SCITECH FORUM

7–11 JANUARY 2019

SAN DIEGO, CALIFORNIA

AEROSPACE ON DEMAND

Check out the HUB

Page 27

scitech.aiaa.org

#aiaaSciTech

AIAA

SHAPING THE FUTURE OF AEROSPACE

70TH INTERNATIONAL ASTRONAUTICAL CONGRESS

21–25 OCTOBER 2019

Walter E. Washington Convention Center, Washington, D.C.

Exhibition Space is Selling Out – RESERVE TODAY!

ENGAGE with over 3,000 delegates from industry, government, and academia, including the most influential experts, innovative technologists, and decision makers from across the world.

INFLUENCE where the future of space is headed by educating the industry about your business.

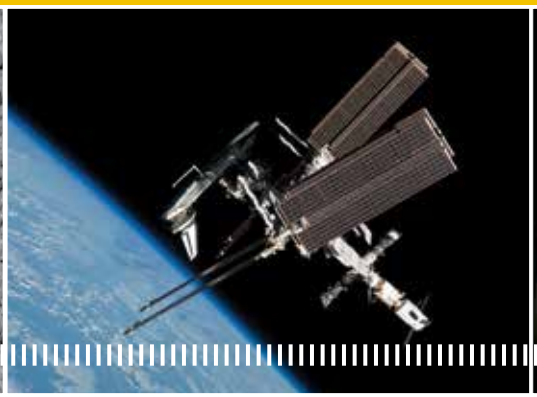
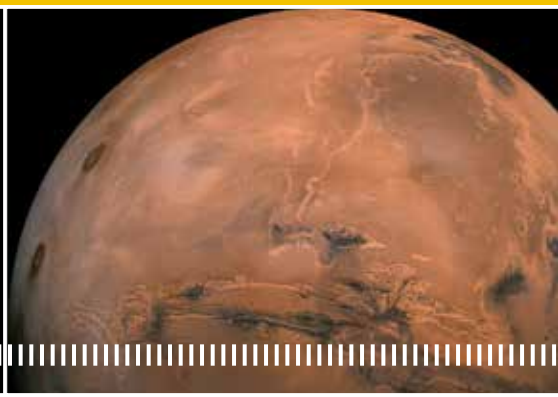
EXPAND your network and sales by leveraging business opportunities at IAC 2019.

Reserve your spot today and secure your sponsorship or exhibit space at IAC 2019, the World's Premier Global Space Event!

iac2019.org/floorplan

Stop by booth #718 to learn more about IAC 2019, and meet the Local Organizing Committee during the Welcome Reception!

SPACE: The Power of the Past, the Promise of the Future

INDUSTRY ANCHOR SPONSOR

LOCKHEED MARTIN

ON-SITE Wi-Fi **NETWORK NAME: AIAAscitech**
PASSWORD: 2019scitech

CONTENTS

Organizing Committee 4
Welcome 5
Sponsors and Supporters 7
Forum Overview 8
Pre-Forum Activities 10
Plenary & Forum 360 Sessions 13
Rising Leaders in Aerospace 16
Special Programming 17
Recognition and Lectures 19
Networking Events 24
Exposition Hall 25
Exposition Hall Floor Plan 26
the HUB 27
Exhibitors by Booth Number 29
Exhibitors 30
General Information 41
Author and Session Chair Information 42
Committee Meetings 43
Program Detail 48
Author and Session Chair Index 195
Venue Map 214

Manage your schedule
Download the free app

Scan the QR code or enter the URL in your device browser to download

Search for "MyItinerary" by ScholarOne

Download on the App Store
http://atlv.me/ep1

GET IT ON Google Play
http://atlv.me/ep2

For all other devices Web Version
http://atlv.me/aiaamet19

MyItinerary by ScholarOne
Clarivate Analytics (US) LLC

twitter.com/aiaa (#aiaaSciTech)
facebook.com/AIAAfan
youtube.com/AIAATV
linkedin.com/companies/aiaa
flickr.com/aiaaevents
instagram.com/AIAAerospace
livestream.com/AIAAVideo/scitech2019
Join the Q&A at aiaa.cnf.io

AIAA
SHAPING THE FUTURE OF AEROSPACE

American Institute of Aeronautics and Astronautics
12700 Sunrise Valley Drive, Suite 200, Reston, VA 20191-5807
703.264.7500 or 800.639.AIAA (2422) | Fax: 703.264.7657
custserv@aiaa.org | aiaa.org

The American Institute of Aeronautics and Astronautics (AIAA) is the world's largest aerospace technical society. With nearly 30,000 individual members from 85 countries, and 95 corporate members, AIAA brings together industry, academia, and government to advance engineering and science in aviation, space, and defense. For more information, visit aiaa.org, or follow us on Twitter @AIAA.

ORGANIZING COMMITTEE

YOUNG PROFESSIONAL CHAIR

Ali K. Raz, Purdue University

FORUM TECHNICAL CHAIRS

Stephen Blanchette, The Aerospace Corporation

Eric Silk, NASA Goddard Space Flight Center

Joseph Slater, Wright State University

FORUM DEPUTY TECHNICAL CHAIRS

Brett Bednarcyk, NASA Glenn Research Center

Haoxiang Luo, Vanderbilt University

Mahyar Malekpour, NASA Langley Research Center

Brian McGrath, Johns Hopkins University Applied Physics Laboratory

TECHNICAL DISCIPLINE CHAIRS

ADAPTIVE STRUCTURES
Jeffrey L. Kauffman, University of Central Florida

AEROACOUSTICS
Douglas Nark, NASA Langley Research Center

AERODYNAMIC MEASUREMENT TECHNOLOGY
Terry Meyer, Purdue University

AEROSPACE EDUCATION
K. Ravindra, St. Louis University

AIRCRAFT DESIGN
Cees Bil, RMIT University

APPLIED AERODYNAMICS
Phil Ansell, University of Illinois at Urbana-Champaign

ATMOSPHERIC AND SPACE ENVIRONMENTS
Dale Ferguson, Air Force Research Laboratory

ATMOSPHERIC FLIGHT MECHANICS
Kevin Cunningham, NASA Langley Research Center

COMMUNICATIONS SYSTEMS
Daniel Raible, NASA Glenn Research Center

COMPUTER SYSTEMS
Rick Tuggle, PeopleTec, Inc.

DESIGN ENGINEERING
Nathan Hines, The Boeing Company

DIGITAL AVIONICS
Maarten Uijt de Haag, Ohio University

DIGITAL ENGINEERING
Mat French, Rolls-Royce North American Technologies, Inc.

DYNAMICS SPECIALISTS
Jonathan Cooper, University of Bristol

FLUID DYNAMICS
Adrian Sescu, Mississippi State University

GAS TURBINE ENGINES
David Blunck, Oregon State University

GREEN ENGINEERING
Tarek Abdel-Salam, East Carolina University

GROUND TEST
John Micol, NASA Langley Research Center

GUIDANCE, NAVIGATION, AND CONTROL
Uday Shankar, Johns Hopkins University Applied Physics Laboratory

HIGH-SPEED AIR-BREATHING PROPULSION
Bayindir Saracoğlu, von Karman Institute for Fluid Dynamics

HISTORY
Kevin Burns, Northrop Grumman Corporation

INFORMATION AND COMMAND & CONTROL SYSTEMS
Mike Sotak, Kratos Defense

INLETS, NOZZLES, AND PROPULSION SYSTEMS INTEGRATION
Vishal Acharya, Georgia Institute of Technology

INTELLIGENT SYSTEMS
Thomas Lombaerts, SGT Inc. / NASA Ames Research Center

MATERIALS
Ray Fertig III, University of Wyoming

MESHING VISUALIZATION AND COMPUTATIONAL ENVIRONMENTS
John Dannenhoffer, Syracuse University

MODELING AND SIMULATION TECHNOLOGIES
Alaa Elmiligui, NASA Langley Research Center

MULTI-DISCIPLINARY DESIGN OPTIMIZATION
Manav Bhatia, Mississippi State University

NON-DETERMINISTIC APPROACHES
Satchi Venkataraman, San Diego State University

PLASMADYNAMICS AND LASERS
Gabe Xu, University of Alabama in Huntsville

PRESSURE GAIN COMBUSTION
Daniel Paxson, NASA Glenn Research Center

PROPELLANTS AND COMBUSTION
Venkat Raman, University of Michigan

SENSOR SYSTEMS AND INFORMATION FUSION
Thomas Frey Jr., Lockheed Martin Corporation

SMALL SATELLITE
Jeremy Straub, University of North Dakota

SOCIETY AND AEROSPACE TECHNOLOGY
Matthew Kuester, Virginia Polytechnic Institute and State University

SOFTWARE
James Murphy, NASA Ames Research Center

SPACE EXPLORATION
Surendra Sharma, NASA Ames Research Center

SPACE OPERATIONS AND SUPPORT
Scott Burleigh, NASA Jet Propulsion Laboratory

SPACECRAFT STRUCTURES
Johanne Heald, Canadian Space Agency

STUDENT PAPER COMPETITION – AD&S
Ali Najafi, ANSYS Enterprise Accounts Program

STRUCTURAL DYNAMICS
Weihua Su, University of Alabama

STRUCTURES
Michael Wolff, Gulfstream Aerospace Corporation

SURVIVABILITY
Andrew Lingenfleter, Air Force Institute of Technology

SYSTEMS ENGINEERING
John Hsu, California State University, Long Beach

TERRESTRIAL ENERGY
Gustaaf "Guus" Jacobs, San Diego State University

THERMOPHYSICS
Kevin Pope, Memorial University

UNIQUE AND TRANSFORMATIONAL FLIGHT SYSTEMS
Tony Linn, A.B. Linn, P.E

UNMANNED SYSTEMS
Greg Larson, Northrop Grumman Corporation

WIND ENERGY
David Maniaci, Sandia National Laboratories

WELCOME TO

SCITECH FORUM

The 2019 AIAA SciTech Forum Executive Steering Committee welcomes you to San Diego! We have worked hard this past year curating exciting and thought-provoking content around the forum theme, **Aerospace On Demand**. We hope these industry leaders, topics, and discussions inspire you. Make it a great week!

EXECUTIVE STEERING COMMITTEE

2019 AIAA SciTech Forum

Scott Fouse
Lockheed Martin Corporation
(ret.)

Michael Gazarik
Ball Aerospace &
Technologies Corporation

Jill Marlowe
NASA Langley Research Center
(Forum General Chair)

Nelson Pedreiro
Lockheed Martin Corporation

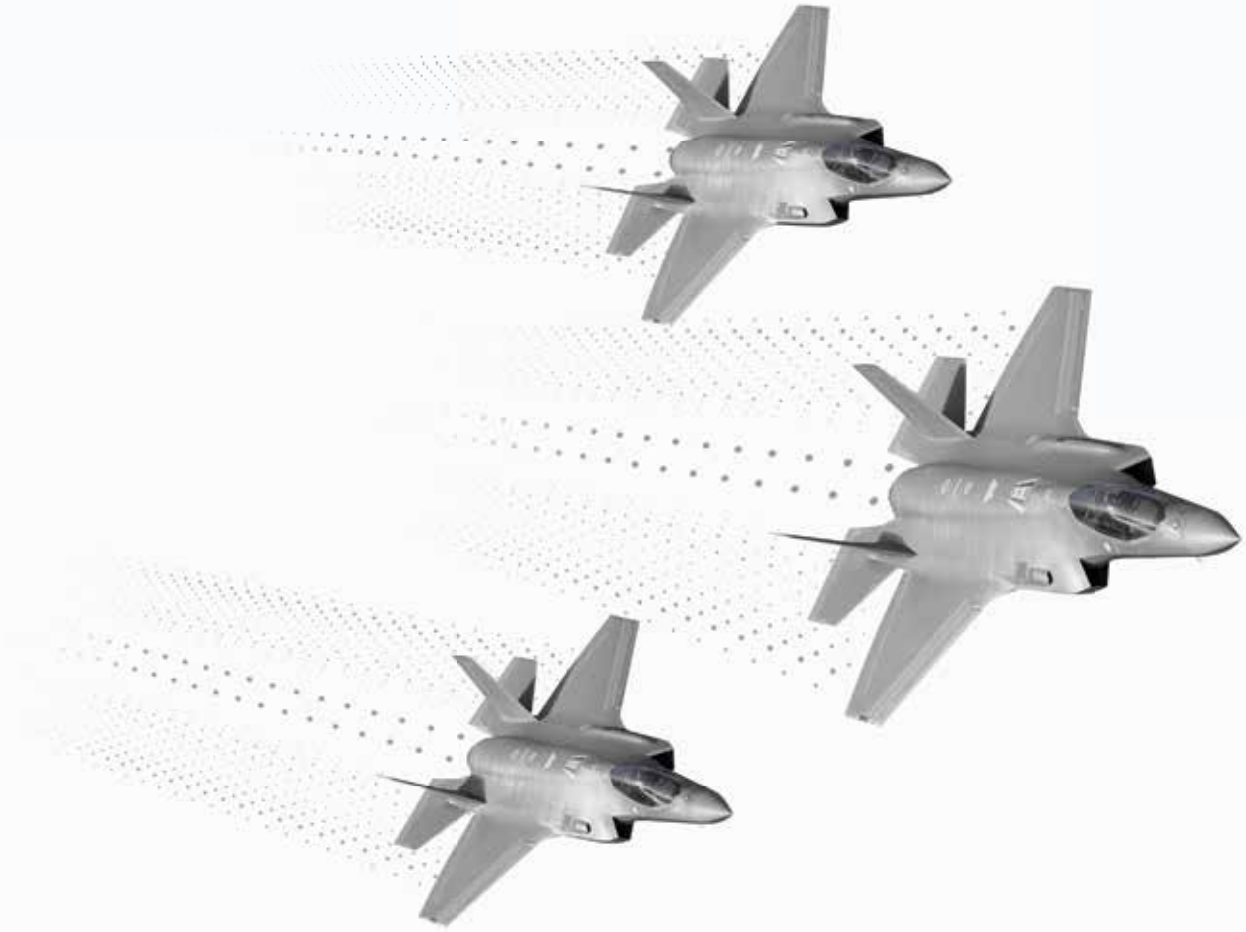
Martiqua Post
U.S. Air Force Academy
(Forum 360 Chair)

Amy Pritchett
Pennsylvania State University

Douglas Stanley
National Institute of Aerospace

Tony Washburn
NASA Langley Research Center
(Deputy Forum 360 Chair)

Next-generation technology to protect the generations to come.



You are being called to greatness, not mediocrity. You are being called to define what's next, not what's already been done. You are being called to Lockheed Martin. Join us in our mission to solve critically important challenges for our customers, to ensure security and freedom around the world. Together, we can innovate the next generation of flight. Take that next step.
Visit the Lockheed Martin booth #401 at the AIAA SciTech Forum.
Learn more at lockheedmartinjobs.com/working-here.

Lockheed Martin. Your Mission is Ours.™

LOCKHEED MARTIN

© 2019 Lockheed Martin Corporation

SPONSORS AND SUPPORTERS

AIAA would like to thank the following organizations
for their support of the 2019 AIAA SciTech Forum

SIGNATURE, DURAND LECTURE, INTERNATIONAL STUDENT CONFERENCE & RISING LEADERS EVENTS SPONSOR

LOCKHEED MARTIN

EXECUTIVE LEVEL & OTHER SPONSORS

THE HUB SPONSOR

BOEING

GENERAL ATOMICS AERONAUTICAL

NORTHROP GRUMMAN

Raytheon

SMALL BUSINESS SPONSORS

DARcorporation

BASTION TECHNOLOGIES

DIVERSITY SCHOLARS PROGRAM SPONSOR

Aurora FLIGHT SCIENCES
A BOEING COMPANY

MEDIA SPONSOR

AEROSPACE AMERICA

FORUM OVERVIEW

	SAT./SUN. 5–6	MONDAY 7			TUESDAY 8			
0730 hrs		Speaker Briefing			Speaker Briefing			
0800 hrs	Continuing Education Courses and Workshops *0815–1730 hrs Saturday and Sunday*	Plenary			Plenary			
0830 hrs								
0900 hrs		Networking Break			Networking Break			
0930 hrs		Forum 360	Technical Sessions		Forum 360	Technical Sessions		
1000 hrs								
1030 hrs								
1100 hrs								
1130 hrs								
1200 hrs					Rising Leaders in Aerospace Think Big!			
1230 hrs		Durand Lecture for Public Service and Luncheon *Sponsored by: Lockheed Martin*		Networking Lunch on Own		Excellence in Aerospace Awards Luncheon *Celebrating Aerospace Sciences and Information Systems (Purchase Required)*		Exposition Hall Open Networking Break in Exposition Hall *1530-1600 hrs*
1300 hrs								
1330 hrs								
1400 hrs		Forum 360	Technical Sessions		Activities in the HUB			
1430 hrs					Forum 360	Technical Sessions		
1500 hrs								
1530 hrs				Networking Break				
1600 hrs	Meet the Employers Recruiting Event *1600-1800 hrs Sunday*	Rising Leaders in Aerospace Meet the TCs						
1630 hrs								
1700 hrs								
1730 hrs		Rising Leaders in Aerospace Reception			Dryden Lecture in Research			
1800 hrs	Student Welcome Reception *1800-1930 hrs Sunday*							
1830 hrs			AIAA Associate Fellows Reception		Opening Reception in the Exposition Hall *Hall opens at 1815 hrs*			
1900 hrs								
1930 hrs	SciTech 101 - A First-Time Attendee Guide to the Forum *1930-2000 hrs Sunday*	AIAA Associate Fellows Recognition Ceremony and Dinner *(Purchase Required)*						
2000 hrs								
2030 hrs								
2100 hrs								
2130 hrs								
2200 hrs								
2230 hrs								

GROW
Technical Career Development

CONNECT
Networking

EXPLORE
the HUB & Exposition

DISCOVER
High Level

DEVELOPMENT
Student & Young Professionals

FORUM OVERVIEW

	WEDNESDAY 9	THURSDAY 10	FRIDAY 11
0730 hrs	Speaker Briefing	Speaker Briefing	Speaker Briefing
0800 hrs	Plenary	Plenary	Plenary
0830 hrs			
0900 hrs	Networking Break in Exposition Hall	Networking Break in Exposition Hall	Networking Break
0930 hrs	Forum 360	Forum 360	Forum 360
1000 hrs			
1030 hrs	Technical Sessions	Technical Sessions	Technical Sessions
1100 hrs			
1130 hrs	Exposition Hall Open *0845-1600 hrs*	Exposition Hall Open *0845-1600 hrs*	
1200 hrs			
1230 hrs	Lunch in Exposition Hall	Diversity in Aerospace Engineering and the Future of the Aerospace Industry / Networking Lunch on Own	Lunch on Own
1300 hrs			
1330 hrs	Networking Break in Exposition Hall *1530-1600 hrs*	Rising Leaders in Aerospace Panel / Excellence in Aerospace Awards Luncheon *Celebrating Aerospace Design/Structures and Aerospace Literature (Purchase Required)*	Technical Sessions
1400 hrs	Activities in the HUB	Networking Break in Exposition Hall *1530-1600 hrs*	
1430 hrs	Forum 360 / Technical Sessions / Rising Leaders in Aerospace Speed Mentoring	Forum 360 / Technical Sessions	
1500 hrs			
1530 hrs			Networking Break
1600 hrs			
1630 hrs			
1700 hrs			
1730 hrs		Women at SciTech Social Hour and Keynote *(Open to all Attendees)*	
1800 hrs	Tweet Up		
1830 hrs			
1900 hrs			
1930 hrs			
2000 hrs			
2030 hrs			
2100 hrs			
2130 hrs			
2200 hrs			
2230 hrs			

GROW
Technical Career Development

CONNECT
Networking

EXPLORE
the HUB & Exposition

DISCOVER
High Level

DEVELOPMENT
Student & Young Professionals

PRE-FORUM ACTIVITIES

CONTINUING EDUCATION OFFERINGS

Stay at the top of your game with AIAA's continuing education offerings. You will leave with invaluable knowledge and solutions that you can put to immediate use.

SAT. 5 – SUN. 6 JANUARY

0800–1730 HRS — OLD TOWN A/B

Guidance, Control, and Astrodynamics of Space Vehicles

This short course presents a coherent treatment of both the fundamental principles and recent advances in guidance, control, and astrodynamics of space vehicles.

0800–1700 HRS — LA JOLLA A/B

Aircraft and Rotorcraft System Identification Engineering Methods for Manned and UAV Applications with Hands-on Training using CIFER®

This course will review the fundamental methods of manned and UAV aircraft and rotorcraft system identification methods with hands-on training using CIFER®, illustrate the benefits of their broad application throughout the flight vehicle development process, and provide the attendees with an intensive hands-on training of the CIFER® system.

0800–1700 HRS — SOLANA BEACH A/B

Diagnostics for Plasmas and Gases

The course presents diagnostic techniques for the measurement of plasmas and gases. These include passive optical methods such as emission spectroscopy, laser diagnostics such as laser-induced fluorescence and Rayleigh scattering, and physical probe diagnostics such as Langmuir probes.

0800–1700 HRS — GASLAMP A/B

Fundamentals of Space Systems

This course provides an introduction to the concepts and technologies of modern space systems.

0800–1700 HRS — GASLAMP C/D

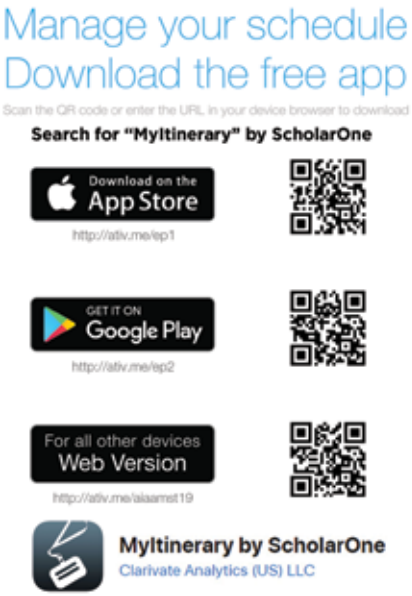
Design of Aircraft Structures

This comprehensive course covers: an introduction to design philosophy and criteria; airframe configuration; margin of safety concept; validation and testing; materials, material selection, design allowables and values; failure theories and interaction methods; fundamental concepts including load paths; free body diagrams; idealization and classical, empirical and finite element analysis methods.

0800–1700 HRS — BALBOA A/B

Design of Electrified Propulsion Aircraft

In this course, participants learn about current developments in electrified propulsion, with an emphasis on hybrid electric aircraft.



PRE-FORUM ACTIVITIES

SUNDAY, 6 JANUARY

0800–1700 HRS — HILLCREST A-D

Hypersonics: Test and Evaluation

The course will introduce the concept of hypersonic flight and describe the critical physics that is encountered at this unique and formidable speed regime. It will briefly discuss the system benefits and uses for this flight regime and put in perspective, why system performance and evaluation through test for this important speed regime can create difficulties for the tester, test facility developer, and project manager.

0800–1700 HRS — GOLDEN HILL A/B

Additive Manufacturing: Structural and Material Optimization

This course will provide a practical understanding of topology optimization and additive manufacturing. It will uncover the numerical machineries of a range of topology optimization methods and reveal how to formulate the design problems and select numerical parameters to yield successful designs. It will also discuss the state-of-the-art topology optimization capabilities in the context of material and structural designs under multiphysics.

0800–1700 HRS — TORREY HILLS A/B

A Unified Approach for Computational Aeroelasticity

This one-day short course covers concepts and terminology associated with aeroelasticity, including structural dynamics, unsteady aerodynamics, aeroservoelasticity, and recent developments such as computational reduced-order models.

0800–1730 HRS — MISSION BEACH A-C

2nd AIAA Geometry and Mesh Generation Workshop (GMGW-2)

Geometry and Mesh Generation Workshops (GMGW) assess the current state of the art in geometry and mesh generation technology and software as applied to aircraft and spacecraft systems. They will help identify and develop understanding of areas of needed improvement (performance, accuracy, applicability) in geometry and mesh generation technology software. And they will provide a foundation for documenting best practices for geometry and mesh generation.

1600–1800 HRS — SEAPORT G

Meet the Employers Recruiting Event

AIAA's recruiting event brings together corporate members and students/young professional attendees. This fun and dynamic environment allows students and professionals to interact with organizations regarding employment opportunities. Participating companies/organizations will present an organizational overview and opportunities available, then have follow-on discussions with the attendees.

1800–1930 HRS — HARBOR FOYER

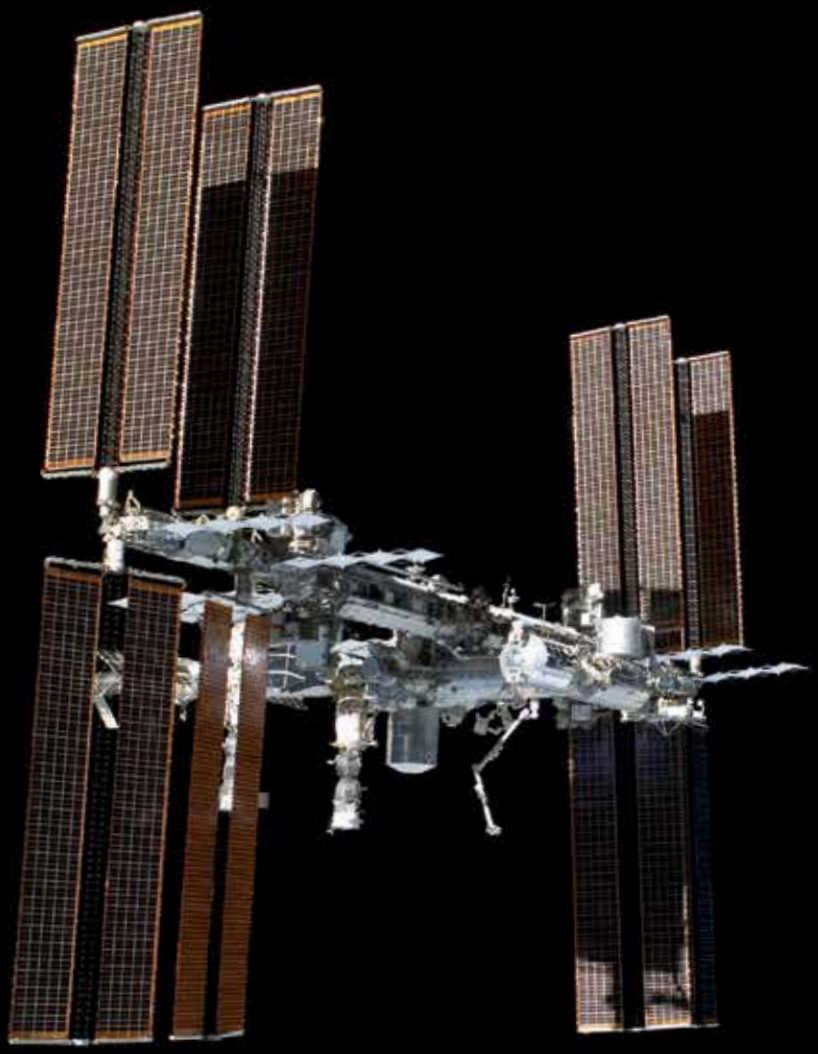
Student Welcome Reception

AIAA SciTech Forum has one of the largest gatherings of students of any of the AIAA forums. Come meet fellow students who you are sure to see again throughout the week. Many student award winners and presenters will be in attendance. Take advantage of this chance to meet key members of AIAA and learn about opportunities that are available.

1930–2000 HRS — SEAPORT G

SciTech 101

Discover how you can make the most of your week at AIAA SciTech Forum while meeting fellow attendees. This orientation is ideal for first-time attendees, but all are welcome!



SPACE TO DREAM.

Sometimes making your biggest dreams come true means leaving the familiar. Boeing is proud to support those who aren't afraid to go wherever their dreams take them.

BOEING

PLENARY & FORUM 360 SESSIONS

MONDAY, 7 JANUARY

0800–0900 HRS SEAPORT A–E

Enabling the Replicator

MODERATOR: Heather Bulk, Chief Executive Officer and Co-Founder, Special Aerospace Services and SAS Manufacturing

SPEAKERS:
Tony Gingiss, Chief Executive Officer, OneWeb Satellites

Robert Gold, Director, Engineering Enterprise, Office of the Deputy Assistant Secretary of Defense for Systems Engineering, U.S. Department of Defense

Jeff Miller, Senior Technical Fellow, Production Engineering, The Boeing Company

FORUM 360°

0930–1130 HRS SEAPORT F

In-Space Factories

MODERATOR: Thomas Cwik, Manager, Space Technology Program, Ocean Worlds Technology, NASA Jet Propulsion Laboratory

PANELISTS:
Robert Hoyt, Chief Executive Officer, Tethers Unlimited, Inc.

Andrew Rush, President and Chief Executive Officer, Made In Space, Inc.

Alfred Tadros, Vice President, Space Infrastructure and Civil Space, SSL

John Vickers, Principal Technologist, Advanced Manufacturing, Space Technology Mission Directorate, NASA

FORUM 360°

1400– 1600 HRS SEAPORT F

On-Demand Metal Manufacturing

MODERATOR: Mary "Niki" Werkheiser, Manager, NASA In-space Manufacturing, NASA Marshall Space Flight Center

PANELISTS:
Mohammad Ehteshami, CEO, GE Additive (ret.)

Branden Kappes, Operations Director, Alliance for the Development of Additive Processing Technologies (ADAPT), Colorado School of Mines

Nicholas Mulé, Program Manager, Advanced Programs, Additive Manufacturing, Aerojet Rocketdyne

Randall "Ty" Pollak, Director, Research & Development, Universal Technology Corporation

David Waller, Principal Engineer, Ball Aerospace

TUESDAY, 8 JANUARY

0800–0900 HRS SEAPORT A–E

Exploration for Everyone

MODERATOR: Frank Morring Jr., Senior Editor, Space, Aviation Week & Space Technology (ret.)

PANELISTS:
Ariane Cornell, Head, Astronaut Strategy and Sales, Blue Origin

Richard DalBello, Vice President, Business Development and Government Affairs, Virgin Orbit

Lon Levin, President and Chief Executive Officer, GEOshare LLC

Bradley Schneider, Vice President, Launch Services, Rocket Lab USA

John Tylko, Chief Innovation Officer, Aurora Flight Sciences

FORUM 360°

0930–1130 HRS SEAPORT F

Responsive Space

MODERATOR: Douglas Loverro, President, Loverro Consulting LLC, and former Deputy Assistant Secretary of Defense, Space Policy, U.S. Department of Defense

PANELISTS:
Eric Felt, Director, Space Vehicles Directorate, Air Force Research Laboratory

John London III, Space Systems Program Manager, Space and Missile Defense Command, U.S. Army (TBC)

William Surrey, Director, Contracting, Space RCO, Kirtland Air Force Base

Paul "Rusty" Thomas, Program Manager, Tactical Technology Office, Defense Advanced Research Projects Agency

Mandy Vaughn, President, VOX Space, LLC

FORUM 360°

1430–1630 HRS SEAPORT F

Engineering Apollo

MODERATOR: John Tylko, Chief Innovation Officer, Aurora Flight Sciences

SPEAKERS:
Don Eyles, Author and Former Member, Technical Staff, MIT Instrumentation Lab and Charles Stark Draper Laboratory

Join the Q&A at aiaa.cnf.io

PLENARY & FORUM 360 SESSIONS

WEDNESDAY, 9 JANUARY

0800–0900 HRS — SEAPORT A–E

Flying Anyone from Here to There – Anytime, Anywhere

MODERATOR: Bruce Holmes, Vice President, Digital Aviation, SmartSky Networks, LLC

KEYNOTE: Eduardo Dominguez-Puerta, Head, Urban Air Mobility, Airbus

FORUM 360°

0930–1130 HRS — SEAPORT F

On-Demand Aviation – Challenges and Solutions

MODERATOR: Douglas Stanley, President and Executive Director, National Institute of Aerospace

PANELISTS:
William Crossley, Professor, Aeronautics and Astronautics, Purdue University

William Fredericks, Founder and Chief Executive Officer, Advanced Aircraft Company

Brian German, Langley Associate Professor, Daniel Guggenheim School of Aerospace Engineering, Georgia Institute of Technology

Michael Patterson, Aerospace Technologist, NASA Langley Research Center

Wes Ryan, Unmanned Systems Certification Lead, Policy & Innovation Division, FAA

FORUM 360°

1430–1630 HRS — SEAPORT F

Lindbergh Innovation Forum

MODERATOR: Erik Lindbergh, President, VerdeGo Aero

PART 1:
SPEAKERS:
John S. Langford III, President and Chief Executive Officer, Aurora Flight Sciences, and President, AIAA

Ben Marcus, Co-Founder and Chairman, AirMap

Kevin Noertker, Co-Founder and Chief Executive Officer, Ampaire, Inc.

PART 2:
SPEAKERS:
Michael Hinderberger, Senior Vice President, Aircraft Development, Aerion Corporation

John L. Petersen, Chairman, The Charles A. and Anne Morrow Lindbergh Foundation

Edgar Waggoner, Director, Integrated Aviation Systems Program, Aeronautics Research Mission Directorate, NASA

THURSDAY, 10 JANUARY

0800–0900 HRS — SEAPORT A–E

Applying Disruptive Technologies in Disney Parks, Experiences and Consumer Products

MODERATOR: Amy Pritchett, Professor and Head, Department of Aerospace Engineering, Pennsylvania State University

KEYNOTE: Kathy de Paolo, Vice President, Technology, The Walt Disney Company

FORUM 360°

0930–1130 HRS — SEAPORT F

Autonomy Across Domains

PANELISTS:
James Cutler, Associate Professor, Department of Aerospace Engineering, University of Michigan

Aaron Kahn, Flight Controls Engineer, U.S. Naval Research Laboratory

Fritz Langford, Program Manager, Aurora Flight Sciences

FORUM 360°

1400–1600 HRS — SEAPORT F

Verification & Validation in the Age of Autonomy

MODERATOR: Julie Parish, Principal Member of Technical Staff, Navigation, Guidance, and Control, Sandia National Laboratories

PANELISTS:
Kris Kearns, Director, Strategy, Soar Technology, Inc.

John Koelling, Project Manager, System Wide Safety, NASA

Natasha Neogi, Senior Research Scientist, NASA Langley Research Center

James L. Paunicka, Technical Fellow, Senior Researcher, Boeing Research & Technology, The Boeing Company

John Valasek, Director, Vehicle Systems & Control Laboratory and Professor, Department of Aerospace Engineering, Texas A&M University

PLENARY & FORUM 360 SESSIONS

FRIDAY, 11 JANUARY

0800–0900 HRS SEAPORT A–E

Customized Learning, When and Where You Need It

SPEAKERS:

Eric Paterson, Aerospace and Ocean Engineering Department Head and Rolls-Royce Commonwealth Professor of Marine Propulsion, Virginia Polytechnic Institute and State University

John Tangney, Director, Human and Bioengineered Systems Division, Office of Naval Research

FORUM 360°

0930–1130 HRS SEAPORT F

Workforce Needs of the 21st Century

MODERATOR: Dan Dumbacher, Executive Director, AIAA

PANELISTS:

Tim Cahill, Vice President, Integrated Air & Missile Defense, Lockheed Martin Missiles & Fire Control

Stephen Morford, Vice President, Core Systems Engineering, Pratt & Whitney

Michael Moses, President, Virgin Galactic

Tom Pieronek, Vice President, Basic Research, Northrop Grumman Aerospace Systems

Tamaira Ross, Principal Manager, New Glenn System Definition and Design, Blue Origin

Join the Q&A at aiaa.cnf.io

RISING LEADERS IN AEROSPACE

This multidimensional program features speed mentoring, panel sessions, Q&A with top industry leaders, and multiple opportunities for networking. These exciting and energetic activities will provide access to top aerospace leaders and their perspectives, with subject matter relevant to your career stage.

MONDAY, 7 JANUARY

1600–1730 HRS — SEAPORT G

Meet the Technical Committees

Learn how you can excel in your career and within the aerospace industry. Members of several AIAA Technical Committees will be taking the time to meet with the Rising Leaders in Aerospace participants and highlight their role within AIAA as well as how their committees serve the industry and Institute at large. This interactive event is a great way to get insight from your peers, gain industry contacts, and meet your fellow young professionals.

1730–1900 HRS — SEAPORT G

Networking Reception

Continue your conversations and networking at the reception that will immediately follow. Take time to socialize with your fellow young professionals who are also attending the forum. Having just participated in the Meet the TCs, you'll have at least one thing in common. Don't miss this rewarding opportunity.

TUESDAY, 8 JANUARY

1200–1400 HRS — SEAPORT G

Lunch Panel: Think Big! A Session for Students Who Want to Break New Ground in Aerospace

Grab a box lunch and join this Tuesday afternoon interactive session for undergraduate and graduate students from all backgrounds to learn, grow, and get tools that help young professionals break new ground in aerospace. This session features a special keynote speaker who will lead a diverse panel discussion and a follow-up workshop for you to set SMART goals for you to accomplish this week at AIAA SciTech and beyond. Think big, build up, reach high.

MODERATOR: Elaine Petro, University of Maryland, College Park

KEYNOTE & PANELIST: Nick Campbell, The Hypershield Partnership & Committee for Expansion into Key Space Industries

PANELISTS:
Sofia Russi, Denmar Technical Services

Dani Selva, Texas A&M University

Sunny Wicks, Lockheed Martin Corporation

WEDNESDAY, 9 JANUARY

1430–1600 HRS — SEAPORT G

Speed Mentoring

Leaders in the aerospace industry will be taking time to meet with the Rising Leaders participants and share their experiences. This event is a great way to get insight and make new contacts. And, maybe, they will end up being a mentor for more than just the 15 minutes at this event.

THURSDAY, 10 JANUARY

0930–1030 HRS — SEAPORT G

Contemporary Emerging Trends in Aerospace

Increasingly complex future mission needs, from space exploration missions and establishing a Mars colony to the integration of unmanned aerial vehicles in the air transportation system, demand engineering and technology expertise beyond the traditional aeronautics and astronautics disciplines. Designing and fielding safe, efficient, cost-effective, and reliable aero/astro systems of the future requires innovations in autonomy, cybersecurity, policy, business models, and digital engineering (to name a few). This panel discussion will introduce the Rising Leaders to the emerging trends in our discipline and help them develop skills sets for meeting the future demands of aeronautical and astronautical systems.

MODERATOR: Ali Raz, Purdue University

PANELISTS:
Julie Parish, Sandia National Laboratories

Even Sills, Good Harbor Security Risk Management

Lon Levin, GEOshare

Bob Pearce, NASA Headquarters

Rising Leaders in Aerospace Sponsor

LOCKHEED MARTIN

SPECIAL PROGRAMMING

MONDAY, 7 JANUARY

0930–1200 HRS — MARRIOTT MARQUIS: LEUCADIA, POINT LOMA, SOLANA

AIAA Foundation International Student Conference

The first-place winners of the AIAA Regional Student Conferences, which took place in the spring, will gather to present their research to a team of judges made up of professional members in the industry. The students will have three consecutive sessions in the categories of Undergraduate, Masters, and Team.

Sponsored by: LOCKHEED MARTIN

CASE 1100–1230 HRS — SEAPORT G

A Collision of Worlds: MDO vs Digital Thread vs MBSE in Today's Complex Systems Engineering

MODERATOR: Don Farr, Senior Technical Fellow, Boeing Research & Technology

PANELISTS:
Atherton Carty, Director, Technology Roadmaps, Advanced Development Programs, Lockheed Martin Aeronautics Company

Olivier de Weck, Professor of Aeronautics and Astronautics and Engineering Systems, Massachusetts Institute of Technology; Senior Vice President for Technology Planning and Roadmapping, Airbus

Jason Hatakeyama, Chief Architect, Boeing Defense, Space & Security

Ray Kolonay, Director, Multidisciplinary Science and Technology Center, Air Force Research Laboratory

Anna-Marie McGowan, Senior Engineer for Complex Systems Design, NASA Langley Research Center

1100–1230 HRS — HARBOR H

Grand Challenges in Aerospace Research

Sponsored by Aerospace Department Chairs Association (ADCA)

PANELISTS:
Charbel Farhat, Vivian Church Hoff Professor of Aircraft Structures, Stanford University

Wesley L Harris, Charles Stark Draper Professor, Department of Aeronautics & Astronautics, Massachusetts Institute of Technology

John Junkins, Distinguished Professor, Department of Aerospace Engineering, Texas A&M University

Nancy Leveson, Professor of Aeronautics and Astronautics, Professor of Engineering Systems, Massachusetts Institute of Technology

Elaine Oran, Glenn L. Martin Professor, Department of Aerospace Engineering, University of Maryland

WEDNESDAY, 9 JANUARY

CASE 0930–1230 HRS — LA JOLLA A

ICME Software Panel — Addressing 2040 Grand Challenges

PANELISTS:
Craig Collier, President, Collier Research Corporation-HyperSizer

Dave Conover, Chief Technologist for Mechanical Products, ANSYS

Tod Dalrymple, R&D Applications Director, Mechanics Technology, Dassault Systemes

Will Marsden, Director, Industry Relations, Granta Design Limited

Doug Neill, Vice President, Product Development, MSC Software Corporation

Mark Samonds, Director of Engineering, ESI North America

Jeff Wollschlager, Senior Technical Director, Altair Engineering

0930–1130 HRS — HARBOR F

Challenges in Aerospace Education

Sponsored by Aerospace Department Chairs Association (ADCA)

MODERATOR: Tom Shih, Purdue University

PANELISTS:
Wesley L. Harris, Massachusetts Institute of Technology

Eric Loth, University of Virginia

Tasos Lyrintzis, Embry-Riddle Aeronautical University

Kristi Morgansen, University of Washington

Eric Paterson, Virginia Polytechnic Institute and State University

Amy Pritchett, Pennsylvania State University

John Sullivan, Purdue University

SPECIAL PROGRAMMING

THURSDAY, 10 JANUARY

CASE 0930–1100 HRS COVE

Operationalizing Artificial Intelligence

PANELISTS:
John Piorkowski, Chief Engineer, Asymmetric Operations Sector, Johns Hopkins University Applied Physics Laboratory

Ryan Quick, Principal and Co-Founder, Providentia Worldwide

Laurel Riek, Director, Healthcare Robotics Lab, University of California at San Diego

Stoney Trent, Chief, Implementation Team, DoD Joint Artificial Intelligence Center

CASE 1100–1230 HRS COVE

Systems Thinking for Software Engineering (and Vice Versa)

PANELISTS:
Ron Kohl, AIAA Software Systems Technical Committee

John Matlik, Rolls-Royce

Natasha Neogi, NASA Langley Research Center

Michael Rubin, Red Canyon Software

1200–1400 HRS SEAPORT G

Diversity in Aerospace Engineering and the Future of the Aerospace Industry with Lunch

Hear how diversity in the aerospace industry can help enhance collaborative and creative team environments. Panelists will discuss how diversity in the workplace has increased their excitement about work, and what diversity means to them. Panelists will include representatives from different stages in their career as well as panelists from different parts of the aerospace industry.

MODERATOR: Emily Kusulas, University of Michigan

PANELISTS:
Mumu Xu, University of Maryland

Laurette Lahey, Boeing Defense, Space & Security

Louise Moores, Lockheed Martin Corporation

Mary Snitch, Lockheed Martin Corporation

Michelle Ferebee, NASA Langley Research Center

Cosponsored by Women of Aeronautics and Astronautics and the AIAA Diversity Working Group

Boxed lunch is first-come, first-served.

CASE 1600–1730 HRS HARBOR B

Art in Engineering

MODERATOR: Christian Dommell, SmallSat Innovation Lead, Boeing Phantom Works

PANELISTS:
Robert Moreland, OCE Project Management Enterprise Integration, NASA

Ken Museth, Head of Simulation R&D, Weta Digital; Computational Scientist, SpaceX; CEO, Voxel Tech Inc.

Alejandro Salado, Assistant Professor of Systems Engineering, Virginia Polytechnic Institute and State University

1730–1930 HRS SEAPORT F

Women at SciTech Social Hour and Keynote

This event will provide an opportunity for forum attendees to meet informally, network, discuss experiences, and create advocates. The speaker for the event will be:

Heather Bulk, Chief Executive Officer and Co-Founder, Special Aerospace Services and SAS Manufacturing

RECOGNITION AND LECTURES

MONDAY, 7 JANUARY

1230–1400 HRS SEAPORT A-E

Durand Lecture for Public Service and Luncheon

Douglas L. Loverro
President, Loverro Consulting LLC, and former Deputy Assistant Secretary of Defense, Space Policy, U.S. Department of Defense

"Guarding the 'High Frontier' and Preserving Its Capability for Commercial Use — What Is Necessary to Assure a Secure Future for Our Nation and a Thriving Space Industry?"

The Durand Lecture, named in honor of William F. Durand, is presented to showcase notable achievements by a scientific or technical leader whose contributions have led directly to the understanding and application of the science and technology of aeronautics and astronautics for the betterment of mankind. Lunch will be provided to the first 180 guests on a first-come, first-served basis. The lecture will be presented after lunch and is open to all attendees at that time.

Sponsored by: LOCKHEED MARTIN

2019 Associate Fellows Recognition Ceremony and Dinner

RECEPTION: 1830–1915 HRS SEAPORT FOYER
(No purchase required)

DINNER: 1930–2230 HRS SEAPORT A-E
(Proof of purchase required)

Each year, the Institute recognizes exemplary professionals for their accomplishments in engineering or scientific work, outstanding merit and contributions to the art, science, or technology of aeronautics or astronautics. Please support your colleagues and join us for the induction of the 2019 Associate Fellows. The reception is open to all who would like to congratulate the newest members of the Class of 2019. Access to this celebrated event is available on a first-come, first-served basis and can be purchased for $100 via the AIAA SciTech Forum registration webpage, or onsite (based on availability).

TUESDAY, 8 JANUARY

0930–1130 HRS MARRIOTT MARQUIS SANTA ROSA

AIAA Foundation International Student Conference Awards Breakfast

The top three winners will be announced during the breakfast after hearing from the chair of the Student Conference Committee and the guest speaker. Best overall prizes in the amount of $1,000 will be awarded in each of the categories. This is an invite-only event.

Sponsored by: LOCKHEED MARTIN AIAA FOUNDATION

1230–1400 HRS SEAPORT A-E

Excellence in Aerospace Awards Luncheon: Celebrating Aerospace Sciences and Information Systems

We honor our up-and-coming students, our technical innovators, and our seasoned practitioners. We meet to elevate their work and encourage our community. Proof of purchase for the luncheon is required and included in the registration fee where indicated. Access for guests may be purchased onsite at the registration desk, as space is available. Please join use as we recognize the following winners:

STUDENT COMPETITIONS AND PAPERS

Atmospheric Flight Mechanics Student Paper Competition
"An Experimental Investigation of Tractor and Pusher Hexacopter Performance" (AIAA 2018-2983) by Prashin Sharma and Ella Atkins, University of Michigan, Ann Arbor, Michigan

EDUCATOR/EDUCATION AWARDS

Abe M. Zarem Award for Distinguished Achievement in Aeronautics
Geoffrey Andrews, Purdue University

Abe M. Zarem Educator Award in Aeronautics
Gregory Blaisdell, Purdue University

Abe M. Zarem Award for Distinguished Achievement in Astronautics
Ken Mitchell, University of Memphis

Abe M. Zarem Educator Award in Astronautics
Jeffrey Marchetta, University of Memphis

CERTIFICATES OF MERIT FOR BEST PAPERS

Guidance, Navigation and Control Best Paper
"Efficient Prioritization in Explicit Adaptive NMPC through Reachable-Space Search" (AIAA 2018-1847) by Vishnu Desaraju and Nathan Michael, Robotics Institute, Carnegie Mellon University, Pittsburgh, Pennsylvania.

High Speed Air Breathing Propulsion Best Paper
"Supersonic Isolator Shock-Train Dynamics: Simple Physics-Based Model for Closed Loop Control of Shock Train Location" (AIAA 2018-1618) by Leon Vanstone, Joe Lingren and Noel Clemens, Department of Aerospace Engineering and Engineering Mechanics, University of Texas at Austin.

Meshing, Visualization and Computational Environments Best Paper
"Generation of Anisotropic Adaptive Meshes for the First AIAA Geometry and Mesh Generation Workshop" (AIAA 2018-0658) by Todd Michal, Joshua Krakos and Dmitry Kamenetskiy of The Boeing Company.

Modeling and Simulation Best Papers

- "Differential Adaptive Stress Testing of Airborne Collision Avoidance Systems" (AIAA 2018-1923) by Ritchie Lee and Ole Mengshoel, Carnegie Mellon University Silicon Valley, Moffett Field, California; Anshu Saksena, Ryan Gardner, Daniel Genin and Jeffrey Brush, Johns Hopkins University Applied Physics Laboratory, Laurel, Maryland; and Mykel Kochenderfer of Stanford University, Stanford, California.

Predator B

SURPASSING 5 MILLION FLIGHT HOURS

Predator

Gray Eagle

SkyGuardian

Avenger

ga-asi.com

©2018 GENERAL ATOMICS AERONAUTICAL SYSTEMS, INC.

GENERAL ATOMICS AERONAUTICAL

Leading The Situational Awareness Revolution

RECOGNITION AND LECTURES

› "A Modeling, Simulation and Control Framework for Small Unmanned Multicopter Platforms in Urban Environments" (AIAA 2018-1915) by Corey Ippolito and Kalmanje Krishnakumar, NASA Ames Research Center, Moffett Field, California; and Sebastian Hening and Shankar Sankararaman, Stinger Ghaffarian Technologies, Inc., Moffett Field, California.

Sensor Systems and Information Fusion Best Paper
"Information Exchange Considerations for Effective Fusion among Heterogeneous Network Participants" (AIAA 2018-0710) by Thomas Frey Jr. and Kent Engebretson, Lockheed Martin Aeronautics, Fort Worth, Texas; and Nelson Rasmussen, Lockheed Martin Rotary and Mission Systems, Colorado Springs, Colorado.

TECHNICAL EXCELLENCE AWARDS
2019 Aerospace Software Engineering Award
Scott A. Morton
Project Manager, CREATE Aviation Vehicles Project at the Department of Defense High Performance Computing Modernization Program, Vicksburg, Mississippi
"For over 30 years of significant research and innovations in the software engineering of multi-disciplinary, physics-based simulation tools for the design analysis and virtual test of aeronautical systems."

deFlorez Award for Flight Simulation
Ronald A. Hess
Professor, Department of Mechanical and Aerospace Engineering
University of California, Davis
"For contributions in the field of simulation fidelity for the improvement of air vehicle simulation and trainers, aircraft man machine interface, and flight control."

Mechanics and Control of Flight Award
E. Glenn Lightsey
Professor, Daniel Guggenheim School of Aerospace Engineering
Georgia Institute of Technology
"For far-reaching advances toward low-cost space mission concepts through groundbreaking technological developments in sensor and actuator systems for small satellites."

DIVERSITY AND INCLUSION AWARD
Susan A. Frost
NASA Ames Research Center
"For shaping AIAA's Diversity and Inclusion initiative and moving it forward throughout the AIAA community and beyond; and for the passion, dedication and leadership role that make her the ultimate role model for everyone who follows her footsteps."

1730–1630 HRS SEAPORT A-E

Dryden Lecture in Research

Joseph A. Schetz
Holder of the Fred D. Durham Chair
Virginia Polytechnic Institute and State University

"Truss-Braced Wing Designs for High-Speed Transport Aircraft"

The Dryden Lecture in Research was named in honor of Dr. Hugh L. Dryden in 1967, succeeding the Research Award established in 1960. The lecture emphasizes the great importance of basic and applied research to the advancement in aeronautics and astronautics and is a salute to research scientists and engineers. Open to all attendees.

WEDNESDAY, 9 JANUARY

1800–1900 HRS HARBOR I

Structures, Structural Dynamics, and Materials Lecture

THURSDAY, 10 JANUARY

1200–1400 HRS SEAPORT A-E

Excellence in Aerospace Awards Luncheon - Celebrating Aerospace Design, Structures and Aerospace Literature

Matthew Hutchinson, Vice President of Engineering, Aurora Flight Sciences

Proof of purchase for the luncheon is required and included in the registration fee where indicated. Access for guests may be purchased onsite, as space is available. Please join us as we recognize the following winners:

STUDENT COMPETITIONS

› **American Society for Composites (ASC) Student Competition in Composites**

› **CFD Best Student Paper**

› **Jefferson Goblet**

› **Lockheed Martin Student Paper in Structures**

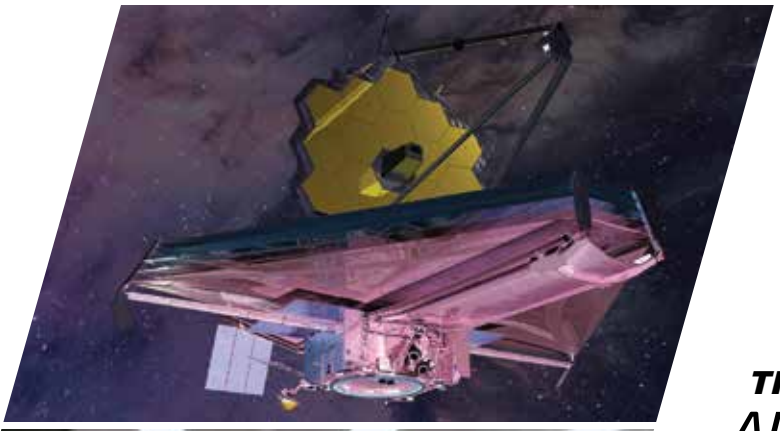
› **Southwest Research Institute Student Paper Award in Non-Deterministic Approaches**

BEST PAPERS
AIAA/Colliers-HyperSizer Research Best Structures Paper
"Steering of Carbon Fiber/Thermoplastic Pre-preg Tapes Using Laser Assisted Tape Placement" (AIAA 2018-0478) by Gearoid Clancy, Daniel Peeters, Vincenzo Oliveri, Ronan O'Higgins, David Jones and Paul Weaver, School of Engineering and Bernal Institute, University of Limerick, Ireland

ASME/Boeing Best Paper
"Nonlinear Computational Aeroelasticity Using Structural Modal Coordinates" (AIAA 2018-1447) by Renator Medieros and Carlos Cesnik, University of Michigan, Ann Arbor, Michigan; and Etienne Coetzee, Airbus Operations, Filton, Bristol, United Kingdom

Spacecraft Structures Best Paper
'Flight Qualification Testing of a Meter-class CubeSat Deployable Boom" (AIAA 2017-0621) by JoAnna Fulton, of the University of Colorado at Boulder, Colorado; Sungeun Jeon of LoadPath LLC, Albuquerque, New Mexico; and Thomas Murphy, Roccor LLC, in Longmont, Colorado

History Best Paper
"Unlikely Partners: German-Soviet Aeronautical Cooperation, 1919-1933" (AIAA 2018-1612) by Richard Hallion, Florida Polytechnic University, Lakeland, Florida (ret.)



THE VALUE OF
ADVANCING INNOVATION TO SOLVE TOMORROW'S PROBLEMS TODAY.

Northrop Grumman develops innovative systems, products and solutions in autonomous systems, cyber, C4ISR, strike, and logistics and modernization to government and commercial customers worldwide. These innovations have defined our most inventive capabilities to defend our nation's freedom and advance human discovery. ***That's why we're a leader in providing innovative solutions.***

THE VALUE OF *PERFORMANCE.*

NORTHROP GRUMMAN

northropgrumman.com

© 2019 Northrop Grumman Corporation

RECOGNITION AND LECTURES

TECHNICAL EXCELLENCE AWARDS

J. Leland Atwood Award
Joseph C. Majdalani
Auburn University
"For significant contributions to the aerospace engineering profession through sustained technical achievements in the field of propulsion and memorable student development experiences."

Walter J. and Angeline H. Crichlow Trust Prize
Larry B. Ilcewicz
Federal Aviation Administration (FAA)
"For exemplary technical leadership in establishing a safety and regulatory framework enabling large-scale structural application of composites in commercial and general aviation aircraft, rotorcraft and engines."

AEROSPACE LITERATURE AWARDS

Gardner-Lasser Aerospace History Literature Award
Valerie Neal
Smithsonian National Air and Space Museum
Spaceflight in the Shuttle Era and Beyond: Redefining Humanity's Purpose in Space

History Manuscript Award
Tony Chong
Northrop Grumman Corporation
"Flying Wings & Radical Things: Northrop's Secret Aerospace Projects & Concepts 1939-1994"

Pendray Aerospace Literature Award
Naira Hovakimyan
University of Illinois at Urbana-Champaign
L1 Adaptive Control Theory: Guaranteed Robustness with Fast Adaptation

Summerfield Book Award
Jack D. Mattingly and Keith M. Boyer
Department of Aeronautics
U.S. Air Force Academy, CO
U.S. Air Force (retired)
"For Elements of Propulsion – Gas Turbines and Rockets *and its contributions, from quickly predicting the behavior of "real" engines to the numerous and helpful examples."*

NETWORKING EVENTS

Understanding the importance of networking with colleagues new and old, a series of activities have been planned that will help you connect with current colleagues and new acquaintances.

SUNDAY, 6 JANUARY

1500–1900 HRS HARBOR FOYER

Registration Welcome and Networking Lounge

Network with your fellow attendees, review the program of events, and plan for the week ahead while listening to some live music from Mike Myrdal. Attendees of every generation will enjoy his music!

TUESDAY, 8 JANUARY

1815–2000 HRS GRAND HALL

Opening Reception

Take this opportunity to engage new contacts and refresh old ones. Proof of purchase for the reception is required and included in the registration fee where indicated. Access for guests may be purchased at registration or on site, as space is available.

WEDNESDAY, 9 JANUARY

1230–1400 HRS GRAND HALL

Lunch in the Exposition Hall

Proof of purchase is required and included in the registration fee where indicated.

THURSDAY, 10 JANUARY

1730–1930 HRS SEAPORT F

Women at SciTech Social Hour and Keynote

This event will provide an opportunity for forum attendees to meet informally, network, discuss experiences, and create advocates. There is no charge to attend this event and all attendees are welcome.

Heather Bulk, Chief Executive Officer and Co-Founder, Special Aerospace Services and SAS Manufacturing

Stay Fit at SciTech!

Stay fit with your fellow attendees! Join AIAA staff on **Tuesday, 8 January**, and **Thursday, 10 January**, at **0600 hrs** at the Manchester Grand Hyatt Lobby, by the Concierge Desk for a run/walk. All levels are welcome for a 1-3 mile route.

Coffee Breaks

Coffee breaks allow even more time for making new contacts, continuing discussions from sessions, visiting the Exposition Hall, or checking emails and voicemails to keep in touch with the office while you are at the forum. Coffee breaks will be located in the following locations and times:

Monday, 7 January	0900 & 1530 hrs; Session room foyers
Tuesday, 8 January	0900 hrs; Session room foyers 1530 hrs; Exposition Hall
Wednesday, 9 January	0900 & 1530 hrs; Exposition Hall
Thursday, 10 January	0900 & 1530 hrs; Exposition Hall
Friday, 11 January	0900 & 1530 hrs; Session room foyers

EXPOSITION HALL

EXPOSITION HALL HOURS

TUESDAY, 8 JANUARY

1300–1630 HRS
1815–2000 HRS — OPENING RECEPTION*

WEDNESDAY, 9 JANUARY

0845–1600 HRS
1230–1400 HRS — LUNCH*

THURSDAY, 10 JANUARY

0845–1600 HRS

**Proof of purchase is required and included in the registration fee where indicated.*

AIAA FOUNDATION
Advancing Aerospace

Please join our generous donors in advancing aerospace with your gift today. With your help, we will continue to inspire and support the next generation of aerospace professionals. In addition, we are hosting a silent auction with some cool aerospace items up for bid and a rocket shot contest, with all proceeds supporting the AIAA Foundation's educational programs. Come to the HUB and check it out!

AIAA Publications Pavilion within the HUB

Stop by the AIAA Publications Pavilion, located in the Exposition Hall, to browse publications and merchandise, learn about your membership benefits, and meet AIAA staff.

30% OFF ALL BOOKS

AIAA Publications is offering a special show discount on all titles featured at the AIAA SciTech Forum. Attendees can take advantage of a 30% discount off the list price of all books for sale at the AIAA Bookstore located in the AIAA Pavilion. This show special will only be available during the forum! Take advantage of these super savings and visit the AIAA Bookstore!

Meet the Authors

LELAND M. NICOLAI
Lessons Learned and *Fundamentals of Aircraft and Airship Design*

Tuesday, 8 January	Coffee Break: 1530–1600 hrs
Wednesday, 9 January	Coffee Break: 0900–0930 hrs Coffee Break: 1530–1600 hrs

DANIEL P. RAYMER
Aircraft Design, 6E and *RDSWin Student*

Wednesday, 9 January	Luncheon: 1230–1430 hrs

the HUB

DAILY PRIZE DRAWINGS — VISIT THE HUB TO ENTER!

Visit the HUB in the Exposition Hall to drop your business card for a chance at **winning one of three gift cards!** Visit daily to enter as prize entry collection restarts each morning with an empty box. You must drop a business card each day to have a chance to win each day!

- Prize 1 drawing at 1945 hrs on Tuesday during reception in Exposition Hall.
- Prize 2 drawing at 1600 hrs on Wednesday.
- Prize 3 drawing at 1600 hrs on Thursday.

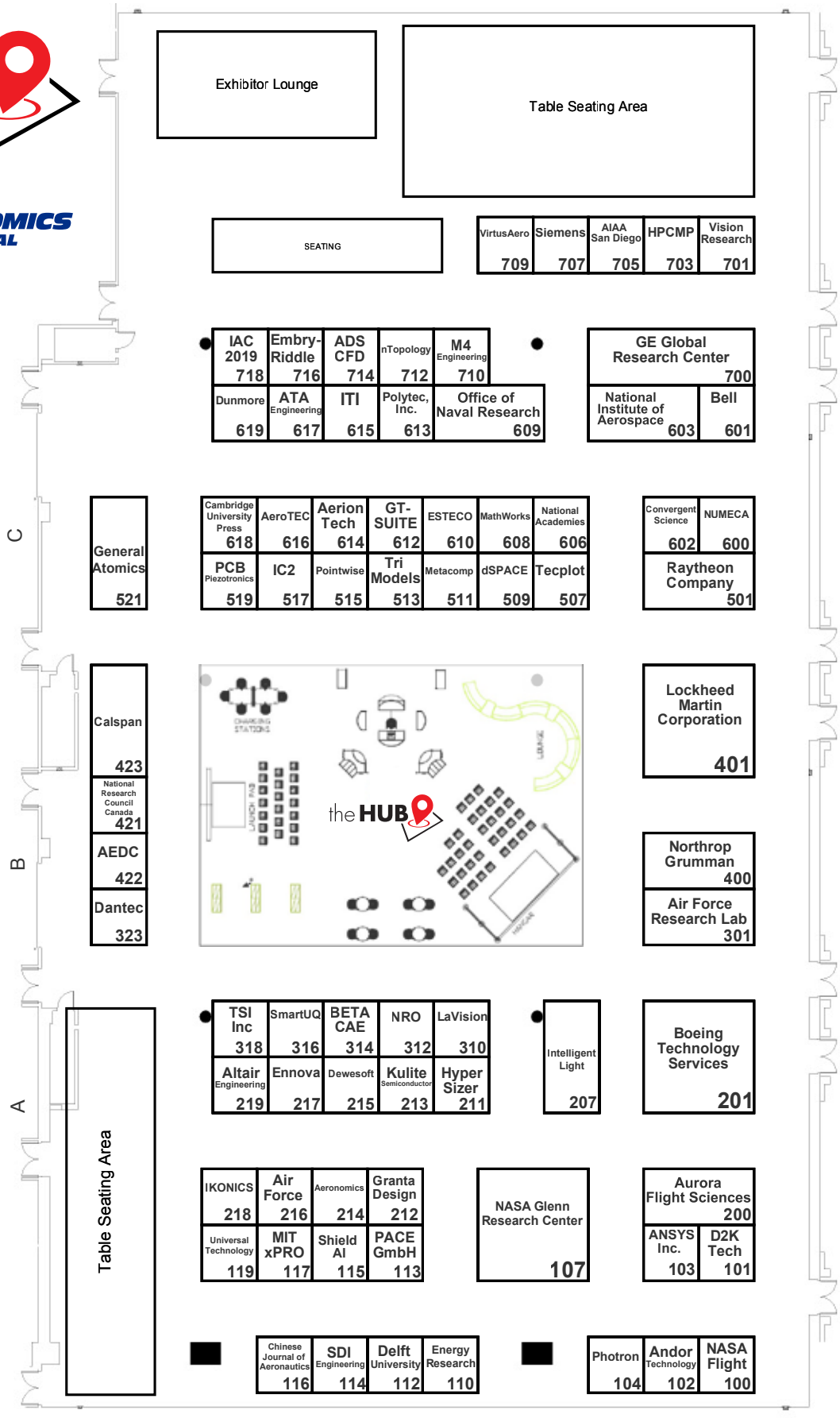
Please drop only one entry (business card) per day! Mulitple entries will be removed. You do not need to be present to win, but you may claim your prize in the HUB while at 2019 AIAA SciTech Forum.

EXPOSITION HALL FLOOR PLAN

the HUB

Sponsored by:

GENERAL ATOMICS AERONAUTICAL



the HUB

where great minds gather

Need to identify a place to meet up with friends?
Make the HUB that place!

The HUB is open Tuesday–Thursday during Exposition Hall hours!

This multi-use area built into the heart of AIAA expositions will feature many attendee-favorite activities like Q&A with keynote speakers and AIAA leadership, PLUS two presentation areas and innovative programming and features such as design challenges, charging stations, a lounge area, and more.

Check out the complete schedule of activities:
scitech.aiaa.org/thehubschedule

HIGHLIGHTED SESSIONS

- Career Tips for Students
- Meet the AIAA President-Elect Candidates
- Q&A with Eduardo Dominguez-Puerta, Airbus
- Airplane and Rocket Contests
- EIS's Girls Take Flight Presentation & Demo

Schedule subject to change.

Sponsored by:

GENERAL ATOMICS AERONAUTICAL

CAREERS AT RAYTHEON

ARE YOU READY TO ENGINEER A SAFER WORLD?

We are excited to see you at the AIAA Conference, and share the innovative projects we've been working on. We're also looking forward to telling you about career opportunities at Raytheon – your chance to work with pioneering technologies and collaborate with some of the finest talent in the engineering field as you grow your skills and expertise. In addition to full-time roles, we offer robust internships, co-ops and leadership development programs – all of which provide the training, development and experiences you need to stand out and change the world.

Now Hiring

If you're ready to pioneer world-changing innovation, products and services, while building a rewarding aerospace engineering career, explore an opportunity with Raytheon.

Learn more at jobs.Raytheon.com/engineers

jobs.Raytheon.com/engineers

@Raytheon_Jobs

Raytheon

Raytheon

©2018 Raytheon Company. All rights reserved.

EXHIBITORS BY BOOTH NUMBER

714	ADS CFD
614	Aerion Technologies ★
214	Aeronomics, Inc.
616	AeroTEC ★
705	AIAA San Diego Section
301	Air Force Research Laboratory
216	Air Force Reserve
219	Altair Engineering, Inc. ★
102	Andor Technology
103	ANSYS, Inc.
422	Arnold Engineering Development Complex (AEDC)
617	ATA Engineering, Inc.
200	Aurora Flight Sciences, A Boeing Company ★
601	Bell ★
314	BETA CAE Systems USA, Inc.
201	Boeing Technology Services ★
423	Calspan Corporation ★
618	Cambridge University Press
116	Chinese Journal of Aeronautics
602	Convergent Science
101	D2K Technologies, LLC
323	Dantec Dynamics, Inc.
112	Delft University of Technology
215	Dewesoft LLC
509	dSPACE ★
619	Dunmore Aerospace ★
716	Embry-Riddle Aeronautical University (ERAU)
110	Energy Research Consultants
217	Ennova Technologies
610	ESTECO
700	GE Global Research Center ★
521	General Atomics and Affilliated Companies ★
212	Granta Design
612	GT-SUITE System Simulation
703	HPCMP CREATE
211	HyperSizer - Collier Research ★
718	IAC 2019 hosted by AIAA
517	IC2 (Interdisciplinary Consulting Corp)
218	IKONICS Advanced Material Solutions
207	Intelligent Light ★
615	ITI
213	Kulite Semiconductor Products, Inc.
310	LaVision, Inc.
401	Lockheed Martin Corporation ★
710	M4 Engineering, Inc. ★
608	MathWorks
511	Metacomp Technologies ★
117	MIT xPRO Systems Engineering Online Program
100	NASA Flight Opportunities
107	NASA Glenn Research Center
606	National Academies of Sciences, Engineering and Medicine
603	National Institute of Aerospace (NIA) ★
312	National Reconaissance Office (NRO)
421	National Research Council Canada
400	Northrop Grumman ★
712	nTopology
600	NUMECA USA
609	Office of Naval Research
113	PACE GmbH - a TXT Company
519	PCB Piezotronics, Inc.
104	Photron
515	Pointwise, Inc ★
613	Polytec, Inc.
501	Raytheon Company ★
114	SDI Engineering Inc.
115	Shield AI
707	Siemens PLM Software
316	SmartUQ
507	Tecplot ★
513	Tri Models Incorporated
318	TSI Incorporated
119	Universal Technology Corporation 3D Innovation Lab
709	VirtusAero, LLC
701	Vision Research

★ *AIAA Corporate Member Company*

EXHIBITORS

ADS CFD Inc 714

Michael Ni
60 St. Timothy Ct
Danville, CA 94526
Phone: 925-202-2013
Email: info@adscfd.com
www.adscfd.com

ADSCFD is a provider of design and analysis software for the aerospace industry. Our software suite is built around the aerospace-class CFD solver, Code LEO. Organizations trust ADSCFD for designs where high fidelity and fast turnaround time are required. ADSCFD is CFD you can count on.

Aerion Technologies 614

Charles Schnake
1900 Embarcadero Road, STE #101
Palo Alto, CA 94303
Phone: 650-433-2314
Email: cschnake@aerioncorp.com
www.aerion-tech.com

Aerion Technologies (ATC) creates tools for aerodynamic design and analysis of aerospace vehicles. At SciTech 2019 ATC is showcasing 2 products: 1) Cart3Dv, an intuitive aerial vehicle design tool built around NASA's renowned Cartesian Euler CFD solver with ATC's proprietary boundary-layer solver for capturing viscous effects, and 2) Pascale, a scriptable CAD tool that enables the construction of sophisticated parametric models for engineering design optimization.

Aeronomics, Inc. 214

Abigale Brown
5030 Bradford Drive, Suite 230
Huntsville, AL 35805
Phone: 256-808-7483
Email: abrown@aeronomicsinc.com
aeronomicsinc.com/index.htm

Aeronomics is small business providing advanced solutions to system engineering design problems. Founded in 2017, our team of industry recognized experts excels in the areas of thermal protection systems, hypersonic aerothermodynamics, thermostructural analysis, electronics thermal management, flight test and evaluation, and aerothermal ground test and evaluation, strategic simulation planning, threat modeling, hypersonic missile systems, and integrated defense architecture characterization.

AeroTEC 616

Emily Brown
6100 4th Ave S, Suite 300
Seattle, WA 98108
Phone: 206-486-1923
Fax: 206-486-1923
Email: ebrown@aerotec.com

AeroTEC is a full-service testing, engineering and certification service provider. Our team is comprised of the most talented and experienced aerospace engineers, pilots, technicians, DERs, mechanics, and support staff in the industry who will work with you, utilizing our in-house instrumentation, software, tools, and processes every step of the way for efficient, cost-effective project completion. We provide turn-key solutions that are fully scalable to your needs.

AIAA San Diego Section 705

Lauren Paunescu
PO Box 3898
San Diego, CA 92163-1898
Phone: 817-648-9427
Email: wilhelm.lauren@gmail.com

The AIAA San Diego Section is dedicated to furthering the interests, activities, and technical knowledge of local professionals, students, and educators within our aerospace community.

Air Force Research Laboratory 301

Philip Mangan
2079 10th Street Bldg. 255 Area B
Wright Patterson Air Force Base, OH 45433
Phone: 937-255-3690
Fax: 937-656-7620
Email: philip.mangan.ctr@us.af.mil
www.afresearchlab.com

Air Force Research Laboratory (AFRL) is the only Air Force organization wholly dedicated to leading the discovery, development, and integration of warfighting technologies for the nation's air, space and cyberspace forces. The lab and its predecessors have overseen more than 80 years of critical research efforts for the Air Force and Department of Defense.

Air Force Reserve 216

Samantha Ash
Blaine Warren Advertising
7120 Smoke Ranch Rd
Las Vegas, NV 89128
Email: sash@blainewarren.com

Altair Engineering, Inc. 219

Stacey Holman
1820 E. Big Beaver Rd
Troy, MI 48083
Phone: 248-614-2400
Email:sholman@altair.com
altair.com

Altair is focused on the development and broad application of simulation technology to synthesize and optimize designs, processes and decisions for improved business performance. Today, Altair serves more than 5,000 corporate clients across broad industry segments. Altair's HyperWorks suite is dedicated to engineering simulation and performance optimization technology. Altair PBS Works for HPC and computing technology. Altair ProductDesign for dedicated consulting in product engineering.

EXHIBITORS

Andor Technology 102

Susan Cummings
300 Baker Avenue, Suite 150
Concord, MA 01742
Phone: 44 28 9023 7126 (Ext. 2727)
Email: s.cummings@andor.com
www.andor.com

You're invited to stop by the Andor booth to learn more about our combustion and spectroscopy innovations.

ANSYS, Inc. 103

MaryTherese Gallagher
2600 ANSYS Drive
Cannonsburg PA 15317
Phone: 724-746-3304
Fax: 724-514-9494
Email: marytherese.gallagher@ansys.com
www.ansys.com

If you've ever seen a rocket launch, flown on an airplane, driven a car, used a computer, touched a mobile device, crossed a bridge, or put on wearable technology, chances are you've used a product where ANSYS software played a critical role in its creation. ANSYS is the global leader in engineering simulation. We help the world's most innovative companies deliver radically better products to their customers.

Arnold Engineering Development Complex (AEDC) 422

Jason Austin
100 Kindel Drive, Suite A242
Arnold AFB, TN 37389-2242
Phone: 931-454-4204
Email: jason.austin.5@us.af.mil
www.arnold.af.mil

The Arnold Engineering Development Complex (AEDC) conducts developmental test and evaluation of weapon, propulsion, aerodynamic and space systems for the Nation through modeling, simulation, ground and flight test. Team AEDC seeks to be the Nation's best value test and analysis source for aerospace and defense systems. AEDC is part of the Air Force Test Center, an Air Force Materiel Command organization.

ATA Engineering, Inc. 617

13290 Evening Creek Drive South
Suite 250
San Diego, CA 92128
Phone: 858-480-2000
Email: sales@ata-e.com
www.ata-e.com

ATA Engineering, Inc (ATA) is an engineering services firm that provides solutions through test- and analysis-driven design by focusing on the needs of manufacturers in addressing their cost, quality, and time-to-market challenges in their mechanical and aerospace systems.

Aurora Flight Sciences, A Boeing Company 200

Patti Woodside
9950 Wakeman Dr.
Manassas, VA 20110
Phone: 703-396-6304
Email: pwoodside@aurora.aero
www.aurora.aero

Aurora Flight Sciences, A Boeing Company is an innovative technology company which strives to create smarter aircraft through the development of versatile and intuitive autonomous systems. Operating at the intersection of technology and robotic aviation, Aurora leverages the power of autonomy to make manned and unmanned flight safer and more efficient. Headquartered in Manassas, Virginia, Aurora has more than 550 employees and operates in six locations.

Bell 601

Regan Vermillion
3255 Bell Flight Blvd
Fort Worth, TX 76118
Phone: 817-280-2315
Email: jvermillion@bellflight.com

We are pioneers. We were the first to break the sound barrier and to certify a commercial helicopter. We were aboard NASA's first lunar mission and brought advanced tiltrotor systems to the market. Today, we're defining the future of on-demand mobility and vertical lift. Thinking above and beyond flight is the reason our company was formed. It's how we help save lives, create efficient business and travel solutions and show people the world from a different point of view.

BETA CAE Systems USA, Inc. 314

John Skarakis
29800 Middlebelt Road, Suite 100
Farmington Hills, MI 48334
Phone: 248-737-9760
Email: jskar@ansa-usa.com
www.ansa-usa.com

BETA CAE Systems USA, Inc, est. 1997, is an engineering company based in Farmington Hills, Michigan. For over 20 years it has been known for its distribution of the ANSA and META Software Suite and continued commitment to offering industry leading software support and services. In addition to this, the company also provides consulting services in high-end Finite Element modeling and analysis, and places specialists for contract positions on client sites.

EXHIBITORS

Boeing Technology Services 201

Suzi Hammond
7755 E. Marginal Way S
Seattle, WA 98108
Phone: 253-241-6310
Email: suzzane.m.hammond@boeing.com
www.boeing.com/bts

Boeing Technology Services provides access to the Boeing testing facilities, equipment, and technical expertise that have produced some of today's most innovative products, including commercial airplanes, rotorcraft, unmanned aircraft, tankers, fighters, airlifters, space systems, network-centric systems and more. With a passion for collaborative listening, planning, contracting, execution and delivery, Boeing creates a tailored partnership with you to achieve your product testing goals.

Calspan Corporation 423

Melody Baber
7340 Trade St, Suite D
San Diego, CA 92121
Phone: 858-537-2020
Email: melody.baber@calspan.com
www.calspan.com/fms

For more than 70 years, Calspan has been providing internationally recognized research and testing services for the aviation industry. Calspan's Force Measurement Systems located in San Diego, CA, develops state of the art internal and external type balances and model position / motion control systems. Wind tunnel model design, fabrication and instrumentation is executed at Calspan's Newport News, VA, facility. Model testing is performed in Calspan's Transonic Wind Tunnel located in Buffalo, NY.

Cambridge University Press 618

Kamini Ramphal
1 Liberty Plaza
New York, NY 10006
Phone: 212-337-5000
Email: kramphal@cambridge.org
www.cambridge.org/academic

Cambridge University Press' publishing in books and journals combines state-of-the-art content with the highest standards of scholarship, writing and production. Visit our stand to browse new titles, available at 20% discount, and to pick up sample copies of our journals. Visit our website to find out more about what we do: www.cambridge.org/academic

Chinese Journal of Aeronautics 116

Wang Jiao
238 North Fourth Ring Road
HaiDian District
Beijing China 100083
Phone: 86-010-82318016
Email: wangjiao@buaa.edu.cn
www.journal-aero.com

Chinese Journal of Aeronautics (CJA) is an international, peer-reviewed and open access journal of aerospace engineering published by Elsevier. The main aim of the Journal is to report the scientific and technological achievements frontiers in aeronautic and astronautic engineering.

Convergent Science 602

Tiffany Cook
6400 Enterprise Lane
Madison WI 53719
Phone: 830-625-5005
Email: tiffany.cook@convergecfd.com
convergecfd.com

Convergent Science is an innovative, rapidly expanding computational fluid dynamics (CFD) company. Our flagship product, CONVERGE, is a revolutionary CFD software with truly autonomous meshing capabilities that eliminate the grid generation bottleneck from the simulation process. Convergent Science is headquartered in Madison, Wisconsin, and has offices in the United States, Europe, and India and distributors worldwide.

D2K Technologies, LLC 101

Bill Walker
5062 Nighthawk Way
Oceanside, CA 92056
Phone: 833-325-8324
Email: bill.walker@d2ktech.com
www.d2ktech.com

Transforming Data to Knowledge- Where Knowledge is Power! We Provide engineering development and support for the reasoning software applications of the 21st century. Assuring reliable, timely, and cost-effective delivery of mission critical systems for all clientele.

Dantec Dynamics, Inc. 323

Kai Oh
750 Blue Point Rd
Holtsville, NY 11742
Phone: 201-218-3909
Email: xo@dantecdynamics.com

Dantec Dynamics specializes in the development, manufacture and application support of measurement systems in fluids (velocity, temperature, concentration, species) and solid structures (strain, vibration, laminate defects). We deliver turnkey and customized solutions built on high-end laser optics, imaging, and sensor technologies.

Delft University of Technology 112

Renee van de Watering
Kluyverweg 1
Delft 2629HS
Netherlands
Phone: 31 15 27 83928
Email: r.vandewatering@tudelft.nl

EXHIBITORS

Dewesoft LLC 215

Christie Nowicki
10730 Logan Street
Whitehouse, OH 43571
Phone: 419-574-1739
Fax: 419-877-5505
Email: christie.nowicki@dewesoft.com
www.dewesoft.com

DEWESoft, offers a full suite of hardware for in-vehicle & lab data acquisition applications. Scalable from 4 to 1,000's of channels our instruments are available as small USB & EtherCat devices, stand-alone battery-powered systems, rack-mounted configurations, & ruggedized field-ready solutions. Powered by the latest DEWESoft X software, we acquire & control many multi-domain test sets that include analog in/out, digital in/out, video, CAN, FlexRay, XCP, GPS, & more.

dSPACE 509

Janice Johnson
50131 Pontiac Trail
Wixom, MI 48393-2020
Phone: 248-295-4761
Fax: 248-295-2950
Email: jjohnson@dspaceinc.com
www.dspaceinc.com

dSPACE tools are used for developing and testing sophisticated electronic control systems for embedded software development and testing tasks on complex systems. dSPACE systems have supported numerous aerospace, defense, UAV and space flight technology applications in areas such as: high-performance engine development, navigation systems, propulsion, real-time flight maneuver simulation, and testing of on-board systems in virtual laboratory test flights. To learn more, visit www.dspaceinc.com.

Dunmore Aerospace 619

Seth Broughton
145 Wharton Road
Bristol PA 19007
Phone: 2675431095
Email: sbroughton@dunmore.com

Embry-Riddle Aeronautical University (ERAU) 716

Christina Groenenboom
600 S. Clyde Morris Blvd
Daytona Beach FL 32114
Phone: 386-226-7404
Email: groenenc@erau.edu
www.erau.edu

Energy Research Consultants 110

Christopher Brown
23342 South Pointe Drive, Suite E
Laguna Hills, CA 92653-1422
Phone: 949-583-1197
Email: brown@erc-ltd.com
www.erc-ltd.com

Energy Research Consultants (ERC) was founded in 1990 to fulfill a need for application of state-of-the-art experimental and numerical modeling tools to problems associated with energy generation and use. Projects which require fast and confidential answers via advanced research tools which are not otherwise readily available are addressed through experienced personnel and a fully equipped research laboratory.

Ennova Technologies 217

Michael Hohmeyer
2150 Allston Way, Suite 250
Berkeley, CA 94704
Phone: 858-334-8675
Email: hohmeyer@ennova-cfd.com
www.ennova-cfd.com

Ennova Technologies delivers today's most scalable simulation platform combining the power of cloud based computing, advanced geometry repair tools, and mixed mode meshing to create an extremely efficient pre and post processing simulation environment.

ESTECO 610

Sally Duquesnel
39555 Orchard Hill Place, Suite 457
Novi, MI 48375
Phone: 248-885-9507
Email: duquesnel@esteco.com
www.esteco.com

ESTECO is a pioneer in numerical optimization solutions, specializing in the research and development of engineering software for all stages of the simulation-driven design process. ESTECO's top-class products, modeFRONTIER and VOLTA, are used worldwide, helping companies increase efficiency in design simulation and accelerate product innovation.

GE Global Research Center 700

Keith McManus
1 Research Circle
Niskayuna, NY 12309
Phone: 518-387-6597
Email: mcmanus@ge.com

Inspired by Thomas Edison and led by GE's early chief consulting engineer, Charles Steinmetz, GE Research was created to maintain market edge and to foster new discoveries and commercial applications. That mission rings true today as we harness unparalleled scientific breadth and depth to drive innovation at the intersection of technical fields, move product to entitlement, solve problems and deliver outcomes to our customers.

EXHIBITORS

General Atomics and Affiliated Companies 521

Tracy Keen
14200 Kirkham Way
Poway, CA 92064
Phone: 858-312-2810
Email: tracy.keen@ga-asi.com

General Atomics Aeronautical Systems, Inc. (GA-ASI), an affiliate of General Atomics, is a leading designer and manufacturer of proven, reliable Unmanned Aircraft Systems (UAS), radars, and electro-optic and related mission systems, including the Predator®, Reaper® and Gray Eagle UAS programs of record and the Lynx® Multi-mode Radar. Celebrating over 25 years of aviation innovation, GA-ASI provides long-endurance, multi-mission capable aircraft with integrated sensor and data link systems required to deliver persistent flight, enabling situational awareness and rapid strike. The company also produces a variety of ground control stations and sensor control/image analysis software, offers pilot training and support services, and develops meta-material antennas. For more information, visit www.ga-asi.com.

Granta Design 212

Charlotte Kirby
300 Rustat House 62 Clifton Road
Cambridge CB17EG
United Kingdom
Phone: 01223 218011
Email: charlotte.kirby@grantadesign.com

A spin-out from the University of Cambridge, Granta helps world-leading aerospace organizations and engineering enterprises to manage information on the materials (metals, plastics, composites, and more) that are essential to their businesses. We provide supporting resources to thousands of university educators worldwide as they teach materials or related topics to the next generation of engineers, scientists, and industrial designers.

GT-SUITE System Simulation 612

Dana Pellegrini
601 Oakmont Lane Suite 220
Westmont, IL 60559
Phone: 630-325-5848
Email: d.pellegrini@gtisoft.com
www.gtisoft.com

Gamma Technologies develops GT-SUITE, the industry-leading Model-Based Systems Engineering (MBSE) CAE system simulation software. GT-SUITE provides a comprehensive set of validated 0D/1D/3D multi-physics component libraries, which simulate the physics of fluid flow, thermal, mechanical, multi-body, structural, electrical, magnetic, chemistry, and controls. Using combinations of these libraries, models simulate any aircraft system, including the complete Virtual Integrated Aircraft (VIA).

HPCMP CREATE 703

Erick Knarzer
10501 Furnace Road, Suite 101
Lorton, VA 22079
Phone: 703-812-3779
Email: erick.r.knarzer.ctr@mail.mil

The U.S. DoD High Performance Computing Modernization Program (HPCMP) includes a strategically important portfolio of software technology investments known as “CREATE” (Computational Research and Engineering Acquisition Tools and Environments). The portfolio produces physics-based, multi-disciplinary software products that deliver capabilities for design, analysis, and virtual testing of weapon systems (air, land, and sea), and associated electromagnetic subsystems. These capabilities are developed by the U.S. DoD, via the HPCMP, to address prioritized capability requirements of the Department, providing a strategic advantage to the United States over all current and future adversaries. HPCMP CREATETM products are export controlled.

HyperSizer - Collier Research 211

Jennifer Hause
760 PIlot House Dr., Ste. A
Newport News, VA 23606
Phone: 757-825-0000
Email: jennifer.hause@hypersizer.com
www.hypersizer.com

What began at NASA 20 years ago has continuously developed into today’s HyperSizer suite of structural software solutions. HyperSizer performs design, stress analysis, &detail sizing optimization for aircraft and space launch vehicles fabricated with composite or traditional metallic materials. On average, the software reduces the weight of structures by 30-40%. HyperSizer replaces the need for spreadsheets & “hand calculations” with automatically generated stress reports for FAA certification.

70th International Astronautical Congress 718

Vickie Singer
12700 Sunrise Valley Dr. Suite 200
Reston, VA 20191
Phone: 703-264-7509
Email: vickies@aiaa.org
www.iac2019.org

AIAA is excited and proud to host the 70th International Astronautical Congress in Washington, D.C. Our commitment to fostering the future of space exploration and technology is unrivaled, and we look forward to making the Congress a resounding success. AIAA is a founding member of the International Astronautical Federation (IAF) and has served as IAC host in 1961, 1968, 1976, 1982, and 2002.

EXHIBITORS

IC2 (Interdisciplinary Consulting Corp) 517

Steve Horowitz
5745 SW 75th St. #364
Gainesville, FL 32608
Phone: 256-698-6175
Email: sales@thinkic2.com
www.thinkIC2.com

Delivering Scientific-Grade Sensors. Advancing Aerospace Test. With a deep knowledge of aerospace test and over two decades researching best-in-class sensor development techniques, IC2 delivers scientific-grade precision sensors that push the envelope of aerospace measurement accuracy and performance.

IKONICS Advanced Material Solutions 218

Mikaela Hernesman
4832 Grand Ave
Duluth, MN 55807
Phone: 218-628-2217
Fax: 218-628-2064
Email: mhernesman@ikonics.com
ikonicsams.com

IKONICS Advanced Material Solutions uses Precision Abrasive Machining® (PAM), a non-traditional machining process. PAM can support a diverse array of features in materials, such as; carbon fiber, fiberglass, Kevlar®, CMC's, silicon carbide, sapphire, glass, alumina, graphite and many others.

Intelligent Light 207

Barbara Brucaliere
301 Rt. 17 North
Rutherford, NJ 07070
Phone: 201-460-4700
Fax: 201-460-0221
Email: bab@ilight.com
www.ilight.com

Intelligent Light helps you harness the power and value of highly productive CFD workflows with industry leading software and services. Our FieldView CFD post-processing software is used every day by thousands of engineers around the world. Our expert staff provides Custom Engineered Solutions for data analytics, workflow automation, uncertainty quantification and visualization.

ITI 615

Margo Spurgeon
5303 DuPont Circle
Milford, OH 45150
Phone: 513-576-3858
Email: margo.spurgeon@iti-global.com
www.iti-global.com

ITI is the leading provider of reliable interoperability, validation, translation and migration solutions for engineering product data. ITI's solutions solve complex interoperability problems and support key aspects of PLM and MBE implementation for manufacturers and their supply chain including: product design and computational analysis, engineering change management, ITAR regulatory compliance, long term archival solutions, technical data packaging, and secure engineering information transfer.

Kulite Semiconductor Products, Inc. 213

Pauline Pellegrino
One Willow Tree Road
Leonia, NJ 07605
Phone: 201-461-0900
Email: pauline@kulite.com

Globally recognized as the leader in transducer technology, Kulite Semiconductor Products maintains its edge with vigilant research, ingenious designs and forward-thinking minds. Employing solid-state silicon on silicon technology, Kulite creates and customizes the most reliable transducers, designed to perform in the harshest conditions. Ongoing research and development has led to the pioneering of new sensing technologies with applications in aviation, wind tunnel and flight test engineering.

LaVision, Inc. 310

Deborah Mullins
211 W. Michigan Ave., Suite 100
Ypsilanti, MI 48197
Phone: 734-485-0913
Fax: 240-465-4306
Email: dmullins@lavisioninc.com
www.lavision.com

LaVision provides integrated measurement systems for experimental fluid dynamics, combusting and multiphase flows, material characterization, and in cylinder measurement. LaVision is the market leader in image based measurement systems playing a pioneering role in the development of techniques such as PIV, LIF, DIC and BOS. LaVision stays at the forefront of measurement science strives for customer satisfaction.

Lockheed Martin Corporation 401

Bryan Raupe
7501 Calmont Ave
Fort Worth, TX 76116
Email: bryan.c.raupe@lmco.com

Lockheed Martin is a global security and aerospace company principally engaged in the research, design, development, manufacture, integration and sustainment of advanced technology systems, products and services. Please visit us at Booth 401 where we will be showcasing our products, introducing our employees, and recruiting talented individuals who are ready to research and develop innovative aerospace solutions. We deliver next-generation technology to protect the generations to come.

EXHIBITORS

M4 Engineering, Inc. 710

Dan J. Abir
4020 Long Beach Blvd Floor 2
Long Beach, CA 90807
Phone: 562-735-3803
Email: dabir@m4-engineering.com

MathWorks 608

Greg Drayer Andrade
3 Apple Hill Drive
Natick, MA 01760
Phone: 508-647-7000
Email: Greg.DrayerAndrade@mathworks.com
mathworks.com

The MATLAB and Simulink product families are fundamental applied math and computational tools adopted by more than 5000 universities and colleges. MathWorks products help prepare students for careers in industry, where the tools are widely used for data analysis, mathematical modeling, and algorithm development in collaborative research and new product development.

Metacomp Technologies 511

Vedat Akdag
28632 Roadside Drive Suite 255
Agoura Hills, CA 91301
Phone: 818-735-4880
Fax: 818-735-4881
Email: vedat@metacomptech.com
www.metacomptech.com

Metacomp Technologies is at the forefront of cutting edge simulation technology with software products for Computational Fluid Dynamics ICFD++, Aero-Acoustics ICAA++, Mesh Generation IMIME and Structural Mechanics ICSM++ including MetaFSI for fluid-structure interactions. Founded in 1994 by pioneers in CFD, validated by industry, government institutions, and universities worldwide, and with an unparalleled reputation for high-level support, Metacomp will be an Integral part of your success.

MIT xPRO Systems Engineering Online Program 117

Julie Swanson
600 Technology Square NE49
Cambridge, MA 02139
Phone: 617-258-0976
Email: jswanson@mit.edu
sysengonline.mit.edu

As the pace of innovation accelerates, engineers are tasked with designing, managing, & optimizing increasingly complex systems. MIT xPRO's Systems Engineering online program has armed hundreds of engineering teams with a knowledge base in complex systems, analysis of complex systems, & model management that will impact how they approach & solve problems. Join the 3,500+ professionals in the fields of aerospace, automotive, defense, manufacturing, & more who have completed this online program.

NASA Flight Opportunities 100

Alexander van Dijk
NASA Ames Research Center
Moffet Field CA 94035
Phone: 650-336-4955
Email: alexander.vandijk@nasa.gov
www.nasa.gov/flightopportunities

Flight Opportunities strives to mature innovative space technologies of interest to the agency while also stimulating the growth and use of the U.S. commercial spaceflight industry. The program works with technology development partners across academia, industry and NASA to provide access to space-relevant environments on commercial suborbital rockets, high-altitude balloons and airplanes flying reduced gravity trajectories. Visit us at booth #100 or go to www.nasa.gov/flightopportunities.

NASA Glenn Research Center 107

Rich Rinehart
21000 Brookpark Rd., MS 142-1
Cleveland, OH 44135
Phone: 216-433-5211
Email: richard.d.rinehart@nasa.gov
www.nasa.gov

NASA's Vision: We reach for new heights and reveal the unknown for the benefit of humankind.

National Academies of Sciences, Engineering and Medicine 606

Linh Huynh
500 Fifth Street NW
Washington, DC 20001
Phone: 202-334-2031
Email: lhuynh@nas.edu

The National Academies of Sciences, Engineering, and Medicine are private, nonprofit institutions that provide expert advice on some of the most pressing challenges facing the nation and the world. Our work helps shape sound policies, inform public opinion, and advance the pursuit of science, engineering, and medicine. Visit our booth to learn about our Fellowships Office which administers predoctoral, postdoctoral, and senior fellowship awards on behalf of government and private/ foundation sponsors. Also learn about the Aeronautics and Space Engineering Board which provides an independent, authoritative forum for space engineering and aeronautics research.

National Institute of Aerospace (NIA) 603

Becky Jaramillo
100 Exploration Way
Hampton, VA 23666
Phone: 757-636-6300
Email: rebecca.jaramillo@nianet.org

NIA is a non-profit research and graduate education institute created to conduct innovative aerospace and atmospheric research, develop new technologies for the nation and help inspire the next generation of scientists and engineers.

EXHIBITORS

National Reconnaissance Office (NRO) 312

Stephanie Gusto
14675 Lee Road
Chantilly, VA 20151
Phone: 703-808-3412
Fax: 703-808-2646
Email: dii@nro.mil
acq.westfields.net

An R & D Funding Program - The National Reconnaissance Office's (NRO) Director's Innovation Initiative (DII) invests in advanced technologies, fosters innovation, and provides seed funding to push the boundaries of technology to dramatically improve our overhead reconnaissance capabilities. It presents an opportunity for developers not traditionally associated with the NRO to participate in building the National Reconnaissance Office of the 21st Century.

National Research Council Canada 421

Stuart McIlwain
1200 Montreal Road, Bldg M2
Ottawa, ON K1A 0R6
Canada
Phone: 613-998-0503
Email: stuart.mcilwain@nrc.ca
www.nrc-cnrc.gc.ca/eng/rd/aerospace/index.html

The National Research Council (NRC) is the Government of Canada's largest research organization supporting innovation, knowledge and technology development. The NRC's Aerospace Research Centre has world-class research facilities and multidisciplinary expertise, providing cost-effective platforms to test, validate and demonstrate your technologies. Clients have access to our 5 foot trisonic tunnel, 6 × 9 foot tunnel, 30 foot low-speed tunnel, altitude icing tunnel or 10 × 20 foot icing tunnel.

Northrop Grumman 400

Jim Gross
1 Space Park
Redondo Beach, CA 90278
Phone: 858-774-5527
Email: j.gross@ngc.com

Northrop Grumman is a leading global security company providing innovative systems, products and solutions in autonomous systems, cyber, C4ISR, space, strike, and logistics and modernization to customers worldwide. Please visit news.northropgrumman.com and follow us on Twitter, @NGCNews, for more information.

nTopology 712

Linda Deeb
153 Lafayette St. Floor 7
New York, NY 10013
Phone: 347-849-0999
Email: linda@ntopology.com

NUMECA USA 600

Rebecca Watrous
1044 Larkin St.
San Francisco, CA 94109
Phone: 415-503-9323
Email: rebecca.watrous@numeca.com
www.numeca.com

NUMECA offers grid generation, CFD tools, and consulting targeted to the aerospace industry. NUMECA's software and engineering services cover a wide range of aerospace flow analyses including: passenger aircraft, full aircraft configurations, transonic, supersonic, and hypersonic flows, aircraft cabins, wing-box fuel tanks and high-lift devices.

Office of Naval Research 609

Kimberly Cleveland
875 North Randolph Street
Arlington, VA 22203
Phone: 703-696-0988
Email: kimberly.cleveland.ctr@navy.mil
www.onr.navy.mil

The Department of the Navy's Office of Naval Research provides the science and technology necessary to maintain the Navy and Marine Corps' technological advantage. ONR is a leader in science and technology with engagement in 50 states, 55 countries, 634 institutions of higher learning and nonprofit institutions, and more than 960 industry partners. ONR, through its commands, including ONR Global and NRL employs more than 3,800 people, comprising uniformed, civilian and contract personnel.

PACE GmbH - a TXT Company 113

Monica Piazzalunga
Rotherstr. 20
Berlin 10245
Germany
Phone: 49 30 293 61 307
Email: monica.piazzalunga@pace.de

We develop innovative commercial off-the-shelf software products for preliminary aircraft and systems architecture design, which help mitigate technological risks, support investment decisions and reduce time to market. Our software's open architecture supports the investigation of new and emerging technologies such as electric or hybrid-electric propulsion systems.

EXHIBITORS

PCB Piezotronics, Inc. 519

Jennifer Gadomski
3425 Walden Avenue
Depew, NY 14043
Phone: 716-684-0001
Fax: 716-684-0987
Email: tradeshow@pcb.com
www.pcb.com

PCB Piezotronics Inc. is a designer and manufacturer of microphones, vibration, pressure, force, torque, load, and strain sensors, as well as the pioneer of ICP® technology. This instrumentation is used for flight testing, wind tunnels, modal analysis, satellite testing and acoustics for cabin noise. PCB® stands behind their products with the valuable services, including a 24-hour SensorLines, a global distribution network, and the industry's only commitment to Total Customer Satisfaction.

Photron 104

Jennifer Fenlason
9520 Padgett St., Suite 110
San Diego, CA 92126
Phone: 858-684-3555
Email: Jennifer@photron.com

Photron's wide range of light sensitive high-speed cameras including systems ideally suited to PIV and DIC, mega pixel to 21,000 frames per second (fps) and 4M pixels producing HD to 2,000fps. Photron has a slow-motion camera for every application.

Pointwise, Inc. 515

Travis Carrigan
213 South Jennings Avenue
Fort Worth, TX 76104
Phone: 817-377-2807-1201
Email: sales@pointwise.com
www.pointwise.com

Pointwise, Inc. is solving the top problem facing computational fluid dynamics (CFD) today – reliably generating high-fidelity meshes. The Pointwise software generates structured, unstructured, overset and hybrid meshes; interfaces directly with CFD solvers; utilizes native CAD geometry; runs on Windows, Linux, and Mac; and has a scripting language for automation. More information about Pointwise is available at www.pointwise.com.

Polytec, Inc. 613

Pam Cravenor
16400 Bake Parkway
Irvine, CA 92618
Phone: 949-943-3033
Fax: 949-679-0463
Email: p.cravenor@polytec.com
www.polytec.com

Polytec has been the leading supplier of non-contact, laser based, precision vibration measurement instrumentation for more than 30 years. Polytec's laser Doppler vibrometers are utilized for many aerospace applications including Jet Engine Design Validations, Flow Induced Vibration Studies, Ground Vibration Testing and Shock Measurements. Polytec's new multipoint vibrometer allows simultaneous, real time measurements at up to 48 locations for capturing non-repeating or non-linear phenomena.

Raytheon Company 501

Lauren Todd
3301 E. Global Loop
Tucson, AZ 85706
Phone: 617-873-7554
Email: lauren.todd@raytheon.com

Raytheon Company is a technology and innovation leader specializing in defense, civil government and cybersecurity solutions. Visit us at our booth today or learn more about us at https://www.raytheon.com/ourcompany. View open jobs at https://jobs.raytheon.com/. We are one global team creating trusted, innovative solutions to make the world a safer place.

SDI Engineering Inc. 114

Dennis Fredell
4030 Lake Washington Blvd NE #205
Kirkland, WA 98033
Phone: 425-827-6836
Email: dfredell@sdi-eng.com
www.sdi-eng.com

SDI Engineering is a specialist provider of engineering services in the aeronautical, aerospace and related industries. Our services cover applied areas in modeling and simulation, aeroelastics and advanced R&D. Our extended capabilities include flight test support, ground vibration testing, certification reporting, health monitoring, remote sensing and Industrial IoT. We have developed proprietary commercial software that can be used for engineering analysis, or licensed to outside parties.

Shield AI 115

Abby May
501 W Broadway, Suite 1520
San Diego, CA 92101
Email: abby.may@shield.ai

Shield AI is an artificial intelligence robotics company building products for the national security sector and first responders. Our mission is to protect service members and civilians with artificially intelligent systems. Shield AI's current products are Hivemind and Nova. Hivemind is an artificial intelligence framework that enables robots to see, reason about, and search the world. Nova is a Hivemind-powered, robotic quadcopter that autonomously searches buildings while streaming video and building maps back to the user.

EXHIBITORS

Siemens PLM Software 707

Carin Pierce
5800 Granite Parkway, Suite 600
Plano, TX 75024
Phone: 256-705-2610
Email: carin.pierce@siemens.com

Siemens PLM Software is a world-leading provider of product lifecycle management (PLM) software. We help thousands of companies make great products by optimizing their lifecycle processes, from planning and development through manufacturing and support.

SmartUQ 316

Robert Goffee
3545 University Ave
Madison, WI 53705
Phone: 608-255-2440
Email: info@smartuq.com

SmartUQ's software provides powerful uncertainty quantification and engineering analytics solutions for simulation, testing, and complex systems. Using cutting edge statistics and probabilistic methods, SmartUQ dramatically accelerates analysis cycles by reducing design iterations, improves design robustness, and maximizes insight of complex systems by quantifying uncertainties.

Tecplot 507

Margaret Connelly
3535 Factoria Blvd. SE, Suite 550
Bellevue, WA 98006
Phone: 425-460-8290
Email: m.connelly@tecplot.com
www.tecplot.com

Tecplot empowers those working fluid dynamics to discover, analyze and understand information in complex data. Whether performing simulations or experiments, visualization provides insight and understanding hidden inside your data. This information can be critical in pinpointing and solving problems, optimizing designs, and in explaining physical observations. Professional, high-resolution images and animations can be exported to help you effectively communicate your results to others.

Tri Models Incorporated 513

Chris Athaide
5191 Oceanus Dr.
Huntington Beach, CA 92649
Phone: 714-896-0823
Fax: 714-896-0923
Email: caathaide@trimodels.com
www.Trimodels.com

Tri Models is the Premier supplier of wind tunnel models & ground test hardware for the global aerospace community. From "standard" wind tunnel models, to icing/deicing certification models to hot-firing hypersonic test rigs, we have done it all. We support most major airframers world-wide. We have worked with all major testing facilities around the world and provide a complete, turn-key solution to your testing needs. Contact us to see how we can help you achieve all of your testing goals.

TSI Incorporated 318

Matt Stegmeir
500 Cardigan Rd.
Shoreview, MN 55126
Phone: 651-483-0900
Fax: 651-490-3824
Email: answers@tsi.com
www.tsi.com

For over 50 years, TSI has been providing a complete line of fluid diagnostics systems for air/gas flow research including: Particle Image Velocimetry, TR-Volumetric PIV, Laser Doppler Velocimetry and Hot Wire Anemometry. These systems can be used for measuring supersonic to low speed flows, giving details of the fluid statistics.

Universal Technology Corporation 3D Innovation Lab 119

Tomi Emmerick
1270 N. Fairfield Rd.
Dayton OH 45432
Phone: 937-306-6140
Email: temmerick@utcdayton.com
www.utcdayton.com

Universal Technology Corporation (UTC), providing technical services and innovative solutions to the aerospace and defense S&T community since 1961.

VirtusAero, LLC 709

Kristin Brand
8944 Vickors Crossing
Brooklyn Park, MN 55443
Phone: 612-282-0868
Email: kbrand@virtusaero.com
www.virtusaero.com

At VirtusAero we believe that powerful software should be easy to use. This simple idea drives us to improve every aspect of software that we develop and support. We work hard to incorporate our knowledge and expertise into the tools we build so that researchers and engineers can more quickly and easily find the answers they need. Some of our software has even been criticized as being too easy to use — "like playing a video game." To us, that sounds like success!

Vision Research 701

Kenya Ebersole
100 Dey Road
Wayne, NJ 07470
Phone: 973-692-4026
Email: phantomshows@ametek.com
www.visionresearch.com

Vision Research designs and manufactures a broad range of high-speed digital imaging systems that are used in all military, industry, academic and entertainment sectors. Marketing under the Phantom brand, our cameras allow you to analyze physical phenomena when it's too fast to see, and too important not to. For additional information regarding Vision Research, please visit www.phantomhighspeed.com.

LET YOUR CAREER SOAR

There's no limit to how high you can fly when you invest in yourself.

Gain the skills and knowledge you need to boost your career trajectory with an advanced degree in aerospace engineering. The University of Alabama offers innovative programs and online classes that allow you to earn your degree while continuing to work full time.

Distance learning degree programs include:

- MS in Aerospace Engineering and Mechanics *(online)*
- PhD in Aerospace Engineering and Mechanics *(primarily online)*

BamaByDistance.ua.edu/scitech

Bama By Distance

THE UNIVERSITY OF ALABAMA®

ONLINE LEARNING

GENERAL INFORMATION

AIAA Registration and Information Center Hours

The AIAA Registration and Information Center is located in the Palm Foyer located on the second floor.

Sunday, 6 January:	1500–1900 hrs
Monday, 7 January – Thursday, 10 January:	0700–1730 hrs
Friday, 11 January:	0700–1700 hrs

Wi-Fi Internet Access On Site

AIAA provides limited Wi-Fi service for attendees to use while onsite. To keep this service available and optimized for all attendees, please do not download files larger than 2MB, create multiple sessions across multiple devices, or download multiple files in one session. If you receive an error message that an AIAA server is blocking your current IP address, please inform the AIAA registration desk.

Network Name: **AIAAscitech** Password: **2019scitech**

AIAA Livestream Channel

Visit **livestream.com/aiaavideo/scitech2019** to view selected keynotes, plenaries, and Forum 360 sessions. Share the link with colleagues who couldn't attend the forum so they can watch live or view later.

Social Media at #AIAASciTech

Watch the social media kiosks spaced throughout the forum for announcements and content shared by attendees using the hashtag #AIAASciTech.

Win prizes including gift cards. See contest official rules: **scitech.aiaa.org/socialmediacontest**

Conference Proceedings

Proceedings for the forum will be available online. The cost is included in the registration fee where indicated. Online proceedings will be available on 7 January 2019. Please follow the instructions below to access the proceedings:

1. To view proceedings visit **aiaa.org** >ARC>Meeting Papers.
   a. Log in with the link at the top right of the page.
   b. Select the appropriate conference from the list.
   c. **Search for individual papers** with the **Quick Search toolbar** in the upper-right corner of the page:
      i. By paper number: Click the "Paper Number" link, select the conference year, and enter the paper number.
      ii. Use the Search textbox to find papers by author, title, or keyword. The Advanced Search link provides additional search information and options.
2. Direct any questions concerning access to proceedings and/or ARC to **arcsupport@aiaa.org**.

Manuscript Corrections

1. The manuscript in the proceedings is the version of record and may not be edited or replaced. Corrections to manuscripts will be available through the Crossmark feature. To view corrections made to a manuscript click the Crossmark icon, located on every article's webpage and PDF.
2. Corrections will be available online approximately 15 business days after the last day of the conference.

Certificate of Attendance

All attendees will receive a Certificate of Attendance on the last day of the AIAA forum via email. Claims of hours or applicability toward professional education requirements are the responsibility of the participant.

Employment Opportunities

AIAA members can post and browse resumes, browse job listings, and access other online employment resources by visiting the AIAA Career Center at **careercenter.aiaa.org**.

Badge Policy

AIAA forum badges are provided to those individuals who have paid for a registration to the event. Badges must be worn at all times to participate in all forum activities. Badges are not provided at the registration desk for committee meetings attendance. In order to obtain an AIAA SciTech Forum badge, one must register for the forum.

Nondiscriminatory Practices

AIAA accepts registrations irrespective of age, race, creed, sex, sexual orientation, color, physical handicap, and national or ethnic origin.

Restrictions

Photos, video, or audio recording of sessions or exhibits, as well as the unauthorized sale of AIAA-copyrighted material, is prohibited.

AIAA Photography and Video Notice

Attendance at, or participation in, this American Institute of Aeronautics and Astronautics (hereinafter "AIAA") event constitutes consent to the use and distribution by AIAA and its employees, agents and assignees of the attendee's image and/or voice for purposes related to the mission of AIAA, including but not limited to, publicity, marketing, other electronic forms of media, and promotion of AIAA and its various programs and events. Please contact AIAA's Communications Director John Blacksten at johnb@aiaa.org with requests or questions.

Continue the Conversation on Engage

Just because the forum ends, the conversation doesn't have to end too. AIAA Engage allows you to connect with a community of nearly 30,000 of your AIAA colleagues online. Continue your conversations from the forum on the Engage platform. Discuss the sessions, connect with attendees you met at the forum, and share your experiences. Visit **engage.aiaa.org** to start connecting.

Membership

AIAA is your vital lifelong link to the collective creativity and brainpower of the aerospace profession and a champion for its achievements. **aiaa.org/member**.

Anti-Harrassment Policy

All attendees, including members, students, guests, staff, organizers, exhibitors, and speakers, must adhere to the Institute's Anti-Harassment Policy found at aiaa.org/Anti-Harassment-Policy.

AUTHOR AND SESSION CHAIR INFORMATION

Speakers' Briefing in Session Rooms

Authors who are presenting papers will meet with session chairs and co-chairs in their session rooms for a short 30-minute briefing on the day of their sessions to exchange bios and review final details prior to the session. Please attend on the day of your session(s). Laptops preloaded with the Speakers' Briefing preparation slides will be provided in each session room. Speakers' Briefings will be held, **Monday, 7 January–Friday, 11 January: 0730 hrs.**

Speakers' Practice Room

Speakers who wish to practice their presentations may do so in the Show Office 1, Lobby Level, across from the Exposition Hall. A sign-up sheet will be posted on the door. In consideration of others, please limit practice time to 30-minute increments.

Session Chair Reports

All session chairs are asked to complete a session chair report to evaluate their session for future planning purposes, including session topics and room allocations. AIAA has partnered with GoCanvas to provide an electronic Session Chair Report form. You can download the FREE mobile app at **gocanvas.com/m**. If you do not have a mobile device, enter your report at the session chair report station located on-site near the AIAA registration area. Please submit your session chair report **electronically by Friday, 11 January**.

Audiovisual

Each session room will be preset with the following: Laptop computer, LCD projector, screen, microphone and sound system (if necessitated by room size), and a laser pointer. You may use your own laptop if you wish. Any additional audiovisual equipment requested onsite will be at cost to the presenter. Please note that AIAA does not provide security in the session rooms and recommends that items of value not be left unattended.

"No Paper, No Podium" and "No Podium, No Paper" Policies

If a written paper is not submitted by the final manuscript deadline, authors will not be permitted to present the paper at the forum. It is also the responsibility of those authors whose papers or presentations are accepted to ensure that a representative attends the forum to present the paper. If a paper is not presented at the forum, it will be withdrawn from the forum proceedings. These policies are intended to eliminate no-shows, to improve the quality of the forum for all participants, and to ensure that the published proceedings accurately represent the presentations made at a forum.

Journal Publication

Authors of appropriate papers are encouraged to submit them for possible publication in one of the Institute's archival journals: *AIAA Journal; Journal of Aircraft; Journal of Air Transportation; Journal of Guidance, Control, and Dynamics; Journal of Propulsion and Power; Journal of Spacecraft and Rockets; Journal of Thermophysics and Heat Transfer;* or *Journal of Aerospace Information Systems.* You may now submit your paper online at **http://mc.manuscriptcentral.com/aiaa**.

Manage your schedule
Download the free app
Scan the QR code or enter the URL in your device browser to download
Search for "MyItinerary" by ScholarOne
Download on the App Store
http://ativ.me/ep1
GET IT ON Google Play
http://ativ.me/ep2
For all other devices Web Version
http://ativ.me/aiaamst19
MyItinerary by ScholarOne
Clarivate Analytics (US) LLC

COMMITTEE MEETINGS

***Hyatt =** Manchester Grand Hyatt
***Marriott =** Marriott Marquis

TIME	COMMITTEE AND ANCILLARY MEETINGS/EVENTS	ROOM
	Sunday, 6 January	
0800-1200	**Council Director/Deputy Director Training**	Promenade A/B *Hyatt
0800-1200	**IOD & TAD Committee Leadership Training**	Harbor G/H *Hyatt
0800-2200	**Propellants and Combustion Model Validation Technical Meeting**	Seaport H *Hyatt
1200-1300	**AIAA Council of Directors Training & Workshop Lunch**	Harbor G/H *Hyatt
1300-1700	**AIAA Council of Directors Workshop**	Harbor G/H *Hyatt
1330-1630	**GMG Workshop – Breakout 1**	Conference Parlor 778 *Hyatt
1330-1630	**GMG Workshop – Breakout 2**	Conference Parlor 777 *Hyatt
1330-1630	**GMG Workshop – Breakout 3**	Conference Parlor 768 *Hyatt
1330-1630	**GMG Workshop – Breakout 4**	Skyline *Hyatt
1400-1500	**GTTC: Steering**	Seaport F *Hyatt
1430-1500	**APATC: Liaison Subcommittee Meeting**	Ocean Beach *Hyatt
1500-1530	**GTTC: New Members Introduction**	Seaport F *Hyatt
1500-1600	**APATC: Publicity and Publications Subcommittee**	Nautical *Hyatt
1500-1600	**APATC: Education Subcommittee Meeting**	Bankers Hill *Hyatt
1500-1600	**APATC: Honors and Awards Subcommittee Meeting**	Ocean Beach *Hyatt
1500-1600	**APATC: Planning Subcommittee Meeting**	Mt. Whitney *Hyatt
1500-1600	**APATC: Membership Subcommittee Meeting**	Eagle Peak &Hyatt
1530-1630	**GTTC: Program**	Seaport F *Hyatt
1600-1700	**APATC: Technical Activities Meeting**	Mt. Whitney *Hyatt
1630-1700	**GTTC: Awards**	Seaport F *Hyatt
1700-1730	**GTTC: Conferences**	Seaport F *Hyatt
1700-1800	**APATC: Steering Committee**	Bankers Hill *Hyatt
1730-1800	**GTTC: Education and Student Activities**	Seaport F *Hyatt
1730-1930	**Structures Technical Committee Lecture**	Cove *Hyatt
1800-1830	**GTTC: Membership**	Seaport F *Hyatt
1800-2100	**Applied Aerodynamics Technical Committee**	Promenade A/B *Hyatt
1800-2100	**Information Systems Group**	Skyline *Hyatt
1830-1900	**GTTC: Publications**	Seaport F *Hyatt
1900-1930	**GTTC: Standards**	Seaport F *Hyatt
1900-2030	**FDTC: Transition Discussion Group**	Golden Hill A/B *Hyatt
1900-2100	**MVCE Higher Order Visualization Working Group**	Torrey Hills A *Hyatt
1900-2100	**Aerospace Design and Structures Group Meeting**	Hillcrest C *Hyatt
1900-2200	**Aviation Technology, Integration and Operations Group (ATIOG)**	Old Town A/B *Hyatt
1900-2200	**Propulsion and Energy Group**	Hillcrest A *Hyatt
1900-2200	**GNC Graduate Student Paper Competition**	Marina Room *Hyatt
1930-2100	**Committee on Higher Education (formerly Academic Affairs)**	Harbor G/H *Hyatt
1930-2100	**IOD: Integration Group**	Hillcrest B *Hyatt
	Monday, 7 January	
0800-1000	**RAC I Meeting**	Conference Parlor 677 *Hyatt
0800-1000	**RAC II Meeting**	Conference Parlor 678 *Hyatt
0800-1000	**RAC IV Meeting**	Conference Parlor 577 *Hyatt
0800-1000	**RAC V Meeting**	Mt. Woodson *Hyatt
0800-1200	**GTTC: High Speed Wind Tunnel Calibration Working Group**	Santa Rosa *Marriott
0830-1530	**NIA Technical Advisory Council Meeting**	Bankers Hill *Hyatt

COMMITTEE MEETINGS

TIME	COMMITTEE AND ANCILLARY MEETINGS/EVENTS	ROOM
0900-1000	**ABP Steering Committee**	Temecula 3 *Marriott
0900-1030	**Publications Ethical Standards Subcommittee**	Conference Parlor 578 *Hyatt
0900-1100	**Journal of Aerospace Information Systems Editors and Advisory Board**	Conference Parlor 667 *Hyatt
1000-1100	**ABP Student Design Competition**	Temecula 3 *Marriott
1030-1200	**Books Series Subcommittee**	Conference Parlor 670 *Hyatt
1100-1200	**ABP Honors and Awards**	Temecula 3 *Marriott
1200-1400	**Aerospace Sciences Group**	Temecula 4 *Marriott
1300-1345	**HSABP TC Steering Committee**	Santa Rosa *Marriott
1330-1730	**Aerospace Cybersecurity Working Group**	Catalina *Marriott
1400-1530	**Journal of Aircraft Editors and Advisory Board**	Santa Rosa *Marriott
1400-1600	**Council Innovation and Initiative Committee (CIIC)**	Temecula 3 *Marriott
1400-1600	**GTTC: Model Deformation Working Group Computer Systems Technical Committee**	Conference Parlor 578 *Hyatt
1430-1530	**Gas Turbine Engines Technical Committee**	Temecula 4 *Marriott
1430-1530	**HSABP Technical Committee**	Point Loma *Marriott
1430-1530	**INPSI Technical Committee**	Leucadia *Marriott
1530-1600	**ABP Conference Committee**	Solana *Marriott
1600-1700	**Propulsion Aerodynamics Workshop (PAW)**	Temecula 4 *Marriott
1600-1730	**Progress Series Editorial Advisory Board**	Conference Parlor 567 *Hyatt
1600-1730	**AIAA Journal Editors and Advisory Board**	Santa Rosa *Marriott
1600-1730	**2019 AVIATION Executive Steering Committee**	Mt. Woodson *Hyatt
1700-1800	**APATC Aerodynamic/Propulsive DG**	Bankers Hill *Hyatt
1700-1800	**ABP Working Group**	Temecula 3 *Marriott
1700-1800	**FDTC: Computational Methods for High-Speed Multiphase Flows**	Leucadia *Marriott
1730-1830	**FDTC: Solver Technology for Turbulent Flows**	Temecula 4 *Marriott
1730-1900	**APATC: Low Boom Discussion Group**	Harbor C *Hyatt
1800-1900	**FDTC: Low-Complexity Flow Modeling and Analysis Discussion Group**	Seaport F *Hyatt
1800-1930	**Lockheed Martin Reception**	Harbor Foyer *Hyatt
1800-2100	**Transformational Flight Integration Committee**	Old Town A *Hyatt
1800-2100	**Terrestrial Energy Systems Technical Committee**	Solana *Marriott
1800-2130	**Digital Engineering Integration Committee**	Point Loma *Marriott
1800-2200	**Propellants and Combustion Technical Committee**	Santa Rosa *Marriott
1830-1930	**FDTC: Turbulence Model Benchmarking Discussion Group**	Ocean Beach *Hyatt
1830-1930	**Aerospace Design and Structures All Committee Meeting**	Harbor I *Hyatt
1830-1930	**FDTC Non-Equilibrium Flows DG**	Harbor F *Hyatt
1830-2030	**Aerospace at Illinois Alumni Reception**	Skyline *Hyatt
1830-2130	**Computer Systems Technical Committee**	Leucadia *Marriott
1830-2130	**Sensor Systems and Information Fusion Technical Committee**	Temecula 3 *Hyatt
1830-2130	**Air Breathing Propulsion Business Meeting**	Harbor D *Hyatt
1900-2000	**APATC/FDTC Flow Control Applications and Impacts Discussion Group**	Harbor G *Hyatt
1900-2000	**FDTC: Massively Separated Flows Discussion Group**	Harbor A *Hyatt
1900-2100	**PSU - Aerospace Engineering Alumni Reception**	Brew 30 *Hyatt
1900-2100	**UW Aeronautics and Astronautics Alumni Reception**	Vista C *Hyatt
1900-2100	**FDTC: High-Speed Fluid-Structure Interaction Discussion Group**	Balboa C *Hyatt
1900-2100	**Geometry Modeling Working Group**	Bankers Hill *Hyatt
1900-2200	**Friends of UC Reception**	Cityview A *Hyatt
1900-2200	**Society and Aerospace Technology Outreach Committee**	Conference Parlor 577 *Hyatt

COMMITTEE MEETINGS

TIME	COMMITTEE AND ANCILLARY MEETINGS/EVENTS	ROOM
1900-2200	**Adaptive Structures Technical Committee**	Catalina *Marriott
1900-2200	**Atmospheric and Space Environments Technical Committee**	Gaslamp B *Hyatt
1930-2030	**ASME Aerospace Structure Technical Committee**	Gaslamp A *Hyatt
1930-2030	**FDTC: Large Eddy Simulation (LES) Discussion Group**	Balboa B *Hyatt
1930-2130	**CFD Vision 2030 Integration Committee**	Balboa A *Hyatt
1930-2230	**Software Technical Committee**	Temecula 4 *Marriott
	Tuesday, 8 January	
0800-1200	**GTTC - Model Attitude Measurement Working Group**	Bankers Hill *Hyatt
0900-1000	**Education Series Editorial Advisory Board**	Conference Parlor 567 *Hyatt
0900-1100	**Journals Subcommittee**	Mt. Woodson *Hyatt
0900-1200	**2020 Associate Fellows Committee Kickoff Meeting**	Catalina *Marriott
0930-1100	**Certification/Qualification by Analysis CoI Steering Committee**	Solana *Marriott
0930-1100	**Forums Committee**	Conference Parlor 577 *Hyatt
1000-1400	**Public Policy Meeting**	America's Cup D *Hyatt
1100-1200	**Publications Review Subcommittee**	Mt. Woodson *Hyatt
1100-1230	**Journal of Spacecraft and Rockets Editors and Advisory Board**	Point Loma *Marriott
1230-1400	**Spacecraft Structures Panel Discussion: "In-Space Assembly and Manufacture - Is It Possible?"**	Santa Rosa *Marriott
1400-1600	**GTTC: Flow Quality Working Group**	Bankers Hill *Hyatt
1400-1600	**GTTC: Standards**	Catalina *Marriott
1400-1600	**Journal Editors-in-Chief**	Mt. Woodson *Hyatt
1400-1800	**Integration and Outreach Division**	Solana *Marriott
1400-1800	**Regional Engagement Activities Division**	Leucadia *Marriott
1500-1730	**Technical Activities Division**	Seaport G *Hyatt
1600-1630	**Thermophysics TC Best Paper Subcommittee**	Conference Parlor 567 *Hyatt
1600-1730	**Journal of Thermophysics and Heat Transfer Editors and Advisory Board**	Mt. Woodson *Hyatt
1600-1800	**Content Advisory Committee (CAC)**	America's Cup D *Hyatt
1630-1700	**Thermophysics TC Publications Subcommittee**	Conference Parlor 577 *Hyatt
1700-1730	**Thermophysics TC Awards Subcommittee**	Conference Parlor 567 *Hyatt
1700-1900	**AIAA Computational Fluid Dynamics CoS**	Santa Rosa *Marriott
1700-2000	**Small Satellites Technical Committee**	La Jolla B *Hyatt
1730-1800	**Thermophysics TC Nominations Subcommittee**	Conference Parlor 577 *Hyatt
1730-1830	**San Diego Section Town Hall**	Harbor F *Hyatt
1800-1830	**Thermophysics Education Subcommittee**	Conference Parlor 567 *Hyatt
1800-1900	**APATC: Stability and Control Prediction Discussion Group**	Marina Room *Hyatt
1800-1930	**Continuing Education Committee Meeting**	Conference Parlor 677 *Hyatt
1800-2000	**Section Officers Meeting**	Promenade Foyer *Hyatt
1800-2000	**APATC: Rotorcraft Discussion Group**	Seaport G *Hyatt
1800-2100	**Survivability Technical Committee**	Mt. Woodson *Hyatt
1800-2100	**Intelligent Systems Technical Committee**	Seaport F *Hyatt
1800-2100	**History Integration Committee**	Newport Beach *Marriott
1800-2300	**Atmospheric Flight Mechanics Technical Committee**	Catalina *Marriott
1830-1900	**Thermophysics TC Emerging Technologies Subcommittee**	Conference Parlor 578 *Hyatt
1830-1900	**Thermophysics TC Publicity Subcommittee**	Conference Parlor 577 *Hyatt
1830-1930	**FDTC High-Order CFD Methods DG**	Harbor H *Hyatt
1830-2130	**Pressure Gain Combustion Technical Committee**	La Costa *Marriott
1900-1930	**Thermophysics TC Conferences Subcommittee**	Conference Parlor 567 *Hyatt

COMMITTEE MEETINGS

TIME	COMMITTEE AND ANCILLARY MEETINGS/EVENTS	ROOM
1900-2030	**APATC: Sailplane Aero & Design Discussion Group**	Bankers Hill *Hyatt
1900-2100	**FDTC: Flow Control and Fluid Applications SC**	Balboa A *Hyatt
1900-2100	**FDTC: Fundamentals of Flow Phenomenon SC**	Balboa B *Hyatt
1900-2100	**ASME Wind Energy Technical Committee**	Malibu *Marriott
1900-2100	**UMD Alumni Reception**	Cityview B *Hyatt
1900-2100	**FDTC: CFD Methods SC**	Gaslamp A *Hyatt
1900-2100	**Aerospace Department Chairs Association (ADCA) Meeting**	Harbor C *Hyatt
1900-2200	**Aerodynamics Technical Working Group Meeting**	Old Town A/B *Hyatt
1900-2200	**Meshing, Visualization and Computational Environments Technical Committee**	Solana *Marriott
1900-2200	**Plasmadynamics and Lasers Technical Committee**	Seaport H *Hyatt
1900-2200	**Structures Technical Committee**	Leucadia *Marriott
1930-2200	**Materials Technical Committee**	Santa Rosa *Marriott
1930-2230	**Thermophysics Technical Committee**	Point Loma *Marriott
1930-2230	**Aeroacoustics Technical Committee**	Harbor B *Hyatt
2000-2130	**APATC: Collaborative Experiments and Computations Discussion Group**	Marina Room *Hyatt
	Wednesday, 9 January	
0800-1200	**Regional Engagement Activities Division**	Bankers Hill *Hyatt
0830-1200	**Publications Committee**	Point Loma *Marriott
0900-1130	**Corporate Member Group Meeting**	Santa Rosa *Marriott
0900-1200	**GTTC: Internal Strain Gage Balance Working Group**	Temecula 3 *Marriott
0900-1200	**Certification/Qualification by Analysis Community of Interest Open Meeting**	Seaport G *Hyatt
0900-1200	**GTTC: Dual Flow Reference Nozzle Working Group**	Conference Parlor 567 *Hyatt
0900-1200	**Technical Activities Division**	Solana *Marriott
1100-1230	**SciTech 2020 Technical Program Planning**	Seaport A-E *Hyatt
1100-1230	**2019 P&E Executive Steering Committee Meeting**	Mt. Woodson *Hyatt
1230-1400	**FDTC Steering Committee**	Conference Parlor 577 *Hyatt
1230-1600	**Honors and Awards Committee**	Boardwalk *Hyatt
1300-1500	**AIAA Standards Steering Committee**	Conference Parlor 578 *Hyatt
1300-1600	**GTTC: Uncertainty Standard Working Group**	Bankers Hill *Hyatt
1300-1700	**AIAA Council of Directors**	Santa Rosa *Marriott
1400-1500	**Journal of Propulsion and Power Editors and Advisory Board**	Point Loma *Marriott
1600-1700	**SciTech Executive Steering Committee**	Conference Parlor 578 *Hyatt
1600-1730	**Journal of Guidance, Control, and Dynamics Editors and Advisory Board**	Point Loma *Marriott
1630-1730	**AIAA Compensation and Benefits Committee**	Conference Parlor 567 *Hyatt
1630-1800	**Lockheed Martin Aeronautics Company Meeting**	Harbor F *Hyatt
1700-1900	**Flight Test Technical Committee**	Conference Parlor 577 *Hyatt
1700-2000	**Energy Optimized Aircraft Systems Integration Committee**	Solana *Marriott
1730-1900	**APATC: Missile and Projectile Aeroprediction Discussion Group**	Temecula 3 *Marriott
1730-1900	**APATC: CFD Transition Modeling Discussion Group**	Seaport H *Hyatt
1730-1900	**APATC: High Lift Common Research Model Applications Discussion Group**	Seaport G *Hyatt
1730-1930	**Plasma Aerodynamics Discussion Group**	Seaport A-E *Hyatt
1800-1900	**HyTASP TC Steering Committee**	Seaport F *Hyatt
1800-2000	**Space Exploration Integration & Outreach Committee**	Iron Mountain *Hyatt
1800-2100	**Design Engineering Technical Committee**	Temecula 4 *Marriott
1800-2100	**Modeling and Simulation Technical Committee**	Newport Beach *Marriott
1800-2100	**Systems Engineering Technical Committee**	Leucadia *Marriott

COMMITTEE MEETINGS

TIME	COMMITTEE AND ANCILLARY MEETINGS/EVENTS	ROOM
1800-2100	**V/STOL Aircraft Systems Technical Committee**	Conference Parlor 567 *Hyatt
1800-2300	**Guidance, Navigation and Control Technical Committee**	Catalina *Marriott
1830-2000	**NCSU Alumni Social**	Promenade A/B *Hyatt
1830-2030	**San Diego State University Alumni Reception**	Skyline *Hyatt
1830-2030	**UM Aerospace Engineering Alumni Reunion Reception**	Harbor C *Hyatt
1830-2030	**Virginia Tech Alumni & Friends**	Cityview A/B *Hyatt
1830-2030	**Purdue University, School of Aeronautics and Astronautics Alumni Reception**	Vista A-C *Hyatt
1830-2030	**TU Delft Aerospace Engineering Alumni Event**	Cove *Hyatt
1830-2100	**Boeing Engineering Test and Technology Customer Reception**	Solana Beach A/B *Hyatt
1830-2130	**Multidisciplinary Design Optimization Technical Committee**	Harbor B *Hyatt
1900-2100	**HyTASP Technical Committee**	Seaport F *Hyatt
1900-2100	**Aerodynamic Measurement Technologies Technical Committee**	Marina Room *Hyatt
1900-2100	**Unmanned Systems Integration Committee**	Harbor G *Hyatt
1900-2100	**Solid Rockets Technical Committee**	Bankers Hill *Hyatt
1900-2100	**Structural Dynamics Technical Committee**	Santa Rosa *Marriott
1900-2100	**Spacecraft Structures Technical Committee**	Harbor A *Hyatt
1900-2200	**Fluid Dynamics Technical Committee Plenary**	Harbor E *Hyatt
1900-2200	**Aircraft Design Technical Committee**	Harbor H *Hyatt
1900-2200	**Non-Deterministic Approaches Technical Committee**	Point Loma *Marriott
1930-2100	**HILift PW-4 Planning Meeting**	Seaport H *Hyatt
1930-2130	**CREATE-AV User's Group Meeting**	La Jolla A *Hyatt
2000-2100	**Human Machine Teaming**	Balboa A *Hyatt
	Thursday, 10 January	
0900-1200	**Certification/Qualification by Analysis CoI Leaders and Writers**	Solana *Marriott
0900-1200	**GTTC: Statistically Defensible Test Methods Focus Group**	Bankers Hill *Hyatt
0900-2100	**PCTC: Rotating Detonation Rocket Engine Technical Meeting**	Leucadia *Marriott
0930-1530	**AIAA Board of Trustees**	Santa Rosa *Marriott
1000-1200	**Workforce Development Initiative**	Catalina *Marriott
1400-1700	**GTTC: Future of Ground Test Working Group**	Bankers Hill *Hyatt
1600-1930	**One Boeing/NASA Collaboration**	Seaport G *Hyatt
1730-2130	**Ground Test Technical Committee**	Catalina *Marriott
1800-1900	**Aircraft Electrified Propulsion and Power Working Group**	Solana *Marriott
1800-2100	**Information and Command and Control Systems Technical Committee**	Point Loma *Marriott
1900-2200	**Green Engineering Integration Committee**	Solana *Marriott
1930-2200	**ICME Working Group**	Bankers Hill *Hyatt
	Friday, 11 January	
0800-1200	**Intelligent Systems TC Publications Subcommittee**	Bankers Hill *Hyatt
0800-1800	**NASA Combustion Modeling Grants 3 Year Review**	Marina Room *Hyatt
0900-1700	**PCTC: Rotating Detonation Rocket Engine Technical Meeting**	Seaport G *Hyatt

Sunday

Sunday, 6 January 2019

1-NW-1 1600 - 1800 hrs	Meet the Employers Recruiting Event	Seaport G

AIAA's recruiting event brings together corporate members and students/young professional attendees. This fun and dynamic environment allows students and professionals to interact with organizations regarding employment opportunities. Participating companies/organizations will present an organizational overview and opportunities available, then have follow-on discussions with the attendees.

Sunday, 6 January 2019

2-NW-2 1800 - 1930 hrs	Student Welcome Reception	Harbor D Foyer

AIAA SciTech Forum has one of the largest gatherings of students of any of the AIAA forums. Come meet fellow students who you are sure to see again throughout the week. Many student award winners and presenters will be in attendance. Take advantage of this chance to meet key members of AIAA and learn about opportunities that are available.

Sunday, 6 January 2019

3-NW-3 1930 - 2000 hrs	SciTech 101 - A First-Time Attendee Guide to the Forum	Seaport G

Monday

Monday, 7 January 2019

4-SB-1 0730 - 0800 hrs	Monday Speaker Briefing	Session Rooms

Monday, 7 January 2019

5-PLNRY-1 0800 - 0900 hrs	Enabling the Replicator	Seaport A-E

Moderator: Heather Bulk, Chief Executive Officer and Co-Founder, Special Aerospace Services and SAS Manufacturing

Speakers:

Tony Gingiss
Chief Executive Officer
OneWeb Satellites

Robert Gold
Director, Engineering Enterprise
Office of the Deputy Assistant Secretary of Defense for Systems Engineering
U.S. Department of Defense

Jeff Miller
Senior Technical Fellow, Production Engineering
The Boeing Company

Monday, 7 January 2019

6-NW-4 0900 - 0930 hrs	Monday Morning Coffee Break	Session Room Foyers

Monday, 7 January 2019

7-AA-1	Airframe/Propulsion Integration	Balboa C

Chaired by: J. WINKLER, United Technologies Research Center

0930 hrs AIAA-2019-0001 **Noise Amplification Effects due to Jet-Surface Interaction** L. Rego, D. Casalino, F. Avallone, D. Ragni, Delft University of Technology, Delft, The Netherlands	1000 hrs AIAA-2019-0002 **Towards Adjoint-based Broadband Noise Minimization using Stochastic Noise Generation** B. Zhou, N. Gauger, Technical University of Kaiserslautern, Kaiserslautern, Germany; H. Yao, S. Peng, L. Davidson, Chalmers University of Technology, Göteborg, Sweden	1030 hrs AIAA-2019-0003 **Analysis of noise sources in realistic landing gear configurations through high fidelity simulations** T. Rodarte Ricciardi, W. Wolf, University of Campinas, Campinas, Brazil; R. Speth, P. Bent, The Boeing Company, Hazelwood, MO				

Monday, 7 January 2019						
8-ACD-1	**Multi-Disciplinary Design and Education**					**Gaslamp D**
Chaired by: I. KROO, Stanford University and E. DIGIROLAMO, Lockheed-Martin						
0930 hrs AIAA-2019-0004 **Research on Applicability of Integrated Design Optimization in Blended Wing Body Aircraft** X. Wang, Z. Wan, C. Yang, Beihang University, Beijing, China	1000 hrs AIAA-2019-0005 **Introducing Engineering Design Through an Aerospace-Based Project** W. Butler, Virginia Polytechnic Institute and State University, Blacksburg, VA	1030 hrs AIAA-2019-0006 **An Industry-Based Approach to Aircraft Design Education at the Pre-Collegiate Level** P. Clark, K. Mull, C. Reynolds, W. Miller, Lockheed Martin Corporation, Palmdale, CA	1100 hrs AIAA-2019-0007 **Kriging Assisted Integrated Rotor-Duct Optimization for Ducted Fan in Hover** J. Qing, Y. Hu, Y. Wang, Z. Liu, X. Fu, Northwestern Polytechnical University, Xi'an, China; W. Liu, University of Victoria, Victoria, Canada	1130 hrs AIAA-2019-0008 **Multi–Objective Design Optimization of an MoM Aircraft using an Asynchronous Constrained PSO** P. Jansen, R. Perez, Royal Military College of Canada, Kingston, Canada		

Monday, 7 January 2019						
9-AFM-1	**Flight Test and System Identification I**					**Harbor A**
Chaired by: B. LEONHARDT, Northrop Grumman Corporation and B. MARTOS, Embry Riddle Aeronautical University and J. GRAUER, NASA Langley Research Center						
0930 hrs AIAA-2019-0009 **Identification of Bare-Airframe Dynamics from Closed-Loop Data Using Multisine Inputs and Frequency Responses** J. Grauer, NASA Langley Research Center, Hampton, VA; M. Boucher, NASA Armstrong Flight Research Center, Edwards, CA	1000 hrs AIAA-2019-0010 **Aircraft Carrier Landing Demonstration using Manual Control by a Ship-based Observer** D. Shafer, R. Paul, M. King, J. Denham, Naval Air Systems Command, Patuxent River, MD	1030 hrs AIAA-2019-0011 **Evaluation of a Reference Ballistic Trajectory-based Navigation Strategy for Steerable Cruciform Parachutes** S. Herrington, T. Fields, University of Missouri, Kansas City, Kansas City, MO; O. Yakimenko, Naval Postgraduate School, Monterey, CA	1100 hrs AIAA-2019-0012 **An Observability Based Approach to Flight Path Reconstruction of Uninformative Coupled Aircraft Trajectories: A Case Study Considering Stall Maneuvers for Aircraft Certification** G. Moszczynski, M. Giamou, J. Leung, J. Kelly, P. Grant, University of Toronto, Toronto, Canada	1130 hrs AIAA-2019-0013 **A State Estimation Approach for High Angle-of-Attack Parameter Estimation from Certification Flight Data** J. Leung, G. Moszczynski, P. Grant, University of Toronto, Toronto, Canada		

Monday, 7 January 2019						
10-AFM-2	**Entry Vehicle and Launch Vehicle Flight Mechanics I**					**Vista A**
Chaired by: C. KARLGAARD, Analytical Mechanics Associates Inc and S. D'SOUZA, NASA-ARC and A. DWYER-CIANCIOLO, NASA Langley Research Center						
0930 hrs AIAA-2019-0014 **Reconstruction of the Advanced Supersonic Parachute Inflation Research Experiment Sounding Rocket Flight Tests with Strengthened Disk-Gap-Band Parachute** C. Karlgaard, J. Tynis, Analytical Mechanics Associates, Inc., Hampton, VA; C. O'Farrell, B. Sonneveldt, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1000 hrs AIAA-2019-0015 **Potential for Integrating Entry Guidance into the Multi-Disciplinary Entry Vehicle Optimization Environment** S. D'Souza, D. Kinney, J. Garcia, NASA Ames Research Center, Moffett Field, CA; E. Llama, NASA Johnson Space Center, Houston, TX; N. Sarigul-Klijn, University of California, Davis, Davis, CA	1030 hrs AIAA-2019-0016 **Single-Stage Drag Modulation GNC Performance for Venus Aerocapture Demonstration** E. Roelke, M. Werner, R. Braun, University of Colorado, Boulder, Boulder, CO	1100 hrs AIAA-2019-0017 **Plume Effect of Flowfield Around Winged Two-Stage-To-Orbit and Its Flight Characteristics** H. Iwafuji, M. Kanazaki, Tokyo Metropolitan University, Tokyo, Japan; T. Fujikawa, Kyushu Institute of Technology, Fukuoka, Japan	1130 hrs AIAA-2019-0018 **Reentry Capsule Dynamic Instability with Different Aft-body Shape in Transonic Flow** M. Nomura, Tohoku University, Sendai, Japan; A. Robbe, École Centrale de Lyon, Lyon, France; K. Fujita, H. Nagai, Tohoku University, Sendai, Japan	1200 hrs AIAA-2019-0019 **Development of Free Flight Experimental and Analytical Procedures for Atmospheric Entry Vehicles** O. Jegede, K. Fujita, H. Nagai, Tohoku University, Sendai, Japan; H. Tanno, Japan Aerospace Exploration Agency (JAXA), Kakuda, Japan	

Monday, 7 January 2019						
11-AMT-1	**Pressure Sensitive Paint**					**Harbor G**
Chaired by: C. COMBS, The University of Texas at San Antonio and K. NAKAKITA, Japan Aerospace Exploration Agency						
0930 hrs AIAA-2019-0020 **Pyrene based Polymer Ceramic Pressure-Sensitive Paint for Aerodynamic Application** S. Claucherty, H. Sakaue, University of Notre Dame, Notre Dame, IN	1000 hrs AIAA-2019-0021 **Surface Flow Visualization Techniques for Analysis on Mars-Helicopter Rotor Aerodynamics** H. Sato, M. Okochi, Y. Sugioka, K. Kusama, Tohoku University, Sendai, Japan; D. Numata, Tokai University, Sendai, Japan; T. Nonomura, Tohoku University, Sendai, Japan; et al.	1030 hrs AIAA-2019-0022 **Identifying and Correcting Optical and Camera Error Sources in Fast-PSP Experiments** H. Leite, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil; H. Sakaue, University of Notre Dame, Notre Dame, IN; A. Avelar, Aeronautics and Space Institute (IAE), São José dos Campos, Brazil; R. Silva, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil	1100 hrs AIAA-2019-0023 **Investigation of Image-based Lifetime PSP Measurements with Sinusoidal Excitation Light** D. Yorita, U. Henne, C. Klein, German Aerospace Center (DLR), Göttingen, Germany; M. Munekata, Kumamoto University, Kumamoto, Japan; G. Holst, PCO AG, Kelheim, Germany	1130 hrs AIAA-2019-0024 **In-Flight Visualization of Shock Wave on a Jet Aircraft Wing Using Lifetime-Based Pressure-Sensitive Paint Technique** Y. Sugioka, H. Sato, Tohoku University, Sendai, Japan; K. Nakakita, T. Nakajima, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan; T. Nonomura, K. Asai, Tohoku University, Sendai, Japan	1200 hrs AIAA-2019-0025 **Unsteady PSP Measurements of the Shock Dynamics on a Transonic Laminar Airfoil** M. Merienne, V. Brion, J. Abart, ONERA, Meudon, France	

Monday, 7 January 2019						
12-AMT-2	**Absorption Spectroscopy I - Challenging Environments**					**Torrey Hills A**
Chaired by: R. SPEARRIN and C. GOLDENSTEIN						
0930 hrs Oral Presentation **Advances in absorption spectroscopy for challenging environments** K. Rein, Spectral Energies, LLC, Dayton, OH	1000 hrs AIAA-2019-0026 **Progress Toward Dual Frequency Comb Spectroscopy in a Rapid Compression Machine** A. Torres, R. Cole, University of Colorado, Boulder, Boulder, CO; J. Mohr, A. Zdanawicz, C. Gould, A. Marchese, Colorado State University, Fort Collins, CO; et al.	1030 hrs AIAA-2019-0027 **A single-ended, mid-IR sensor for time-resolved temperature and species measurements in a hydrogen/ethylene-fueled rotating detonation engine** S. Cassady, W. Peng, C. Strand, J. Jeffries, R. Hanson, Stanford University, Stanford, CA; D. Dausen, Naval Postgraduate School, Monterey, CA; et al.	1100 hrs AIAA-2019-0028 **TDLAS Measurements of the Underexpanded Exhaust Plume from a Solid Propellant Gas Generator** C. Almodovar, D. Salazar, C. Strand, R. Hanson, Stanford University, Stanford, CA; R. Wright, C. Brophy, Naval Postgraduate School, Monterey, CA	1130 hrs AIAA-2019-0029 **Sensitivity of Blended Baseline Fitting Method for Direct Absorption Spectroscopy** J. Weisberger, P. DesJardin, State University of New York, Buffalo, NY	1200 hrs AIAA-2019-0030 **Implementing TDLAS Diagnostics in Harsh Environments Via Fiber Optics** M. Button, P. Bardet, George Washington University, Washington, D.C.	

Monday, 7 January 2019						
13-APA-1	**Airfoil/Wing/Configuration Aerodynamics I**					**La Jolla A**
Chaired by: N. HALL, Lockheed Martin Corporation and B. HINSON, Textron Aviation						
0930 hrs AIAA-2019-0031 **Subsonic Aerodynamic Evaluation of NASA Mars Entry Vehicle Concepts** B. Cambio, D. Lee, T. Yechout, U.S. Air Force Academy, Colorado Springs, CO	1000 hrs AIAA-2019-0032 **Aerodynamic Center at the Root of Swept, Elliptic Wings in Inviscid Flow** B. Moorthamers, D. Hunsaker, Utah State University, Logan, UT	1030 hrs AIAA-2019-0033 **Effect of External Rib Structure on Aerodynamic Performance of Thin Wing in Low Reynolds Number** S. Tamura, University of Tokyo, Sagamihara, Japan; A. Oyama, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan	1100 hrs AIAA-2019-0034 **Study of 3D Co-Flow Jet Wing Induced Drag and Power Consumption at Cruise Conditions** Y. Wang, G. Zha, University of Miami, Coral Gables, FL	1130 hrs AIAA-2019-0035 **Winglet Design and Optimization for a Low-speed Subsonic UAV Wing** Z. Toor, J. Masud, Air University, Islamabad, Pakistan; F. Akram, National University of Sciences and Technology, Islamabad, Pakistan; Z. Abbas, U. Ahsun, King Saud University, Riyadh, Saudi Arabia		

Monday, 7 January 2019						
14-APA-2	**Applied Computational Aerodynamics: Methods and Results I**					**Bayview**
Chaired by: J. FARNSWORTH, University of Colorado Boulder and W. SILVA, NASA-Langley Research Center						
0930 hrs AIAA-2019-0036 **Computational Study of a Generic T-tail Transport** S. McMillin, N. Frink, P. Murphy, K. Cunningham, G. Shah, NASA Langley Research Center, Hampton, VA; S. Nayani, Analytical Services & Materials, Inc., Hampton, VA	1000 hrs AIAA-2019-0037 **Global Shock Buffet Instability on NASA Common Research Model** S. Timme, University of Liverpool, Liverpool, United Kingdom	1030 hrs AIAA-2019-0038 **Experimental Validation for Globally Optimized Tractor-Trailer Base Flaps** J. Freeman, M. Reeder, A. Demoret, Air Force Institute of Technology, Wright-Patterson AFB, OH	1100 hrs AIAA-2019-0039 **Further Development of the Amplification Factor Transport Transition Model for Aerodynamic Flows** J. Coder, University of Tennessee, Knoxville, Knoxville, TN	1130 hrs AIAA-2019-0040 **Improvements to the Amplification Factor Transport Transition Model for Finite-Element Implementations** D. Stefanski, R. Glasby, J. Erwin, J. Coder, University of Tennessee, Knoxville, Knoxville, TN		

Monday, 7 January 2019

15-APA-3	Special Session: Innovative Control Effectors for Maneuvering of Aircraft I					La Jolla B
Chaired by: D. SMITH, Air Force Office of Scientific Research and D. WILLIAMS, Illinois Institute of Technology						
0930 hrs AIAA-2019-0041 **NATO AVT-239 Task Group: 'Innovative Control Effectors for Manoeuvring of Air Vehicles' – Introduction and Overview** D. Smith, Air Force Office of Scientific Research, Arlington, VA; C. Warsop, BAE Systems, Bristol, United Kingdom	1000 hrs AIAA-2019-0042 **NATO AVT-239 Task Group: Trade Study Approach Toward Assessing Prospects of Active Flow Control on a Future UAS** D. Miller, Lockheed Martin Corporation, Palmdale, CA	1030 hrs AIAA-2019-0043 **NATO AVT-239 Task Group: Flight Control Derivatives using Active Flow Control Effectors on the ICE/ SACCON UAS Model** D. Williams, Illinois Institute of Technology, Chicago, IL; J. Seidel, R. Osteroos, T. McLaughlin, U.S. Air Force Academy, Colorado Springs, CO	1100 hrs AIAA-2019-0044 **NATO AVT-239 Task Group: Supercritical Coanda based Circulation Control and Fluidic Thrust Vectoring** C. Warsop, BAE Systems, Bristol, United Kingdom; W. Crowther, Manchester University, Manchester, United Kingdom; M. Forster, BAE Systems, Bristol, United Kingdom	1130 hrs AIAA-2019-0045 **On the Use of Active Flow Control to Change the Spanwise Flow on Tailless Aircraft Models, Thus Affecting their Trim and Control** E. Phillips, University of Arizona, Tucson, Tucson, AZ; M. Jentzsch, Technical University of Berlin, Berlin, Germany; P. Menge, University of the German Federal Armed Forces, Munich, Germany; L. Taubert, University of Arizona, Tucson, Tucson, AZ; M. Forster, BAE Systems, Filton, United Kingdom; I. Wygnanski, University of Arizona, Tucson, Tucson, AZ	1200 hrs AIAA-2019-0046 **NATO AVT-239 Task Group: Air Vehicle Integration Considerations for Active Flow Control on a Future UAS** B. Maines, D. Miller, Lockheed Martin Corporation, Fort Worth, TX	

Monday, 7 January 2019

16-APA-4/FD-1/PDL-1	Plasma Flow Control I					Old Town B
Chaired by: J. ZIMMERMAN, CU Aerospace and B. MARPLES, The Johns Hopkins University Applied Physics Laboratory						
0930 hrs AIAA-2019-0047 **Scaling Studies of Cyclotronic Plasma Actuators for Active Flow Control Applications** J. Zimmerman, CU Aerospace, Champaign, IL; G. Hristov, M. Vahora, M. Motz, D. Richardson, P. Ansell, University of Illinois, Urbana-Champaign, Urbana, IL; et al.	1000 hrs AIAA-2019-0048 **Development and Flight Testing of a Dielectric Barrier Discharge Plasma Actuator Controlled Aircraft** J. Laten, R. LeBeau, Saint Louis University, St. Louis, MO	1030 hrs AIAA-2019-0049 **Study on the Effectiveness of Plasma Induced Flow in Manipulating a Near-Wall Vortex** T. Wittig, Technical University of Berlin, Berlin, Germany; G. Nino, Quest Integrated, LLC, Kent, WA; R. Breidenthal, University of Washington, Seattle, Seattle, WA	1100 hrs AIAA-2019-0050 **A Hybrid Anti-/De-Icing Strategy by Combining NS-DBD Plasma Actuator and Superhydrophobic Coating for Aircraft Icing Mitigation** C. Kolbakir, H. Hu, Y. Liu, H. Hu, Iowa State University, Ames, IA			

Monday, 7 January 2019

17-APA-5/FD-2/PDL-2	Plasma Flow Control II					Skyline
Chaired by: S. LEONOV, University of Notre Dame						
0930 hrs AIAA-2019-0051 **Experimental Study of Vorticity Generation with Pair of Counter-Moving Pulsed Arcs** P. Kazansky, I. Moralev, A. Firsov, Russian Academy of Sciences, Moscow, Russia; S. Leonov, University of Notre Dame, Notre Dame, IN; V. Bityurin, A. Bocharov, Russian Academy of Sciences, Moscow, Russia	1000 hrs AIAA-2019-0052 **Experimental Study of Synthetic Jet Induced by MHD Actuator** A. Firsov, P. Kazansky, A. Efimov, Russian Academy of Sciences, Moscow, Russia	1030 hrs AIAA-2019-0053 **Laminar Separation Bubble Control using Plasma Tubercles for Low Reynold Number** A. Abbasi, Y. Shiqing, H. Li, X. Meng, Northwestern Polytechnical University, Xi'an, China	1100 hrs AIAA-2019-0054 **Spanwise Wavefront Analysis of Turbulence Amplification in a Turbulent Boundary Layer Forced by an External Shear Layer.** J. Sontag, M. Kemnetz, S. Gordeyev, University of Notre Dame, Notre Dame, IN			

Monday, 7 January 2019

18-AS-1 0930 - 1130 hrs	Adaptive Structures Lecture	Harbor I
"Reconfigurable Vertical Lift — Status, Challenges, and Opportunities" **Farhan Gandhi** Rensselaer Polytechnic Institute		

Monday, 7 January 2019						
19-ASE-1	**Arcing on Orbit**					**Mt. Whitney**
Chaired by: D. FERGUSON, Air Force Reseach Laboratory and N. GREEN, Jet Propulsion Laboratory						
0930 hrs AIAA-2019-0055 **Experimental Study of Transient Vacuum Arcs with High Time Resolution** B. Vayner, National Academy of Sciences, National Research Council, Albuquerque, NM; D. Ferguson, Air Force Research Laboratory, Kirtland AFB, NM; A. Koch, Worcester Polytechnic Institute, Worcester, MA	1000 hrs AIAA-2019-0056 **Radiofrequency Detection of Arcing on MEO and GEO Satellites** D. Ferguson, R. Hoffmann, Air Force Research Laboratory, Kirtland AFB, NM; D. Engelhart, Assurance Technology Corporation, Carlisle, MA	1030 hrs AIAA-2019-0057 **GPS Amplitude Fading Due to Ionospheric Scintillation Near the Equatorial Ionospheric Anomaly** Y. Gladek, J. Sousasantos, L. Salles, V. Lima Filho, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil; B. Vani, Federal Institute of São Paulo, Presidente Epitácio, Brazil; A. de O. Moraes, Institute of Aeronautics and Space (IAE), São José dos Campos, Brazil	1100 hrs AIAA-2019-0058 **Laboratory Investigations of Electrostatic Discharge Risks for Astronauts on Lunar Surface** W. Dull, University of Southern California, Los Angeles, CA; A. Wang, Palos Verdes High School, Palos Verdes Estates, CA; W. Yu, University of Southern California, Los Angeles, CA		

Monday, 7 January 2019						
20-CPS-1	**Computing Systems**					**Cove**
0930 hrs AIAA-2019-0059 **Parallel Integration of Perturbed Orbital Motion** A. Atallah, A. Bani Younes, San Diego State University, San Diego, CA	1000 hrs AIAA-2019-0060 **What the Hack Happened to the Flight Deck: Analyzing the Impact of Cyber Attacks on Commercial Flight Crews** J. Buch, R. Geister, German Aerospace Center (DLR), Brunswick, Germany; L. Canzian, G. Gamba, O. Pozzobon, Qascom S.r.l., Bassano del Grappa, Italy	1030 hrs AIAA-2019-0061 **Aircraft Cyber Security Risk Assessment: Bringing Air Traffic Control and Cyber-Physical Security to the Forefront** K. Sampigethaya, Embry-Riddle Aeronautical University, Prescott, AZ				

Monday, 7 January 2019						
21-DE-1	**Topics in Design Engineering - Education and Frameworks**					**Pier**
Chaired by: N. HINES, The Boeing Company and J. QUINLAN, NASA Langley Research Center						
0930 hrs AIAA-2019-0062 **Rotorcraft Projects for Design Education** M. Anderson, University of California, San Diego, La Jolla, CA	1000 hrs AIAA-2019-0063 **A systems engineering Persistence Of Vision teaching module integrating coordinated sensing, actuation, multithreaded computation, custom PCB design, and inductive power transfer** J. Duenas, F. Nezampasandarbabi, T. Bewley, University of California, San Diego, La Jolla, CA	1030 hrs AIAA-2019-0064 **An Experimental Framework for Determining the Usability of Mixed Reality Interfaces for Aerospace Applications** K. Bershinsky, R. Narciso, Ball Corporation, Boulder, CO				

Monday, 7 January 2019						
22-EDU-1	**Advances in Aerospace Education I**					**Balboa B**
Chaired by: D. LANDRUM, The University of Alabama in Huntsville and K. RAVINDRA, Saint Louis University						
0930 hrs AIAA-2019-0065 **Using Simulated, Unmanned, and Manned Aircraft in Undergraduate Flight Test Engineering Education** M. Abdulrahim, University of Florida, Gainesville, Gainesville, FL	1000 hrs AIAA-2019-0066 **A Wargame for Introducing Cybersecurity Considerations to First-year Engineering Students** C. Kanipe, D. Yeo, University of Maryland, College Park, College Park, MD	1030 hrs AIAA-2019-0067 **Self-Assessment and Accountability: Where are Students Applying their Time in an Industry-Sponsored Capstone Project with Aerospace Content?** J. Allenstein, K. Kecskemety, R. Rhoads, Ohio State University, Columbus, OH	1100 hrs AIAA-2019-0068 **Learning Intro to Flight Course Content through an Individual Aircraft Conceptual Sizing Experience** A. Altman, University of Dayton, Dayton, OH	1130 hrs AIAA-2019-0069 **Revolutionary Aeronautics: Learner-Centered Teaching Applied to A Unique Science, Technology, Engineering, Arts, and Mathematics (STEAM) Program** A. Gohardani, Springs of Dreams Corporation, Tustin, CA	1200 hrs AIAA-2019-0070 **Application of robots in middle school math classes** J. Benedict, Woodland High School, Woodland, WA; H. Briggs, Self, Colorado Springs, CO	

Monday, 7 January 2019

23-F360-1
0930 - 1130 hrs

Forum 360: In-Space Factories

Seaport F

Moderator: Thomas Cwik, Manager, Space Technology Program, Ocean Worlds Technology, NASA Jet Propulsion Laboratory

Panelists:

Robert Hoyt
Chief Executive Officer
Tethers Unlimited, Inc.

Andrew Rush
President and Chief Executive Officer
Made In Space, Inc.

Alfred Tadros
Vice President, Space Infrastructure and Civil Space
SSL

John Vickers
Principal Technologist, Advanced Manufacturing
Space Technology Mission Directorate
NASA

Monday, 7 January 2019

24-FD-3

Shear Flows: Wakes

Gaslamp C

Chaired by: D. GONZALEZ, Naval Surface Warfare Center and E. DEMAURO, Rutgers, The State University of New Jersey

0930 hrs
AIAA-2019-0071
Three-Dimensional Entrainment Dynamics of a Supersonic Base Flow
B. Kirchner, T. Tetef, J. Dutton, G. Elliott, University of Illinois, Urbana-Champaign, Urbana, IL

1000 hrs
AIAA-2019-0072
Aerodynamic Characteristics of Axial Circular Cylinders with Low Fineness Ratios between 0.5 and 0.75 using a Magnetic Suspension and Balance System
K. Shinji, H. Nagaike, T. Nonomura, K. Asai, H. Sawada, Y. Konishi, Tohoku University, Sendai, Japan; et al.

1030 hrs
AIAA-2019-0073
On the Near Wake Turbulent Flow Properties of the SD7003 Airfoil
S. Goodman, S. Gunasekaran, A. Altman, University of Dayton, Dayton, OH; A. Medina, Air Force Research Laboratory, Wright-Patterson AFB, OH

1100 hrs
AIAA-2019-0074
On the Role of High- and Low-speed Streaks in Turbulent Wedge Lateral Spreading
A. Berger, E. White, Texas A&M University, College Station, TX

1130 hrs
AIAA-2019-0075
Dynamics of an Airfoil Moving Through the Wake of a Circular Cylinder
L. Jarman, Georgia Institute of Technology, Atlanta, GA; J. Lefebvre, A. Jones, University of Maryland, College Park, College Park, MD; M. Smith, Georgia Institute of Technology, Atlanta, GA

1200 hrs
AIAA-2019-0076
Characterizing Length Scales in the Wake of a Circular Cylinder using Particle Shadow Velocimetry
S. Hinkle, R. Jefferies, Pennsylvania State University, University Park, PA

Monday, 7 January 2019

25-FD-4

Special Session: CFD 2030 - Experiments and Computations for Juncture Flows

Harbor D

Chaired by: M. MALIK, NASA-Langley Research Center and M. ROGERS, NASA-Ames Research Center

0930 hrs
AIAA-2019-0077
An Experimental Investigation of a Wing-Fuselage Junction Model in the NASA Langley 14- by 22-Foot Subsonic Wind Tunnel
M. Kegerise, D. Neuhart, J. Hannon, C. Rumsey, NASA Langley Research Center, Hampton, VA

1030 hrs
AIAA-2019-0078
Flow-Field Measurements in a Wing-Fuselage Junction Using an Embedded Particle Image Velocimetry System
L. Jenkins, C. Yao, S. Bartram, NASA Langley Research Center, Hampton, VA

1100 hrs
AIAA-2019-0079
FUN3D Juncture Flow Computations Compared with Experimental Data
C. Rumsey, J. Carlson, N. Ahmad, NASA Langley Research Center, Hampton, VA

1130 hrs
AIAA-2019-0080
Overflow Juncture Flow Computations Compared with Experimental Data
H. Lee, T. Pulliam, NASA Ames Research Center, Moffett Field, CA

1200 hrs
AIAA-2019-0081
Progress on Experimental and Computational Investigation of Juncture Flows
D. Jeon, California Institute of Technology, Pasadena, CA; M. Beyar, L. Gea, The Boeing Company, Huntington Beach, CA; D. Hirsch, S. Rider, C. Willert, California Institute of Technology, Pasadena, CA; et al.

Monday, 7 January 2019

26-FD-5

Hybrid RANS/LES I

Gaslamp B

Chaired by: E. ARAD, RAFAEL and C. FUREBY, Swedish Defense Research Agency

0930 hrs
AIAA-2019-0082
Applications of a DES Model Based on Wray-Agarwal Turbulence Model with Rotation and Curvature Correction
X. Zhang, R. Agarwal, Washington University in St. Louis, St. Louis, MO

1000 hrs
AIAA-2019-0083
The NASA 2D wall-mounted hump simulated using DDES-SA with the G3D::Flow solver
E. Siggeirsson, N. Andersson, Chalmers University of Technology, Göteborg, Sweden

1030 hrs
AIAA-2019-0084
Base Drag Evaluations Using Hybrid Simulations
E. Arad, Rafael Advanced Defense Systems, Ltd., Haifa, Israel

1100 hrs
AIAA-2019-0085
RANS, DES and LES of the Flow Past the 6:1 Prolate Spheroid at 10° and 20° Angle of Incidence
C. Fureby, Swedish Defense Research Agency (FOI), Stockholm, Sweden; D. Norrison, Defence Science and Technology Group, Melbourne, Australia

1130 hrs
AIAA-2019-0086
On the WMLES use of ZDES in compressible flows
N. Renard, S. Deck, P. Weiss, ONERA, Meudon, France

1200 hrs
AIAA-2019-0087
Towards a Predictive Hybrid RANS/LES Framework
S. Haering, T. Oliver, R. Moser, University of Texas, Austin, Austin, TX

Monday, 7 January 2019						
27-FD-6	**Stability and Transition: BOLT Hypersonic Flight Experiment**					**Harbor B**
Chaired by: T. JULIANO, University of Notre Dame and D. BERRIDGE, JHU APL						
0930 hrs AIAA-2019-0088 **Freestream Disturbance Effects on Boundary Layer Instability and Transition on the AFOSR BOLT Geometry** H. Kostak, R. Bowersox, Texas A&M University, College Station, TX; G. McKiernan, Purdue University, West Lafayette, IN; J. Thome, G. Candler, University of Minnesota, Twin Cities, Minneapolis, MN; R. King, NASA Langley Research Center, Hampton, VA	1000 hrs AIAA-2019-0089 **Receptivity analysis of BOLT to distributed surface roughness using input-output analysis** D. Cook, J. Thome, J. Nichols, G. Candler, University of Minnesota, Twin Cities, Minneapolis, MN	1030 hrs AIAA-2019-0090 **Hypersonic Ground Tests With High-Frequency Instrumentation In Support of the Boundary Layer Transition (BOLT) Flight Experiment** D. Berridge, Johns Hopkins University Applied Physics Laboratory, Laurel, MD; H. Kostak, Texas A&M University, College Station, TX; G. McKiernan, Purdue University, West Lafayette, IN; B. Wheaton, T. Wolf, Johns Hopkins University Applied Physics Laboratory, Laurel, MD; S. Schneider, Purdue University, West Lafayette, IN	1100 hrs AIAA-2019-0091 **LaRC Aerothermodynamic Ground Tests in Support of BOLT Flight Experiment** S. Berry, M. Mason, F. Greene, R. King, E. Rieken, K. Basore, NASA Langley Research Center, Hampton, VA	1130 hrs AIAA-2019-0092 **Boundary layer instabilities on BoLT subscale geometry** J. Thome, A. Knutson, G. Candler, University of Minnesota, Twin Cities, Minneapolis, MN		

Monday, 7 January 2019						
28-FD-7	**Shock Boundary Layer Interaction I**					**Gaslamp A**
Chaired by: J. CHEN, University at Buffalo and V. NARAYANASWAMY, North Carolina State Univ						
0930 hrs AIAA-2019-0093 **Investigation of Transitional Shock-Wave/Boundary Layer Interactions Using Direct Numerical Simulations** B. Venkatachari, National Institute of Aerospace, Hampton, VA; C. Chang, NASA Langley Research Center, Hampton, VA	1000 hrs AIAA-2019-0094 **Flowfield Response to Controlled Perturbations in Swept Shock/ Boundary-Layer Interaction Using Unsteady PSP** L. Mears, N. Arora, F. Alvi, Florida State University, Tallahassee, FL	1030 hrs AIAA-2019-0095 **Unsteadiness Mechanisms of a Swept Compression-Ramp Shock / Boundary Layer Interaction at Mach 2** L. Vanstone, N. Clemens, University of Texas, Austin, Austin, TX	1100 hrs AIAA-2019-0096 **Structure, Scale, and Dynamics of a Double-Fin Shock/Turbulent-Boundary-Layer Interaction at Mach 4** M. Adler, D. Gaitonde, Ohio State University, Columbus, OH	1130 hrs AIAA-2019-0097 **Oblique Shockwave Boundary Layer Interaction on a Flexible Surface** S. Tan, P. Bruce, M. Gramola, Imperial College London, London, United Kingdom	1200 hrs AIAA-2019-0098 **Using large-eddy simulations to design a new hypersonic shock/ boundary-layer interaction experiment** P. Volpiani, University of Maryland, College Park, College Park, MD; A. Wagner, German Aerospace Center (DLR), Göttingen, Germany; M. Bernardini, University of Rome "La Sapienza", Rome, Italy; J. Larsson, University of Maryland, College Park, College Park, MD	

Monday, 7 January 2019						
29-FD-8	**Special Session: Unsteady Aerodynamics - Surging and Surging/Pitching I**					**Old Town A**
Chaired by: O. SAHNI, Rensselaer Polytechnic Institute and J. GREGORY, The Ohio State University						
0930 hrs Oral Presentation **Limitations of Unsteady Airfoil Theory for Surging Flows** J. Gregory, W. Zhu, G. Altamirano, B. Harter, M. McCrink, J. Bons, Ohio State University, Columbus, OH	1000 hrs Oral Presentation **Characteristics of the wake behind a streamwise-oscillating cylinder** M. Shamai, California Institute of Technology, Pasadena, CA; I. Mezic, University of California, Santa Barbara, Santa Barbara, CA; B. McKeon, California Institute of Technology, Pasadena, CA	1030 hrs Oral Presentation **Large Eddy Simulation of Surging Airfoils with Active Camber** J. Rane, F. Gandhi, O. Sahni, Rensselaer Polytechnic Institute, Troy, NY	1100 hrs Oral Presentation **High-order LES of reversed flow unsteady aerodynamics of a pitching wing** Y. Delorme, S. Frankel, Technion-Israel Institute of Technology, Haifa, Israel; M. Amitay, Rensselaer Polytechnic Institute, Troy, NY	1130 hrs Oral Presentation **Computational Analysis of Surging Airfoils Encountering Reverse Flow** S. Narsipur, H. Ramanathan, A. Gopalarathnam, J. Edwards, North Carolina State University, Raleigh, NC		

Monday, 7 January 2019						
30-FD-9	**CFD Solver Techniques I**					**Hillcrest D**
Chaired by: W. ANDERSON, NASA Langley Research Center and B. REZA AHRABI						
0930 hrs AIAA-2019-0099 **An Overset Generalized Minimal Residual Method for CFD on Heterogeneous Compute Architectures** D. Jude, University of Maryland, College Park, College Park, MD; J. Sitaraman, Parallel Geometric Algorithms, LLC, Sunnyvale, CA; V. Lakshminarayan, Science and Technology Corporation, Moffett Field, CA; J. Baeder, University of Maryland, College Park, College Park, MD	1000 hrs AIAA-2019-0100 **Accelerating Newton Method Continuation for CFD Problems** D. Mavriplis, University of Wyoming, Laramie, Laramie, WY	1030 hrs AIAA-2019-0101 **An Implicit Block ILU Smoother for Preconditioning of Newton-Krylov Solvers with Application in Finite-Element Discretizations** B. Reza Ahrabi, D. Mavriplis, University of Wyoming, Laramie, Laramie, WY	1100 hrs AIAA-2019-0102 **An Evaluation of p-Multigrid and Local Mach Number Preconditioning with High Order FR/CPR Method** E. Jourdan de Araujo Jorge Filho, Z. Wang, University of Kansas, Lawrence, Lawrence, KS; J. Azevedo, Institute of Aeronautics and Space (IAE), São José dos Campos, Brazil	1130 hrs AIAA-2019-0103 **Multigrid schemes for high order discretizations of hyperbolic problems** A. Ruggiu, J. Nordstrom, Linköping University, Linköping, Sweden		

Monday, 7 January 2019						
31-GNC-1	**Morphing Aircraft and Helicopter GNC**					**Cowles Mountain**
Chaired by: A. CHAKRAVARTHY, University of Texas, Arlington and A. MENON, Wichita State University						
0930 hrs AIAA-2019-0104 **Analysis of Rotorcraft Pilot-Induced Oscillations Triggered by Active Inceptor Failures** M. Jones, M. Barnett, German Aerospace Center (DLR), Braunschweig, Germany	1000 hrs AIAA-2019-0105 **Automatic Inceptor Decoupling System in Electronically Coupled Active Sidesticks for Dual Pilot Helicopters** R. Sampaio, German Aerospace Center (DLR), Braunschweig, Germany	1030 hrs AIAA-2019-0106 **Linear Parameter-Varying Control of Variable Span-Sweep Morphing Aircraft** J. Lee, S. Kim, S. Jung, H. Lee, Y. Kim, Seoul National University, Seoul, South Korea	1100 hrs AIAA-2019-0107 **Dynamic Soaring at 600 mph** G. Sachs, Technical University of Munich, Munich, Germany	1130 hrs AIAA-2019-0108 **Spatial Control of Spanwise Lift Distribution for Gust Alleviation** J. Dias, University of Maryland University College, Hampton, VA; J. Hubbard, Texas A&M University, College Station, TX		

Monday, 7 January 2019						
32-GNC-2	**Aircraft Fault Tolerant Control**					**Cuyamuca Peak**
Chaired by: K. DOGAN and T. YUCELEN, University of South Florida						
0930 hrs AIAA-2019-0109 **Failure Detection and Control of Distributed Electric Propulsion Aircraft Engines** Y. Suzuki, W. Dunham, I. Kolmanovsky, A. Girard, University of Michigan, Ann Arbor, Ann Arbor, MI	1000 hrs AIAA-2019-0110 **Incremental Backstepping Sliding Mode Fault-Tolerant Flight Control** X. Wang, E. Van Kampen, Delft University of Technology, Delft, The Netherlands	1030 hrs AIAA-2019-0111 **Modeling of Asymmetric Elevator Failures in the F-16 Aircraft** I. Gumusboga, A. Iftar, Eskisehir Technical University, Eskisehir, Turkey	1100 hrs AIAA-2019-0112 **Design of Fault Tolerant Control System for Engine Failure of Single-engined Aircraft** Y. Seo, Y. Kim, Seoul National University, Seoul, South Korea	1130 hrs AIAA-2019-0113 **Vision-integrated navigation system for aircraft final approach in case of GNSS/SBAS or ILS failures** Y. Watanabe, A. Manecy, ONERA, Toulouse, France; A. Hiba, Hungarian Academy of Sciences, Budapest, Hungary; S. Nagai, S. Aoki, Ricoh Company, Ltd., Yokohama, Japan		

Monday, 7 January 2019						
33-GNC-3	**Spacecraft and Launch Vehicle Slosh**					**Twin Peaks**
Chaired by: M. MCFARLAND, Raytheon and J. RAMAKRISHNAN, Bastion Technologies, Inc.						
0930 hrs AIAA-2019-0114 **Suppression of Nonlinear Rotary Slosh Dynamics using the SLS Adaptive Augmenting Control System Demonstration on a Quadcopter Testbed** J. Pei, NASA Langley Research Center, Hampton, VA; A. Puetz, South Dakota State University, Brookings, SD; C. Duerte, Georgia Institute of Technology, Atlanta, GA; L. Miller, NASA Langley Research Center, Hampton, VA	1000 hrs AIAA-2019-0115 **Towards New Control Design Oriented Models for Fuel Sloshing in Observation Spacecraft** A. Bourdelle, L. Burlion, J. Biannic, ONERA, Toulouse, France; H. Evain, S. Moreno, C. Pittet, French Space Agency (CNES), Toulouse, France; et al.	1030 hrs AIAA-2019-0116 **The Effect of Sloshing on the Controllability of a Conventional Aeroelastic Launch Vehicle** E. Mooij, D. Gransden, Delft University of Technology, Delft, The Netherlands				

Monday, 7 January 2019					
34-GT-1 **0930 - 1200 hrs**	**Presentations Selected from the 11th International Symposium on Strain Gauge Balances (Invited)**				**Cityview B**
0930 hrs "Investigation of Dynamic Characteristics for Strain Gauge Balance" **Anton Gobushin** TsAGI	1000 hrs "Technology Review of Wind-Tunnel Angle Measurement" **Ken Toro** NASA Langley Research Center	1030 hrs "Recent Activities on Strain-Gauge Balances and the Automatic Balance Calibration Machine at JAXA" **Shigeru Yamamoto** Japan Aerospace Exploration Agency (JAXA)	1100 hrs "New Verification Concept for ETW's 25 kN Balance Calibration Machine" **Jae Hun You** European Transonic Windtunnel	1130 hrs "Duct Balance and Wireless Data Transfer for Model Instrumentation" **Klaus Hufnagel** Delft University of Technology	

Monday, 7 January 2019						
35-GTE-1	**Combustors I**					**Highland Peak**
Chaired by: K. MCMANUS, GE Global Research Center						
0930 hrs AIAA-2019-0117 **Experimental Investigation of Flow Characteristics in an Ultra Compact Combustor** T. Rathsack, B. Bohan, M. Polanka, Air Force Institute of Technology, Wright-Patterson AFB, OH; L. Goss, Innovative Scientific Solutions, Inc., Dayton, OH	1000 hrs AIAA-2019-0118 **Development and Characterization of an Experimental Arrangement for Studying Bluff-Body-Stabilized Turbulent Premixed Propane-Air Flames** B. Paxton, Innovative Scientific Solutions, Inc., Dayton, OH; C. Fugger, Spectral Energies, LLC, Dayton, OH; B. Rankin, A. Caswell, Air Force Research Laboratory, Wright-Patterson AFB, OH	1030 hrs AIAA-2019-0119 **High-speed 4-D Imaging Study of Isooctane Combustion in a Shock Tube** E. Ninnemann, O. Pryor, S. Neupane, S. Barak, S. Vasu, University of Central Florida, Orlando, FL				

Monday, 7 January 2019						
36-HIS-1	**Biographies in Aerospace**					**Marina Room**
Chaired by: W. GORDON, Moog, Inc., Space, Advanced Programs						
0930 hrs AIAA-2019-0120 **Dr. Paul Bevilaqua: The Brilliant Mind Behind The F-35B Lift Fan Engine** A. Majchrowicz, B. Atuk, San Diego State University, San Diego, CA	1000 hrs AIAA-2019-0121 **Edgar N. Gott** C. Quento, San Diego State University, San Diego, CA	1030 hrs AIAA-2019-0122 **Ruth Blaney Alexander** G. Fogel, San Diego State University, San Diego, CA	1100 hrs AIAA-2019-0123 **On the Invention of Lateral Control: Wright and Montgomery** C. Harwood, Self, Ben Lomond, CA; G. Fogel, San Diego State University, San Diego, CA	1130 hrs AIAA-2019-0124 **Aviation in the Sestercentennial of San Diego** K. Burns, American Legion, San Diego, CA		

Monday, 7 January 2019						
37-HSABP-1	**Numerical Analysis of Scramjet Engines**					**Hillcrest C**
Chaired by: T. SMITH, Boeing Engineering Operations & Technology and T. ABDEL-SALAM, East Carolina University and C. MARLEY						
0930 hrs AIAA-2019-0125 **Evaluating the Correlations for Supersonic Spray Combustion** F. Ladeinde, Stony Brook University, Stony Brook, NY	1000 hrs AIAA-2019-0126 **Simulated Shock Train Control using an All-Coefficient Adaptive Control Approach** R. Rockwell, C. Goyne, University of Virginia, Charlottesville, Charlottesville, VA; L. Di, Self, Charlottesville, VA; Z. Lin, University of Virginia, Charlottesville, Charlottesville, VA; R. Bakos, Innoveering, LLC, Ronkonkoma, NY; J. Donbar, Air Force Research Laboratory, Wright-Patterson AFB, OH	1030 hrs AIAA-2019-0127 **Weighted Least-squares Cell-Average Gradient Construction Methods For The VULCAN-CFD Second-Order Accurate Unstructured Grid Cell-Centered Finite-Volume Solver** J. White, NASA Langley Research Center, Hampton, VA; H. Nishikawa, National Institute of Aerospace, Hampton, VA; R. Baurle, NASA Langley Research Center, Hampton, VA	1100 hrs AIAA-2019-0128 **The Effect of Turbulence Modeling on the Mixing Characteristics of Several Fuel Injectors at Hypervelocity Flow Conditions** T. Drozda, J. Lampenfield, NASA Langley Research Center, Hampton, VA; R. Deshmukh, Purdue University, West Lafayette, IN; R. Baurle, J. Drummond, NASA Langley Research Center, Hampton, VA			

Monday, 7 January 2019						
38-IS-1/GNC-4	**NASA-DLR Flight Control Research (Invited)**					**Seaport H**
Chaired by: G. LOOYE, DLR-Oberpfaffenhofen and T. LOMBAERTS, NASA Ames Research Center						
0930 hrs AIAA-2019-0129 **Design and Flight Testing of Incremental Backstepping based Control Laws with Angular Accelerometer Feedback (Invited)** T. Keijzer, G. Looye, German Aerospace Center (DLR), Wessling, Germany; Q. Chu, E. Van Kampen, Delft University of Technology, Delft, The Netherlands	1000 hrs AIAA-2019-0130 **Design and flight testing of flight control laws integrating incremental nonlinear dynamic inversion and servo current control (Invited)** T. Pollack, G. Looye, F. Van der Linden, German Aerospace Center (DLR), Wessling, Germany	1030 hrs AIAA-2019-0131 **Aeroelastic Modeling and Control of an Experimental Flexible Wing (Invited)** M. Pusch, D. Ossmann, German Aerospace Center (DLR), Wessling, Germany; J. Dillinger, German Aerospace Center (DLR), Göttingen, Germany; T. Kier, German Aerospace Center (DLR), Wessling, Germany; M. Tang, J. Lübker, German Aerospace Center (DLR), Göttingen, Germany	1100 hrs AIAA-2019-0132 **Design and Piloted Simulator Evaluation Results of Model Independent Stall Recovery Guidance (Invited)** T. Lombaerts, S. Schuet, V. Stepanyan, J. Kaneshige, G. Hardy, K. Shish, NASA Ames Research Center, Moffett Field, CA; et al.	1130 hrs AIAA-2019-0133 **Time-Varying Weights in Multi-Objective Optimal Control for Flexible Wing Aircraft (Invited)** K. Hashemi, N. Nguyen, M. Drew, NASA Ames Research Center, Moffett Field, CA	1200 hrs AIAA-2019-0134 **Nonlinear Dynamic Inversion Based Attitude Control for a hovering quad tiltrotor eVTOL vehicle (Invited)** T. Lombaerts, J. Kaneshige, S. Schuet, G. Hardy, V. Stepanyan, K. Shish, NASA Ames Research Center, Moffett Field, CA; et al.	

Monday, 7 January 2019						
39-IS-2	**Learning, Reasoning, and Data Driven Systems I**					**Solana Beach A**
Chaired by: Y. WAN, University of North Texas and A. YUCEL, Lockheed Martin Aeronautics						
0930 hrs AIAA-2019-0135 **Online Intelligent Motion Video Guidance for Unmanned Air System Ground Target Surveillance** J. Valasek, H. Lehman, V. Goecks, Texas A&M University, College Station, TX	1000 hrs AIAA-2019-0136 **Decoding the Black Box: Extracting Explainable Decision Boundary Approximations from Machine Learning Models for Real Time Safety Assurance of the National Airspace** A. Grushin, J. Nanda, A. Tyagi, D. Miller, J. Gluck, Intelligent Automation, Inc., Rockville, MD; N. Oza, NASA Ames Research Center, Moffett Field, CA; et al.	1030 hrs AIAA-2019-0137 **Deep Reinforcement Learning on Intelligent Motion Video Guidance for Unmanned Air System Ground Target Tracking** V. Goecks, J. Valasek, Texas A&M University, College Station, TX	1100 hrs AIAA-2019-0138 **Learning-based Aircraft Trajectory Planning Enhancement** A. Alizadeh, N. Humaira, E. Koyuncu, Istanbul Technical University, Istanbul, Turkey	1130 hrs AIAA-2019-0139 **Phases of Flight Identification for Rotorcraft Operations** H. Chin, A. Payan, Georgia Institute of Technology, Atlanta, GA; C. Johnson, Federal Aviation Administration, Atlantic City, NJ; D. Mavris, Georgia Institute of Technology, Atlanta, GA	1200 hrs AIAA-2019-0140 **Vision-based UAV Guidance for Autonomous Landing with Deep Neural Networks** Y. Bicer, M. Moghadam, C. Sahin, B. Eroglu, N. Üre, Istanbul Technical University, Istanbul, Turkey	

Monday, 7 January 2019						
40-IS-3	**Adaptive and Intelligent Control Systems**					**Solana Beach B**
Chaired by: J. VALASEK, Texas A&M University and N. NEOGI, NASA Langley Research Center						
0930 hrs AIAA-2019-0141 **Stability and Performance Robustness of an L1 Adaptive Dynamic Inversion Flight Control System** J. Harris, C. Elliott, G. Tallant, Lockheed Martin Corporation, Fort Worth, TX	1000 hrs AIAA-2019-0142 **Flight test of Quadcopter Guidance with Vision-Based Reinforcement Learning** M. Siddiquee, J. Junell, E. Van Kampen, Delft University of Technology, Delft, The Netherlands	1030 hrs AIAA-2019-0143 **Closed-Loop Control in Active Target Defense Using Machine Learning** M. Lau, M. Steffens, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1100 hrs AIAA-2019-0144 **Reinforcement Learning-based Control Allocation for the Innovative Control Effectors Aircraft** P. de Vries, E. Van Kampen, Delft University of Technology, Delft, The Netherlands	1130 hrs AIAA-2019-0145 **Continuous state and action Q-learning framework applied to quadrotor UAV control** A. Naruta, T. Mannucci, E. Van Kampen, Delft University of Technology, Delft, The Netherlands		

Monday, 7 January 2019						
41-ISC-MS	**International Student Conference - Masters Category**					**Point Loma - Marriott Hotel**
Chaired by: R. DOWDY, American Institute of Aeronautics and Astronautics						
0930 hrs AIAA-2019-0146 **Characterization of a Hybrid (Steel-Composite) Gear with Various Composite Materials and Layups** S. Gauntt, R. Campbell, Pennsylvania State University, University Park, PA	1000 hrs AIAA-2019-0147 **Characterization of Near-Muzzle Ballistic Flow Fields using High-Speed Shadowgraphy** M. Schwartz, J. Schmisseur, University of Tennessee, Tullahoma, Tullahoma, TN	1030 hrs AIAA-2019-0148 **Investigation of Nanosecond-Scale Plasma Discharges at Atmospheric Pressure Using Time-Resolved Imaging** P. Stockett, R. Jagannath, S. Bane, Purdue University, West Lafayette, IN	1100 hrs AIAA-2019-0149 **Comparison of Linear and Nonlinear Dynamics of a Virtual Telescope** R. Adcock, A. Naseri, University of New Mexico, Albuquerque, Albuquerque, NM	1130 hrs AIAA-2019-0150 **Velocity Measurements of Projectiles Propelled by Underexpanded Supersonic Jets** F. van Donkelaar, University of Washington, Seattle, Seattle, WA		

Monday, 7 January 2019						
42-ISC-TM	**International Student Conference - Team Category**					**Leucadia - Marriott Hotel**
Chaired by: R. DOWDY, American Institute of Aeronautics and Astronautics						
0930 hrs AIAA-2019-0151 **The Road to the Karman Line: Development of Liquid-Fueled Propulsion and Flight-Control Systems for Suborbital Launch Vehicles** S. Buddhavarapu, T. Charlson, A. Gupta, S. Seshan, Georgia Institute of Technology, Atlanta, GA	1000 hrs AIAA-2019-0152 **Spray Cone Formation from Pintle-Type Injector Systems in Liquid Rocket Engines** J. Freeberg, J. Hogge, University of Southern California, Los Angeles, CA	1030 hrs AIAA-2019-0153 **Liquid Water Micropropulsion System for Small Satellites** S. Pugia, R. Clay, M. Fuehne, M. Linker, N. Franks, B. Davis, Purdue University, West Lafayette, IN; et al.	1100 hrs AIAA-2019-0154 **Stereoscopic Mixed Reality in Unmanned Aerial Vehicle Search and Rescue** S. Katragadda, B. Mondal, A. Deane, University of Maryland, College Park, College Park, MD	1130 hrs AIAA-2019-0155 **Payload Design and Development for Orbital Structural Health Monitoring** A. Tandon, New Mexico Institute of Mining and Technology, Socorro, NM		

Monday, 7 January 2019						
43-ISC-UG	**International Student Conference - Undergraduate Category**					**Solana - Marriott Hotel**
Chaired by: R. DOWDY, American Institute of Aeronautics and Astronautics						
0930 hrs AIAA-2019-0156 **Design for Multi-Axis Fused Filament Fabrication with Continuous Fiber Reinforcement: Unmanned Aerial Vehicle Applications** P. Sinkez, W. De Backer, University of South Carolina, Columbia, Columbia, SC	1000 hrs AIAA-2019-0157 **Stability and Control Derivative Estimation for the Bell-Shaped Lift Distribution** L. Newton, University of California, Berkeley, Berkeley, CA	1030 hrs AIAA-2019-0158 **Application of Computational Intelligence for Command & Control of Unmanned Air Systems** H. Lehman, J. Valasek, Texas A&M University, College Station, TX	1100 hrs AIAA-2019-0159 **The Impact of a Notched Leading Edge on Performance and Noise Signature of Unmanned Aerial Vehicle Propellers** A. Demoret, C. Wisniewski, U.S. Air Force Academy, Colorado Springs, CO	1130 hrs AIAA-2019-0160 **Development of an Emergency Response UAV** M. Lozier, C. Sickbert, Rose-Hulman Institute of Technology, Terre Haute, IN		

Monday, 7 January 2019						
44-MAT-1	**Materials in Extreme Environments**					**Mission Beach C**
Chaired by: E. PINEDA, NASA Glenn Research Ctr and J. PINESS, Northrop Grumman						
0930 hrs AIAA-2019-0161 **Spacecraft Material Tests under Aerothermal and Mechanical Reentry Loads** D. Leiser, S. Loehle, F. Zander, University of Stuttgart, Stuttgart, Germany; R. Choudhury, D. Buttsworth, University of Southern Queensland, Toowoomba, Australia; S. Fasoulas, University of Stuttgart, Stuttgart, Germany	1000 hrs AIAA-2019-0162 **Effect of Phenolic Matrix Microcracking on the Structural Response of a 3-D Woven Thermal Protection System** S. Langston, NASA Langley Research Center, Hampton, VA; K. Peterson, NASA Ames Research Center, Moffett Field, CA; C. Poteet, NASA Langley Research Center, Hampton, VA	1030 hrs AIAA-2019-0163 **Evaluation of the fire resistance of protected carbon/epoxy laminates in small-scale experiments** P. Chávez, T. Pelzmann, É. Robert, L. Laberge Lebel, Polytechnique Montréal, Montréal, Canada	1100 hrs AIAA-2019-0164 **An Improved Unified Viscoplastic Polymer Constitutive Formulation for Multiscale Analysis of Polymer Matrix Composites Under High Strain Rate Loading** C. Sorini, A. Chattopadhyay, Arizona State University, Tempe, AZ; R. Goldberg, NASA Glenn Research Center, Cleveland, OH	1130 hrs AIAA-2019-0165 **Modeling of Thermo-Mechanical Degradation of the Polymer Matrix Composites at High Temperatures** T. Konduri, O. Zhupanska, University of Arizona, Tucson, Tucson, AZ; P. Deierling, University of Iowa, Iowa City, Iowa City, IA	1200 hrs AIAA-2019-0166 **Cryogenic Properties of CNT Reinforced UHMWPE Laminated Composites** G. Bahceli, Istanbul Technical University, Istanbul, Turkey; B. Atli-Veltin, TNO, Delft, The Netherlands; D. Wilbers, Teijin Aramid B.V., Arnhem, The Netherlands; H. Cebeci, Istanbul Technical University, Istanbul, Turkey	

Monday, 7 January 2019						
45-MDO-1	**Sensitivity Analysis of Time-Dependent Flows**					**Mission Beach B**
Chaired by: J. HICKEN, Rensselaer Polytechnic Institute and M. BHATIA, Mississippi State University						
0930 hrs AIAA-2019-0167 **Plant and Controller Optimization in the Context of Chaotic Dynamical Systems** L. Repolho Cagliari, S. Mishra, J. Hicken, Rensselaer Polytechnic Institute, Troy, NY	1000 hrs AIAA-2019-0168 **Towards Aerodynamic Shape Optimization of Unsteady Turbulent Flows** A. Ashley, J. Crean, J. Hicken, Rensselaer Polytechnic Institute, Troy, NY	1030 hrs AIAA-2019-0169 **Challenges in Sensitivity Computations for (D)DES and URANS** T. Albring, Technical University of Kaiserslautern, Kaiserslautern, Germany; B. Zhou, National Institute of Aerospace, Hampton, VA; N. Gauger, Technical University of Kaiserslautern, Kaiserslautern, Germany	1100 hrs AIAA-2019-0170 **Assessment of Stabilized Sensitivity Analysis Approach For High-Dimensional Chaotic Systems** M. Bhatia, L. Taoudi, Mississippi State University, Starkville, MS	1130 hrs AIAA-2019-0171 **FUN3D-based Adjoint Sensitivity for Elastic Tandem Airfoils in Chaotic Flows** Z. Zhang, S. Yang, ZONA Technology, Inc., Scottsdale, AZ; Q. Wang, Massachusetts Institute of Technology, Cambridge, MA; P. Beran, Air Force Research Laboratory, Wright-Patterson AFB, OH		

Monday, 7 January 2019						
46-MDO-2	**Multidisciplinary Design Optimization for Vehicle Design I**					**Mission Beach A**
Chaired by: S. MASSEY, NASA-Langley Research Center and G. KURUVILA, Boeing Research & Technology						
0930 hrs AIAA-2019-0172 **Multipoint Variable Cycle Engine Design Using Gradient-Based Optimization** J. Jasa, University of Michigan, Ann Arbor, Ann Arbor, MI; J. Gray, J. Seidel, NASA Glenn Research Center, Cleveland, OH; C. Mader, J. Martins, University of Michigan, Ann Arbor, Ann Arbor, MI	1000 hrs AIAA-2019-0173 **Lockheed Martin Overview of the AFRL EXPEDITE Program** C. Davies, Lockheed Martin Corporation, Palmdale, CA	1030 hrs AIAA-2019-0174 **Flutter Prediction for Aircraft Conceptual Design** W. Li, K. Geiselhart, J. Robinson, NASA Langley Research Center, Hampton, VA	1100 hrs AIAA-2019-0175 **Conceptual Multidisciplinary Design and Optimization of Morphing Aircraft** J. Kao, University of Dayton, Dayton, OH; D. Clark, Wright State University, Dayton, OH; T. White, G. Reich, Air Force Research Laboratory, Wright-Patterson AFB, OH; S. Burton, American Optimization, LLC, Springboro, OH	1130 hrs AIAA-2019-0176 **Modelling of Humanitarian Aid and Disaster Relief Logistic Operations with Non-Homogenous Fleets Utilizing Generic Assets** M. Muehlberg, A. Sudol, D. Mavris, Georgia Institute of Technology, Atlanta, GA		

Monday, 7 January 2019						
47-MST-1	**Motion Cueing for Training Simulators I - Qualification and Testing**					**Eagle Peak**
Chaired by: D. POOL, Delft University of Technology and P. ZAAL, NASA Ames Research Center						
0930 hrs AIAA-2019-0177 **Objective Motion Cueing Test. Development, Strengths, Weaknesses and Possibilities (Invited)** E. van Duivenbode, E. van Oene, J. van Hoof, L. Jacobs, D. Belleter, Bosch Rexroth B.V., Boxtel, The Netherlands	1000 hrs AIAA-2019-0178 **The Application of Frequency Domain Techniques to Motion for Crew Training Flight Simulators (Invited)** D. Littmann, FlightSafety International, Broken Arrow, OK	1030 hrs AIAA-2019-0179 **Eigenmode Distortion Analysis for Motion Cueing Evaluation in Fixed-Wing Aircraft Simulators (Invited)** S. Stoev, O. Stroosma, M. van Paassen, I. Miletovic, M. Mulder, Delft University of Technology, Delft, The Netherlands	1100 hrs AIAA-2019-0180 **The Suitability of Objective Motion Criteria for Rotorcraft Manoeuvres (Invited)** M. Jones, German Aerospace Center (DLR), Braunschweig, Germany	1130 hrs **Panel Discussion**		

Monday, 7 January 2019

48-NDA-1 0930 - 1100 hrs	Non-Deterministic Approaches Lecture	Harbor H

"Why do you think those margins are adequate?: Infusing Quantification of Margins and Uncertainties into Aerospace Engineering Practice"
Lee Peterson
NASA Jet Propulsion Laboratory

Monday, 7 January 2019

49-PC-1 — **Turbulent Flames I** — **Hillcrest A**

Chaired by: M. SOTERIOU, United Technologies Research Center and K. GROGAN

0930 hrs AIAA-2019-0181 **Distinct Effects of Turbulence on Flame Structure by Perforated Plate stabilized Lean Premixed Turbulent Flames** J. Kim, A. Satija, R. Lucht, J. Gore, Purdue University, West Lafayette, IN	1000 hrs AIAA-2019-0182 **The Ramifications of the Darrieus-Landau Instability in Turbulent Premixed Flames** M. Matalon, University of Illinois, Urbana-Champaign, Urbana, IL	1030 hrs AIAA-2019-0183 **Experimental Investigation of Flame Stabilization in a Turbulent Premixed Recirculation-Stabilized Jet-Flame with Simultaneous kHz Laser Diagnostics** M. Severin, O. Lammel, W. Meier, M. Aigner, German Aerospace Center (DLR), Stuttgart, Germany	1100 hrs AIAA-2019-0184 **Progress in limiting the impact of numerical error on reacting LES simulations** M. Soteriou, K. Gottiparthi, United Technologies Corporation, East Hartford, CT	1130 hrs AIAA-2019-0185 **Analysis of The Chemical States of A Bluff-body Stabilized Premixed Flame Near Blowoff** B. Wu, X. Zhao, C. Xu, T. Lu, University of Connecticut, Storrs, Storrs, CT	1200 hrs AIAA-2019-0186 **Dynamic Flame Thickening through In-Situ Numerical Stiffness Detection** K. Grogan, Z. LaBry, P. Shah, ATA Engineering, Inc., San Diego, CA; S. Sardeshmukh, Purdue University, West Lafayette, IN	

Monday, 7 January 2019

50-PC-2/PGC-1 — **Detonations** — **Hillcrest B**

Chaired by: K. AHMED, University of Central Florida and L. BAUWENS, University of Calgary

0930 hrs AIAA-2019-0187 **Kinetic Enhancement of Microchannel Detonation Transition by Ozone Addition to Acetylene Mixtures** J. Sepulveda, A. Rousso, H. Ha, T. Chen, V. Cheng, Princeton University, Princeton, NJ; W. Kong, Chinese Academy of Sciences, Beijing, China; et al.	1000 hrs AIAA-2019-0188 **Effects of Thermal and Compositional Gradients and Turbulence Transport on Detonation Formation** T. Zhang, Princeton University, Princeton, NJ; L. Wang, Tsinghua University, Beijing, China; W. Sun, Y. Ju, Princeton University, Princeton, NJ	1030 hrs AIAA-2019-0189 **Evidence of Pressure Build-up in H_2-Air Fast Flames for Deflagration-to-Detonation** J. Chambers, K. Ahmed, University of Central Florida, Orlando, FL; L. ONeill, A. Poludnenko, Texas A&M University, College Station, TX; V. Gamezo, Naval Research Laboratory, Washington, D.C.	1100 hrs AIAA-2019-0190 **Theory of Weakly Exothermic Oblique Detonations** M. Daniel, C. Huete, Charles III University of Madrid, Leganes, Spain; A. Sanchez, F. Williams, University of California, San Diego, La Jolla, CA			

Monday, 7 January 2019

51-PDL-3 — **Diagnostics I** — **Iron Mountain**

Chaired by: A. YALIN, Colorado State University and C. LIMBACH, Texas A&M University

0930 hrs AIAA-2019-0191 **Application of a Streak Camera for Optical Emission Spectroscopy of Nanosecond Repetitively Pulsed Plasma Discharges** R. Jagannath, A. Satija, N. Numa, P. Stockett, N. Joel, R. Lucht, Purdue University, West Lafayette, IN; et al.	1000 hrs AIAA-2019-0192 **Electron Temperature and Density Measurements in a Low-Power Hollow Cathode Discharge by Cavity Enhanced Thomson Scattering** A. Friss, A. Yalin, Colorado State University, Fort Collins, CO	1030 hrs AIAA-2019-0193 **Measurements of $N_2(A^3\Sigma_u^+,v)$ Populations in a Nanosecond Pulse Discharge by Cavity Ring Down Spectroscopy and Tunable Diode Laser Absorption Spectroscopy** E. Jans, K. Frederickson, T. Miller, I. Adamovich, Ohio State University, Columbus, OH	1100 hrs AIAA-2019-0194 **Shock Propagation in a High Temperature Gas Discharge Initiated by Ultraviolet Laser-Induced Breakdown** Y. Wu, C. Limbach, Texas A&M University, College Station, TX	1130 hrs AIAA-2019-0195 **Radar REMPI Measurements in the Presence of a Magnetic Field** C. Galea, M. Shneider, A. Dogariu, Princeton University, Princeton, NJ; R. Miles, Texas A&M University, College Station, TX	1200 hrs AIAA-2019-0196 **Application of Optical Sensors for Flame Blow-off Prediction in a Plasma Stabilized Scramjet Combustor** S. Elliott, A. Houpt, S. Leonov, University of Notre Dame, Notre Dame, IN	

Monday, 7 January 2019						
52-PGC-2/HSABP-2	**Rotating Detonation Pressure Gain Combustion I**					**Harbor E**
Chaired by: R. ZITOUN and G. MEHOLIC, The Aerospace Corporation						
0930 hrs AIAA-2019-0197 **Effect of Aerospike Plug Nozzle Design on Rotating Detonation Engine Performance for Rocket Applications** A. Harroun, S. Heister, S. Sardeshmukh, Purdue University, West Lafayette, IN; J. Ruf, NASA Marshall Space Flight Center, Huntsville, AL	1000 hrs AIAA-2019-0198 **Detonation Wave Dynamics in a Rotating Detonation Engine** F. Chacon, M. Gamba, University of Michigan, Ann Arbor, Ann Arbor, MI	1030 hrs AIAA-2019-0199 **Scramjet Operability and RDE Design for RDE Piloted Scramjet** R. Druss, M. Polanka, Air Force Institute of Technology, Wright-Patterson AFB, OH; T. Ombrello, F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH	1100 hrs AIAA-2019-0200 **Progress in understanding Rotating Detonation Modes** C. Jourdain, V. Rodriguez, P. Vidal, R. Zitoun, National Center for Scientific Research (CNRS), Chasseneuil, France	1130 hrs AIAA-2019-0201 **Reduced Order Modeling of Rotational Detonation Engines** J. Humble, S. Sardeshmukh, S. Heister, Purdue University, West Lafayette, IN		

Monday, 7 January 2019						
53-SCS-1	**Analysis of Lightweight Spacecraft Structures**					**Torrey Hills B**
Chaired by: S. PELLEGRINO, California Institute of Technology and H. SOLIMAN						
0930 hrs AIAA-2019-0202 **On Orbit Structural Performance of Hitomi (ASTRO-H)** K. Ishimura, Waseda University, Tokyo, Japan; K. Minesugi, T. Kawano, M. Ishida, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan; K. Shoji, NEC Corporation, Fuchu, Japan; K. Abe, Nippi Corporation, Yokohama, Japan	1000 hrs AIAA-2019-0203 **Acoustic Analysis of Spacecraft Cavities using the Boundary Element Method** P. Marshall, T. McQuigg, D. Inoyama, T. Stoumbos, Northrop Grumman Corporation, Dulles, VA; R. Kapania, Virginia Polytechnic Institute and State University, Blacksburg, VA	1030 hrs AIAA-2019-0204 **Predicting Sloshing Motion in Flexible Propellant Tanks using Three-Dimensional Computational Simulation and Experimental Validation** M. Hari, N. Sarigul-Klijn, University of California, Davis, Davis, CA	1100 hrs AIAA-2019-0205 **Crush Dynamics and Shear Failure of Alternate Sandwich Panel Honeycomb Core for Space Structures** U. Shah, R. Kapania, Virginia Polytechnic Institute and State University, Blacksburg, VA	1130 hrs AIAA-2019-0206 **Failure of Alternate Honeycomb Core Sandwich Panels** U. Shah, R. Kapania, Virginia Polytechnic Institute and State University, Blacksburg, VA		

Monday, 7 January 2019						
54-SD-1	**Aircraft Nonlinear Aeroelasticity**					**Promenade A**
Chaired by: P. TAYLOR, Gulfstream Aerospace Corporation and N. FALKIEWICZ, MIT Lincoln Laboratory						
0930 hrs AIAA-2019-0207 **Using Nonlinear Normal Modes to Optimize the Design of Geometrically Nonlinear Structures** C. VanDamme, M. Allen, University of Wisconsin, Madison, Madison, WI	1000 hrs AIAA-2019-0208 **Nonlinear Modal Aeroelastic Analysis from Large Industrial-Scale Models** A. Cea, R. Palacios, Imperial College London, London, United Kingdom	1030 hrs AIAA-2019-0209 **Static Aeroelastic Characteristics of a Wing Including Geometric Nonlinearities** X. Liu, Northwestern Polytechnical University, Xi'an, China; R. Cook, J. Cooper, University of Bristol, Bristol, United Kingdom; Q. Sun, Northwestern Polytechnical University, Xi'an, China	1100 hrs AIAA-2019-0210 **Flutter analysis of very large flexible wing based on structural ROM and finite-state inflow aerodynamics** C. An, C. Xie, C. Yang, Beihang University, Beijing, China			

Monday, 7 January 2019						
55-SD-2	**Structural Dynamics of Beams, Plates, and Membranes I**					**Promenade B**
Chaired by: W. SCHNEIDER, Lockheed Martin Aeronautics and C. BARNES, AFRL/RQVA						
0930 hrs AIAA-2019-0211 **Dynamic Analysis of Nonlinear Composite Beams with 3-D Structural Damping** M. Gupta, K. Sarkar, D. Hodges, Georgia Institute of Technology, Atlanta, GA	1000 hrs AIAA-2019-0212 **Non-uniform isospectrals of uniform Timoshenko beams** S. Bhat K, R. Ganguli, Indian Institute of Science, Bengaluru, India	1030 hrs AIAA-2019-0213 **ANCF-ICE Beam Element for Modeling Highly Flexible and Deployable Aerospace Structures** K. Otsuka, K. Makihara, Tohoku University, Sendai, Japan	1100 hrs AIAA-2019-0214 **Dynamic Behavior of Bi-Stable Fixed-Fixed Composite Plates** C. McLean, J. Ferguson, A. Cabri, S. Phillips, M. Snyder, M. Obenchain, U.S. Air Force Academy, Colorado Springs, CO; et al.	1130 hrs AIAA-2019-0215 **Family of non-rotating beams isospectral to rotating beams: A discrete approach** N. Ramachandran, R. Ganguli, Indian Institute of Science, Bengaluru, India		

Monday, 7 January 2019						
56-SD-3	**Special Session: Adaptive Aeroelastic Wing Shaping Control I**					**Ocean Beach**
Chaired by: N. NGUYEN, NASA-Ames Research Center and W. SU, University of Alabama, Tuscaloosa						
0930 hrs AIAA-2019-0216 **Gradient-Based Aeroservoelastic Optimization with Static Output Feedback** B. Stanford, NASA Langley Research Center, Hampton, VA	1000 hrs AIAA-2019-0217 **Flutter Analysis of the Transonic Truss-Braced Wing Aircraft Using Transonic Correction** N. Nguyen, NASA Ames Research Center, Moffett Field, CA; J. Fugate, Stinger Ghaffarian Technologies, Inc., Moffett Field, CA; U. Kaul, NASA Ames Research Center, Moffett Field, CA; J. Xiong, Stinger Ghaffarian Technologies, Inc., Moffett Field, CA	1030 hrs AIAA-2019-0218 **Active Vibration Suppression of BWB Airplane Using Smooth Switching LPV Control** T. He, G. Zhu, Michigan State University, East Lansing, MI; S. Swei, NASA Ames Research Center, Moffett Field, CA; W. Su, University of Alabama, Tuscaloosa, Tuscaloosa, AL	1100 hrs AIAA-2019-0219 **Nonlinear Aeroelasticity of Morphing Wings with Corrugated Structures** N. Tsushima, H. Arizono, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan; T. Yokozeki, University of Tokyo, Tokyo, Japan; W. Su, University of Alabama, Tuscaloosa, Tuscaloosa, AL	1130 hrs AIAA-2019-0220 **Multi-objective Optimal Control of the 6-DoF Aeroservoelastic Common Research Model with Aspect Ratio 13.5 Wing** M. Drew, K. Hashemi, N. Cramer, N. Nguyen, NASA Ames Research Center, Moffett Field, CA		

Monday, 7 January 2019						
57-SE-1	**Systems Engineering I**					**Vista C**
Chaired by: B. MESMER, University of Alabama in Huntsville and M. BAILEY						
0930 hrs AIAA-2019-0221 **Model-Based Approach for Resilience and Affordability Tradeoff Analysis** M. Wheaton, The Aerospace Corporation, El Segundo, CA; A. Madni, University of Southern California, Los Angeles, CA	1000 hrs AIAA-2019-0222 **Resilient Operation of Autonomous Unmanned Aerial Vehicles** E. Ordoukhanian, A. Madni, University of Southern California, Los Angeles, CA	1030 hrs AIAA-2019-0223 **Formal and Probabilistic Modeling in Design of Resilient Systems and System-of-Systems** A. Madni, M. Sievers, D. Erwin, University of Southern California, Los Angeles, CA	1100 hrs AIAA-2019-0224 **Assuring Spacecraft Swarm Byzantine Resilience** M. Sievers, A. Madni, P. Pouya, University of Southern California, Los Angeles, CA	1130 hrs AIAA-2019-0225 **Porous System Boundaries** M. French, Rolls-Royce Group plc, Indianapolis, IN; J. McEver, Johns Hopkins University Applied Physics Laboratory, Laurel, MD		

Monday, 7 January 2019						
58-STR-1	**Aircraft Structural Design, Test and Analysis**					**Golden Hill A**
Chaired by: B. BEDNARCYK, NASA Glenn Research Center and A. LOVEJOY, NASA-Langley Research Center						
0930 hrs AIAA-2019-0226 **Constructal Approach to the Design of Inflected Airplane Wings** S. Powell, E. Izadpanahi, S. Rastkar, P. Mardanpour, Florida International University, Miami, FL	1000 hrs AIAA-2019-0227 **Evaluation of Wing Load Calibration and Sensing Methods Using Conventional Strain Gages and a Fiber Optic Sensing System Installed on a Straight Tapered Wing** E. Miller, F. Pena, A. Jordan, L. Hudson, W. Lokos, NASA Armstrong Flight Research Center, Edwards, CA	1030 hrs AIAA-2019-0228 **Strength prediction of non-conventional laminates using layerwise theories** D. Barazanchy, M. Van Tooren, University of South Carolina, Columbia, Columbia, SC	1100 hrs AIAA-2019-0229 **Structural Modelling of Compliance-Based Morphing Structures under Transverse Shear Loading** A. Rivero, P. Weaver, B. Woods, University of Bristol, Bristol, United Kingdom	1130 hrs AIAA-2019-0230 **Quasi-static experimental path-following** R. Neville, R. Groh, A. Pirrera, M. Schenk, University of Bristol, Bristol, United Kingdom	1200 hrs AIAA-2019-0231 **Localised post-buckling states of axially compressed cylinders and their energy barriers** R. Groh, A. Pirrera, University of Bristol, Bristol, United Kingdom	

Monday, 7 January 2019						
59-STR-2	**Structural Joints and Repairs**					**Golden Hill B**
Chaired by: S. TERMAATH, University of Tennessee and P. AGGARWAL, NASA Marshall Space Flight Center						
0930 hrs AIAA-2019-0232 **Comparison of Design Tools for Stress Analysis of Adhesively Bonded Joints** S. Stapleton, University of Massachusetts, Lowell, Lowell, MA; A. Bergan, D. Sleight, NASA Langley Research Center, Hampton, VA; B. Bednarcyk, NASA Glenn Research Center, Cleveland, OH; A. Zahn, NASA Langley Research Center, Hampton, VA; B. Farrokh, NASA Goddard Space Flight Center, Greenbelt, MD; et al.	1000 hrs AIAA-2019-0233 **Damage Tolerance Prediction for a Hybrid Composite/Metal Structure under Three Point Bending** C. Arndt, B. Heng, X. Ma, S. TerMaath, University of Tennessee, Knoxville, Knoxville, TN	1030 hrs AIAA-2019-0234 **Functionally Graded Adhesives Joints with Enhanced Strength** A. Cassano, S. Stapleton, D. Schmidt, University of Massachusetts, Lowell, Lowell, MA	1100 hrs AIAA-2019-0235 **Test and Analysis Correlation for Sandwich Composite Longitudinal Joint Specimens** B. Mason, A. Satyanarayana, D. Sleight, NASA Langley Research Center, Hampton, VA	1130 hrs AIAA-2019-0236 **Development of Composite Sandwich Bonded Longitudinal Joints for Space Launch Vehicle Structures** D. Sleight, NASA Langley Research Center, Hampton, VA; K. Segal, NASA Goddard Space Flight Center, Greenbelt, MD; W. Guin, NASA Marshall Space Flight Center, Huntsville, AL; S. Miller, NASA Glenn Research Center, Cleveland, OH; M. McDougal, NASA Marshall Space Flight Center, Huntsville, AL	1200 hrs AIAA-2019-0237 **A Continuum Damage Mechanics (CDM) Modeling Approach for Prediction of Fatigue Failure of Metallic Bolted Joints** A. Sadeghirad, J. Xiao, P. Liu, J. Lua, Global Engineering and Materials, Inc., Princeton, NJ	

Monday, 7 January 2019						
60-TES-1 0930 - 1200 hrs	Supercritical Carbon Dioxide Based Power Cycles: Systems, Components and Technology Development for Supercritical Carbon Dioxide Power Systems					Vista B
Doug Hofer General Electric	**Tim Held** EchoGen Powersystems	**Jeff Moore** Southwest Research Institute	**Mike McDowell** GTI	**Scott Martin** 8Rivers	**Blake Lance** Sandia National Laboratory	

Monday, 7 January 2019						
61-TES-2	Turbomachinery and Energy Systems					Pyramid Peak
Chaired by: A. ENGEDA, Michigan State University and R. AMANO, University of Wisconsin-Milwaukee						
0930 hrs AIAA-2019-0238 **Experimental Study on a Dual Cavity Synthetic Jet Airfoil** D. Silva, G. Jacobs, San Diego State University, San Diego, CA	1000 hrs AIAA-2019-0239 **Optimal Configuration for Multiple M.A.C.E. Turbines in Train Tunnel to Harvest Power** B. Elizabeth, K. Joseph, S. Lee, Alfred University, Alfred, NY	1030 hrs AIAA-2019-0240 **Impact of alternative fuel on gas turbine noise, vibration and instability** C. Wijesinghe, B. Khandelwal, University of Sheffield, Sheffield, United Kingdom	1100 hrs AIAA-2019-0241 **Performance Investigation of Very-Low-Head Kaplan Hydro-Turbines** R. Amano, M. Qandil, A. Abbas, M. Al-Haddad, University of Wisconsin, Milwaukee, Milwaukee, WI			

Monday, 7 January 2019						
62-TF-1 0930 - 1200 hrs	Rolling Recap on Aircraft Electrified Propulsion and Power					Harbor C
The Rolling Recap session's objective is to disseminate information in the rapidly emerging and exciting area of Aircraft Electrified Propulsion and Power technology to attendees of AIAA forums. This session presents a summary of papers/panel sessions from previous AIAA forums on electric aircraft and propulsion, and keeps the community informed, and also presents an opportunity to discuss relevant technology developments and activities in the industry.						

Monday, 7 January 2019						
63-TP-1	Aerothermodynamics					Balboa A
Chaired by: K. KNOX, NASA Marshall Space Flight Center						
0930 hrs AIAA-2019-0242 **Uncertainty Analysis of Probe Surface Predictions for the Hypersonic Material Environmental Test System Facility** A. Brune, T. West, L. White, NASA Langley Research Center, Hampton, VA	1000 hrs AIAA-2019-0243 **A Chemical Equilibrium Analysis Approach to Oxidation and Nitridation of Silicon Carbide** S. Chen, I. Boyd, University of Michigan, Ann Arbor, Ann Arbor, MI	1030 hrs AIAA-2019-0244 **Exomars mission 2016: A preliminary post-flight performance analysis of the heat shield during entry on Mars atmopshere** G. Pinaud, J. Bertrand, J. Soler, P. Tran, ArianeGroup, Saint Médard en Jalles, France; H. Ritter, ESA, Noordwijk, The Netherlands	1100 hrs AIAA-2019-0245 **Effective Oxidation Model for Light-Weight Carbon Preform Ablators** K. Swaminathan Gopalan, K. Stephani, University of Illinois, Urbana-Champaign, Urbana, IL			

Monday, 7 January 2019						
64-WE-1	Wind Turbine Health Monitoring and Reliability					Cityview A
Chaired by: D. GRIFFITH and J. JONKMAN, National Renewable Energy Laboratory						
0930 hrs AIAA-2019-0246 **Fatigue Impact of Mechanical and Thermal Residual Stresses on the Trailing Edge Bond Line of Wind Turbine Blades** M. Rosemeier, Fraunhofer, Bremerhaven, Germany; A. Krimmer, EUROS Group, Berlin, Germany; A. Bardenhagen, Technical University of Berlin, Berlin, Germany; A. Antoniou, Fraunhofer, Bremerhaven, Germany	1000 hrs AIAA-2019-0247 **Probabilistic Fatigue Evaluation of Floating Wind Turbine using Combination of Surrogate Model and Copula Model** X. Li, W. Zhang, University of Connecticut, Storrs, Storrs, CT	1030 hrs AIAA-2019-0248 **Assessment of Airfoil Property Sensitivity on Wind Turbine Extreme and Fatigue Loads** K. Shaler, A. Robertson, J. Jonkman, National Renewable Energy Laboratory, Golden, CO	1100 hrs AIAA-2019-0249 **Experimental demonstration of health monitoring of composites using FBG sensor arrays** B. Atli-Veltin, L. Cheng, A. Vosteen, A. Jedynska, TNO, Delft, The Netherlands; L. van der Linden, Jules Dock, Rotterdam, The Netherlands			

Monday, 7 January 2019

65-DGE-1/CASE-1 1100 - 1230 hrs	A Collision of Worlds: MDO vs Digital Thread vs MBSE in Today's Complex Systems Engineering	Seaport G

Today's systems are growing in complexity. There is a strong focus in the aerospace industry to develop digital artifacts linking requirements, physics-based and data driven models, functions and systems derived from design, manufacturing, production, support, and services into a "system of models" environment. This offers visibility of conflicts in early life cycle phases enabling reductions in total life cycle cost. In addition, multidisciplinary design optimization provides a framework in which various digital models and methods to be streamlined and managed for model based engineering of a complex system. This panel will explore the relationships between these converging worlds, their mutual benefits, and their challenges.

Moderator: Don Farr, Senior Technical Fellow, Boeing Research & Technology

Panelists:

Atherton Carty
Director, Technology Roadmaps
Advanced Development Programs
Lockheed Martin Aeronautics Company

Olivier de Weck
Professor of Aeronautics and Astronautics and Engineering Systems
Massachusetts Institute of Technology;
Senior Vice President for Technology Planning and Roadmapping
Airbus

Jason Hatakeyama
Chief Architect
Boeing, Defense, Space & Security

Ray Kolonay
Director, Multidisciplinary Science and Technology Center
Air Force Research Laboratory

Anna-Marie McGowan
Senior Engineer for Complex Systems Design
NASA Langley Research Center

Monday, 7 January 2019

66-EDU-5/GT-10/DE-4/INPSI-3 1100 - 1230 hrs	Grand Challenges in Aerospace Research	Harbor H

This is an inaugural panel that brings world-class university thought leaders together to discuss and take questions on the Grand Challenges in Aerospace Engineering University Research. The panelists are all chaired professors and members of the prestigious National Academy of Engineering who are research leaders in a wide range of areas including aeroelasticity, combustion, defense systems, fluid dynamics, human-computer interaction, hypersonics, simulation science, smart sensor technology, spacecraft dynamics, and system safety. Sponsored by Aerospace Department Chairs Association (ADCA).

Moderator: Eric Loth, University of Virginia

Panelists:

Charbel Farhat
Stanford University

Wes Harris
Massachusetts Institute of Technology

John Junkins
Texas A&M University

Nancy Levinson
Massachusetts Institute of Technology

Elaine Oran
University of Maryland

Monday, 7 January 2019

67-WE-10 1130 - 1230 hrs	Wind Energy Lecture	Cityview A

"Wind Plant Modeling and Simulation: The Amazing Interactions of Physics and Engineering in Wind Plant Design"
Paul Veers
National Renewable Energy Laboratory

Monday, 7 January 2019

68-LEC-1 1230 - 1400 hrs	Durand Lecture for Public Service and Luncheon	Seaport A-E

The Durand Lecture, named in honor of William F. Durand, presented for notable achievements by a scientific or technical leader whose contributions have led directly to the understanding and application of the science and technology of aeronautics and astronautics for the betterment of mankind. Lunch will be provided to the first 200 guests on a first-come, first-served basis. The lecture will be presented after lunch and is open to all attendees at that time.

Guarding the "High Frontier" and Preserving Its Capability for Commercial Use – What Is Necessary to Assure a Secure Future for Our Nation and a Thriving Space Industry?

Speaker
Douglas L. Loverro
President, Loverro Consulting LLC
and
former Deputy Assistant
Secretary of Defense, Space Policy
U.S. Department of Defense

Monday, 7 January 2019

69-AA-2	Jet Noise I					Balboa C
Chaired by: A. LYRINTZIS, Embry Riddle Aeronautical University						
1400 hrs AIAA-2019-0250 **Subsonic Jet Noise Source Location as a Function of Nozzle Geometry** N. Breen, K. Ahuja, Georgia Institute of Technology, Atlanta, GA	1430 hrs AIAA-2019-0251 **Translating Phased Array Measurements of a low-noise top-mounted propulsion installation for a supersonic airliner** J. Cluts, J. Bridges, G. Podboy, NASA Glenn Research Center, Cleveland, OH	1500 hrs AIAA-2019-0252 **PIV measurements of a low-noise top-mounted propulsion installation for a supersonic airliner** J. Bridges, M. Wernet, NASA Glenn Research Center, Cleveland, OH	1530 hrs AIAA-2019-0253 **Noise measurements of a low-noise top-mounted propulsion installation for a supersonic airliner** J. Bridges, NASA Glenn Research Center, Cleveland, OH	1600 hrs AIAA-2019-0254 **Numerical Investigation of a Shielded Chevron Nozzle** B. Heberling, Vantage Partners, LLC, Cleveland, OH		

Monday, 7 January 2019

70-ACD-2	Aircraft Design and Analysis Methods					Hillcrest B
Chaired by: W. ANEMAAT, DARcorporation and A. CHAPUT, University of Texas at Austin						
1400 hrs AIAA-2019-0255 **Air Vehicle Propeller Data Analysis and Modeling - a Back to Basics Approach** A. Chaput, University of Texas, Austin, Austin, TX	1430 hrs AIAA-2019-0256 **Design Guidelines for High Capacity Innovative Regional Turboprop Aircraft** F. Nicolosi, S. Corcione, V. Trifari, P. Della Vecchia, A. De Marco, University of Naples "Federico II", Naples, Italy	1500 hrs AIAA-2019-0257 **Weight Estimation for Conceptual Design: Refurbishing and Tweaking of Older Methods** K. Amadori, C. Jouannet, Saab Group, Linköping, Sweden; L. Franzén, E. Magnusson, Linköping University, Linköping, Sweden	1530 hrs AIAA-2019-0258 **Refined Tail Sizing Methods for Aircraft Design Tool towards Sustainable and Energy Efficient Aviation** Y. Liu, A. Elham, Technical University of Braunschweig, Braunschweig, Germany	1600 hrs AIAA-2019-0259 **Interference Drag Associated with Engine Locations for Multidisciplinary Design Optimization** N. Blaesser, NASA Langley Research Center, Hampton, VA; J. Schetz, R. Kapania, Virginia Polytechnic Institute and State University, Blacksburg, VA		

Monday, 7 January 2019

71-AFM-3 1400 - 1730 hrs	UAS Handling Qualities Workshop - Identified Dynamics, MTEs, and Requirements	Harbor A

1400 hrs
"Handling Qualities Database Generation with a Fixed-Wing with sUAS"
David Klyde
Systems Technology, Inc.

1420 hrs
"Scaling and Scoring of ADS-33E-PRF Mission Task Elements for Unmanned Aerial Systems"
Dr. Christine Ivler
University of Portland

1440 hrs
"Scalability of ADS-33 MTEs for Multirotor FPV Flight and Helicopter Dynamics Characterization"
Bill Geyer
U.S. Navy Test Pilot School

1500 hrs
"Gust Rejection Performance for UAS of Varying Sizes"
Mark J. S. Lopez
U.S. Army Aviation Development Directorate

1520 hrs
"Progress on an Unmanned Aircraft Handling Qualities Specification"
David G. Mitchell
Mitchell Aerospace Research

1540 hrs
"A Template to Meeting MIL-HDBK-516C Airworthiness Compliance for Section 6.1, Flying Qualities"
Will Thomas
AFLCMC Engineering Directorate

1600 hrs
"A Highly Scalable, Low-Latency, and Deterministic Flight Control System for UAS Estimation and Flight Controls Research"
Brian Taylor
Bolder Flight Systems Co-Founder and CEO & UMN UAS Research Labs, Research Specialist

1620 hrs
"System Identification of an UltraStick 120 UAS"
Chase Schulze
Systems Technology, Inc.

1640 hrs
"Identification and Validation of a Hexacopter UAS Flight Dynamics Model"
Dr. Subodh Bhandari
California State Polytechnic University, Pomona

1700 hrs
Open Discussion Among Attendees

Monday, 7 January 2019

72-AFM-4	Entry Vehicle and Launch Vehicle Flight Mechanics II					Vista A
Chaired by: M. GRANT, Purdue University and F. PRIOLO, Millennium Engineering and Integration Company and S. D'SOUZA, NASA-ARC						
1400 hrs AIAA-2019-0260 **Quasilinear Chebyshev-Picard Iteration Method for Indirect Trajectory Optimization** T. Antony, M. Grant, Purdue University, West Lafayette, IN	1430 hrs AIAA-2019-0261 **Trigonomerization of Optimal Control Problems with Mixed Constraints** K. Mall, M. Grant, Purdue University, West Lafayette, IN	1500 hrs AIAA-2019-0262 **Maximum-Normal-Load Entry Trajectory Optimization for Hypersonic Glide Vehicles** Z. Wang, University of Tennessee, Knoxville, Knoxville, TN	1530 hrs AIAA-2019-0263 **Effect of Maximum Angle of Attack on Path Constraints and Flyability Analysis for Winged Re-entry Vehicles** P. Nair, A. Joshi, Indian Institute of Technology Bombay, Mumbai, India			

Monday, 7 January 2019

73-AFM-15	Aircraft Flight Dynamics I			Vista A
Chaired by: N. FEZANS, DLR - German Aerospace Center and K. SHWEYK, Boeing Engineering Operations & Technology				
1400 hrs **No Presentations**	1600 hrs AIAA-2019-0264 **Analysis of wake surfing benefits using a fast unsteady vortex lattice method** D. Fleischmann, M. Lone, Cranfield University, Cranfield, United Kingdom	1630 hrs AIAA-2019-0265 **Non-elliptic wing lift distribution wings to decrease vertical tailplane size in commercial aircraft** M. Carrizales, M. Lone, E. Bragado Aldana, Cranfield University, Cranfield, United Kingdom	1700 hrs AIAA-2019-0266 **Towards the Unification of Static and Dynamic Soaring** J. Koessler, Bushwhack Design LLC, Tucson, AZ	

Monday, 7 January 2019

74-AMT-4 1400 - 1630 hrs	Special Session: Pressure Sensitive Paint Workshop	Harbor G

The PSP workshop will offer an excellent opportunity for the PSP community to exchange ideas. All PSP users, developers, and customers are encouraged to attend. Three invited speakers will provide insight followed by open discussion.

Speakers:

Sarah Peak
NASA Langley Research Center

Tianshu Liu
Western Michigan University

Yves Le Sant
ONERA

Monday, 7 January 2019

75-AMT-5	Velocimetry I - 3D Techniques					Harbor H
Chaired by: B. THUROW, Auburn University and N. JIANG, Spectral Energies, LLC						
1400 hrs AIAA-2019-0267 **Time-Resolved 3D Flow-Measurement with a Single Plenoptic-Camera** Z. Tan, B. Thurow, Auburn University, Auburn, AL	1430 hrs AIAA-2019-0268 **Refinement and Application of 3D Particle Location from Perspective Shifted Plenoptic Images** E. Hall, Auburn University, Auburn, AL; D. Guildenbecher, Sandia National Laboratories, Albuquerque, NM; B. Thurow, Auburn University, Auburn, AL	1500 hrs AIAA-2019-0269 **High Spatial Resolution 3D Fluid Velocimetry by Tomographic Particle Flow Velocimetry** K. Kumashiro, A. Steinberg, M. Yano, University of Toronto, Toronto, Canada	1530 hrs AIAA-2019-0270 **Evaluation of Wavelet-Based Optical Flow Velocimetry from OH Scalar Fields in Reacting Turbulent Flows** B. Schmidt, Ohio State University, Columbus, OH; C. Towery, P. Hamlington, University of Colorado, Boulder, Boulder, CO; J. Sutton, Ohio State University, Columbus, OH	1600 hrs AIAA-2019-0271 **High-Speed Fragment Tracking with X-ray Radiography** B. Halls, E. Quintana, L. Lebow, D. Guildenbecher, Sandia National Laboratories, Albuquerque, NM	1630 hrs AIAA-2019-0272 **A Comparison of the Sequential Quadratic Programing Algorithm and Extended Kalman Filter Method in the Magnetic Particle Tracking Reconstruction** X. Tao, H. Wu, University of Kansas, Lawrence, Lawrence, KS	1700 hrs AIAA-2019-0273 **A Novel Camera Model for Calibrating Optical Systems Including Cylindrical Windows** T. Astarita, G. Paolillo, University of Naples "Federico II", Naples, Italy

Monday, 7 January 2019						
76-APA-6	**Applied Computational Aerodynamics: Methods and Results II**					**Balboa B**
Chaired by: J. HOWISON and K. BERGERON, US Army NSRDEC						
1400 hrs AIAA-2019-0274 **Establishing Best Practices for X-57 Maxwell CFD Database Generation** J. Duensing, NASA Ames Research Center, Moffett Field, CA; S. Yoo, NASA Armstrong Flight Research Center, Edwards, CA; D. Maldonado, J. Housman, J. Jensen, C. Kiris, NASA Ames Research Center, Moffett Field, CA	1430 hrs AIAA-2019-0275 **A Study of the Fluid-Structure Interaction Response of a Parachute Suspension Line under a Range of Operating Tensions using ICFD and CPFD** C. Barry, B. Olson, University of Massachusetts, Lowell, Lowell, MA; K. Bergeron, Army Research, Development and Engineering Command, Natick, MA; D. Willis, J. Sherwood, University of Massachusetts, Lowell, Lowell, MA	1500 hrs AIAA-2019-0276 **Higher-Order Implicit Large Eddy Simulations of a VFE-2 Delta Wing** T. Dzanic, L. Martinelli, Princeton University, Princeton, NJ	1530 hrs AIAA-2019-0277 **Assessing Turbofan Modeling Approaches in the DLR TAU-Code for Aircraft Aerodynamics Investigations** A. Stuermer, German Aerospace Center (DLR), Braunschweig, Germany	1600 hrs AIAA-2019-0278 **Reduced Domain Method Applied to a Mach 6.9 Circular Arc Airfoil with a Trailing Edge Flap** R. Decker, U.S. Air Force Academy, Colorado Springs, CO; J. Miller, Air Force Research Laboratory, Wright-Patterson AFB, OH		

Monday, 7 January 2019						
77-APA-7	**Special Session: Innovative Control Effectors for Maneuvering of Aircraft II**					**Bayview**
Chaired by: C. WARSOP, BAE Systems . and D. MILLER, Lockheed Martin Aeronautics						
1400 hrs AIAA-2019-0279 **NATO AVT-239 Task Group: Active Flow Control Simulation of the Tailless ICE Aircraft** M. Niestroy, Lockheed Martin Corporation, Fort Worth, TX; D. Williams, Illinois Institute of Technology, Chicago, IL; J. Seidel, U.S. Air Force Academy, Colorado Springs, CO	1430 hrs AIAA-2019-0280 **NATO AVT-239 Task Group: Control effectiveness and system sizing requirements for integration of fluidic flight controls on the SACCON aircraft configuration** C. Hutchin, Defence Science and Technology Laboratory, Fareham, United Kingdom	1500 hrs AIAA-2019-0281 **NATO AVT-239 Task Group: An Assessment on the Prospects of Active Flow Control on a Future UAS** D. Miller, Lockheed Martin Corporation, Palmdale, CA	1530 hrs AIAA-2019-0282 **NATO AVT-239 Task Group: Flight Demonstration of Fluidic Flight Controls on the MAGMA Subscale Demonstrator Aircraft** C. Warsop, BAE Systems, Bristol, United Kingdom; W. Crowther, Manchester University, Manchester, United Kingdom	1600 hrs AIAA-2019-0283 **NATO AVT-239 Task Group: Flight Test of Compressed and Bleed-Air Driven Control Effectors on the ICE/SACCON UAS Subscale Aircraft** S. Brandt, T. McLaughlin, U.S. Air Force Academy, Colorado Springs, CO; D. Williams, Illinois Institute of Technology, Chicago, IL; J. Holmes, B. Crawford, U.S. Air Force Academy, Colorado Springs, CO	1630 hrs AIAA-2019-0284 **NATO AVT-239 Task Group: Innovative Control Effectors for Manoeuvring of Air Vehicles - Conclusions and Next Steps** C. Warsop, BAE Systems, Bristol, United Kingdom; D. Smith, Air Force Office of Scientific Research, Arlington, VA; D. Miller, Lockheed Martin Corporation, Palmdale, CA	1700 hrs **Open Discussion**

Monday, 7 January 2019						
78-APA-8	**Special Session: Simulation of Rotor in Hover I**					**La Jolla A**
Chaired by: N. HARIHARAN, HPCMP CREATE						
1400 hrs Oral Presentation **AIAA Standardized Evaluations of Rotorcraft in Hover: Current State, Challenges and Future Paths** N. Hariharan, CREATE AV Team, Lorton, VA	1430 hrs AIAA-2019-0285 **Computation and Quantification of Uncertainty in Predictions of HVAB Rotor Performance in Hover** R. Singh, E. Corle, Army Research Laboratory, Aberdeen Proving Ground, MD; R. Jain, J. Lim, Army Aviation and Missile Research, Development and Engineering Command, Moffett Field, CA	1500 hrs AIAA-2019-0286 **Turbulent Transition Prediction of PSP Hovering Rotor Using γ-$Re_{\theta t}$-SA with Crossflow Transition Model** B. Lee, Y. Jung, D. Jude, J. Baeder, University of Maryland, College Park, College Park, MD	1530 hrs AIAA-2019-0287 **Numerical Simulations of Various Rotor Designs in Hover and Forward Flight** G. Barakos, T. Fitzgibbon, M. Woodgate, A. Jimenez-Garcia, University of Glasgow, Glasgow, United Kingdom	1600 hrs AIAA-2019-0288 **Computational Assessment of the HVAB Rotor in Hover Using Laminar-Turbulent Transition Modeling** J. Carnes, J. Coder, University of Tennessee, Knoxville, Knoxville, TN	1630 hrs AIAA-2019-0289 **Effects of Anhedral on S-76 Hover Aerodynamics** C. Zhou, L. Sankar, Georgia Institute of Technology, Atlanta, GA; P. Griffin, University of Limerick, Limerick, Ireland	

Monday, 7 January 2019						
79-APA-9	**Special Session: Slotted Natural Laminar Flow Airfoil Development from NASA University Leadership Initiative**					**La Jolla B**
Chaired by: J. CODER, University of Tennessee and P. ANSELL, University of Illinois at Urbana-Champaign						
1400 hrs Oral Presentation **Overview of Slotted, Natural-Laminar-Flow Airfoil Research for Ultra-Efficient Commercial Vehicles** J. Coder, University of Tennessee, Knoxville, Knoxville, TN	1430 hrs AIAA-2019-0290 **High-Lift Simulations of Slotted, Natural-Laminar-Flow Airfoils** H. Ortiz-Melendez, J. Coder, University of Tennessee, Knoxville, Knoxville, TN	1500 hrs AIAA-2019-0291 **High Lift Configuration of a Slotted Natural Laminar Flow Airfoil** D. Twiss, C. Colletti, P. Ansell, University of Illinois, Urbana-Champaign, Urbana, IL	1530 hrs AIAA-2019-0292 **Effect of Geometric Parameters and Flow Conditions on the Frequency of Fluidic Oscillators for Active Flow Control** C. Colletti, V. Awate, P. Ansell, University of Illinois, Urbana-Champaign, Urbana, IL	1600 hrs AIAA-2019-0293 **CFD Analysis of Slotted Natural-Laminar-Flow Concepts for Ultra-Efficient Commercial Aircraft** D. Stefanski, R. Glasby, J. Erwin, J. Coder, University of Tennessee, Knoxville, Knoxville, TN	1630 hrs AIAA-2019-0294 **Discrete Adjoint Formulation for Turbulent Flow Problems with Transition Modelling on Unstructured Meshes** Z. Yang, D. Mavriplis, University of Wyoming, Laramie, Laramie, WY	

Monday, 7 January 2019						
80-APA-10	**Supersonic and Hypersonic Aerodynamics**					**Hillcrest D**
Chaired by: K. VANDEN, USAF and K. GERZINA, Northrop Grumman						
1400 hrs AIAA-2019-0295 **Numerical Prediction of Interference Drag of a Strut-Surface Intersection in Supersonic Flow** N. Hari, J. Schetz, R. Kapania, Virginia Polytechnic Institute and State University, Blacksburg, VA	1430 hrs AIAA-2019-0296 **The impact of roughness size on the shock-wave boundary-layer interaction on aero-engine intakes at incidence.** C. Coles, H. Babinsky, University of Cambridge, Cambridge, United Kingdom	1500 hrs AIAA-2019-0297 **Unstart Control in Scramjet Engines** M. Varshney, M. Baig, Aligarh Muslim University, Aligarh, India	1530 hrs AIAA-2019-0298 **Sonic Boom Assessment in Primary Boom Carpet of Low-Boom Supersonic Airplane (NASA C25D)** H. Ishikawa, ASIRI Corporation, Tokyo, Japan; Y. Makino, A. Ueno, M. Kanamori, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan	1600 hrs AIAA-2019-0299 **Side Force Characteristics of Supersonic Flight Vehicle Equipped with Asymmetric Protuberance** T. Harada, K. Kawauchi, K. Kitamura, Yokohama National University, Yokohama, Japan; S. Nonaka, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan		

Monday, 7 January 2019						
81-APA-11	**Unsteady Aerodynamics I**					**Hillcrest C**
Chaired by: K. MULLENERS, EPFL and C. KANG, University of Alabama in Huntsville						
1400 hrs AIAA-2019-0300 **Similitude between 3D cellular patterns in transonic buffet and subsonic stall** F. Plante, J. Dandois, ONERA, Meudon, France; E. Laurendeau, Polytechnique Montréal, Montréal, Canada	1430 hrs AIAA-2019-0301 **Effects of Compressibility on Dynamic-Stall Onset Using Large-Eddy Simulation** S. Benton, M. Visbal, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs AIAA-2019-0302 **Transition regime and its effects on the unsteady aerodynamic characteristics of a pitching airfoil** A. Rezaei, H. Taha, University of California, Irvine, Irvine, CA	1530 hrs AIAA-2019-0303 **Aerodynamic Response of a NACA-0012 Airfoil Undergoing Non-Sinusoidal Pitching Waveforms** H. Shehata, Virginia Polytechnic Institute and State University, Blacksburg, VA; M. Zakaria, Military Technical College, Cairo, Egypt; M. Hajj, Stevens Institute of Technology, Hoboken, NJ; C. Woolsey, Virginia Polytechnic Institute and State University, Blacksburg, VA	1600 hrs AIAA-2019-0304 **Reynolds Scaling Effects on Dynamic Stall of VR-7 and VR-12 Airfoils** W. Zhu, J. Bons, J. Gregory, Ohio State University, Columbus, OH		

Monday, 7 January 2019						
82-APA-12/FD-10/PDL-5	**Plasma Flow Control III**					**Old Town B**
Chaired by: J. LITTLE, The University of Arizona and D. INGRAHAM, NASA Glenn Research Center						
1400 hrs AIAA-2019-0305 **A Plasma-actuated Lift Enhancement of a Plunging Airfoil: a Computational Study** S. Jakirlic, Technical University of Darmstadt, Darmstadt, Germany	1430 hrs AIAA-2019-0306 **Unsteady Flow Characteristics of a Double-side Sliding Pulsed Discharge Plasma Actuation** B. Zheng, C. Ge, X. Ke, Xi'an University of Technology, Xi'an, China; M. Xue, Y. Wang, Northwestern Polytechnical University, Xi'an, China	1500 hrs AIAA-2019-0307 **Parametric study of burst mode on vortex structure induced by DBD plasma actuator** M. Xue, C. Gao, Northwestern Polytechnical University, Xi'an, China; F. Liu, S. Luo, University of California, Irvine, Irvine, CA	1530 hrs AIAA-2019-0308 **Simulations of Compressible Channel Flow with Pulsed-DC Plasma Actuation for Drag Reduction** C. Nelson, A. Cain, Innovative Technology Applications Company, LLC, Chesterfield, MO; F. Hussain, Texas Tech University, Lubbock, TX	1600 hrs AIAA-2019-0309 **Viscous Drag Reduction in Adverse Pressure Gradient Boundary Layers** K. Disser, T. Corke, F. Thomas, A. Duong, S. Midya, University of Notre Dame, Notre Dame, IN		

Monday, 7 January 2019

83-ASE-2	Spacecraft in Orbit					Mt. Whitney
Chaired by: E. BERING, University of Houston and M. MANDELL						
1400 hrs AIAA-2019-0310 **Electrostatic Actuation within Expanded Low Earth Orbit Plasma Wakes: Experiments and Analysis** J. Maxwell, H. Schaub, University of Colorado, Boulder, Boulder, CO	1430 hrs AIAA-2019-0311 **Remote Sensing of Spacecraft Potential at Geosynchronous Orbit using Secondary and Photo Electrons** M. Bengtson, H. Schaub, University of Colorado, Boulder, Boulder, CO	1500 hrs AIAA-2019-0312 ***Nascap-2k* Modeling of Electron and Ion Fluxes to DSX/LEESA During VLF Transmission** M. Mandell, V. Davis, Leidos, San Diego, CA; J. McCollough, W. Johnston, D. Cooke, D. Ferguson, Air Force Research Laboratory, Kirtland AFB, NM	1530 hrs AIAA-2019-0313 **Rocket Studies of the X-ray Flux in the High Latitude Mesosphere and Stratosphere** E. Bering, University of Houston, Houston, TX; J. Roeder, The Aerospace Corporation, El Segundo, CA			

Monday, 7 January 2019

84-DE-2	Topics in Design Engineering - Applications					Pier
Chaired by: N. HINES, The Boeing Company and K. BENSON, Raytheon Missile Systems						
1400 hrs AIAA-2019-0314 **Additive Manufacturing: Designing to Withstand Space Launch** T. Shelton, C. Hartsfield, G. Cobb, Air Force Institute of Technology, Wright-Patterson AFB, OH	1430 hrs AIAA-2019-0315 **An Integrated Model Based Development to Robotic Motion Flight Simulator** M. Alves, E. da Silva, Embraer, São José dos Campos, Brazil; L. Trabasso, E. Villani, W. Rodrigues de Oliveira, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil	1500 hrs AIAA-2019-0316 **Design of an Intelligent Self-Aware Solar-Powered Unmanned Aerial Vehicle: Conventional and Unconventional Design Approaches** S. Arumbakkam, K. Brassard, P. Casey, L. Fahey, D. Hoddinott, T. Khan, Rensselaer Polytechnic Institute, Troy, NY; et al.				

Monday, 7 January 2019

85-F360-2 1400 - 1600 hrs	Forum 360: On-Demand Metal Manufacturing	Seaport F

Moderator: Mary "Niki" Werkheiser, Manager, NASA In-space Manufacturing, NASA Marshall Space Flight Center

Panelists:

Mohammad Ehteshami
CEO
GE Additive (ret.)

Branden Kappes
Operations Director, Alliance for the Development of Additive Processing Technologies (ADAPT)
Colorado School of Mines

Nicholas Mulé
Program Manager, Advanced Programs
Additive Manufacturing
Aerojet Rocketdyne

Randall "Ty" Pollak
Director, Research & Development
Universal Technology Corporation

David Waller
Principal Engineer
Ball Aerospace

Monday, 7 January 2019

86-FD-11	Modeling of Turbulence					Gaslamp D
Chaired by: N. BISEK, Air Force Reseach Laboratory and N. GEORGIADIS, NASA Glenn Research Center						
1400 hrs AIAA-2019-0317 **Recommendations for Future Efforts in RANS Modeling and Simulation** R. Bush, Pratt & Whitney, East Hartford, CT; T. Chyczewski, Northrop Grumman Corporation, Melbourne, FL; K. Duraisamy, University of Michigan, Ann Arbor, Ann Arbor, MI; B. Eisfeld, German Aerospace Center (DLR), Braunschweig, Germany; C. Rumsey, NASA Langley Research Center, Hampton, VA; B. Smith, Lockheed Martin Corporation, Fort Worth, TX	1430 hrs AIAA-2019-0318 **Hybrid RANS-LES Techniques for Compressible Flows: A Comparative Study** J. Edwards, North Carolina State University, Raleigh, NC	1500 hrs Oral Presentation **Optimization of the Control Forced Concurrent Precursor Method** J. Haywood, A. Sescu, Mississippi State University, Mississippi State, MS	1530 hrs AIAA-2019-0319 **A Novel Numerical Method for LES of High-enthalpy Turbulent Flows** R. George, Defence Research & Development Organisation, Hyderabad, India; S. Ghosh, Indian Institute of Technology Madras, Chennai, India	1600 hrs Oral Presentation **Compressible flows around fractal structures: an inceptive LES investigation** O. Es-Sahli, A. Sescu, Mississippi State University, Starkville, MS; M. Afsar, University of Strathclyde, Glasgow, United Kingdom; O. Buxton, Imperial College London, London, United Kingdom	1630 hrs AIAA-2019-0320 **Analysis of Coherent Structures in Large-Eddy Simulations of a NACA0012 Airfoil** T. Rodarte Ricciardi, J. Ribeiro, W. Wolf, University of Campinas, Campinas, Brazil	

Monday, 7 January 2019						
87-FD-12	**Shear Flows: Jets**					**Gaslamp C**
Chaired by: M. MUNSON, U.S. Army Research Office and D. CUPPOLETTI, Air Force Research Laboratory						
1400 hrs AIAA-2019-0321 **Exploration of Asymmetric Forcing on Mixing and Structural Characteristics for Transverse Jets** A. Besnard, T. Shoji, S. Schein, E. Harris, A. Karagozian, University of California, Los Angeles, Los Angeles, CA	1430 hrs AIAA-2019-0322 **Comparison of Time-Averaged Supersonic Jet Profile Acquired by Particle Image Velocimetry and Shadowgraph Velocimetry Using Single Pixel Ensemble Correlation** Y. Ozawa, T. Nonomura, K. Asai, Tohoku University, Sendai, Japan	1500 hrs AIAA-2019-0323 **Coherent Feature Extraction in Turbulent Buoyant Jets Using Modal Decompositions** M. Meehan, J. Christopher, C. Lapointe, P. Hamlington, University of Colorado, Boulder, Boulder, CO	1530 hrs AIAA-2019-0324 **Stochastic Estimation Using Modern Methods in Machine Learning** A. Tenney, M. Glauser, Syracuse University, Syracuse, NY; Z. Berger, Pennsylvania State University, State College, PA	1600 hrs AIAA-2019-0325 **Improvements to an Explicit Algebraic Stress Model for Turbulent Jet Mixing Predictions** N. Georgiadis, D. Yoder, NASA Glenn Research Center, Cleveland, OH		

Monday, 7 January 2019						
88-FD-13	**Hybrid RANS/LES II**					**Gaslamp B**
Chaired by: T. GALLAGHER, Innovative Scientific Solutions, Inc. and S. HEINZ, University of Wyoming						
1400 hrs AIAA-2019-0326 **Flow and Noise Predictions Around Tandem Cylinders using DDES approach with SU2** E. Molina, Stanford University, Stanford, CA; B. Zhou, Technical University of Kaiserslautern, Kaiserslautern, Germany; J. Alonso, Stanford University, Stanford, CA; M. Righi, Zürich University of Applied Sciences, Winterthur, Switzerland; R. Silva, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil	1430 hrs AIAA-2019-0327 **Physics-Based Control of Hybrid RANS-LES Methods** S. Heinz, R. Mokhtarpoor, M. Stoellinger, University of Wyoming, Laramie, Laramie, WY	1500 hrs AIAA-2019-0328 **Computations of Swept Wing Icing Aerodynamics** S. Stebbins, E. Loth, C. Qin, University of Virginia, Charlottesville, Charlottesville, VA	1530 hrs AIAA-2019-0329 **Scale-Adaptive Simulations of Unsteady Flow around NACA0021 Airfoil at 60° angle of attack** Y. Wang, K. Liu, W. Song, Z. Han, Northwestern Polytechnical University, Xi'an, China	1600 hrs AIAA-2019-0330 **Turbulence Scales Adapted Formulation of the k-ε Model** V. Przulj, E. Shapiro, Ricardo Software, Shoreham-by-Sea, United Kingdom; U. Quadri, University of Cambridge, Cambridge, United Kingdom	1630 hrs AIAA-2019-0331 **Scale-resolving Simulations of the Streamwise Vortex Downstream of a Delta Wing** S. Probst, T. Knopp, D. Francois, C. Grabe, German Aerospace Center (DLR), Göttingen, Germany; T. Landa, R. Radespiel, Technical University of Braunschweig, Braunschweig, Germany	

Monday, 7 January 2019						
89-FD-14	**Stability and Transition of Low-Speed Flows**					**Harbor B**
Chaired by: R. KUMAR, Florida State University and S. SILTON, US Army Research Laboratory						
1400 hrs AIAA-2019-0332 **Growth of Unsteady Disturbances over Two-Dimensional Surface Roughness in a Flat Plate Boundary Layer** M. Kuester, L. Massa, Virginia Polytechnic Institute and State University, Blacksburg, VA	1430 hrs AIAA-2019-0333 **Modification of Wray-Agarwal Transition Model for Computing Rough Wall Flows** S. Shuai, R. Agarwal, Washington University in St. Louis, St. Louis, MO	1500 hrs AIAA-2019-0334 **Stabilization of a Swept-Wing Boundary Layer by Discrete Roughness Elements at High Reynolds Numbers** G. Nicholson, L. Duan, Missouri University of Science and Technology, Rolla, MO; M. Malik, F. Li, NASA Langley Research Center, Hampton, VA				

Monday, 7 January 2019						
90-FD-15	**Multiphase Flows I**					**Old Town A**
Chaired by: M. BELISLE, Northrop Grumman Corporation and J. CHEN, University at Buffalo						
1400 hrs AIAA-2019-0335 **Exploration of Near-Field Cross-Sectional Structures of Aerated-Liquid Jets Using Confocal X-Ray Fluorescence** K. Lin, Taitech, Inc., Beavercreek, OH; A. Kastengren, Argonne National Laboratory, Argonne, IL; C. Carter, J. Donbar, Air Force Research Laboratory, Wright-Patterson AFB, OH	1430 hrs AIAA-2019-0336 **Confocal X-Ray Fluorescence for the Exploration of Near-Field Structures of Aerated-Liquid Jets in Subsonic Crossflows** K. Lin, Taitech, Inc., Beavercreek, OH; A. Kastengren, Argonne National Laboratory, Argonne, IL; J. Donbar, C. Carter, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs AIAA-2019-0337 **Numerical Simulation of Aerated-Liquid Jets in Subsonic Crossflows** B. Bornhoft, Air Force Research Laboratory, Wright-Patterson AFB, OH; K. Lin, Taitech, Inc., Beavercreek, OH; R. Chamberlain, Tetra Research Corporation, Milwaukee, WI; E. Luke, Mississippi State University, Mississippi State, MS	1530 hrs AIAA-2019-0338 **Numerical Investigation of Nozzle Deformities in Aerated-Liquid Injectors** B. Bornhoft, Air Force Research Laboratory, Wright-Patterson AFB, OH; J. Edwards, North Carolina State University, Raleigh, NC; K. Lin, Taitech, Inc., Beavercreek, OH			

Monday, 7 January 2019						
91-FD-16	**Shock Boundary Layer Interaction II**					**Gaslamp A**
Chaired by: J. VASILE, U. S. Army Research Laboratory (APG) and L. DUAN, Missouri University of Science and Technology						
1400 hrs AIAA-2019-0339 **Heat transfer prediction in shock-turbulent boundary layer interaction at flight enthalpy** S. Roy, B. Saikia, K. Sinha, Indian Institute of Technology Bombay, Mumbai, India	1430 hrs AIAA-2019-0340 **Experimental Study of Swept Impinging Oblique Shock Boundary Layer Interaction** S. Padmanabhan, J. Castro Maldonado, J. Threadgill, J. Little, University of Arizona, Tucson, Tucson, AZ	1500 hrs AIAA-2019-0341 **Experimental 3D mapping of Reflected Shock - Boundary Layer Interaction Unsteadiness** P. Rabey, P. Bruce, Imperial College London, London, United Kingdom	1530 hrs AIAA-2019-0342 **Study of Shock Wave Boundary Layer Interactions on an Axisymmetric Body** F. Mason, R. Kumar, Florida A&M University-Florida State University, Tallahassee, FL	1600 hrs AIAA-2019-0343 **Transitional Shock Wave Boundary Layer Interactions on a Compression Ramp at Mach 4** J. Threadgill, J. Little, University of Arizona, Tucson, Tucson, AZ; S. Wernz, Raytheon Missile Systems, Tucson, AZ	1630 hrs AIAA-2019-0344 **Analysis of Shock-Wave/Boundary-Layer Interaction Experiments at Mach 1.8 and Mach 4.2** C. Combs, University of Texas, San Antonio, San Antonio, TX; J. Schmisseur, University of Tennessee, Tullahoma, Tullahoma, TN; B. Bathel, S. Jones, NASA Langley Research Center, Hampton, VA	

Monday, 7 January 2019						
92-FD-17	**Special Session: Unsteady Aerodynamics - Surging and Surging/Pitching II**					**Cityview B**
Chaired by: J. GREGORY, The Ohio State University and O. SAHNI, Rensselaer Polytechnic Institute						
1400 hrs Oral Presentation **Analytical and Experimental study of Transition and Separation on an Airfoil in Longitudinal Gust** K. Ramesh, University of Glasgow, Glasgow, United Kingdom; K. Granlund, North Carolina State University, Raleigh, NC	1430 hrs AIAA-2019-0345 **Vorticity Transport in the Reverse Flow Region of a Rotor at High Advance Ratio** L. Smith, Y. Jung, J. Baeder, A. Jones, University of Maryland, College Park, College Park, MD	1500 hrs AIAA-2019-0346 **Unsteady DMD-Based Flow Field Estimation From Embedded Pressure Sensors in an Actuated Airfoil** D. Gomez, University of Maryland, College Park, College Park, MD; F. Lagor, University at Buffalo, Buffalo, NY; P. Kirk, A. Lind, A. Jones, D. Paley, University of Maryland, College Park, College Park, MD	1530 hrs Oral Presentation **The Interaction Between Added-Mass Effects and Vorticity** S. Corkery, H. Babinsky, University of Cambridge, Cambridge, United Kingdom	1600 hrs AIAA-2019-0347 **Linking the Unsteady Force Generation to Vorticity for a Translating and Rotating Cylinder** P. Gehlert, H. Babinsky, University of Cambridge, Cambridge, United Kingdom	1630 hrs AIAA-2019-0348 **The Vortex Formation of an Unsteady Translating Plate with a Rotating Tip** J. Chowdhury, L. Cook, M. Ringuette, State University of New York, Buffalo, NY	

Monday, 7 January 2019						
93-FD-18	**CFD Solver Techniques II**					**Promenade A**
Chaired by: D. GONZALEZ, Naval Surface Warfare Center and M. GALBRAITH, Massachusetts Institute of Technology and J. GREGORY, The Ohio State University						
1400 hrs AIAA-2019-0349 **A goal oriented hp-optimization technique for tetrahedral grids using a continuous-mesh model** A. Rangarajan, A. Chakraborthy, G. May, RWTH Aachen University, Aachen, Germany	1430 hrs AIAA-2019-0350 **Edge-based Finite Element Formulation of Hypersonic Flows Under an External Magnetic Field** W. Zhang, W. Habashi, McGill University, Montréal, Canada; N. Ben Salah, University of Tunis, Tunis, Tunisia; D. Isola, G. Baruzzi, ANSYS, Inc., Montréal, Canada	1500 hrs AIAA-2019-0351 **An Adjoint Method using Fully Implicit Runge-Kutta Schemes for Optimization of Flow Problems** M. Franco, P. Persson, University of California, Berkeley, Berkeley, CA; W. Pazner, Lawrence Livermore National Laboratory, Livermore, CA; M. Zahr, University of Notre Dame, Notre Dame, IN	1530 hrs AIAA-2019-0352 **Implementation and Performance of Aggregation-based AMG Solver for Computational Fluid Dynamics Applications** C. Burns, M. Raju, Convergent Science, Inc., Madison, WI			

Monday, 7 January 2019						
94-GNC-5	**Aircraft Guidance**					**Skyline**
Chaired by: U. SHANKAR, The Johns Hopkins University Applied Physics Laboratory and M. MAGILL, Sandia National Laboratories						
1400 hrs AIAA-2019-0353 **Merging Optimization Method with Runway Allocation Optimization maximizing Runway Capacity** D. Toratani, Electronic Navigation Research Institute, Chofu, Japan	1430 hrs AIAA-2019-0354 **Performance Optimization and Guidance of a Low-Altitude Skid-to-Turn Vehicle. Part I: Performance Optimization** M. Dennis, A. Rao, University of Florida, Gainesville, Gainesville, FL	1500 hrs AIAA-2019-0355 **Performance Optimization and Guidance of a Low-Altitude Skid-to-Turn Vehicle. Part II: Optimal Guidance** M. Dennis, A. Rao, University of Florida, Gainesville, Gainesville, FL	1530 hrs AIAA-2019-0356 **Cooperative Guidance Strategies for Aircraft Defense with Impact Angle Constraints** A. Saurav, S. Kumar, A. Maity, Indian Institute of Technology Bombay, Mumbai, India	1600 hrs AIAA-2019-0357 **Fast Three-Dimensional Path Planning with Obstacle Avoidance Constraints** H. Jiang, X. Liu, Beijing Institute of Technology, Beijing, China	1630 hrs AIAA-2019-0358 **Optimal Landing Guidance for a Fixed-Wing UAV Based on Dynamic Window Approach** S. Ishioka, K. Uchiyama, K. Masuda, Nihon University, Funabashi, Japan	1700 hrs AIAA-2019-0359 **Formal Evaluation of an Advanced Helo Display for Zero-Zero Shipboard Landings** A. Lampton, J. Gray, D. Klyde, P. Thompson, Systems Technology, Inc., Hawthorne, CA

Monday, 7 January 2019						
95-GNC-6	**Aircraft Navigation, Estimation, and Testing**					**Cuyamuca Peak**
Chaired by: B. GRUENWALD						
1400 hrs AIAA-2019-0360 **A GNSS/IMU-Based 5-Hole Pitot Tube Calibration Algorithm** K. Sun, C. Regan, D. Gebre-egziabher, University of Minnesota, Twin Cities, Minneapolis, MN	1430 hrs AIAA-2019-0361 **GNSS/INS Integrity Monitoring Considering Nominal Bias for Civil Aircraft CAT-I Approach** W. Pan, X. Zhan, X. Zhang, B. Liu, Shanghai Jiao Tong University, Shanghai, China	1500 hrs AIAA-2019-0362 **Parametric Real-Time Navigation En-Route** J. Kirk, S. Balasekar, S. Tarazi, M. Hassan, M. Kirby, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1530 hrs AIAA-2019-0363 **Kalman Filter-Based Reliable GNSS Positioning for Aircraft Navigation** S. Bhattacharyya, D. Mute, Indian Institute of Technology Kharagpur, Kharagpur, India; D. Gebre-egziabher, University of Minnesota, Twin Cities, Minneapolis, MN	1600 hrs AIAA-2019-0364 **Test Methods Used to Quantify Flight Control Inceptor Selection for a Business Jet Aircraft** S. Taylor, Gulfstream Aerospace Corporation, Savannah, GA; G. Essenberg, Garmin International, Olathe, KS; T. Horne, F. Hugon, Gulfstream Aerospace Corporation, Savannah, GA	1630 hrs AIAA-2019-0365 **Design and Flight Test of a Stability Augmentation System for a Flexible Aircraft** G. Barbosa, R. Bertolin, J. Paulino, F. Silvestre, A. Guimarães Neto, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil	

Monday, 7 January 2019						
96-GNC-7	**Flight Envelope Protection and Simulation**					**Cowles Mountain**
Chaired by: J. STECK, Wichita State University and M. RAFI, Wichita State University						
1400 hrs AIAA-2019-0366 **From Automation to Autonomy – Envelope Protection Functions in a manned Fighter Aircraft** M. Dinkelmann, C. Pauser, M. Hanel, R. Stich, Airbus, Manching, Germany	1430 hrs AIAA-2019-0367 **Evaluation of a Haptic Feedback System for Flight Envelope Protection** D. Van Baelen, J. Ellerbroek, M. van Paassen, M. Mulder, Delft University of Technology, Delft, The Netherlands	1500 hrs AIAA-2019-0368 **Real-time Adaptive Prediction of Loss-of-Control Margins on a Fourth Order Aircraft** M. Rafi, J. Steck, Wichita State University, Wichita, KS; A. Chakravarthy, University of Texas, Arlington, Arlington, TX	1530 hrs AIAA-2019-0369 **Simulated Flight Testing of an Adaptive Loss-of-Control Avoidance Pilot Advisory Display** M. Rafi, K. Rajaram, M. Moustafa, D. bin Salmaan Hussain, K. Morales, J. Steck, Wichita State University, Wichita, KS; et al.	1600 hrs AIAA-2019-0370 **Simulator Evaluation of a Medium-Cost Variable Stability System for a Business Jet** A. Mirza, M. van Paassen, T. Mulder, M. Mulder, Delft University of Technology, Delft, The Netherlands	1630 hrs AIAA-2019-0371 **Parameter Envelope for Safe Emergency Landing Using Pareto Optimal Control** B. Grüter, F. Sevilla, J. Diepolder, F. Holzapfel, Technical University of Munich, Garching, Germany	

Monday, 7 January 2019						
97-GNC-8	**Navigation, Estimation, and Tracking I**					**Twin Peaks**
Chaired by: M. KUMAR, Ohio State University						
1400 hrs AIAA-2019-0372 **Trade Studies on Implementation of Extended Kalman Filters for sUAS Navigation** T. Nakamura, E. Johnson, Georgia Institute of Technology, Atlanta, GA	1430 hrs AIAA-2019-0373 **Robust Wind Estimation for Fixed Wing UAVs in Surveying Applications** S. Verling, R. Siegwart, Swiss Federal Institute of Technology, Zürich, Switzerland	1500 hrs AIAA-2019-0374 **Ultrasonic Localization of a Quadrotor using a Portable Beacon** J. O'Keefe, J. Etele, Carleton University, Ottawa, Canada	1530 hrs AIAA-2019-0375 **Estimating Attitude from Signal-to-Noise Ratio at Multiple Ground-Based Receivers** A. Pimienta-Penalver, J. Crassidis, State University of New York, Amherst, NY	1600 hrs AIAA-2019-0376 **Data Association via Tensor Compression with Application to GEO Multi-Target Tracking** S. Krishnaswamy, M. Kumar, Ohio State University, Columbus, OH	1630 hrs AIAA-2019-0377 **Attitude Observability from Polarized Light Curves** A. Dianetti, J. Crassidis, State University of New York, Amherst, NY	

Monday, 7 January 2019						
98-HIS-2	**Apollo 50th Anniversary**					**Marina Room**
Chaired by: G. FOGEL, Natural Selection, Inc.						
1400 hrs AIAA-2019-0378 **Space and Theology: Apollo - The End before the End** B. Davis, Davis Group, Columbia, MD	1430 hrs AIAA-2019-0379 **The Road to the Moon Went Through Western New York** W. Gordon, Moog, Inc., East Aurora, NY	1500 hrs Oral Presentation **Neil Armstrong, Experimental Test Pilot 1955-1962** C. Martin, Self, Tehachapi, CA; J. Hansen, Auburn University, Auburn, AL	1530 hrs **Panel Discussion**			

Monday, 7 January 2019						
99-ICC-1/SEN-1	**Autonomy and Collaboration**					**Highland Peak**
Chaired by: E. DE LELLIS, CIRA - Centro Italiano Ricerche Aerospaziali and M. SOTAK, Kratos Defense						
1400 hrs AIAA-2019-0380 **Autonomy and Collaboration in a Network of Layered Sensors** T. Frey, Lockheed Martin Corporation, Fort Worth, TX	1430 hrs AIAA-2019-0381 **Enabling Autonomy in Command and Control via Game-Theoretic Models and Machine Learning with a Systems Perspective** A. Raz, Purdue University, West Lafayette, IN; E. Blasch, Air Force Office of Scientific Research, Arlington, VA; R. Cruise, Naval Surface Warfare Center, Crane, IN; S. Natarajan, University of Texas, Dallas, Dallas, TX	1500 hrs AIAA-2019-0382 **Stigmergic Collaboration in a Network of Angle-Only Sensors** D. Faulk, T. Frey, Lockheed Martin Corporation, Fort Worth, TX	1530 hrs AIAA-2019-0383 **LAUD: Low-cost on-board Acoustic Understanding utilizing aerial Data ferrying** A. Mayalu, Z. Standridge, A. Wagner, J. Bird, K. Kochersberger, Virginia Polytechnic Institute and State University, Blacksburg, VA	1600 hrs AIAA-2019-0384 **Sensor Fusion Tools in Support of Autonomous Systems** E. Kivelevitch, G. Dionne, T. Roose, P. Arora, B. Fanous, R. Salvo, MathWorks, Natick, MA; et al.		

Monday, 7 January 2019						
100-IS-4	**Multi-Agent Coordination and Control (Invited)**					**Seaport H**
Chaired by: R. SHARMA, University of Cincinnati and D. CASBEER, Air Force Reseach Laboratory						
1400 hrs AIAA-2019-0385 **Cooperative Pursuit using Collision Cones (Invited)** A. Chakravarthy, University of Texas, Arlington, Arlington, TX; D. Ghose, Indian Institute of Science, Bengaluru, India	1430 hrs AIAA-2019-0386 **Sequential Auto-Landing of Multiple UAVs using Control Constrained Path Following (Invited)** J. Patrikar, Indian Institute of Technology Kanpur, Kanpur, India; V. Makkapati, Georgia Institute of Technology, Atlanta, GA; M. Kothari, Indian Institute of Technology Kanpur, Kanpur, India	1500 hrs AIAA-2019-0387 **Multiple Target Tracking Via Dynamic Point Clustering on a UAV Platform (Invited)** S. Holsinger, R. Sharma, University of Cincinnati, Cincinnati, OH	1530 hrs AIAA-2019-0388 **Coordinating Defender Path Planning for Optimal Target-Attacker-Defender Game (Invited)** S. Manyam, Infoscitex Corporation, Dayton, OH; D. Casbeer, A. Von Moll, E. Garcia, S. Rasmussen, Air Force Research Laboratory, Wright-Patterson AFB, OH	1600 hrs AIAA-2019-0389 **Landmark Placement Algorithms for Multi-vehicle Path Planning with Localization Constraints (Invited)** B. Wang, S. Rathinam, Texas A&M University, College Station, TX; R. Sharma, University of Cincinnati, Cincinnati, OH	1630 hrs AIAA-2019-0390 **Analysis of Range-based Agent Motion Patterns (Invited)** P. Anjaly , A. Ratnoo, Indian Institute of Science, Bengaluru, India	1700 hrs AIAA-2019-0391 **Improvement of Flocking Behavior Using the Inactivity of Multiple Agents (Invited)** Y. Song, Ulsan National Institute of Science and Technology (UNIST), Ulsan, South Korea

Monday, 7 January 2019						
101-IS-5	**Information-Driven Decision and Control (Invited)**					**Solana Beach B**
Chaired by: H. CHOI, Korea Advanced Institute of Science & Technology and J. WILHELM, Ohio University						
1400 hrs AIAA-2019-0392 **A Dynamic Risk Form of Entropic Value at Risk (Invited)** A. Axelrod, G. Chowdhary, University of Illinois, Urbana-Champaign, Urbana, IL	1430 hrs AIAA-2019-0393 **Informative Path Planning for Efficient Scalar Field Reconstruction (Invited)** T. Jonsson, J. Wang, J. Kim, Korea Advanced Institute of Science and Technology, Daejeon, South Korea	1500 hrs AIAA-2019-0394 **Particle Methods for Integrated Sensor Fusion and Cooperative Planning for Tracking Emitters using Airborne Directional Sensors (Invited)** S. Moon, E. Frew, R. Rajasekaran, K. Glasheen, N. Ahmed, University of Colorado, Boulder, Boulder, CO	1530 hrs AIAA-2019-0395 **Riding an Uncertain Wind Field: Receding Horizon Tree Search Planning with Opportunistic Sampling for an Autonomous Weather Balloon (Invited)** R. Born, M. Schwager, Stanford University, Stanford, CA	1600 hrs AIAA-2019-0396 **Self-Learning Exploration and Mapping for Mobile Robots via Deep Reinforcement Learning (Invited)** F. Chen, S. Bai, T. Shan, B. Englot, Stevens Institute of Technology, Hoboken, NJ	1630 hrs AIAA-2019-0397 **Information-Driven Autonomous Search and Source Reconstruction Using Cooperative Mobile Sensors (Invited)** M. Park, H. Oh, Ulsan National Institute of Science and Technology (UNIST), Ulsan, South Korea	1700 hrs AIAA-2019-0398 **A Bayesian Approach to Learning and Planning for Partially Observable Dynamical Systems (Invited)** S. Park, Y. Park, H. Choi, Korea Advanced Institute of Science and Technology, Daejeon, South Korea

Monday, 7 January 2019						
102-IS-6	**Learning, Reasoning, and Data Driven Systems II**					**Solana Beach A**
Chaired by: A. YUCEL, Lockheed Martin Aeronautics and Y. WAN, University of North Texas						
1400 hrs AIAA-2019-0399 **Design and Implementation of Intelligent Decision-Making Algorithms for Unmanned Aerial Vehicles Mission Protection** K. Rivera Lopez, H. Moncayo, J. Verberne, D. Festa, Embry-Riddle Aeronautical University, Daytona Beach, FL	1430 hrs AIAA-2019-0400 **Too Fast, Too Low, and Too Close: Improved Real Time Safety Assurance of the National Airspace Using Long Short Term Memory** J. Gluck, A. Tyagi, A. Grushin, D. Miller, S. Voronin, J. Nanda, Intelligent Automation, Inc., Rockville, MD; et al.	1500 hrs AIAA-2019-0401 **Damage Precursor Identification in Composite Laminates using Data Driven Approach** M. Elenchezhian, V. Vadlamudi, University of Texas, Arlington, Arlington, TX; R. Md Raihan, K. Reifsnider, University of Texas, Arlington Research Institute, Fort worth, TX	1530 hrs AIAA-2019-0402 **From Design Assistants to Design Peers: Turning Daphne into an AI Companion for Mission Designers** A. Viros Martin, D. Selva, Texas A&M University, College Station, TX	1600 hrs AIAA-2019-0403 **Dimensionality Reduction in a Data-Driven Model for Airline Disruption Management** K. Ogunsina, N. Davendralingam, I. Bilionis, D. DeLaurentis, Purdue University, West Lafayette, IN	1630 hrs AIAA-2019-0404 **Loads Alleviation on an Airfoil via Reinforcement Learning** E. Hufstedler, P. Chatelain, Catholic University of Leuven, Leuven, Belgium	

Monday, 7 January 2019						
103-MAT-2	**Materials and Design for Additive Manufacturing**					**Mission Beach B**
Chaired by: S. WANTHAL, Boeing Research & Technology and J. KOO, The University of Texas at Austin						
1400 hrs AIAA-2019-0405 **Print Parameter Effects on the Fracture Properties of Fiber Reinforced ABS Composites Fabricated Through Fused Deposition Modeling** W. Ferrell, S. TerMaath, University of Tennessee, Knoxville, Knoxville, TN	1430 hrs AIAA-2019-0406 **Development of Multifunctional CNTs Reinforced PEI Filaments for Fused Deposition Modeling** O. Kaynan, A. Yildiz, Y. Bozkurt, Istanbul Technical University, Istanbul, Turkey; E. Ozden Yenigun, Royal Collage of Art, London, United Kingdom; H. Cebeci, Istanbul Technical University, Istanbul, Turkey	1500 hrs AIAA-2019-0407 **Effects of fiber surface treatment and nozzle geometry in structural properties of additively manufactured two-phase composites** E. Papon, A. Haque, University of Alabama, Tuscaloosa, Tuscaloosa, AL; S. Spear, Alabama Innovation and Mentoring of Entrepreneurs Center, Tuscaloosa, AL	1530 hrs AIAA-2019-0408 **Additive Manufacturing of Carbon Fiber Reinforced Silicon Carbide Solid Rocket Nozzles** M. McClain, I. Gunduz, S. Son, Purdue University, West Lafayette, IN	1600 hrs AIAA-2019-0409 **Feasibility Study of Additively Manufactured Al-6061 RAM2 Parts for Aerospace Applications** D. Waller, Ball Corporation, Broomfield, CO; A. Polizzi, J. Iten, Elementum 3D, Erie, CO	1630 hrs AIAA-2019-0410 **Inherent Damping Sustainability Study on Additively Manufactured Nickel-Based Alloys for Critical Part** O. Scott-Emuakpor, T. George, J. Beck, B. Runyon, Air Force Research Laboratory, Wright-Patterson AFB, OH; R. O'Hara, Air Force Institute of Technology, Wright-Patterson AFB, OH; C. Holycross, Air Force Research Laboratory, Wright-Patterson AFB, OH; et al.	

Monday, 7 January 2019						
104-MAT-3	**Fatigue and Fracture**					**Mission Beach C**
Chaired by: M. MAIARU, University of Massachusetts Lowell and E. PINEDA, NASA Glenn Research Ctr						
1400 hrs AIAA-2019-0411 **Biaxial Fatigue Damage Behavior in Carbon Fiber Reinforced Polymer Composites** T. Skinner, S. Datta, A. Chattopadhyay, Arizona State University, Tempe, AZ; A. Hall, Army Research Laboratory, Aberdeen Proving Ground, MD	1430 hrs AIAA-2019-0412 **Fatigue Damage Initiation and Propagation in Al – 7075 under Combined Bending and Torsion Loading** A. Singh, S. Datta, A. Chattopadhyay, Arizona State University, Tempe, AZ; A. Hall, J. Riddick, Army Research Laboratory, Aberdeen Proving Ground, MD	1500 hrs AIAA-2019-0413 **Biaxial Fatigue Crack Propagation in Al 7075-T6 Alloy Under the Influence of Mixed-Mode Overloads** S. Datta, A. Chattopadhyay, Arizona State University, Tempe, AZ; N. Iyyer, Technical Data Analysis, Inc., Falls Church, VA; N. Phan, Naval Air Systems Command, Patuxent River, MD	1530 hrs AIAA-2019-0414 **Effect of Ultrasonic Impact Treatment on the Stress-Controlled Fatigue Performance of Additively Manufactured Ti-6Al-4V Alloy** S. Malz, S. Nosir, E. Trudel, M. El Sayed, Carleton University, Ottawa, Canada; L. Kok, E. Provost, Bombardier Aerospace, Toronto, Canada	1600 hrs AIAA-2019-0415 **A study on thermo mechanical fatigue life prediction of Ni-base superalloy GH4169** C. Qian, Nanjing University of Aeronautics and Astronautics, Nanjing, China	1630 hrs AIAA-2019-0416 **Effects of Testing Parameters on the Fatigue Performance NiTiHf High Temperature Shape Memory Alloys** O. Karakoc, A. Demblon, R. Wheeler, D. Lagoudas, I. Karaman, Texas A&M University, College Station, TX	

Monday, 7 January 2019						
105-MDO-3	**Optimization of Structural, Composite and Multiscale Models**					**Mission Beach A**
Chaired by: J. DEATON, Adjoint Technologies and J. HWANG						
1400 hrs AIAA-2019-0417 **Optimization of 3D Curved Fiber Steered Shells** F. van Zanten, Delft University of Technology, Delft, The Netherlands; C. Pupo, D. Barazanchy, M. Van Tooren, University of South Carolina, Columbia, Columbia, SC	1430 hrs AIAA-2019-0418 **Estimating Jig Shape for an Aircraft Wing Determined Through Aerodynamic Shape Optimization with Rigid Body Assumptions** J. Corman, D. Sarojini, A. Gharbi, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1500 hrs AIAA-2019-0419 **Structure Analysis and Aeroelastic Optimization Method for Composite Wing-box Structure with Curved Fiber** Z. Wang, Z. Wan, S. Zhu, C. Yang, Beihang University, Beijing, China	1530 hrs AIAA-2019-0420 **Multiscale Design Optimization of Additively Manufactured Aerospace Structures Employing Functionally Graded Lattice Materials** E. Trudel, M. El Sayed, Carleton University, Ottawa, Canada; L. Kok, E. Provost, Bombardier Aerospace, Montréal, Canada	1600 hrs AIAA-2019-0421 **Retrieving tow paths from a fiber angle distribution on single, and double curved surfaces** C. Pupo, University of South Carolina, Columbia, Columbia, SC; F. van Zanten, Delft University of Technology, Delft, The Netherlands; D. Barazanchy, M. Van Tooren, University of South Carolina, Columbia, Columbia, SC	1630 hrs AIAA-2019-0422 **Tow path planning strategies for fiber steered laminates** I. Jahangir, M. Van Tooren, University of South Carolina, Columbia, Columbia, SC	

Monday, 7 January 2019						
106-MST-2	**Motion Cueing for Training Simulators II - Motion Drive Algorithms**					**Eagle Peak**
Chaired by: O. STROOSMA, Delft Technical University of Technology and D. POOL, Delft University of Technology						
1400 hrs AIAA-2019-0423 **An Adaptive Model Predictive Control Based Motion Drive Algorithm (Invited)** A. Bukal, University of Toronto, Toronto, Canada; B. Haycock, University Health Network, Toronto, Canada; P. Grant, University of Toronto, Toronto, Canada	1430 hrs AIAA-2019-0424 **Introspective Control Systems: Fast Model Predictive Control with Explicit Optimization Search, Nonlinear Models, and On-line Learning (Invited)** K. Zaychik, T. Miller, State University of New York, Binghamton, NY	1500 hrs AIAA-2019-0425 **Adaptation of the Classic Cueing Algorithm for Automotive Applications (Invited)** M. de Mooij, E. de Vries, J. van Doornik, Cruden B.V., Amsterdam, The Netherlands	1530 hrs AIAA-2019-0426 **Verification of a Motion Cueing Strategy for Stall Recovery Training in a Commercial Transport Simulator (Invited)** P. Zaal, San Jose State University, Moffett Field, CA; W. Chung, American Systems, Moffett Field, CA; D. Carpenter, Flight Research Associates, Moffett Field, CA; K. Cunningham, G. Shah, NASA Langley Research Center, Hampton, VA	1600 hrs **Panel Discussion**		

Monday, 7 January 2019						
107-MST-3/SOF-8	**Multidisciplinary Modeling and Simulation**					**Vista B**
Chaired by: S. MASSEY, NASA-Langley Research Center and C. WINSKI						
1400 hrs AIAA-2019-0427 **Efficient Prediction of Aerodynamic Response Behavior for Control Surfaces using the Linear Frequency Domain** R. Seidler, S. Marten, M. Widhalm, J. Wild, German Aerospace Center (DLR), Braunschweig, Germany	1430 hrs AIAA-2019-0428 **Maximizing Effectiveness of a High-Performance Computing Grid by Using the DASE Protocol** J. Jones, A. Scherling, T. Allen, T. Hurst, Raytheon Company, Tucson, AZ	1500 hrs AIAA-2019-0429 **Statistical Learning for Munition Trajectory Prediction** M. Carpenter, R. Hartfield, L. Zhou, N. Speakman, Auburn University, Auburn, AL	1530 hrs AIAA-2019-0430 **Model Fidelity Studies for Rapid Trajectory Optimization** L. Hood, G. Bennett, J. Parish, Sandia National Laboratories, Albuquerque, NM	1600 hrs AIAA-2019-0431 **Distilling Model Equation from Numerical and Experimental Data Using Equation Inference Algorithm** M. Kanamori, A. Hidaka, S. Nagai, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan		

Monday, 7 January 2019						
108-MST-4	**Modeling and Simulation of Aircraft Systems**					**Pyramid Peak**
Chaired by: J. SCHROEDER, Federal Aviation Administration and A. POPOVICI						
1400 hrs AIAA-2019-0432 **New Algorithm for Fuel Flow Prediction and its Correction during the Cruise - Application on the Cessna Citation X Business Aircraft** K. Abid, G. Ghazi, L. Thioulouse, R. Botez, University of Québec, Montréal, Canada	1430 hrs AIAA-2019-0433 **Robust Aerodynamic Model Identification: A New Method for Aircraft System Identification In the Presence of General Dynamic Model Deficiencies** G. Moszczynski, J. Leung, P. Grant, University of Toronto, Toronto, Canada	1500 hrs AIAA-2019-0434 **Designing Instrument Approach Procedures Compatible with the Use of ATC Automation for Trajectory-based Operations** L. Weitz, R. Sgorcea, A. Boyd, MITRE Corporation, McLean, VA	1530 hrs AIAA-2019-0435 **Flight simulator assisted by a robotic motion platform - SIVOR - Design and Applications** E. Thomaz da Silva, S. Penna, M. Alves, Embraer, São José dos Campos, Brazil; W. Oliveira, E. Villani, L. Trabasso, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil	1600 hrs AIAA-2019-0436 **A Hybrid Learning Approach for the Simulation of Aircraft Dynamical Systems** Y. Yu, H. Yao, Y. Liu, Arizona State University, Tempe, AZ	1630 hrs AIAA-2019-0437 **Simulation of the Reel-In Operation of Towed Target System with Constant-Length Method** T. Ma, Z. Wei, X. Wang, H. Chen, Beihang University, Beijing, China	

Monday, 7 January 2019						
109-NDA-2	**Reliability Analysis Methods and Applications**					**Torrey Hills A**
Chaired by: B. THACKER, Southwest Research Institute and S. MULANI, The University of Alabama						
1400 hrs AIAA-2019-0438 **A multifidelity method for locating aeroelastic flutter boundaries** A. Marques, R. Lam, A. Chaudhuri, M. Opgenoord, K. Willcox, Massachusetts Institute of Technology, Cambridge, MA	1430 hrs AIAA-2019-0439 **Reliability Analysis of Problems with Correlated, non-Gaussian Uncertainties using Second-Order Propagation of High-Order Statistics** D. Papadimitriou, D. Panagiotopoulos, Z. Mourelatos, Oakland University, Rochester, MI; J. Skarakis, BETA CAE Systems, Farmington Hills, MI	1500 hrs AIAA-2019-0440 **Global Sensitivity Analysis Using Efficient Distribution Surrogates** Z. Hu, University of Michigan, Dearborn, Dearborn, MI; S. Mahadevan, Vanderbilt University, Nashville, TN	1530 hrs AIAA-2019-0441 **Adjoint Gradient-enhanced Kriging Model for Time-dependent Reliability Analysis** Y. Gao, Y. Liu, Arizona State University, Tempe, AZ	1600 hrs AIAA-2019-0442 **An Adaptive Probabilistic Maintenance Framework for Decision Planning Optimization** Y. Wang, Y. Liu, Arizona State University, Tempe, AZ	1630 hrs AIAA-2019-0443 **Maximum Entropy Structural-Thermal Uncertainty Modeling at the Finite Element Level** P. Song, X. Wang, M. Mignolet, Arizona State University, Tempe, AZ	1700 hrs AIAA-2019-0444 **A Closed-Loop Adaptive Monte Carlo Framework for Forecasting in GEO** C. Yang, M. Kumar, Ohio State University, Columbus, OH

Monday, 7 January 2019						
110-PC-4	**Turbulent Flames II**					**Harbor F**
Chaired by: D. PETERSON, Air Force Research Laboratory						
1400 hrs AIAA-2019-0445 **Simulation of a Piloted Turbulent Sooting Jet-Flame using a Transported-PDF and a Sectional Soot Modeling Approach** T. Dittmann, A. Fiolitakis, German Aerospace Center (DLR), Stuttgart, Germany; P. Gerlinger, University of Stuttgart, Stuttgart, Germany; M. Aigner, German Aerospace Center (DLR), Stuttgart, Germany	1430 hrs AIAA-2019-0446 **Statistics of Local Flame-Flame Interactions in Flame Interaction Zones of Two V-Flames** A. Tyagi, Pennsylvania State University, University Park, PA; I. Boxx, German Aerospace Center (DLR), Stuttgart, Germany; S. Peluso, J. O'Connor, Pennsylvania State University, University Park, PA	1500 hrs AIAA-2019-0447 **Transport model effects on turbulence-chemistry interactions in lean premixed flames.** D. Dasgupta, W. Sun, Georgia Institute of Technology, Atlanta, GA; M. Day, Lawrence Berkeley National Laboratory, Berkeley, CA; A. Aspden, Newcastle University, Newcastle, United Kingdom; T. Lieuwen, Georgia Institute of Technology, Atlanta, GA	1530 hrs AIAA-2019-0448 **High-Resolution Simulations of Premixed Combustion in a Supersonic Cavity** D. Peterson, Air Force Research Laboratory, Wright-Patterson AFB, OH	1600 hrs AIAA-2019-0449 **Lagrangian Analysis of Flame Structure in a Bluff-Body Stabilized High-Speed Combustor** C. Rising, M. Geikie, K. Ahmed, University of Central Florida, Orlando, FL	

Monday, 7 January 2019						
111-PC-5	**3rd Model Validation for Propulsion Workshop**					**Harbor D**
Chaired by: A. COMER, University of Michigan, Ann Arbor and V. SANKARAN, US Air Force/AFRL/RQRC						
1400 hrs AIAA-2019-0450 **Sensitivity Analysis of Bluff Body Stabilized Premixed Flame Large Eddy Simulations** A. Comer, C. Huang, K. Duraisamy, University of Michigan, Ann Arbor, Ann Arbor, MI; S. Sardeshmukh, Purdue University, West Lafayette, IN; B. Rankin, Air Force Research Laboratory, Wright-Patterson AFB, OH; M. Harvazinski, Air Force Research Laboratory, Edwards AFB, CA; et al.	1430 hrs AIAA-2019-0451 **A Consistent Reactive LES based on Explicit Filtering** V. Sankaran, United Technologies Corporation, East Hartford, CT; T. Gallagher, Innovative Scientific Solutions, Inc., Dayton, OH	1500 hrs AIAA-2019-0452 **Sensitivity to Modeling Parameters in Bluff Body Stabilized Flames** K. Schau, T. Gallagher, Innovative Scientific Solutions, Inc., Dayton, OH	1530 hrs AIAA-2019-0453 **A Large Eddy Simulation (LES) Study of the VOLVO and AFRL Bluff Body Combustors at Different Operating Conditions** C. Fureby, Swedish Defense Research Agency (FOI), Stockholm, Sweden	1600 hrs AIAA-2019-0454 **Large Eddy Simulations of Premixed Bluff Body Stabilized Flame using Detailed Chemistry with Flamelet Generated Manifold: Grid Sensitivity Analysis** I. Verma, R. Yadav, S. Orsino, P. Sharkey, P. Nakod, ANSYS, Inc., Pune, India	1630 hrs AIAA-2019-0455 **Bluff-Body Stabilized Flame Simulations using SBES in Combination with the Flamelet Generated Manifold Combustion Model** R. Yadav, I. Verma, S. Orsino, P. Sharkey, P. Nakod, S. Li, ANSYS, Inc., San Diego, CA	

Monday, 7 January 2019						
112-PC-6	**Laminar Flames and Combustion Chemistry I**					**Hillcrest A**
Chaired by: C. DENNIS, Naval Air Warfare Center and R. PITZ, Vanderbilt University						
1400 hrs AIAA-2019-0456 **Laminar burning velocity measurements in methyl ester/air mixtures** G. Kim, B. Almansour, A. Terracciano, S. Park, S. Vasu, University of Central Florida, Orlando, FL	1430 hrs AIAA-2019-0457 **Propagation and extinction of premixed H_2-O_2-N_2 edge-flames in a counter-flow burner** G. Narayanam, Z. Zhou, P. Ronney, University of Southern California, Los Angeles, CA	1500 hrs AIAA-2019-0458 **Acoustic Response of Near-Equilibrium Diffusion Flames with Large Activation Energies** A. Weiss, A. Sanchez, F. Williams, University of California, San Diego, La Jolla, CA	1530 hrs AIAA-2019-0459 **Performance of Syngas Mechanisms with CO_2 dilution at High Pressure** S. Barak, E. Ninnemann, S. Neupane, F. Barnes, S. Vasu, University of Central Florida, Orlando, FL	1600 hrs AIAA-2019-0460 **Flame Speed Measurements of Primary Reference Fuels at Elevated Temperatures in a Shock Tube** A. Susa, A. Ferris, D. Davidson, R. Hanson, Stanford University, Stanford, CA		

Monday, 7 January 2019						
113-PDL-6	**Plasma-Assisted Combustion and Ignition I**					**Kingston Peak**
Chaired by: C. LAUX, Ecole Centrale Paris and A. TROPINA, Texas A&M University						
1400 hrs AIAA-2019-0461 **Effects of Fuel Mixture Properties on Nanosecond Pulsed High Frequency Discharge Ignition** N. Tichenor, Texas A&M University, College Station, TX; R. Leiweke, T. Ombrello, Air Force Research Laboratory, Wright-Patterson AFB, OH	1430 hrs AIAA-2019-0462 **Streamer-to-Filamentary Transition and Electron Temperature Measurement in Positive Polarity Nanosecond Surface Discharge between 1 and 10 bar** C. Ding, S. Shcherbanev, T. Chng, National Center for Scientific Research (CNRS), Palaiseau, France; N. Popov, Moscow State University, Moscow, Russia; S. Starikovskaia, National Center for Scientific Research (CNRS), Palaiseau, France	1500 hrs AIAA-2019-0463 **On the arc transition mechanism in nanosecond air discharges** N. Minesi, S. Stepanyan, P. Mariotto, G. Stancu, C. Laux, CentraleSupélec, Gif-sur-Yvette, France	1530 hrs AIAA-2019-0464 **Properties of Dual-Pulse Laser Plasmas and Ignition Characteristics in Propane-Air and Methane-Air Mixtures** C. Butte, Colorado State University, Fort Collins, CO; C. Dumitrache, University of Paris-Saclay, Gif-sur-Yvette, France; A. Yalin, Colorado State University, Fort Collins, CO	1600 hrs AIAA-2019-0465 **Time-Resolved Electron Temperature and Species Measurements and Predictions of Plasma-Assisted Reforming of Methane** T. Chen, Princeton University, Princeton, NJ; S. Yang, University of Minnesota, Twin Cities, Minneapolis, MN; A. Rousso, B. Goldberg, S. Wu, E. Kolemen, Princeton University, Princeton, NJ; et al.	1630 hrs AIAA-2019-0466 **Examination of Annular-Electrode Spark Discharges in Flowing Oxygen – Experimental Nuances** D. Tinker, M. Pullen, Vanderbilt University, Nashville, TN; R. Osborne, ERC, Inc., Huntsville, AL; R. Pitz, Vanderbilt University, Nashville, TN	

Monday, 7 January 2019						
114-PDL-7	**Diagnostics II**					**Iron Mountain**
Chaired by: S. LOEHLE, Universitaet Stuttgart - Institut für Raumfahrtsysteme and M. RENNIE, University of Notre Dame						
1400 hrs AIAA-2019-0467 **Simultaneous Neutron Radiography of Metal Nozzle Geometry and Near-Field Spray** C. Smith, M. Gragston, Z. Zhang, University of Tennessee, Knoxville, Knoxville, TN; T. Ombrello, C. Carter, Air Force Research Laboratory, Wright-Patterson AFB, OH; X. Tong, Oak Ridge National Laboratory, Oak Ridge, TN; et al.	1430 hrs AIAA-2019-0468 **Studies of Pulsed-DC Plasma Actuator and Its Effect on Turbulent Boundary Layers Using Novel Optical Diagnostics** J. Sontag, S. Gordeyev, A. Duong, F. Thomas, T. Corke, University of Notre Dame, Notre Dame, IN	1500 hrs AIAA-2019-0469 **Optical investigation of a regularized shear layer for the examination of the aero-optical component of the jitter** M. Kemnetz, S. Gordeyev, E. Jumper, University of Notre Dame, Notre Dame, IN	1530 hrs AIAA-2019-0470 **Atmospheric deflection of airborne lasers for lidar, communication and directed energy applications.** M. New-Tolley, M. Shneider, R. Miles, Princeton University, Princeton, NJ	1600 hrs AIAA-2019-0471 **Absolutely Calibrated REMPI for Diagnostics of Small Neutral Gaseous Components in Mixtures** A. Sharma, M. Slipchenko, K. Rahman, A. Shashurin, Purdue University, West Lafayette, IN; M. Shneider, Princeton University, Princeton, NJ	1630 hrs AIAA-2019-0472 **Numerical Prediction of Aero-Optical Distortions by Transonic Flow over a Cylindrical Turret** M. Kamel, ANSYS, Inc., Lebanon, NH; K. Wang, M. Wang, University of Notre Dame, Notre Dame, IN	

Monday, 7 January 2019						
115-PGC-3/HSABP-3	**Rotating Detonation and Pulsed Pressure Gain Combustion I**					**Harbor E**
Chaired by: D. FERGUSON, National Energy Technology Laboratory and M. BOHON						
1400 hrs AIAA-2019-0473 **Study of Parasitic Combustion in an Optically Accessible Continuous Wave Rotating Detonation Engine** F. Chacon, M. Gamba, University of Michigan, Ann Arbor, Ann Arbor, MI	1430 hrs AIAA-2019-0474 **Experimental Study of a Hypergolically Ignited Liquid Bipropellant Rotating Detonation Rocket Engine** W. Anderson, Arnold Engineering Development Complex, Arnold AFB, TN; S. Heister, Purdue University, West Lafayette, IN; C. Hartsfield, Air Force Institute of Technology, Wright-Patterson AFB, OH	1500 hrs AIAA-2019-0475 **Operating Characteristics of a CH4/O2 Rotating Detonation Engine in a Backpressure Controlled Facility** J. Koch, M. Washington, M. Kurosaka, C. Knowlen, University of Washington, Seattle, Seattle, WA	1530 hrs AIAA-2019-0476 **Impact of Outlet Restriction on RDC Performance and Stagnation Pressure Rise** E. Bach, M. Bohon, C. Paschereit, P. Stathopoulos, Technical University of Berlin, Berlin, Germany	1600 hrs AIAA-2019-0477 **Two Dimensional Simulation of RDE Combustor with a Dynamic Injection Model** K. Mikoshiba, S. Sardeshmukh, S. Heister, Purdue University, West Lafayette, IN	1630 hrs AIAA-2019-0478 **Analysis of off-design characteristics of normal detonation wave engine** R. Kumar, A. Omprakas, D. Wilson, University of Texas, Arlington, Arlington, TX	

Monday, 7 January 2019						
116-SCS-2/AS-2	**Special Session: Smart/Adaptive Deployable Structures**					**Torrey Hills B**
Chaired by: K. KWOK, University of Central Florida and M. SILVER, MIT Lincoln Laboratory and D. MCGOWAN, NASA Langley Research Center						
1400 hrs AIAA-2019-0479 **High Dynamic Range Picometer Scale Metrology for Large Space Structures** J. Wachs, Ball Corporation, Boulder, CO	1430 hrs AIAA-2019-0480 **Dynamics and Estimation of Origami-Inspired Deployable Space Structures: A Review** B. McPherson, J. Kauffman, University of Central Florida, Orlando, FL	1500 hrs AIAA-2019-0481 **Self-assembling Space Architecture: tessellated shell structures for zero gravity habitats** A. Ekblaw, J. Paradiso, Massachusetts Institute of Technology, Cambridge, MA	1530 hrs AIAA-2019-0482 **Webbed Disk Surface Support: Catenary Trees in a Compression Ring** G. Greschik, TentGuild Engineering Company, Boulder, CO	1600 hrs AIAA-2019-0483 **Shape Recovery Behavior of Carbon Nanopaper Shape Memory Polymer Composite** V. Ozdemir, K. Kwok, University of Central Florida, Orlando, FL	1630 hrs AIAA-2019-0484 **Self-Deployable, Self-Stiffening, and Retractable Origami-Based Arrays for Spacecraft** N. Pehrson, S. Smith, D. Ames, S. Magleby, Brigham Young University, Provo, UT; M. Arya, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	

Monday, 7 January 2019						
117-SD-4	**Computational Aeroelasticity I**					**Harbor C**
Chaired by: S. RAGHAVAN, University of Central Florida and A. GREWAL, National Research Council Canada						
1400 hrs AIAA-2019-0485 **Aeroelastic Modeling of Hose and Drogue Aerial Refueling Systems Including a Hose Reeling Mechanism** A. Erickson, P. Richards, SDI Engineering, Inc., Kirkland, WA	1430 hrs AIAA-2019-0486 **Nonlinear Aerodynamic Effects on Static Aeroelasticity of Flexible Missiles** D. Tihomirov, D. Raveh, Technion–Israel Institute of Technology, Haifa, Israel	1500 hrs AIAA-2019-0487 **A Physics-Based Projection Algorithm for Fluid Structure Interaction Simulations** N. Joseph, R. Carrese, P. Marzocca, RMIT University, Melbourne, Australia	1530 hrs AIAA-2019-0488 **Lock-In Phenomenon of a Pitching and Plunging Airfoil** L. Hoskoti, A. Misra, Defence Institute of Advanced Technology, Pune, India; M. Sucheendran, Indian Institute of Technology Hyderabad, Hyderabad, India			

Monday, 7 January 2019						
118-SD-5	**Structural Dynamics and Vibrations I**					**Promenade B**
Chaired by: D. JOHNSON, NASA Glenn Research Center and Z. SOTOUDEH, Cal Poly Pomona						
1400 hrs AIAA-2019-0489 **Efficient Analysis of Cyclic Symmetric Structures with Mistuning and Cracks** M. Tien, T. Hu, K. D'Souza, Ohio State University, Columbus, OH	1430 hrs AIAA-2019-0490 **Bolt Modeling Effects on Fatigue Predictions for Mock Hardware in a Random Vibration Environment** M. Ross, A. Murphy, B. Stevens, Sandia National Laboratories, Albuquerque, NM	1500 hrs AIAA-2019-0491 **Performance optimization of a split type low-shock separation bolt** D. Hwang, J. Han, Korea Advanced Institute of Science and Technology, Daejeon, South Korea; J. Lee, Y. Lee, Agency for Defense Development, Daejeon, South Korea; D. Kim, Hanwha Corporation, Daejeon, South Korea	1530 hrs AIAA-2019-0492 **Improving Accuracy of Structural Dynamic Modification with Augmented Residual Vectors** E. Stewart, NASA Marshall Space Flight Center, Huntsville, AL; P. Blelloch, ATA Engineering, Inc., San Diego, CA; R. Coppolino, Measurement Analysis Corporation, Torrance, CA	1600 hrs AIAA-2019-0493 **Verification Benchmarks and Validation of Advanced Features of MAT261 for High Energy Dynamic Impact Applications** M. Molitor, B. Justusson, J. Iqbal, A. Byar, M. Rassaian, The Boeing Company, Seattle, WA	1630 hrs AIAA-2019-0494 **A Novel Method For The Vibration Reduction of an Air Vehicle Missile Launcher** T. Aksoy, B. Acar, ROKETSAN Missile Industries, Inc., Ankara, Turkey; G. Özgen, Middle East Technical University, Ankara, Turkey	1700 hrs AIAA-2019-0495 **Application of Modal Truncation Vectors to the Mixed and Fixed Boundary Dynamic Math Models** P. Blelloch, ATA Engineering, Inc., San Diego, CA; J. Dickens, Lockheed Martin Corporation, Sunnyvale, CA; A. Majed, Applied Structural Dynamics, Inc., Houston, TX; J. Sills, NASA Johnson Space Center, Houston, TX

Monday, 7 January 2019						
119-SE-2	**Systems Engineering II**					**Vista C**
Chaired by: D. DRESS, NASA Langley Research Center and J. GEBHARD, Rolls-Royce						
1400 hrs AIAA-2019-0496 **SysML Output Interface and System-Level Requirement Analyzer for the Horizon Simulation Framework** V. Patel, E. Mehiel, California Polytechnic State University, San Luis Obispo, CA	1430 hrs AIAA-2019-0497 **MBSE-enabled Interactive Environment for Aircraft Conceptual Sizing & Synthesis** B. Bagdatli, F. Karagoz, K. Reilley, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1500 hrs AIAA-2019-0498 **Model-Based Approach to the Requirements Analysis for a Conceptual Aircraft Sizing and Synthesis Problem** E. Karagoz, K. Reilley, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1530 hrs AIAA-2019-0499 **Model-Based Systems Engineering for Aircraft Design with Dynamic Landing Constraints Using Object-Process Methodology** L. Li, Shanghai Aircraft Design and Research Institute, Shanghai, China; N. Soskin, A. Jbara, M. Karpel, D. Dori, Technion–Israel Institute of Technology, Haifa, Israel	1600 hrs AIAA-2019-0500 **Traceable and Model-Based Requirements Derivation, Simulation, and Validation Using MATLAB Simulink and Polarion Requirements** K. Schmiechen, M. Hochstrasser, J. Rhein, C. Schropp, F. Holzapfel, Technical University of Munich, Munich, Germany	1630 hrs AIAA-2019-0501 **Application of a Verification and Validation Framework for Turbulence Modeling of Swirling Diffuser Flow** J. Hartl, W. Crossley, Purdue University, West Lafayette, IN	

Monday, 7 January 2019						
120-SOF-1	**Software Challenges in Aerospace**					**Cove**
Chaired by: J. MURPHY, NASA -Ames Research Center						
1400 hrs AIAA-2019-0502 **Challenges Using Linux as a Real-Time Operating System** M. Madden, NASA Langley Research Center, Hampton, VA	1430 hrs AIAA-2019-0503 **Challenges Using the Linux Network Stack for Real-Time Communication** M. Madden, NASA Langley Research Center, Hampton, VA	1500 hrs AIAA-2019-0504 **A Viable Approach to Formal Verification of Complex Aerospace Systems** E. Vaz, QRA Corporation, Halifax, Canada; C. Elliott, P. Stanfill, Lockheed Martin Corporation, Fort Worth, TX	1530 hrs AIAA-2019-0505 **Timely Flare Initiation during Automatic Landing – A Model Checking Application Example** M. Kügler, J. Rhein, F. Holzapfel, Technical University of Munich, Garching, Germany	1600 hrs AIAA-2019-0506 **On the gap between aircraft FDI methods in industry and academy: challenges and directions** A. Dahleni Kraemer, E. Villani, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil	1630 hrs AIAA-2019-0507 **Critical Software For Human Spaceflight- Orion Propulsion Software from Development to Qualification** A. Preden, ESA, Noordwijk, The Netherlands; J. Kaschner, F. Rettig, Airbus, Bremen, Germany; M. Rodriggs, NASA Johnson Space Center, Houston, TX	1700 hrs AIAA-2019-0508 **Framework for Multi-Asset Comparison and Rapid Down-selection for Earth Observation Missions** J. Gilleron, M. Muehlberg, A. Payan, Y. Choi, S. Briceno, D. Mavris, Georgia Institute of Technology, Atlanta, GA

Monday, 7 January 2019						
121-STR-3	**Innovative Approaches in Structures I**					**Golden Hill A**
Chaired by: S. CLAY, Air Force Research Laboratory and S. ENGELSTAD, Lockheed Martin Aeronautics						
1400 hrs AIAA-2019-0509 **Plotting Load Paths from Finite Element Stress Results for Aerospace Structures** D. Kelly, G. Pearce, K. Schroder-Turner, University of New South Wales, Sydney, Australia	1430 hrs AIAA-2019-0510 **Practical Dynamic Modeling Approach for Periodic Stiffened Structures** V. Goyal, B. Soltz, The Aerospace Corporation, El Segundo, CA	1500 hrs AIAA-2019-0511 **Enhanced Deterministic Performance of Panels Using Stochastic Variations of Geometric and Material Parameters** S. van den Broek, Leibniz University, Hannover, Germany; S. Minera, A. Pirrera, P. Weaver, University of Bristol, Bristol, United Kingdom; E. Jansen, R. Rolfes, Leibniz University, Hannover, Germany	1530 hrs AIAA-2019-0512 **Laser Shock Impulse Modelling via Data Matching** C. Engebretsen, A. Palazotto, Air Force Institute of Technology, Wright-Patterson AFB, OH; K. Langer, Air Force Research Laboratory, Wright-Patterson AFB, OH	1600 hrs AIAA-2019-0513 **The comparison of an Airfoil to Experimental Limit Cycle Oscillation** J. Lee, A. Palazotto, U.S. Air Force, Eglin AFB, FL	1630 hrs AIAA-2019-0514 **Design and analysis of the bionic energy-absorption thin-wall tube under axial dynamic loading** Z. Feng, P. Zeng, X. Wang, L. Jiang, Beijing Aerospace Unmanned Vehicles System Engineering Research Institute, Beijing, China	

Monday, 7 January 2019						
122-STR-4	**Composite Structural Design, Test and Analysis I**					**Golden Hill B**
Chaired by: T. MANN, NASA-Langley Research Center and M. ROYBAL, Raytheon Missile Systems						
1400 hrs AIAA-2019-0515 **Investigation of Stiffening Effects on Notch Growth Trajectory of Composite Stiffened Panels with Large Transverse Notches** P. Enjuto, M. Lobo, T. Walker, NSE Composites, Seattle, WA; G. Pena, E. Cregger, The Boeing Company, Seattle, WA; S. Wanthal, The Boeing Company, Charleston, SC	1430 hrs AIAA-2019-0516 **Effect of Automated Fiber Placement (AFP) Manufacturing Signature on Mechanical Performance** M. Nguyen, A. Vijayachandran, P. Davidson, University of Washington, Seattle, Seattle, WA; D. Call, D. Lee, Toray Composite Materials America, Inc., Tacoma, WA; A. Waas, University of Washington, Seattle, Seattle, WA	1500 hrs AIAA-2019-0517 **Viscoelastic Effects on Limit Cycle Oscillations** J. Adams, C. Merrett, Clarkson University, Potsdam, NY	1530 hrs AIAA-2019-0518 **Effects of Environmental Factors on Performance of Composite Rocket Motor Cases** H. Hizli, ROKETSAN Missile Industries, Inc., Ankara, Turkey	1600 hrs AIAA-2019-0519 **Examining the Relationship between Basis Values and Ply-by-ply Failure Theories for Composite Structures** W. Guin, D. Phillips, NASA Marshall Space Flight Center, Huntsville, AL	1630 hrs AIAA-2019-0520 **Development of a Design for Manufacturing Tool for Automated Fiber Placement Structures** A. Noevere, C. Collier, Collier Research Corporation, Newport News, VA; R. Harik, J. Halbritter, University of South Carolina, Columbia, SC	

Monday, 7 January 2019						
123-SUR-1	**Survivability**					**Ocean Beach**
Chaired by: A. LINGENFELTER, Air Force Institute of Technology						
1400 hrs AIAA-2019-0521 **Spacecraft Survivability in a Catastrophic Formation Mishap** R. Bettinger, J. Hess, A. Lingenfelter, L. Tatman, Air Force Institute of Technology, Wright-Patterson AFB, OH	1430 hrs AIAA-2019-0522 **Orbital Debris Propagation in Solwind Anti-Satellite Event** L. Tatman, R. Bettinger, J. Hess, A. Lingenfelter, Air Force Institute of Technology, Wright-Patterson AFB, OH	1500 hrs AIAA-2019-0523 **Applications of Second Order Linear Differential Equations to Model a Hydrodynamic Ram Cavity** A. Nesmith, A. Lingenfelter, Air Force Institute of Technology, Wright-Patterson AFB, OH; D. Liu, Air Force Life Cycle Management Center, Eglin AFB, FL	1530 hrs AIAA-2019-0524 **Utilization of Hydrodynamic Ram Simulator to Determine the Dynamic Strength Thresholds of Structural Joints.** B. Hull, T. Sedalor, T. Mifsud, Northrop Grumman Corporation, Melbourne, FL	1600 hrs AIAA-2019-0525 **Numerical Analysis of a Bonded Composite T Joint Subjected to Hydrodynamic Ram Pressures in a Ramgun** T. Sedalor, D. Fleming, Florida Institute of Technology, Melbourne, FL		

Monday, 7 January 2019						
124-TF-2	**Urban and Suburban Air Mobility: Vehicles and Operations**					**Harbor I**
Chaired by: B. GERMAN, Georgia Institute of Technology and X. FEI, NASA LaRC						
1400 hrs AIAA-2019-0526 **Development of Vertiport Capacity Envelopes and Analysis of Their Sensitivity to Topological and Operational Factors** P. Vascik, R. Hansman, Massachusetts Institute of Technology, Cambridge, MA	1430 hrs AIAA-2019-0527 **Effects of Range Requirements and Battery Technology on Electric VTOL Sizing and Operational Performance** M. Warren, A. Garbo, M. Kotwicz Herniczek, T. Hamilton, B. German, Georgia Institute of Technology, Atlanta, GA	1500 hrs AIAA-2019-0528 **Technology Targets and Research Areas for Urban Air Mobility Vehicles** K. Antcliff, L. Kohlman, NASA Langley Research Center, Hampton, VA	1530 hrs Oral Presentation **Urban Air Mobility Network and Vehicle Type Assessment** L. Kohlman, M. Patterson, NASA Langley Research Center, Hampton, VA	1600 hrs AIAA-2019-0529 **Design and Control Evaluation of a Novel Subscale Quad-Tiltrotor** M. Warren, F. Kozel, E. Li, C. Hall, B. German, Georgia Institute of Technology, Atlanta, GA	1630 hrs AIAA-2019-0530 **Environment Impact on Feasibility of Sub-Urban Air Mobility using STOL Vehicles** C. Justin, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1700 hrs AIAA-2019-0531 **Hybrid Turbo-Electric STOL Aircraft for Urban Air Mobility** A. Gnadt, S. Isaacs, R. Price, M. Dethy, C. Chappelle, Massachusetts Institute of Technology, Cambridge, MA

Monday, 7 January 2019						
125-TP-2	**Thermal Systems**					**Balboa A**
Chaired by: S. SHERIF, University of Florida						
1400 hrs AIAA-2019-0532 **Numerical Investigations For Different Combustion Liner Cooling Techniques Under Non-Reacting Conditions Through A Lean Pre-Mixed Fuel Nozzle** S. Ahmed, P. Singh, S. Ekkad, North Carolina State University, Raleigh, NC	1430 hrs AIAA-2019-0533 **Optimization and Analysis of a Heat Exchanger with Encapsulated Phase Change Material** A. Karmakar, Y. Kanani, A. Bhattacharya, S. Acharya, S. Taghizadeh, K. Ling, Illinois Institute of Technology, Chicago, IL	1500 hrs AIAA-2019-0534 **Pressure Loss and Heat Transfer Characterisation of Intersecting Hole Heat Exchangers** I. Naved, D. Gillespie, University of Oxford, Oxford, United Kingdom	1530 hrs AIAA-2019-0535 **Stagnation Point Heat Flux Measurements in a Plasma Wind Tunnel Using a Diamond Heat Transfer Gauge** R. Penty Geraets, M. McGilvray, University of Oxford, Oxford, United Kingdom	1600 hrs AIAA-2019-0536 **Control of Vapor Compression Cycles under Transient Thermal Loads** S. Jackson, A. Palazotto, M. Pachter, Air Force Institute of Technology, Wright-Patterson AFB, OH; N. Niedbalski, Air Force Research Laboratory, Wright-Patterson AFB, OH	1630 hrs AIAA-2019-0537 **Fluid-Solid Heat Exchange in Porous Media for Transpiration Cooling Systems** T. Hermann, M. McGilvray, H. Ifti, University of Oxford, Oxford, United Kingdom; F. Hufgard, S. Loehle, University of Stuttgart, Stuttgart, Germany	

Monday, 7 January 2019						
126-WE-2	**Wind Plant Optimization and Uncertainty Quantification**					**Cityview A**
Chaired by: G. GERACI, Sandia National Laboratories and A. NING, BYU						
1400 hrs AIAA-2019-0538 **Comparison of Wind Farm Layout Optimization Results Using a Simple Wake Model and Gradient-Based Optimization to Large Eddy Simulations** J. Thomas, Brigham Young University, Provo, UT; J. Annoni, P. Fleming, National Renewable Energy Laboratory, Golden, CO; A. Ning, Brigham Young University, Provo, UT	1430 hrs AIAA-2019-0539 **Multi-Objective Kriging-Based Optimization for High-Fidelity Wind Turbine Design** L. Zuhal, G. Faza, Bandung Institute of Technology, Bandung, Indonesia; P. Palar, K. Shimoyama, Tohoku University, Sendai, Japan	1500 hrs AIAA-2019-0540 **Best Practices for Wake Model and Optimization Algorithm Selection in Wind Farm Layout Optimization** N. Baker, A. Stanley, J. Thomas, A. Ning, Brigham Young University, Provo, UT; K. Dykes, National Renewable Energy Laboratory, Golden, CO	1530 hrs AIAA-2019-0541 **Uncertainty Quantification in Wind Plant Energy Estimation** A. Craig, Agari, Inc., Foster City, CA	1600 hrs AIAA-2019-0542 **Multifidelity Uncertainty Quantification with Applications in Wind Turbine Aerodynamics** J. Quick, P. Hamlington, University of Colorado, Boulder, Boulder, CO; R. King, M. Sprague, National Renewable Energy Laboratory, Golden, CO		

Monday, 7 January 2019		
127-NW-5 1530 - 1600 hrs	Monday Afternoon Coffee Break	Session Room Foyers

Monday, 7 January 2019		
128-RLA-1 1600 - 1730 hrs	Meet the AIAA Technical Committees	Seaport G

Learn how you can excel in your career and within the aerospace industry. Members of several AIAA Technical Committees will be taking the time to meet with the Rising Leaders in Aerospace participants and highlight their role within AIAA as well as how their committees serve the industry and Institute at large. This interactive event is a great way to get insight from your peers, gain industry contacts and meet your fellow young professionals.

Monday, 7 January 2019		
129-RLA-2 1730 - 1900 hrs	Rising Leaders in Aerospace Networking Reception	Seaport G

Continue your conversation and networking at the reception, which will immediately follow "Meet the AIAA Technical Committees." Come socialize with your fellow young professionals who are also attending the conference. Don't miss this rewarding opportunity.

Tuesday

Tuesday, 8 January 2019		
130-SB-2 0730 - 0800 hrs	Tuesday Speaker Briefing	Session Rooms

Tuesday, 8 January 2019		
131-PLNRY-2 0800 - 0900 hrs	Exploration for Everyone	Seaport A-E

Moderator: Frank Morring Jr., Senior Editor, Space, Aviation Week & Space Technology (ret.)

Panelists:

Ariane Cornell
Head, Astronaut Strategy and Sales
Blue Origin

Richard DalBello
Vice President, Business Development and Government Affairs
Virgin Orbit

Lon Levin
President and Chief Executive Officer
GEOshare LLC

Bradley Schneider
Vice President, Launch Services
Rocket Lab USA

John Tylko
Chief Innovation Officer
Aurora Flight Sciences

Tuesday, 8 January 2019		
132-NW-6 0900 - 0930 hrs	Tuesday Morning Coffee Break	Session Room Foyers

Tuesday, 8 January 2019		
133-AA-3	Jet Noise II	Balboa C

Chaired by: K. AHUJA, Georgia Institute of Technology and C. BROWN, NASA Glenn

0930 hrs AIAA-2019-0543 **Experimental Investigation of a One-sided Ejector Nozzle** K. Zaman, A. Fagan, J. Bridges, NASA Glenn Research Center, Cleveland, OH	1000 hrs AIAA-2019-0544 **CFD Optimization of Ejector Flaps in a One-Sided Mixer Ejector Nozzle** Z. Hoter, Oregon State University, Corvallis, OR; R. Castner, K. Zaman, NASA Glenn Research Center, Cleveland, OH	1030 hrs AIAA-2019-0545 **Assessment of Mixer-Ejector Nozzle with Thermal Acoustic Shield for Jet Noise Reduction** J. Burt, J. Seidel, S. Leib, NASA Glenn Research Center, Cleveland, OH	1100 hrs AIAA-2019-0546 **Modal analysis and phase velocities in complex-nozzle supersonic near-jet** J. Lewalle, Syracuse University, Syracuse, NY; C. Ruscher, S. Gogineni, Spectral Energies, LLC, Dayton, OH	1130 hrs AIAA-2019-0547 **Jet Noise Prediction via Low-order Machine Learning** C. Ruscher, S. Gogineni, Spectral Energies, LLC, Dayton, OH; A. Tenney, M. Glauser, Syracuse University, Syracuse, NY		

Tuesday, 8 January 2019						
134-ACD-3	**Structural Design and Analysis**					**Hillcrest B**
Chaired by: M. ORR, Boeing Commercial Airplanes and A. KHAN, Institute of Space Technology, Islamabad						
0930 hrs AIAA-2019-0548 **Structural Analysis and Performance-Based Validation of a Composite Wing Spar** J. Moore, S. Cutright, NASA Langley Research Center, Hampton, VA	1000 hrs AIAA-2019-0549 **Aircraft Conceptual Structural Design Using The AMMIT Structural Analysis Tool** B. Horvath, NASA Langley Research Center, Hampton, VA	1030 hrs AIAA-2019-0550 **Automated Top Level Aircraft Structural Sizing Tool (ATLASS): A Framework for Preliminary Aircraft Design and Optimization** B. Autry, D. Victorazzo, Gulfstream Aerospace Corporation, Savannah, GA	1100 hrs AIAA-2019-0551 **Structural Analysis of a Test Flight Vehicle with Multi-functional Energy Storage** V. Mukhopadhyay, E. Olson, T. Ozoroski, NASA Langley Research Center, Hampton, VA	1130 hrs AIAA-2019-0552 **Constructal Approach in Aeroelastic Design and Analysis of Flying Wing Aircraft** P. Mardanpour, E. Izadpanahi, S. Rastkar, Florida International University, Miami, FL; J. Camberos, Air Force Research Laboratory, Wright-Patterson AFB, OH; S. Lorente, National Institute of Applied Sciences (INSA), Toulouse, France; A. Bejan, Duke University, Durham, NC	1200 hrs AIAA-2019-0553 **Incorporating Safety in Early (Airframe) Systems Design and Assessment** S. Jimeno, A. Molina-Cristobal, A. Riaz, M. Guenov, Cranfield University, Cranfield, United Kingdom	

Tuesday, 8 January 2019						
135-ACD-4	**Air Vehicle Design Studies I**					**Pier**
Chaired by: R. BARRETT-GONZALEZ, The University of Kansas						
0930 hrs AIAA-2019-0554 **Design Overview of the Hexa-Chakra Electric Vertical Takeoff and Landing Personal Air Vehicle** I. Chakraborty, Auburn University, Auburn, AL	1000 hrs AIAA-2019-0555 **Preliminary Design of a Long Range, Fuel Efficient High Performance Business Jet** I. Milosavljevic, B. Nuber, G. Swarm, T. Takahashi, Arizona State University, Tempe, AZ	1030 hrs AIAA-2019-0556 **High Efficiency 3-surface Hybrid Single Aisle Commercial Transport Aircraft Design** W. Anemaat, B. Basgall, P. Sargent, W. Liu, D. van Dommelen, Design, Analysis and Research Corporation, Lawrence, KS	1100 hrs AIAA-2019-0557 **Trijet and Twin-jet Aircraft Study For Optimal Aircraft Design** E. Coelho Inouye, A. de Paula, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil; W. Alves, P. London Guedes, Embraer, São José dos Campos, Brazil	1130 hrs AIAA-2019-0558 **Conceptual Design and Assessment of a Light Multirole Rotorcraft Using Uncertainty Quantification** R. Scott, R. Vocke, Army Aviation and Missile Research, Development and Engineering Command, Moffett Field, CA; M. Khurana, Science and Technology Corporation, Moffett Field, CA		

Tuesday, 8 January 2019						
136-AFM-5	**Aircraft Flight Dynamics II**					**Harbor A**
Chaired by: K. SHWEYK, Boeing Engineering Operations & Technology and P. BOLDS-MOOREHEAD, Boeing Commercial Airplanes and B. MARTOS, Embry Riddle Aeronautical University						
0930 hrs AIAA-2019-0559 **We Wonder Why We Wallow: Impacts of Trim Error on Speed and Flight Path Stability** M. Delisle, T. Takahashi, Arizona State University, Tempe, AZ	1000 hrs AIAA-2019-0560 **Flight Characteristics of Iced Aircraft** C. Deiler, German Aerospace Center (DLR), Braunschweig, Germany	1030 hrs AIAA-2019-0561 **Abrupt Ground Effect of the F/A-18E Super Hornet in the Aircraft Carrier Landing Environment** D. Shafer, B. Green, S. Polsky, Naval Air Systems Command, Patuxent River, MD	1100 hrs AIAA-2019-0562 **This Is Pilot Gain (Invited)** D. Mitchell, Mitchell Aerospace Research, Long Beach, CA; D. Klyde, Systems Technology, Inc., Hawthorne, CA	1130 hrs AIAA-2019-0563 **Fifty Years of the Cooper-Harper Scale (Invited)** D. Mitchell, Mitchell Aerospace Research, Long Beach, CA	1200 hrs AIAA-2019-0564 **Some Results In Flying Qualities Criteria Developed at PVL** A. Efremov, M. Tiaglik, E. Efremov, Moscow Aviation Institute, Moscow, Russia	

Tuesday, 8 January 2019						
137-AFM-6	**Small Unmanned Aircraft I**					**Marina Room**
Chaired by: T. RICHARDSON, University of Bristol and T. FIELDS, University of Missouri-Kansas City						
0930 hrs AIAA-2019-0565 **Closed-Form Expressions for Cycle-Averaged Aerodynamic Quantities at an Airfoil Section of an Avian Flapping Wing** D. Bhattacharjee, K. Subbarao, University of Texas, Arlington, Arlington, TX	1000 hrs AIAA-2019-0566 **Beneficial Effect of the Coupled Wing-Body Dynamics on Power Consumption in Butterflies** M. Sridhar, C. Kang, D. Landrum, University of Alabama, Huntsville, Huntsville, AL	1030 hrs AIAA-2019-0567 **Scaling Bioinspired Mars Flight Vehicles for Hover** J. Pohly, C. Kang, M. Sridhar, D. Landrum, F. Fahimi, B. Mesmer, University of Alabama, Huntsville, Huntsville, AL; et al.	1100 hrs AIAA-2019-0568 **Maximum Travel Speed Performance of Albatrosses and UAVs Using Dynamic Soaring** G. Sachs, Technical University of Munich, Munich, Germany	1130 hrs AIAA-2019-0569 **Regenerative Dynamic Soaring Trajectory Augmentation over Flat Terrains** N. Long, S. Watkins, RMIT University, Melbourne, Australia; J. Moschetta, V. Bonnin, Higher Institute of Aeronautics and Space, Toulouse, France	1200 hrs AIAA-2019-0570 **Bioinspired Energy Harvesting from Atmospheric Phenomena for Small Unmanned Aerial Vehicles** N. Gavrilovic, Higher Institute of Aeronautics and Space, Toulouse, France; M. Bronz, French Civil Aviation University, Toulouse, France; J. Moschetta, E. Benard, Higher Institute of Aeronautics and Space, Toulouse, France	

Tuesday, 8 January 2019

138-AMT-6/PC-7	Combustion Diagnostics II					Harbor H
Chaired by: K. GABET HOFFMEISTER, Sandia National Laboratories and R. PITZ, Vanderbilt University						
0930 hrs Oral Presentation **Planar Soot Particle Sizing via Ultra-High-Speed LII Imaging (Invited)** D. Richardson, Y. Chen, B. Halls, D. Guildenbecher, Sandia National Laboratories, Albuquerque, NM; E. Cenker, S. Skeen, Sandia National Laboratories, Livermore, CA; et al.	1000 hrs AIAA-2019-0571 **Pressure Scaling of Spatiotemporally Resolved Femtosecond Two-photon Laser-Induced Fluorescence of CO** K. Rahman, V. Athmanathan, M. Slipchenko, T. Meyer, Purdue University, West Lafayette, IN; S. Roy, Spectral Energies, LLC, Dayton, OH; J. Gord, Air Force Research Laboratory, Wright-Patterson AFB, OH	1030 hrs AIAA-2019-0572 **Two-phase flow imaging of evaporating fuel droplets with temporally filtered laser-induced exciplex fluorescence** A. Douglawi, V. Athmanathan, J. Ma, M. Slipchenko, T. Meyer, Purdue University, West Lafayette, IN; J. Gord, Air Force Research Laboratory, Wright-Patterson AFB, OH	1100 hrs AIAA-2019-0573 **A three-legged burst-mode laser system for high-speed flow and combustion diagnostics** N. Jiang, S. Roy, P. Hsu, M. Slipchenko, Spectral Energies, LLC, Beavercreek, OH; J. Estevadeordal, North Dakota State University, Fargo, ND; J. Gord, Air Force Research Laboratory, Wright-Patterson AFB, OH	1130 hrs AIAA-2019-0574 **High-Speed OH* and CH* Chemiluminescence Imaging and OH Planar Laser-Induced Fluorescence (PLIF) in Spherically Expanding Flames** T. Paschal, P. Parajuli, M. Turner, E. Petersen, W. Kulatilaka, Texas A&M University, College Station, TX	1200 hrs AIAA-2019-0575 **Shock tube/laser absorption measurements of the pyrolysis of JP-10 fuel** S. Johnson, D. Davidson, R. Hanson, Stanford University, Stanford, CA	

Tuesday, 8 January 2019

139-AMT-7	Special Session: NASA Engineering and Safety Center					Harbor G
Chaired by: N. ROOZEBOOM, NASA Ames Research Center						
0930 hrs Oral Presentation **NASA's Independent Organization for Engineering Excellence** M. Kirsch, NASA Langley Research Center, Hampton, VA	1000 hrs Oral Presentation **Computational Prediction of Launch-Vehicle Buffet and Aeroacoustic Loads in Practice** C. Streett, NASA Langley Research Center, Hampton, VA	1030 hrs Oral Presentation **Investigation of Unsteady Pressure-Sensitive Paint (uPSP) and a Dynamic Loads Balance to Predict Launch Vehicle Buffet Environments** J. Ross, NASA Ames Research Center, Moffett Field, CA	1100 hrs Oral Presentation **NESC's Evaluation of Composite Overwrapped Pressure Vessels for Human Spaceflight** M. Kirsch, NASA Langley Research Center, Hampton, VA	1130 hrs Oral Presentation **Micrometeoroid and Orbital Debris (MMOD) Testing on Composite Overwrapped Pressure Vessels (COPVs)** M. Squire, NASA Langley Research Center, Hampton, VA	1200 hrs Oral Presentation **Development of Buckling Design Recommendations for Launch-Vehicle Shell Structures** M. Schultz, NASA Langley Research Center, Hampton, VA	

Tuesday, 8 January 2019

140-APA-13/FD-19/SD-6/AMT-8 0930 - 1230 hrs	Special Session: Joint Experimental-Computational Efforts in High-Speed FSI I	Bayview

Speakers:

Earl Dowell
Duke University

David Van Wie
Johns Hopkins University Applied Physics Laboratory

David Bertino
Boeing Advanced Structures

Ravi Chona
Air Force Research Laboratory, Structural Sciences Center

Tuesday, 8 January 2019

141-APA-14	Airfoil/Wing/Configuration Aerodynamics II					La Jolla B
Chaired by: J. RAULEDER, Technical University of Munich and N. RAJMOHAN, Aerion Technologies Inc.						
0930 hrs AIAA-2019-0576 **Experimental Analysis of the Interaction between Streamwise Vortices and a High-Lift Airfoil** T. Landa, L. Klug, R. Radespiel, Technical University of Braunschweig, Braunschweig, Germany; S. Probst, T. Knopp, German Aerospace Center (DLR), Göttingen, Germany	1000 hrs AIAA-2019-0577 **Parametric Study of Aerodynamic Performance of an Airfoil with Active Circulation Control using Leading Edge Embedded Cross-Flow Fan** M. Mazumder, V. Golubev, S. Gudmundsson, Embry-Riddle Aeronautical University, Daytona Beach, FL	1030 hrs AIAA-2019-0578 **Investigation of Wake Survey over a Wing with Conformal Vortex Generators** R. KC, N. Lucido, T. Wilson, B. Elbing, J. Jacob, A. Alexander, Oklahoma State University, Stillwater, OK; et al.	1100 hrs AIAA-2019-0579 **Effect of slot height variation on the aerodynamic performance of a circulation control airfoil: A CFD analysis** V. Capobianco, P. Shankar, California State University, Long Beach, CA; M. Jiang, Naval Surface Warfare Center, West Bethesda, MD	1130 hrs AIAA-2019-0580 **Simultaneous Flow Field Investigation and Force/Moment Measurements of a Generic Blown Wing with Control Surface** M. Bronz, French Civil Aviation University, Toulouse, France; E. Aydin, I. Fenercioglu, N. Cetiner Yildirim, Istanbul Technical University, Istanbul, Turkey		

Tuesday, 8 January 2019						
142-APA-15	**Applied Computational Aerodynamics: Methods and Results III**					**Harbor I**
Chaired by: J. FREEMAN, Air Force Institute of Technology and N. RATNAYAKE, NASA Langley Research Center						
0930 hrs AIAA-2019-0581 **Stability of Cylindrical and Conical Hypersonic Boundary Layers** G. Andrews, J. Poggie, Purdue University, West Lafayette, IN	1000 hrs AIAA-2019-0582 **Assessment of Fan/Airframe aerodynamic performance using 360° uRANS computations: Code-to-Code comparison between ONERA, DLR, NLR and Airbus.** M. Meheut, F. Sartor, M. Vergez, ONERA, Meudon, France; M. Laban, Netherlands Aerospace Center (NLR), Amsterdam, The Netherlands; R. Schnell, German Aerospace Center (DLR), Cologne, Germany; A. Stuermer, German Aerospace Center (DLR), Braunschweig, Germany; et al.	1030 hrs AIAA-2019-0583 **Wake Modelling with Embedded Lateral and Directional Stability Sensitivity Analysis for Aerial Refuelling or Formation Flight** L. Peristy, R. Perez, P. Jansen, Royal Military College of Canada, Kingston, Canada	1100 hrs AIAA-2019-0584 **Simple shock detector for discontinuous Galerkin method** J. Choi, J. Alonso, Stanford University, Stanford, CA; E. van der Weide, University of Twente, Enschede, The Netherlands	1130 hrs AIAA-2019-0585 **Second-Moment-Closure Modeling for Low-Reynolds-Number regions of Aeronautical Applications** A. Botelho e Souza, R. Radespiel, Technical University of Braunschweig, Braunschweig, Germany	1200 hrs AIAA-2019-0586 **Recent Developments in flowPsi CFD code** A. Jirasek, M. Ghoreyshi, M. Satchell, U.S. Air Force Academy, Colorado Springs, CO	

Tuesday, 8 January 2019						
143-APA-16	**Flow Control Demonstrations and Applications**					**America's Cup B**
Chaired by: R. DOWGWILLO, Boeing Engineering Operations & Technology and B. CYBYK, The Johns Hopkins University Applied Physics Laboratory						
0930 hrs AIAA-2019-0587 **Investigations into the Effects of Unsteady Blowing on the Wake of a Coanda Flap** Y. El Sayed M., N. Gomes de Paula, D. Sedlacek, R. Semaan, R. Radespiel, Technical University of Braunschweig, Braunschweig, Germany	1000 hrs AIAA-2019-0588 **Steady blowing to control the lift and drag on a free shear layer airfoil** M. Di Luca, K. Breuer, Brown University, Providence, RI	1030 hrs AIAA-2019-0589 **Design of Injection Jet Span Profile for Co-Flow Jet Airfoil** Y. Ren, G. Zha, University of Miami, Coral Gables, FL	1100 hrs AIAA-2019-0590 **Microjet Configuration Sensitivities for Lift Enhancement in High-Lift Systems** S. Hosseini, NASA Ames Research Center, Moffett Field, CA; A. Cooperman, C. Van Dam, University of California, Davis, Davis, CA; S. Pandya, NASA Ames Research Center, Moffett Field, CA	1130 hrs AIAA-2019-0591 **Direct Lift Control using Distributed Aerodynamic Bleed** M. DeSalvo, D. Heathcote, M. Smith, A. Glezer, Georgia Institute of Technology, Atlanta, GA	1200 hrs AIAA-2019-0592 **Improvements in NASCAR Race Vehicle Side Force and Yawing Moment Stability in Race Conditions Using Active or Passive Blowing** E. Jacuzzi, NASCAR Research & Development, Concord, NC; M. Aleman Chona, K. Granlund, North Carolina State University, Raleigh, NC	

Tuesday, 8 January 2019						
144-APA-17	**Special Session: Simulation of Rotor in Hover II**					**Gaslamp B**
Chaired by: N. HARIHARAN, HPCMP CREATE						
0930 hrs Oral Presentation **An Overview of Wake Breakdown in High-Fidelity Hover Simulations** N. Hariharan, CREATE AV Team, Lorton, VA	1000 hrs AIAA-2019-0593 **Wake Breakdown of High-fidelity Simulations of a Rotor in Hover** J. Abras, Naval Air Systems Command, Patuxent River, MD; N. Hariharan, CREATE AV Team, Lorton, VA; R. Narducci, The Boeing Company, Philadelphia, PA	1030 hrs AIAA-2019-0594 **NASA PSP Rotor Hover Simulation with Fuselage Effect** Q. Zhao, S. Baugher, C. Sheng, University of Toledo, Toledo, OH	1100 hrs AIAA-2019-0595 **Numerical Study of PSP Rotor Blades using a γ-$Re_{\theta t}$-CF^{+} Turbulent Transition Model** J. Hwang, O. Kwon, Korea Advanced Institute of Science and Technology, Daejeon, South Korea	1130 hrs AIAA-2019-0596 **Analysis of Rotor/Airframe Interaction in Hover and Near-Hover Flight Conditions** T. Quackenbush, G. Whitehouse, M. Yu, Continuum Dynamics, Inc., Ewing, NJ	1200 hrs AIAA-2019-0597 **Free-Vortex Wake and CFD Simulation of a Small Rotor for a Quadcopter at Hover** A. Pérez, O. Lopez, University of Los Andes, Bogota, Colombia; S. Poroseva, University of New Mexico, Albuquerque, Albuquerque, NM	

Tuesday, 8 January 2019						
145-APA-18	**Weapons Aerodynamics: Missile/Projectile/Guided-Munitions, Carriage and Store Separation I**					**Hillcrest D**
Chaired by: V. BHAGWANDIN, US Army Research Laboratory and B. MCGRATH, The Johns Hopkins University Applied Physics Laboratory						
0930 hrs AIAA-2019-0598 **Effect of Tail Fin Geometry on the Induced Roll of a Canard-Controlled, Subsonic Projectile** J. Vasile, Army Research Laboratory, Aberdeen Proving Ground, MD	1000 hrs AIAA-2019-0599 **Investigation of Mach Number Effects on the Aerodynamic Loading on an Articulating Nose Cone Missile** E. Stephen, G. Abate, T. McLaughlin, M. Figueroa, S. Ringenbach, U.S. Air Force Academy, Colorado Springs, CO; J. Olivry, French Air Force Academy, Salon-de-Provence, France; et al.	1030 hrs AIAA-2019-0600 **Experimental investigation on penetration performance affected by the air-guiding grooves on small spinning projectile** J. Kim, Gwangju Institute of Science and Technology, Gwangju, South Korea; H. Kim, Duretek, Inc., Daejeon, South Korea	1100 hrs AIAA-2019-0601 **Trajectory simulation of a standard Store and Generic Wing Pylon using CFD** Z. Toor, J. Masud, O. Mahmood, Air University, Islamabad, Pakistan			

Tuesday, 8 January 2019						
146-APA-19/AS-3	**Adaptive Aircraft Surfaces and Structures for Sonic Boom Mitigation**					**La Jolla A**
Chaired by: D. HARTL, Texas A&M University and N. TICHENOR, Texas A&M University						
0930 hrs AIAA-2019-0602 **Fluid-Structure Interaction Modeling of a Shape-Memory Alloy Actuated Supersonic Wind Tunnel Model Alloy** J. Mabe, The Boeing Company, St. Louis, MO; D. Hartl, N. Tichenor, M. Zackery, Texas A&M University, College Station, TX; E. Blades, M. Nucci, ATA Engineering, Inc., Huntsville, AL	1000 hrs AIAA-2019-0603 **Controlling Sonic Boom Loudness Through Outer Mold Line Modification: A Sensitivity Study** F. Carpenter, P. Cizmas, Texas A&M University, College Station, TX; S. Reddy, G. Dulikravich, Florida International University, Miami, FL	1030 hrs AIAA-2019-0604 **Extended 3D Class/Shape Transformation equations for multicomponent aircraft assemblies** P. Leal, Texas A&M University, College Station, TX; T. Giblette, D. Hunsaker, Utah State University, Logan, UT; D. Hartl, Texas A&M University, College Station, TX	1100 hrs AIAA-2019-0605 **Prediction of Sonic Boom Loudness Using High-Order Panel Methods for the Near-Field Solution** T. Giblette, D. Hunsaker, Utah State University, Logan, UT	1130 hrs AIAA-2019-0606 **Off-Design Sonic Boom Performance for Low-Boom Aircraft** D. Lazzara, T. Magee, H. Shen, J. Mabe, The Boeing Company, Huntington Beach, CA		

Tuesday, 8 January 2019						
147-DS-1	**Aeroelasticity I**					**Promenade B**
Chaired by: A. SCOTTI, Pilatus Aircraft Ltd and F. NITZSCHE, Carleton University						
0930 hrs AIAA-2019-0607 **Aeroelastic Modeling of a Three-Dimensional Wing Using the Harmonic-Balance-Based One-shot Method** H. Li, K. Ekici, University of Tennessee, Knoxville, Knoxville, TN	1000 hrs AIAA-2019-0608 **Aeroservoelastic Design and Wind Tunnel Testing using Parameter-Varying Optimal Control and Inertial-Based Sensing** J. Hopwood, B. Ruskin, D. Broderick, F. Wei, Central Connecticut State University, New Britain, CT	1030 hrs AIAA-2019-0609 **Aeroelastic Flutter Prediction using Multi-fidelity Modeling of the Aerodynamic Influence Coefficients** A. Thelen, L. Leifsson, Iowa State University, Ames, IA; P. Beran, Air Force Research Laboratory, Wright-Patterson AFB, OH	1100 hrs AIAA-2019-0610 **Stall-Induced Oscillations of Typical Aeroelastic Sections in Low Airspeeds** C. dos Santos, F. Marques, University of São Paulo, São Carlos, Brazil			

Tuesday, 8 January 2019						
148-EDU-2	**Innovative Student Rocket Club Designs and Activities**					**Old Town B**
Chaired by: R. SPEARRIN and R. LEBEAU, Saint Louis University						
0930 hrs Oral Presentation **Design-Build-Launch: a hybrid project-based laboratory course for aerospace engineering education** R. Spearrin, F. Bendana, University of California, Los Angeles, Los Angeles, CA	1000 hrs AIAA-2019-0611 **Optimization of the Apogee of an Experimental Sounding Rocket** K. Farmer, R. LeBeau, D. Reczek, Saint Louis University, St. Louis, MO	1030 hrs AIAA-2019-0612 **Educating the Next Generation of Space Scientists at Embry-Riddle through Experience, Design, Build and Fly Rocketry** P. LLanos, R. Haley, S. Gangadharan, V. Duraisamy, G. Maupin, C. Stockton, Embry-Riddle Aeronautical University, Daytona Beach, FL	1100 hrs AIAA-2019-0613 **Low-cost student-manufacturable liquid oxygen-ethanol sounding rocket** A. Nair, D. Pineda, R. Spearrin, University of California, Los Angeles, Los Angeles, CA; D. Crisalli, Polaris Propulsion, Simi Valley, CA	1130 hrs AIAA-2019-0614 **Purdue Liquid Oxygen - Liquid Methane Sounding Rocket** C. Nilsen, S. Meyer, S. Meriam, Purdue University, West Lafayette, IN	1200 hrs AIAA-2019-0615 **The Yellow Jacket Space Program: Insights into Starting a Student Led Space-Shot Rocketry Team at the Georgia Institute of Technology** A. Dutta, Z. Ernst, S. Buddhavarapu, T. Charlson, S. Seshan, J. Sublett, Georgia Institute of Technology, Atlanta, GA	

Tuesday, 8 January 2019

149-EXPL-1 — **Mission Architectures** — **Pyramid Peak**

Chaired by: N. RAMACHANDRAN, NASA Marshall Space Flight Center

0930 hrs	1000 hrs	1030 hrs	1100 hrs	1130 hrs		
AIAA-2019-0616	AIAA-2019-0617	AIAA-2019-0618	AIAA-2019-0619	AIAA-2019-0620		
Moon Direct: A Cost-Effective Plan to Enable Lunar Exploration and Development R. Zubrin, Pioneer Astronautics, Golden, CO	**Argo Nova: Spacecraft and Mission Design of a Heavy Mars Lander** K. Naik, G. Schwarzkopf, F. Reiner, S. Ocaña Losada, A. Caldarelli, S. Pavuluri, Luleå University of Technology, Kiruna, Sweden; et al.	**Evaluation of Mother-Daughter Architectures for Asteroid Belt Exploration** L. Vance, E. Asphaug, J. Thangavelautham, University of Arizona, Tucson, Tucson, AZ	**Near-Term Artificial Gravity Concepts for Deep Space Missions** J. Zipay, J. Hagen, G. James, M. Grygier, P. Taylor, D. Calderon, NASA Johnson Space Center, Houston, TX; et al.	**Design and Fabrication of the Mars Helicopter Rotor, Airframe, and Landing Gear Systems** B. Pipenberg, Aerovironment, Inc., Simi Valley, CA		

Tuesday, 8 January 2019

150-F360-3 — **Forum 360: Responsive Space** — **Seaport F**

0930 - 1130 hrs

Moderator: Douglas Loverro, President, Loverro Consulting LLC, and Former Deputy Assistant Secretary of Defense, Space Policy, U.S. Department of Defense

Panelists:

Col. Eric Felt
Director, Space Vehicles Directorate
Air Force Research Laboratory

John London III
Space Systems Program Manager
Space and Missile Defense Command
U.S. Army

Col. William Surrey
Director, Contracting, Space RCO
Kirtland Air Force Base

Paul "Rusty" Thomas
Program Manager, Tactical Technology Office
Defense Advanced Research Projects Agency

Mandy Vaughn
President
VOX Space, LLC

Tuesday, 8 January 2019

151-FD-20 — **Low-Speed Wall-Bounded Flows** — **Gaslamp C**

Chaired by: A. AHMED, Auburn University and J. WEISS, Ecole de Technologie Superieure

0930 hrs	1000 hrs	1030 hrs				
AIAA-2019-0621	AIAA-2019-0622	AIAA-2019-0623				
Periodic Forcing of an Endwall Vortex in a Highly Loaded Low Pressure Turbine M. Donovan, M. Wolff, Wright State University, Dayton, OH; C. Marks, R. Sondergaard, E. Veley, Air Force Research Laboratory, Wright-Patterson AFB, OH	**Characterization of Periodic Unsteadiness Generator for Secondary Flow Studies** N. Fletcher, C. Marks, R. Sondergaard, Air Force Research Laboratory, Wright-Patterson AFB, OH; M. Wolff, Wright State University, Fairborn, OH	**Variation of Momentum Accommodation Coefficients with Molecular Mass and Structure** T. Acharya, California State University, Bakersfield, CA; M. Martin, National Renewable Energy Laboratory, Denver, CO				

Tuesday, 8 January 2019

152-FD-21 — **Stability and Transition of High-Speed Flows I** — **Harbor B**

Chaired by: T. JULIANO, University of Notre Dame and R. KUMAR, Florida State University

0930 hrs	1000 hrs	1030 hrs	1100 hrs			
AIAA-2019-0624	AIAA-2019-0625	AIAA-2019-0626	AIAA-2019-0627			
Implementation of a Laser-Based Schlieren System for Boundary Layer Instability Investigation in the VKI H3 Hypersonic Wind Tunnel N. Martin, G. Grossir, F. Miró Miró, D. Le Quang, O. Chazot, von Kármán Institute for Fluid Dynamics, Rhode-Saint-Genèse, Belgium	**Effect of Carbon-based Ablation Products on Boundary Layer Stability** O. Elliott, R. Greendyke, Air Force Institute of Technology, Wright-Patterson AFB, OH; J. Jewell, Air Force Research Laboratory, Wright-Patterson AFB, OH; J. Komives, Air Force Institute of Technology, Wright-Patterson AFB, OH	**Transition Measurements on Slender and Blunt Bodies in Ludwieg Tubes at Mach 6** F. Munoz, S. Ali, M. Leinemann, R. Radespiel, Technical University of Braunschweig, Braunschweig, Germany; M. Semper, R. Cummings, U.S. Air Force Academy, Colorado Springs, CO; et al.	**Measurements of Entropy-Layer instabilities over a Cone-Ogive-Cylinder in a Mach-6 Quiet Tunnel** R. Greenwood, U.S. Air Force Academy, Colorado Springs, CO; S. Schneider, Purdue University, West Lafayette, IN			

Tuesday, 8 January 2019						
153-FD-22	**Multiphase Flows II**					**Old Town A**
Chaired by: D. CUPPOLETTI, Air Force Research Laboratory and S. SILTON, US Army Research Laboratory						
0930 hrs AIAA-2019-0628 **Aerodynamic Breakup of a Single Droplet due to a Crossflowed Airstream** G. Carrolo, D. Ribeiro, J. Barata, A. Silva, University of Beira Interior, Covilha, Portugal	1000 hrs AIAA-2019-0629 **Comparative Study of Droplet Impact onto Sloped Surface versus a Droplet Impact onto a Surface with a Crossflow** I. Ferrao, D. Ribeiro, J. Barata, A. Silva, University of Beira Interior, Covilha, Portugal	1030 hrs AIAA-2019-0630 **Cryogenic Cavitation Modeling Capability Using the SLAU Scheme in a Pressure-Based Algorithm** S. Thakur, J. Wright, Streamline Numerics, Inc., Gainesville, FL	1100 hrs AIAA-2019-0631 **Comparison of inert simulated particle transport in a moving shock wave with experiments** A. Marayikkottu Vijayan, P. Rao, D. Levin, University of Illinois, Urbana-Champaign, Urbana, IL; C. Huang, M. Schoenitz, E. L. Dreizin, New Jersey Institute of Technology, Newark, NJ	1130 hrs AIAA-2019-0632 **An Experimental Investigation on the Transient Runback Process of Wind-Driven Water Droplets over Surfaces with Different Wettabilities** L. Ma, Z. Zhang, Y. Liu, H. Hu, Iowa State University, Ames, IA		

Tuesday, 8 January 2019						
154-FD-23	**Special Session: Multidisciplinary LES**					**Gaslamp A**
Chaired by: J. LARSSON, University of Maryland and D. GARMANN, Air Force Research Laboratory						
0930 hrs AIAA-2019-0633 **The Use of Large Eddy Simulations in Jet Aeroacoustics** A. Lyrintzis, Embry-Riddle Aeronautical University, Daytona Beach, FL; M. Coderoni, ANSYS, Inc., Lebanon, NH	1000 hrs Oral Presentation **Large-Eddy Simulations of High Reynolds Number Flows using Immersed Boundary Methods** E. Balaras, George Washington University, Washington, D.C.	1030 hrs AIAA-2019-0634 **Advances in Modeling Supercritical Fluid Behavior and Combustion in High-Pressure Propulsion Systems** J. Oefelein, Georgia Institute of Technology, Atlanta, GA	1100 hrs Oral Presentation **Recent Findings from the DNS of High-Speed, Turbulent Premixed Reacting Flows and Their Implications for the LES Models of Practical Combustion Systems** A. Poludnenko, Texas A&M University, College Station, TX	1130 hrs AIAA-2019-0635 **Large-Eddy Simulation of Flow Over Deformable Parachutes using Immersed Boundary and Adaptive Mesh** H. Yu, C. Pantano, University of Illinois, Urbana-Champaign, Urbana, IL; F. Cirak, University of Cambridge, Cambridge, United Kingdom		

Tuesday, 8 January 2019						
155-FD-24	**Special Session: Unsteady Aerodynamics - Gusts I**					**Harbor D**
Chaired by: A. JONES, University of Maryland and M. SMITH, Georgia Institute of Technology						
0930 hrs AIAA-2019-0636 **Investigation of force transients during transverse and vortex gust encounters** H. Biler, A. Jones, University of Maryland, College Park, College Park, MD; M. Saritas, I. Fenercioglu, N. Cetiner Yildirim, Istanbul Technical University, Istanbul, Turkey; M. Bronz, University of Toulouse, Toulouse, France	1000 hrs AIAA-2019-0637 **Analysis of a Wing Moving Through a Nonlinear Gust** A. Moushegian, M. Smith, Georgia Institute of Technology, Atlanta, GA	1030 hrs AIAA-2019-0638 **Numerical Study of a Flat Plate Wing Response to Large Transverse Gusts at Low Reynolds Number** C. Badrya, J. Baeder, University of Maryland, College Park, College Park, MD	1100 hrs AIAA-2019-0639 **Reynolds Number Effect on Lift Characteristics of an Airfoil Translating Across a Non-uniform Approach Flow** B. Alhosseinihamedani, A. Naguib, M. Koochesfahani, Michigan State University, East Lansing, MI	1130 hrs AIAA-2019-0640 **Fast transverse maneuvers at low Reynolds numbers** M. Moriche, Karlsruhe Institute of Technology, Karlsruhe, Germany; A. Gonzalo, O. Flores, M. Garcia-Villalba, Charles III University of Madrid, Leganes, Spain		

Tuesday, 8 January 2019						
156-FD-25	**CFD Solver Techniques III**					**Promenade A**
Chaired by: A. HADID, Northrop Grumman Aerospace Systems and W. VAN DER VELDEN, Exa GmbH						
0930 hrs AIAA-2019-0641 **An Extended Finite-Element Method for Modeling Fluid-Structure Interaction** D. Caraeni, A. Bakkar, W. Habashi, McGill University, Montréal, Canada	1000 hrs AIAA-2019-0642 **The Moving Discontinuous Galerkin Method with Interface Condition Enforcement for Unsteady Three-Dimensional Flows** A. Corrigan, A. Kercher, D. Kessler, Naval Research Laboratory, Washington, D.C.	1030 hrs AIAA-2019-0643 **Implementation of a Moving Mesh VOF-Based Interface Capturing Method with Application to Low Speed Water Entry Dynamics** R. Smith, Naval Surface Warfare Center, Panama City, FL	1100 hrs AIAA-2019-0644 **Exploration of consistent numerical integration for a 2D Lagrangian discontinuous Galerkin hydrodynamic method** X. Liu, N. Morgan, D. Burton, Los Alamos National Laboratory, Los Alamos, NM	1130 hrs AIAA-2019-0645 **Wall-Modeled Implicit LES of Transitional Flows using Variable-Order Flux Reconstruction Method** V. Singh, S. Frankel, Technion–Israel Institute of Technology, Haifa, Israel		

Tuesday, 8 January 2019						
157-GNC-9	**Control Under Uncertainty**					**Cowles Mountain**
Chaired by: J. QUINDLEN, Boeing Research and Technology						
0930 hrs AIAA-2019-0646 **Minimum-fuel Powered Descent in the Presence of Random Disturbances** J. Ridderhof, P. Tsiotras, Georgia Institute of Technology, Atlanta, GA	1000 hrs AIAA-2019-0647 **Application of Chance-Constrained Optimal Control to Optimal Obstacle Avoidance** R. Keil, University of Florida, Gainesville, Gainesville, FL; R. Aggarwal, M. Kumar, Ohio State University, Columbus, OH; A. Rao, University of Florida, Gainesville, Gainesville, FL	1030 hrs AIAA-2019-0648 **Failure-Adverse Closed-Loop Statistical Verification** J. Quindlen, The Boeing Company, Huntington Beach, CA; U. Topcu, University of Texas, Austin, Austin, TX; G. Chowdhary, University of Illinois, Urbana-Champaign, Urbana, IL; J. How, Massachusetts Institute of Technology, Cambridge, MA	1100 hrs AIAA-2019-0649 **Robust-Control-Based Design and Comparison of an Adaptive Controller for the VEGA Launcher** D. Navarro-Tapia, A. Marcos, University of Bristol, Bristol, United Kingdom; S. Bennani, ESA, Noordwijk, The Netherlands; C. Roux, Avio S.p.A., Colleferro, Italy	1130 hrs AIAA-2019-0650 **A Stochastic Controller Maximizing the Conditional Probability Density for Linear Systems with Additive Cauchy Noises** N. Twito, M. Idan, Technion--Israel Institute of Technology, Haifa, Israel; J. Speyer, University of California, Los Angeles, Los Angeles, CA		

Tuesday, 8 January 2019						
158-GNC-10	**Optimal Control**					**Cuyamuca Peak**
Chaired by: R. FOUST						
0930 hrs AIAA-2019-0651 **Desensitized Optimal Control** K. Seywald, Nabla Zero Labs, San Marino, CA; H. Seywald, Self, Yorktown, VA	1000 hrs AIAA-2019-0652 **Solving Optimal Control with Nonlinear Dynamics Using Sequential Convex Programming** R. Foust, University of Illinois, Urbana-Champaign, Urbana, IL; S. Chung, California Institute of Technology, Pasadena, CA; F. Hadaegh, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1030 hrs AIAA-2019-0653 **Rigid Body Adaptive Stabilization on the Tangent Bundle of the LIE Groups** D. Seo, M. Nazari, Embry-Riddle Aeronautical University, Daytona Beach, FL	1100 hrs AIAA-2019-0654 **An Alternating Projection Approach for Non-Convex Quadratically Constrained Quadratic Programmings** C. Wan, S. You, R. Dai, Ohio State University, Columbus, OH			

Tuesday, 8 January 2019						
159-GNC-11	**Multi-Agent Systems**					**Skyline**
Chaired by: W. WHITACRE, Draper Laboratory and M. OPPENHEIMER, Air Force Research Laboratory						
0930 hrs AIAA-2019-0655 **Hybrid Planning and Control for Multiple Fixed-Wing Aircraft under Input Constraints** K. Garg, D. Panagou, University of Michigan, Ann Arbor, Ann Arbor, MI	1000 hrs AIAA-2019-0656 **Fractional PID Consensus Control Protocols for Second-Order Multiagent Systems** D. Yaylali, E. Butcher, A. Dabiri, University of Arizona, Tucson, Tucson, AZ	1030 hrs AIAA-2019-0657 **Discrete-Time Linear Distributed Tracking Protocols for Nonlinearly Interconnected Multiagent Systems** V. Rezaei, M. Stefanovic, University of Denver, Denver, CO	1100 hrs AIAA-2019-0658 **Multiplayer Target-Attacker-Defender Differential Game: Pairing Allocations and Control Strategies for Guaranteed Intercept** V. Chipade, D. Panagou, University of Michigan, Ann Arbor, Ann Arbor, MI	1130 hrs AIAA-2019-0659 **Finite time formation control for multi-agent systems with event-triggered control scheme** D. Zhou, A. Zhang, W. Bi, Northwestern Polytechnical University, Xi'an, China		

Tuesday, 8 January 2019						
160-GNC-12	**Entry, Descent, and Landing I (Invited)**					**America's Cup C**
Chaired by: J. CARSON, NASA and B. ACIKMESE, University of Washington						
0930 hrs AIAA-2019-0660 **The SPLICE Project: Continuing NASA Development of GN&C Technologies for Safe and Precise Landing (Invited)** J. Carson, NASA Johnson Space Center, Houston, TX; M. Munk, NASA Headquarters, Washington, D.C.; R. Sostaric, J. Estes, NASA Johnson Space Center, Houston, TX; F. Amzajerdian, NASA Langley Research Center, Hampton, VA; J. Blair, NASA Goddard Space Flight Center, Greenbelt, MD; et al.	1000 hrs AIAA-2019-0661 **Defining Navigation Requirements for Future Missions (Invited)** A. Dwyer-Cianciolo, NASA Langley Research Center, Hampton, VA; C. Karlgaard, Analytical Mechanics Associates, Inc., Hampton, VA; D. Woffinden, NASA Johnson Space Center, Houston, TX; R. Lugo, J. Tynis, Analytical Mechanics Associates, Inc., Hampton, VA; R. Sostaric, NASA Johnson Space Center, Houston, TX; et al.	1030 hrs AIAA-2019-0662 **Linear Covariance Analysis Techniques to Generate Navigation and Sensor Requirements for the Safe and Precise Landing Integrated Capabilities Evolution (SPLICE) Project (Invited)** D. Woffinden, S. Robinson, NASA Johnson Space Center, Houston, TX; J. Williams, Z. Putnam, University of Illinois, Urbana-Champaign, Urbana, IL	1100 hrs AIAA-2019-0663 **Integrated Flush Air Data Sensing System Modeling for Planetary Entry Guidance with Direct Force Control (Invited)** R. Lugo, C. Karlgaard, R. Powell, Analytical Mechanics Associates, Inc., Hampton, VA; A. Dwyer-Cianciolo, NASA Langley Research Center, Hampton, VA	1130 hrs AIAA-2019-0664 **Aeroballistic Range Testing of the CobraMRV Mid Lift-to-Drag Entry Vehicle (Invited)** R. Sostaric, NASA Johnson Space Center, Houston, TX; J. Garcia, NASA Ames Research Center, Moffett Field, CA; B. Johnson, NASA Johnson Space Center, Houston, TX; B. Nikaido, NASA Ames Research Center, Moffett Field, CA; T. Brown, Army Research Laboratory, Aberdeen Proving Ground, MD		

Tuesday, 8 January 2019

161-GNC-13 — **Entry, Descent, and Landing II** — **Vista A**

Chaired by: E. MOOIJ, Delft Technical University of Technology and K. BOLLINO, U.S. Air Force

0930 hrs	1000 hrs	1030 hrs	1100 hrs	1130 hrs		
AIAA-2019-0665	AIAA-2019-0666	AIAA-2019-0667	AIAA-2019-0668	AIAA-2019-0669		
Stability of Guided Parachute-Payload Systems for Planetary Descent	**Rapid Generation of Navigation-Optimal Trajectories for Planetary Landing via Convex Optimization**	**Improved Sequential Convex Programming Algorithms for Entry Trajectory Optimization**	**Optimization of Three-Dimensional Lunar Landing Trajectories and Accessible Area Computation**	**Computationally Efficient Suboptimal Guidance for Aerocapture**		
F. Trovarelli, E. Mooij, Delft University of Technology, Delft, The Netherlands	H. Arai, University of Tokyo, Kasiwa, Japan; S. Sakai, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan	Z. Wang, University of Tennessee, Knoxville, Knoxville, TN; M. Grant, Purdue University, West Lafayette, IN	Y. Ulybyshev, RSC Energia, Korolev, Russia	K. Barad, S. B., M. Kothari, Indian Institute of Technology Kanpur, Kanpur, India		

Tuesday, 8 January 2019

162-GT-2 — **Application of Statistical Methods to Ground Testing (Invited)** — **Cityview B**

0930 - 1230 hrs

Statistically Defensible Test Methods Focus Group (SDTMFG) in the AIAA Ground Testing Technical Committee:

0930 hrs
"A Survey of the Application and Impact of Statistical Methods in Aeronautical Ground Testing"
Peter Parker
NASA Langley Research Center

1000 hrs
"Experimental Design of a Unique Force Measurement System Calibration for SLS"
Kenneth Toro
NASA Langley Research Center

1030 hrs
"Statistical Modeling of Electronically Scanned Pressure Transducer Uncertainty Probability Density Functions"
Frank Semmelmeyer
Air Force Research Laboratory

1100 hrs
"Applying Statistically Rigorous Test Techniques to the Calibration of the National Full-Scale Aerodynamics Complex"
Rebecca Rought
Arnold Engineering Development Complex

Tuesday, 8 January 2019

163-GTE-2 — **Combustors II** — **Highland Peak**

Chaired by: B. EMERSON

0930 hrs	1000 hrs	1030 hrs	1100 hrs	1130 hrs		
AIAA-2019-0671	AIAA-2019-0672	AIAA-2019-0673	AIAA-2019-0674	AIAA-2019-0675		
Premixed Flame Response to High-Frequency Transverse Acoustic Modes: Mean Flame Asymmetry Effects	**An Experimental Study on Period Doubling and Flame Shape Bifurcation in Self Excited Combustion Instabilities of Lean Propane Mixtures in a Swirl Stabilized Model Gas Turbine Combustor**	**A Counter-flow Diffusion Flame study for the Supercritical CO_2 Combustion**	**Large Eddy Simulation Of Turbulent Reacting Flow Using Premixed Conditional Moment Closure Method**	**Mean pressure effects on thermoacoustic oscillation dynamics and flame shape on an industrial gas turbine configuration.**		
V. Acharya, T. Lieuwen, Georgia Institute of Technology, Atlanta, GA	E. Karlis, Y. Hardalupas, A. Taylor, Imperial College London, London, United Kingdom	R. Kancherla, University of Central Florida, Orlando, FL; S. Martin, Embry-Riddle Aeronautical University, Daytona Beach, FL; J. Bobren-Diaz, S. Vasu, University of Central Florida, Orlando, FL	J. Bobren-Diaz, University of Central Florida, Orlando, FL; S. Martin, Embry-Riddle Aeronautical University, Daytona, FL; R. Kancherla, S. Vasu, University of Central Florida, Orlando, FL	E. Karlis, Y. Hardalupas, A. Taylor, Imperial College London, London, United Kingdom; J. Rogerson, S. Sadasivuni, Siemens, Lincoln, United Kingdom; M. Stöhr, German Aerospace Center (DLR), Stuttgart, Germany; et al.		

Tuesday, 8 January 2019

164-HSABP-4 — **Novel Approaches for High-Speed Engine Analysis and Optimization** — **Hillcrest C**

Chaired by: T. O'BRIEN, Raytheon Missiles Systems

0930 hrs	1000 hrs	1030 hrs	1100 hrs	1130 hrs		
AIAA-2019-0676	AIAA-2019-0677	AIAA-2019-0678	Oral Presentation	AIAA-2019-0679		
Ignition and flameholding of hydrocarbon fuel in supersonic flow by means of surface electrical discharge	**Distinguishing Characteristics of Thermally- and Mechanically-Generated Backpressure**	**Shock Wave in Combustion in a Scramjet Engine**	**Stratospheric Flying Opportunities for High-Speed Propulsion Concepts: STRATOFLY**	**The Inverse Design of Thrust Optimized Scramjets Derived from Quasi-1D Flowfields**		
D. Yarantsev, A. Firsov, Russian Academy of Sciences, Moscow, Russia; S. Chernyshev, A. Nikolaev, V. Talyzin, TsAGI, Zhukovsky, Russia	F. Ladeinde, Stony Brook University, Stony Brook, NY	S. Sato, Japan Aerospace Exploration Agency (JAXA), Kakuda, Japan; M. Fukui, Space Service, Kakuda, Japan; T. Watanabe, M. Takahashi, T. Munakata, Hitachi, Sendai, Japan	B. Saracoglu, von Kármán Institute for Fluid Dynamics, Rhode-Saint-Genèse, Belgium	F. Ferguson, D. Feng, J. Mendez, F. Pace, North Carolina A&T State University, Greensboro, NC		

Tuesday, 8 January 2019						
165-IS-7	**Intelligent Systems Student Paper Competition**					**Solana Beach B**
Chaired by: A. LAMPTON, Systems Technology, Inc. and T. YUCELEN, University of South Florida						
0930 hrs AIAA-2019-0680 **FEA-Net: A Deep Convolutional Neural Network With PhysicsPrior For Efficient Data Driven PDE Learning** H. Yao, Y. Ren, Y. Liu, Arizona State University, Tempe, AZ	1000 hrs AIAA-2019-0681 **InfoSSM: Interpretable Unsupervised Learning of Nonparametric State-Space Model for Multi-modal Dynamics** Y. Park, H. Choi, Korea Advanced Institute of Science and Technology, Daejeon, South Korea	1030 hrs AIAA-2019-0682 **Anomaly Detection Using Temporal Logic Based Learning for Terminal Airspace Operations** R. Deshmukh, I. Hwang, Purdue University, West Lafayette, IN	1100 hrs AIAA-2019-0683 **An Intercept and Following Strategy for a Multi-rotor Platform using a Modified Proportional Navigation** G. Clem, J. Wilhelm, Ohio University, Athens, OH; D. Casbeer, I. Weintraub, D. Grymin, Air Force Research Laboratory, Wright-Patterson AFB, OH	1130 hrs AIAA-2019-0684 **Cooperative Localization for Multi-rotor UAVs** A. Chakraborty, R. Sharma, University of Cincinnati, Cincinnati, OH; K. Brink, Air Force Research Laboratory, Eglin AFB, FL	1200 hrs AIAA-2019-0685 **Exploring Gaussian Process Regression and Unscented Kalman Filtering for Lithium-ion Battery Prognostics** I. Nagi, D. Yin, A. Yousafzai, D. Tzannetos, O. Mengshoel, Carnegie Mellon University, Moffett Field, CA; R. Martin, NASA Ames Research Center, Moffett Field, CA; et al.	

Tuesday, 8 January 2019						
166-IS-8/SOF-2	**Verification and Validation of Increasingly Autonomous Systems (Invited)**					**Seaport H**
Chaired by: N. NEOGI, NASA Langley Research Center and K. HOBBS, AFRL/RQQA						
0930 hrs AIAA-2019-0686 **Vehicle Level Resilient Intelligent Control – Challenges and Opportunities (Invited)** I. Gregory, NASA Langley Research Center, Hampton, VA	1000 hrs Oral Presentation **Test and Evaluation for Autonomy (Invited)** D. Ahner, Air Force Institute of Technology, Wright-Patterson AFB, OH	1030 hrs Oral Presentation **Machine Learning for Robotics and Autonomy (Invited)** R. Young, Johns Hopkins University Applied Physics Laboratory, Laurel, MD	1100 hrs Oral Presentation **Software and Autonomy V&V at the DLR (Invited)** C. Torens, German Aerospace Center (DLR), Braunschweig, Germany	1130 hrs Oral Presentation **Humans and Autonomy (Invited)** A. Pritchett, Pennsylvania State University, University Park, PA		

Tuesday, 8 January 2019						
167-IS-9	**Autonomous Small UAS Urban Flight I (Invited)**					**Solana Beach A**
Chaired by: V. STEPANYAN, Universities Space Research Association and A. CHAKRABARTY						
0930 hrs AIAA-2019-0687 **Autonomous UAS Operations in High-Density Low-Altitude Urban Environments (Invited)** C. Ippolito, K. Krishnakumar, NASA Ames Research Center, Moffett Field, CA; V. Stepanyan, University of California, Santa Cruz, Santa Cruz, CA; A. Bencomo, S. Hening, J. Baculi, Stinger Ghaffarian Technologies, Inc., Moffett Field, CA	1000 hrs AIAA-2019-0688 **Sensitivity Analysis of Key Factors in High Density Unmanned Aerial System Operations (Invited)** M. Xue, NASA Ames Research Center, Moffett Field, CA	1030 hrs AIAA-2019-0689 **An Autonomy Architecture Concept for High-Density Operations of Small UAS in Urban Environments (Invited)** C. Ippolito, K. Krishnakumar, NASA Ames Research Center, Moffett Field, CA; V. Stepanyan, University of California, Santa Cruz, Santa Cruz, CA; A. Bencomo, A. Chakrabarty, S. Hening, Stinger Ghaffarian Technologies, Inc., Moffett Field, CA	1100 hrs AIAA-2019-0690 **Vehicle to Vehicle (V2V) communication for Collision avoidance for Multi-copters flying in UTM –TCL4 (Invited)** A. Chakrabarty, C. Ippolito, J. Baculi, K. Krishnakumar, S. Hening, NASA Ames Research Center, Moffett Field, CA	1130 hrs **Open Discussion**		

Tuesday, 8 January 2019						
168-MAT-4	**Multiscale Modeling I**					**Mission Beach C**
Chaired by: R. FERTIG, University of Wyoming and S. ARNOLD, NASA Glenn Research Center						
0930 hrs AIAA-2019-0691 **An Integrated Computational Framework for Microstructure-Sensitive Materials Modeling** H. Chen, University of Kentucky, Lexington, Lexington, KY; Y. Jiao, Y. Liu, Arizona State University, Tempe, AZ	1000 hrs AIAA-2019-0692 **A Comparison of Different Modeling Strategies for Predicting Effective Properties of 3D Woven Composites** T. Ricks, NASA Glenn Research Center, Cleveland, OH; B. Farrokh, NASA Goddard Space Flight Center, Greenbelt, MD; B. Bednarcyk, E. Pineda, NASA Glenn Research Center, Cleveland, OH	1030 hrs AIAA-2019-0693 **Multiscale Initial Failure Analysis of Textile Composite Structures Using Mechanics of Structure Genome in MSC.Nastran** X. Liu, Purdue University, West Lafayette, IN; F. Gasco, Spirit Aerosystems, Inc., Wichita, KS; W. Yu, Purdue University, West Lafayette, IN	1100 hrs AIAA-2019-0694 **Micromechanics-Enriched Finite Element Modeling of Composite Structures with Fiber Waviness and Void Defects** A. Hyde, L. Liu, Utah State University, Logan, UT; X. Cui, J. Lua, Global Engineering and Materials, Inc., Princeton, NJ			

Tuesday, 8 January 2019						
169-MDO-4/APA-20	**Aerodynamic Design: Analysis, Methodologies, and Optimization Techniques I**					**Mission Beach B**
Chaired by: D. MAVRIPLIS, University of Wyoming and L. MAINI, MIT						
0930 hrs AIAA-2019-0695 **Active Flow Control Optimization Using the Discrete Adjoint Method** B. Munguia, J. Mukhopadhaya, J. Alonso, Stanford University, Stanford, CA	1000 hrs AIAA-2019-0696 **Multipoint Aerodynamic Shape Optimization for Subsonic and Supersonic Regimes** M. Mangano, J. Martins, University of Michigan, Ann Arbor, Ann Arbor, MI	1030 hrs AIAA-2019-0697 **Aerodynamic Shape Optimization with Time Spectral Flutter Adjoint** S. He, E. Jonsson, C. Mader, J. Martins, University of Michigan, Ann Arbor, Ann Arbor, MI	1100 hrs AIAA-2019-0698 **Effect of Airfoil Parametrization on the Optimization of Counter Rotating Open Rotors** G. Montero Villar, D. Lindblad, N. Andersson, Chalmers University of Technology, Göteborg, Sweden	1130 hrs AIAA-2019-0699 **Toward a Pseudo-Time Accurate Formulation of the Adjoint and Tangent Systems** E. Padway, D. Mavriplis, University of Wyoming, Laramie, Laramie, WY		

Tuesday, 8 January 2019						
170-MDO-5	**Multidisciplinary Design Optimization for Vehicle Design II**					**Mission Beach A**
Chaired by: A. NING, BYU and M. JRAD, Virginia Tech						
0930 hrs AIAA-2019-0700 **A Comparison of Multidisciplinary Design Optimization Architectures with an Aircraft Case Study** B. Chell, S. Hoffenson, M. Blackburn, Stevens Institute of Technology, Hoboken, NJ	1000 hrs AIAA-2019-0701 **Design Optimization of a Closed Box Wing All-Electric Commuter Aircraft Concept** S. Siqueira, P. Skinner, A. Ibrahem, M. Liu, S. Barits, E. Bontoft, Queen Mary University of London, London, United Kingdom; et al.	1030 hrs AIAA-2019-0702 **Multidisciplinary System Design Optimization Approach for Lunar Surface Access from Cislunar Orbit** S. Ueda, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan; T. Ikenaga, R. Ujiie, Japan Aerospace Exploration Agency (JAXA), Tsukuba, Japan	1100 hrs AIAA-2019-0703 **Evolutionary Multidisciplinary Design Optimization of Blended-Wing-Body-Type Flyback Booster** T. Sumimoto, K. Chiba, University of Electro-Communications, Tokyo, Japan; M. Kanazaki, Tokyo Metropolitan University, Tokyo, Japan; T. Fujikawa, K. Yonemoto, Kyushu Institute of Technology, Kitakyushu, Japan; N. Hamada, Fujitsu Laboratories, Ltd., Kawasaki, Japan	1130 hrs AIAA-2019-0704 **Surrogate model-based multi-objective MDO approach for partially Reusable Launch Vehicle design** L. Brevault, M. Balesdent, A. Hebbal, ONERA, Palaiseau, France; A. Patureau De Mirand, French Space Agency (CNES), Paris, France		

Tuesday, 8 January 2019						
171-MDO-6/NDA-3/STR-5	**Special Session: Honoring Professor Rafi Haftka I**					**Golden Hill A**
Chaired by: S. VENKATARAMAN, San Diego State University and Z. GURDAL, University of South Carolina						
0930 hrs AIAA-2019-0705 **Structural Design and Optimization of Commercial Vehicles Chassis under Multiple Load Cases and Constraints** S. De, K. Singh, J. Seo, R. Kapania, Virginia Polytechnic Institute and State University, Blacksburg, VA; E. Ostergaard, N. Angelini, Metalsa, Roanoke, VA; et al.	1000 hrs AIAA-2019-0706 **Effect of Multiple and Competing Failure Modes on Robustness of Progressive Failure Response in Composite Bolted Joints** P. Borwankar, A. Fonanelli, S. Venkataraman, San Diego State University, San Diego, CA	1030 hrs AIAA-2019-0707 **Meshless Local Petrov Galerkin (MLPG) Method with Orthogonal Polynomials for Euler-Bernoulli Beam Problems** I. Raju, NASA Langley Research Center, Hampton, VA	1100 hrs AIAA-2019-0708 **Comparison of Structural Concepts for Transport Aircraft with an Aft Tail Cone Turbine** B. Mason, NASA Langley Research Center, Hampton, VA	1130 hrs AIAA-2019-0709 **Aero-viscoelastic Effects in daVinci-Euler-Bernoulli and Timoshenko Beams with Physical Starting Transients, Moving Shear Centers and Neutral Axes** H. Hilton, University of Illinois, Urbana-Champaign, Urbana, IL; T. Nguyen, Higher Institute of Mechanics of Paris (Supméca), Paris, France		

Tuesday, 8 January 2019						
172-MST-5	**Motion Cueing for Training Simulators III - Human Factors**					**Eagle Peak**
Chaired by: P. ZAAL, NASA Ames Research Center and O. STROOSMA, Delft Technical University of Technology						
0930 hrs AIAA-2019-0710 **The Impact of In-Flight Motion on the Aggressiveness of Pilot Inputs: A Comparison with Fixed-base Simulation (Invited)** D. Klyde, Systems Technology, Inc., Hawthorne, CA	1000 hrs AIAA-2019-0711 **Motion Cueing Fidelity in Upset Recovery Simulation (Invited)** L. Zaichik, Y. Yashin, P. Desyatnik, Y. Arkhangelsky, TsAGI, Zhukovsky, Russia	1030 hrs AIAA-2019-0712 **A Simulator Comparison Study into the Effects of Motion Filter Order on Pilot Control Behavior (Invited)** M. Pieters, P. Zaal, San Jose State University, Moffett Field, CA; D. Pool, O. Stroosma, M. Mulder, Delft University of Technology, Delft, The Netherlands	1100 hrs AIAA-2019-0713 **Evaluation of the Pilot Perception in a Robotic Flight Simulator with and without a Linear Unit (Invited)** W. Rodrigues de Oliveira, A. Matheus, G. Rodamilans, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil; R. Nicola, Mauá Institute of Technology, São Caetano do Sul, Brazil; D. Arjoni, L. Trabasso, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil; et al.	1130 hrs AIAA-2019-0714 **Mitigating the Coriolis Effect in Human Centrifuges by coherent G-misalignment (Invited)** T. Mkhoyan, Delft University of Technology, Delft, The Netherlands; M. Wentink, Desdemona B.V., Soesterberg, The Netherlands; M. van Paassen, M. Mulder, Delft University of Technology, Delft, The Netherlands; B. de Graaf, Desdemona B.V., Soesterberg, The Netherlands	1200 hrs **Panel Discussion**	

Tuesday, 8 January 2019						
173-MST-6	**Technologies for Airplane-State Awareness I (Invited)**					**Twin Peaks**
Chaired by: G. SHAH, NASA-Langley Research Center and S. YOUNG, NASA-Langley Research Center						
0930 hrs AIAA-2019-0715 **NASA Research for Airplane State Awareness (Invited)** G. Shah, K. Cunningham, K. Ellis, NASA Langley Research Center, Hampton, VA; M. Feary, NASA Ames Research Center, Mountain View, CA; A. Harrivel, NASA Langley Research Center, Hampton, VA; S. Schuet, NASA Ames Research Center, Mountain View, CA; et al.	1000 hrs AIAA-2019-0716 **Airplane State Awareness and Prediction Technologies – Research Overview (2014-2018) (Invited)** S. Young, NASA Langley Research Center, Hampton, VA	1030 hrs AIAA-2019-0717 **Pilot Sensitivity to Simulator Flight Dynamics Model Formulation for Stall Training (Invited)** K. Cunningham, G. Shah, P. Murphy, M. Hill, B. Pickering, NASA Langley Research Center, Hampton, VA	1100 hrs AIAA-2019-0718 **Lessons for Design and Evaluation of Flight Crew Attention and Awareness (Invited)** M. Feary, NASA Ames Research Center, Moffett Field, CA; R. Mumaw, D. Billman, San Jose State University, Moffett Field, CA	1130 hrs AIAA-2019-0719 **Training for Airplane State Awareness using Biofeedback (Invited)** A. Harrivel, J. Comstock, C. Stephens, K. Kennedy, C. Heinich, NASA Langley Research Center, Hampton, VA; M. Last, Analytical Mechanics Associates, Inc., Hampton, VA; et al.	1200 hrs AIAA-2019-0720 **Virtual Day-VMC Displays for Attitude State Awareness (Invited)** K. Ellis, NASA Langley Research Center, Hampton, VA	

Tuesday, 8 January 2019						
174-NDA-4	**Special Session: DARPA Efficient Quantification of Uncertainty in Physical Systems (EQUiPS) Program**					**Torrey Hills A**
Chaired by: P. BERAN, US Air Force Research Laboratory(AFRL/RQVC) and G. IACCARINO, Stanford University						
0930 hrs AIAA-2019-0721 **Beyond Basis Values: Fast Precision Margin with FORM** Z. del Rosario, R. Fenrich, G. Iaccarino, Stanford University, Stanford, CA	1000 hrs AIAA-2019-0722 **Recent advancements in Multilevel-Multifidelity techniques for forward UQ in the DARPA Sequoia project** G. Geraci, M. Eldred, Sandia National Laboratories, Albuquerque, NM; A. Gorodetsky, University of Michigan, Ann Arbor, Ann Arbor, MI; J. Jakeman, Sandia National Laboratories, Albuquerque, NM	1030 hrs AIAA-2019-0723 **Sequential Reliability-Based Design Optimization via Anchored Decomposition** R. Fenrich, J. Alonso, Stanford University, Stanford, CA	1100 hrs AIAA-2019-0724 **Uncertainty Propagation Using Conditional Random Fields in Large-Eddy Simulations of Scramjet Computations** X. Huan, University of Michigan, Ann Arbor, Ann Arbor, MI; C. Safta, Sandia National Laboratories, Livermore, CA; Z. Vane, Northrop Grumman Corporation, Sunnyvale, CA; G. Lacaze, Space Exploration Technologies Corporation, Hawthorne, CA; J. Oefelein, Georgia Institute of Technology, Atlanta, GA; H. Najm, Sandia National Laboratories, Livermore, CA	1130 hrs AIAA-2019-0725 **Progress in Scramjet Design Optimization Under Uncertainty Using Simulations of the HIFiRE Configuration** G. Geraci, Sandia National Laboratories, Albuquerque, NM; F. Menhorn, Technical University of Munich, Munich, Germany; X. Huan, C. Safta, Sandia National Laboratories, Livermore, CA; Y. Marzouk, Massachusetts Institute of Technology, Cambridge, MA; H. Najm, Sandia National Laboratories, Livermore, CA; et al.		

Tuesday, 8 January 2019						
175-PC-8	**Sprays and Multiphase Combustion I**					**Hillcrest A**
Chaired by: C. CADOU, University of Maryland and M. ANAND, Rolls-Royce Corp						
0930 hrs AIAA-2019-0726 **Investigation of Primary Atomization Mechanism of a Novel Twin-Fluid Atomizer using High Spatial Resolution Shadowgraph** O. Akinyemi, L. Jiang, University of Louisiana, Lafayette, Lafayette, LA	1000 hrs AIAA-2019-0727 **Assessment of the Comparability of Droplet Evaporation Fuel Sensitivities between a Unit Test Case and an Aviation Gas Turbine Combustor** S. Ruoff, B. Rauch, P. Le Clercq, M. Aigner, German Aerospace Center (DLR), Stuttgart, Germany	1030 hrs AIAA-2019-0728 **An Adaptive Particle Tracking Algorithm for Lagrangian-Eulerian Simulations of Dispersed Multiphase Flows** W. Ge, R. Sankaran, Oak Ridge National Laboratory, Oak Ridge, TN	1100 hrs AIAA-2019-0729 **Combustion of Droplets of Normal Alkanes with Cool-Flame Chemistry** F. Williams, University of California, San Diego, La Jolla, CA; V. Nayagam, Case Western Reserve University, Cleveland, OH			

Tuesday, 8 January 2019						
176-PC-9	**Turbulent Flames III**					**Harbor F**
Chaired by: J. OEFELEIN, Georgia Institute of Technology and M. MUELLER, Princeton University						
0930 hrs AIAA-2019-0730 **Turbulent Flame Structure and Dynamics in Swirling Reacting Flows: Insights from High-Speed Dual-Plane *Stereo*-PIV/OH-PLIF Measurements** T. Yi, N. Jiang, C. Fugger, P. Hsu, J. Felver, S. Roy, Spectral Energies, LLC, Dayton, OH; et al.	1000 hrs AIAA-2019-0731 **Multi-Scalar Measurements of Premixed Flames in Extreme Turbulence Using Raman/Rayleigh Diagnostics** T. Wabel, University of Toronto, Toronto, Canada; A. Steinberg, Georgia Institute of Technology, Atlanta, GA; R. Barlow, Sandia National Laboratories, Livermore, CA	1030 hrs AIAA-2019-0732 **High Speed Imaging of Flame Structure and Dynamic Processes in Swirl Stabilized Prevaporized Liquid Fuel Flames** C. Arndt, German Aerospace Center (DLR), Stuttgart, Germany; A. Steinberg, Georgia Institute of Technology, Atlanta, GA; J. Böhnke, R. Hadef, W. Meier, German Aerospace Center (DLR), Stuttgart, Germany	1100 hrs AIAA-2019-0733 **Measurements and Analysis of Flow-Flame Interactions in Bluff-Body-Stabilized Turbulent Premixed Propane-Air Flames** C. Fugger, Spectral Energies, LLC, Beavercreek, OH; B. Paxton, Innovative Scientific Solutions, Inc., Dayton, OH; J. Gord, B. Rankin, A. Caswell, Air Force Research Laboratory, Wright-Patterson AFB, OH	1130 hrs AIAA-2019-0734 **Experimental Study of the Impact of High Centrifugal Body Forces on Constant Pressure, Propane-Air Flames** T. Erdmann, Innovative Scientific Solutions, Inc., Dayton, OH; A. Caswell, Air Force Research Laboratory, Wright-Patterson AFB, OH; E. Gutmark, University of Cincinnati, Cincinnati, OH	1200 hrs AIAA-2019-0735 **Effect of Sub-Atmospheric Pressures on the Turbulent Flame Speed of Jet Fuel** N. Schorn, J. Bonebrake, A. Fillo, D. Blunck, Oregon State University, Corvallis, OR	

Tuesday, 8 January 2019						
177-PDL-8	**Plasma Actuators I**					**Iron Mountain**
Chaired by: D. ASHPIS, NASA Glenn Research Center						
0930 hrs AIAA-2019-0736 **Numerical Analysis on Flow Characteristics and Jet Boundary Condition of Sparkjet Actuator** H. Kim, J. Shin, S. Ahn, K. Kim, Seoul National University, Seoul, South Korea	1000 hrs AIAA-2019-0737 **Body Force Generation Control by Modulating Applied Voltage Waveform in Tri-Electrode Plasma Actuator** K. Nakai, D. Hasegawa, A. Hatamoto, H. Nishida, Tokyo University of Agriculture and Technology, Tokyo, Japan	1030 hrs AIAA-2019-0738 **Spatial Spectroscopic Analysis of a Cathodic Arc Jet** A. Ronis, I. Kronhaus, Technion–Israel Institute of Technology, Haifa, Israel	1100 hrs AIAA-2019-0739 **Vortex Generator Based on Spark Discharge** A. Firsov, E. Dolgov, S. Leonov, Russian Academy of Sciences, Moscow, Russia	1130 hrs AIAA-2019-0740 **Experimental and Numerical Study of Flow Induced by Nanosecond Repetitively Pulsed Discharges** B. Singh, L. Rajendran, P. Gupta, C. Scalo, P. Vlachos, S. Bane, Purdue University, West Lafayette, IN		

Tuesday, 8 January 2019						
178-PDL-9	**Plasma-Assisted Combustion and Ignition II**					**Kingston Peak**
Chaired by: S. BANE, Purdue University- Sch of Aero and Astro						
0930 hrs AIAA-2019-0741 **Mathematical modeling of dual-pulse laser ignition in a turbulent flow** A. Tropina, R. Mahamud, Texas A&M University, College Station, TX; M. Shneider, R. Miles, Princeton University, Princeton, NJ	1000 hrs AIAA-2019-0742 **Large Eddy Simulations of turbulent flame ignition by Nanosecond Repetitively Pulsed discharges** Y. Bechane, N. Darabiha, CentraleSupélec, Gif-sur-Yvette, France; V. Moureau, National Institute of Applied Sciences (INSA), Rouen, France; C. Laux, B. Fiorina, CentraleSupélec, Gif-sur-Yvette, France	1030 hrs AIAA-2019-0743 **Effect of Nanosecond Repetitively Pulsed Plasma Discharges on Premixed Methane-Air Bunsen Flames** N. Numa, N. Joel, R. Jagannath, A. Satija, R. Lucht, S. Bane, Purdue University, West Lafayette, IN	1100 hrs AIAA-2019-0744 **Flame Oscillations Excited by a Ns Pulse / Ms Tail Electric Discharge Waveform** Y. Tang, Tsinghua University, Beijing, China; M. Simeni Simeni, Ohio State University, Columbus, OH; Q. Yao, Tsinghua University, Beijing, China; K. Frederickson, I. Adamovich, Ohio State University, Columbus, OH	1130 hrs AIAA-2019-0745 **Atomic Nitrogen Density Measurements in a Nanosecond Capillary Discharge** T. Chng, N. Lepikhin, I. Orel, École Polytechnique, Palaiseau, France; N. Popov, Moscow State University, Moscow, Russia; S. Starikovskaia, École Polytechnique, Palaiseau, France	1200 hrs AIAA-2019-0746 **Coupled computational studies of non-thermal plasma based combustion ignition** A. Sharma, V. Subramaniam, E. Solmaz, L. Raja, University of Texas, Austin, Austin, TX	

Tuesday, 8 January 2019						
179-PGC-4	**Detonative Pressure Gain Combustion I**					**Harbor E**
Chaired by: S. CLAFLIN, Aerojet Rocketdyne and A. HAYASHI, Aoyama Gakuin University						
0930 hrs AIAA-2019-0747 **Measurements of H_2O, CO_2, CO, and static temperature inside rotating detonation engines** K. Thurmond, I. Dunn, K. Ahmed, S. Vasu, University of Central Florida, Orlando, FL	1000 hrs AIAA-2019-0748 **Operational Stability Limits in Rotating Detonation Engine Numerical Simulations** D. Paxson, NASA Glenn Research Center, Cleveland, OH; D. Schwer, Naval Research Laboratory, Washington, D.C.	1030 hrs AIAA-2019-0749 **Mach Number Effect on Propagation and Stabilization of Detonation Waves** D. Rosato, J. Sosa, K. Ahmed, University of Central Florida, Orlando, FL	1100 hrs AIAA-2019-0750 **Effects of Nanosecond Repetitively Pulsed Plasma Discharges on a Propagating Hydrogen--Air Flame** J. Gray, D. Lacoste, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia	1130 hrs AIAA-2019-0751 **An Assessment of Techniques for Calculating RDEs** J. Somnic, State University of New York, Incheon, South Korea; F. Ladeinde, Stony Brook University, Stony Brook, NY		

Tuesday, 8 January 2019						
180-SCS-3	**Spacecraft Antennas, and Other Optical Apertures**					**Torrey Hills B**
Chaired by: M. SANTER, Imperial College London and T. MANN, NASA-Langley Research Center						
0930 hrs AIAA-2019-0752 **Enhancement of Large Deployable Mesh Reflectors By a Self-Standing Truss with Hard Points** S. Yuan, B. Yang, University of Southern California, Los Angeles, CA; H. Fang, Shanghai YS Information Technology Company, Ltd., Shanghai, China	1000 hrs AIAA-2019-0753 **Surface Accuracy Study for a Segmented Reflector** Z. Yao, T. Wu, Y. Zhou, H. Fang, Shanghai YS Information Technology Company, Ltd., Shanghai, China	1030 hrs AIAA-2019-0754 **Design concept of hi-precision fan-fold reflector** S. Ozawa, K. Nishi, Japan Aerospace Exploration Agency (JAXA), Tsukuba, Japan; K. Nakamura, N. Nakamura, Technosolver Corporation, Fujisawa, Japan	1100 hrs AIAA-2019-0755 **Deployment Mechanisms for High Packing Efficiency One-Meter Reflectarray Antenna (OMERA)** J. Sauder, M. Arya, N. Chahat, E. Thiel, S. Dunphy, M. Shi, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA; et al.	1130 hrs AIAA-2019-0756 **Flexible Composite Shell Design for the MARCO Deployable Reflector** J. Footdale, LoadPath, LLC, Albuquerque, NM; M. Peterson, Sandia National Laboratories, Albuquerque, NM; J. Griffee, LoadPath, LLC, Albuquerque, NM	1200 hrs AIAA-2019-0757 **Optomechanical Design for CubeSat Laser Infrared Crosslinks** L. Yenchesky, P. Grenfell, M. LaRocca, K. Cahoy, Massachusetts Institute of Technology, Cambridge, MA	

Tuesday, 8 January 2019						
181-SD-7	**Aircraft Dynamic Loads and Response**					**Harbor C**
Chaired by: T. KINNEY, NASA and S. LIGUORE, Boeing Engineering Operations & Technology						
0930 hrs AIAA-2019-0758 **Characterizing the Modification of Turbulence Induced Loads Due to Structural Deformation** A. Becks, V. Shinde, R. Deshmukh, J. McNamara, D. Gaitonde, Ohio State University, Columbus, OH	1000 hrs AIAA-2019-0759 **Dynamic Ground Loads Analysis Using Detailed Modeling of Landing Gear and Aircraft Aeroservoelastics** P. Richards, A. Erickson, SDI Engineering, Inc., Kirkland, WA	1030 hrs AIAA-2019-0760 **Worst-case gust loads prediction with the effects of local structural nonlinearity** L. Garcia Matas, H. Haddad Khodaparast, M. Friswell, Swansea University, Swansea, United Kingdom; A. Castrichini, S. Coggon, B. Leong, Airbus, Bristol, United Kingdom; et al.	1100 hrs AIAA-2019-0761 **Effect of Centrifugal Stiffening on the Natural Frequencies of a Flexible Drone in Roll Maneuvers** R. Deshpande, W. Zhao, M. Jrad, R. Kapania, Virginia Polytechnic Institute and State University, Blacksburg, VA	1130 hrs AIAA-2019-0762 **Aeroelastic Analysis of a Composite Pre-twisted Wing for Minimum Induced Drag** Z. Sotoudeh, California State Polytechnic University, Pomona, CA	1200 hrs AIAA-2019-0763 **Aircraft Transonic Buffet Load Prediction using Artificial Neural Networks** M. Candon, RMIT University, Melbourne, Australia; O. Levinski, Defence Science and Technology Group, Melbourne, Australia; A. Altaf, R. Carrese, P. Marzocca, RMIT University, Melbourne, Australia	

Tuesday, 8 January 2019						
182-SE-3	**Systems Engineering III**					**Vista C**
Chaired by: J. EILER, Stellar Solutions, Inc. and C. MASSA, Draper						
0930 hrs AIAA-2019-0764 **Modeling Spacecraft Design Activities as Rugged Fitness Landscapes** S. Chiesi, P. Grogan, Stevens Institute of Technology, Hoboken, NJ	1000 hrs AIAA-2019-0765 **Best Approaches to Assessment During the Sustainment Phase** C. Vono, Self, Ogden, UT	1030 hrs AIAA-2019-0766 **Preliminary Analysis of Value Contributed by Systems Engineers to Organizations** G. Bhatia, B. Mesmer, University of Alabama, Huntsville, Huntsville, AL	1100 hrs AIAA-2019-0767 **Affordability Through the Eyes of Industry: Preliminary Results** C. White, B. Mesmer, P. Collopy, University of Alabama, Huntsville, Huntsville, AL	1130 hrs AIAA-2019-0768 **Tradespace Exploration of the Next Generation Communication Satellites** A. Aguilar, P. Butler, J. Collins, M. Guerster, B. Kristinsson, P. McKeen, Massachusetts Institute of Technology, Cambridge, MA; et al.	1200 hrs AIAA-2019-0769 **TASTE of Europe's JUICE Mission: Tradespace Analysis of Spacecraft Technology Evaluation (TASTE) for ESA's JUpiter ICy moons Explorer (JUICE)** V. Sundararajan, Self, Research Triangle Park, NC	

Tuesday, 8 January 2019

183-SOF-3 Cybersecurity Challenges for Remotely Piloted Aircraft Systems — Cove

Chaired by: J. PAUNICKA, The Boeing Company and J. MURPHY, NASA -Ames Research Center

0930 hrs
AIAA-2019-0770
Towards Explaining Security Defects in Complex Autonomous Aerospace Systems
C. Paradis, R. Kazman, University of Hawaii, Manoa, Honolulu, HI; M. Davies, NASA Ames Research Center, Moffett Field, CA

1000 hrs
Panel
Unmanned and remotely piloted aircraft systems bring a need to ensure secure communications between the pilot and the aircraft as well as other ground infrastructure. Challenges in all security aspects of the communications that will enable the successful integration of unmanned and remotely piloted aircraft with the existing manned aircraft infrastructure will be discussed.

Moderator: Jim Paunicka, The Boeing Company

Panelists:

Misty Davies	Paul Nelson	Michael Hohnka	Thomas Bui	Jean-Baptiste Jeannin	Darren Cofer
NASA Ames Research Center	NASA Glenn Research Center	Pennsylvania State University	The Boeing Company	University of Michigan	Collins Aerospace

Tuesday, 8 January 2019

184-STR-6 Composite Structural Design, Test and Analysis II — Golden Hill B

Chaired by: A. PALAZOTTO, AFIT and R. TAYLOR, University of Texas, Arlington

0930 hrs
AIAA-2019-0771
An Eco-Efficient Helicopter Tailplane Hybridized from Flax, Balsa and Carbon
K. Strohrmann, M. Hajek, Technical University of Munich, Munich, Germany

1000 hrs
AIAA-2019-0772
Thermo-elastic analysis of laminated functionally graded CNT plates.
B. Adhikari, B. Singh, Indian Institute of Technology Kharagpur, Kharagpur, India

1030 hrs
AIAA-2019-0773
Characterization of IM7/8552 Thin-ply and Hybrid Thin-ply Composites
A. Lovejoy, S. Scotti, NASA Langley Research Center, Hampton, VA; S. Miller, NASA Glenn Research Center, Cleveland, OH; P. Heimann, Ohio Aerospace Institute, Cleveland, OH; S. Miller, NASA Glenn Research Center, Cleveland, OH

1100 hrs
AIAA-2019-0774
Potential Weight Benefits of IM7/8552 Hybrid Thin-ply Composites for Aircraft Structures
A. Lovejoy, S. Scotti, NASA Langley Research Center, Hampton, VA

1130 hrs
AIAA-2019-0775
Integration of MAC/GMC into CalculiX, an open source finite element code
P. Gustafson, F. Yapor Genao, Western Michigan University, Kalamazoo, MI; B. Bednarcyk, E. Pineda, NASA Glenn Research Center, Cleveland, OH

Tuesday, 8 January 2019

185-SUR-2 Materials and Structures for Survivability — Ocean Beach

Chaired by: D. LIU, Air Force Institute of Technology

0930 hrs
AIAA-2019-0776
Fragmentation Properties of Explosively Driven Additively Manufactured Metals
A. LeSieur, A. Lingenfelter, Air Force Institute of Technology, Wright-Patterson AFB, OH; D. Guildenbecher, P. Reu, R. Marinis, J. Ball, Sandia National Laboratories, Albuquerque, NM

1000 hrs
AIAA-2019-0777
Magnet Wire for Venus Exploration
F. Arastu, X. Yi, M. Garg, K. Haran, J. Lyding, University of Illinois, Urbana-Champaign, Urbana, IL

1030 hrs
AIAA-2019-0778
Crashworthiness Analysis and Enhancement of Aircraft Structures under Vertical Impact Scenarios
J. Paz Mendez, J. Díaz García, L. Romera Rodríguez, University of A Coruña, A Coruña, Spain

1100 hrs
AIAA-2019-0779
Optimization of the Bearing Stress of a Hybrid Composite
J. Brewer, A. Palazotto, Air Force Institute of Technology, Wright-Patterson AFB, OH; M. Falugi, Air Force Research Laboratory, Wright-Patterson AFB, OH

Tuesday, 8 January 2019

186-TES-3 Simulation and Modeling of Energy Systems — Vista B

Chaired by: T. SHIH, Purdue University and K. OKAI, Japan Aerospace Exploration Agency

0930 hrs
AIAA-2019-0780
On the robustness and accuracy of marginally resolved discontinuous Galerkin schemes for two dimensional Navier-Stokes flows
B. Klose, G. Jacobs, San Diego State University, San Diego, CA; D. Kopriva, Florida State University, Tallahassee, FL

1000 hrs
AIAA-2019-0781
Calculation of 2D Flame Structure for Premixed Axisymmetric Stagnation Flames with Elevated Flame Temperature and Equivalence Ratio
J. Brunnenmeyer, J. Camacho, San Diego State University, San Diego, CA

1030 hrs
AIAA-2019-0782
Numerical Simulations of an Aluminum-Silicon Metal Alloy Thermal Energy Storage System
J. Mohr, F. Miller, San Diego State University, San Diego, CA

1100 hrs
AIAA-2019-0783
Study of Cavitation Phenomena Over the Hydrofoil of Hydro Turbines
R. Amano, M. Qandil, T. Elgammal, A. Abbas, A. Abdelhadi, University of Wisconsin, Milwaukee, Milwaukee, WI

Tuesday, 8 January 2019						
187-TF-3	**Power Systems, Components, and Modeling for Transformational Applications**					**Mt. Whitney**
Chaired by: A. GIBSON, Empirical Systems Aerospace and K. ANTCLIFF						
0930 hrs AIAA-2019-0784 **Battery Performance Modeling on SCEPTOR X-57 Subject to Thermal and Transient Considerations** J. Chin, S. Schnulo, T. Miller, K. Prokopius, J. Gray, NASA Glenn Research Center, Cleveland, OH	1000 hrs AIAA-2019-0785 **Aging Estimation of Lithium-ion Battery Cell using an Electrochemical Model-Based Extended Kalman Filter** M. Huang, M. Kumar, C. Yang, A. Soderlund, Ohio State University, Columbus, OH	1030 hrs AIAA-2019-0786 **Magnetic Brake testing for Hyperloop Pod Design** A. Soni, T. Indraneel, V. Jayakumar, D. Shiyani, P. Bhagwat, S. Abdallah, University of Cincinnati, Cincinnati, OH	1100 hrs AIAA-2019-0787 **Levitation array testing for Hyperloop Pod Design** T. Indraneel, V. Jayakumar, A. Soni, D. Shiyani, K. Tyagi, S. Abdallah, University of Cincinnati, Cincinnati, OH			

Tuesday, 8 January 2019						
188-TP-3	**Computational Aerothermodynamics**					**Balboa B**
Chaired by: D. KUNTZ, Sandia National Laboratories						
0930 hrs AIAA-2019-0788 **Ab initio based grouped model for O2(3Sigma+)-O(3P2) dissociation and energy transfer mechanisms using ME-QCT Method** M. Sharma Priyadarshini, S. Venturi, M. Panesi, University of Illinois, Urbana-Champaign, Urbana, IL	1000 hrs AIAA-2019-0789 **Statistical Analyses of Quasiclassical Trajectory Data for Air Dissociation** R. Chaudhry, G. Candler, University of Minnesota, Twin Cities, Minneapolis, MN	1030 hrs AIAA-2019-0790 **Effect of Low and High-Fidelity Thermochemical Models on Hypersonic Nonequilibrium Flows** M. Grover, E. Josyula, C. Suchyta, K. Vogiatzis, Air Force Research Laboratory, Wright-Patterson AFB, OH	1100 hrs AIAA-2019-0791 **Molecular dynamics simulation of nitric oxide formation and extinction** D. Andrienko, Texas A&M University, College Station, TX; I. Boyd, University of Michigan, Ann Arbor, Ann Arbor, MI	1130 hrs AIAA-2019-0792 **Quantifying the effects of PES Uncertainty on Ab-Initio Non-Equilibrium Kinetics** S. Venturi, M. Sharma Priyadarshini, M. Panesi, University of Illinois, Urbana-Champaign, Urbana, IL	1200 hrs AIAA-2019-0793 **Different Estimations of the Convective and Radiative Heating for the Martian Entry Probes** D. Yatsukhno, S. Surzhikov, Russian Academy of Sciences, Moscow, Russia; D. Andrienko, Texas A&M University, College Station, TX; J. Annaloro, P. Omaly, French Space Agency (CNES), Toulouse, France	

Tuesday, 8 January 2019						
189-TP-4	**Non-Equilibrium Flows I**					**Balboa A**
Chaired by: J. RABINOVITCH, Jet Propulsion Laboratory						
0930 hrs AIAA-2019-0794 **Nitric Oxide Spectroscopic Measurements in a Hypervelocity Stagnation Flow** N. Yanes, J. Austin, California Institute of Technology, Pasadena, CA	1000 hrs AIAA-2019-0795 **Measurements of Oxygen Vibrational Relaxation and Dissociation Using Ultraviolet Laser Absorption in Shock Tube Experiments** J. Streicher, A. Krish, S. Wang, D. Davidson, R. Hanson, Stanford University, Stanford, CA	1030 hrs AIAA-2019-0796 **Vibrational state-to-state modeling of a recombining nitrogen experiment** P. Mariotto, A. Tibère-Inglesse, CentraleSupélec, Gif-sur-Yvette, France; R. Gollan, P. Jacobs, University of Queensland, Brisbane, Australia; M. Perrin, C. Laux, CentraleSupélec, Gif-sur-Yvette, France	1100 hrs AIAA-2019-0797 **A state-resolved recombination model using orbiting cross-sections from the potential energy surface for atomic oxygen in DSMC** T. Pan, C. Kondur, S. Subramaniam, K. Stephani, University of Illinois, Urbana-Champaign, Urbana, IL	1130 hrs AIAA-2019-0798 **Time Accurate Simulation of Nonequilibrium Flow inside the NASA Ames Electric Arc Shock Tube** K. Bensassi, A. Brandis, NASA Ames Research Center, Moffett Field, CA	1200 hrs AIAA-2019-0799 **An Electronic State-to-State Analysis Method for Nonequilibrium Air Flows** S. Jo, O. Kwon, Korea Advanced Institute of Science and Technology, Daejeon, South Korea; J. Kim, Sejong University, Seoul, South Korea	

Tuesday, 8 January 2019						
190-WE-3	**Wind Turbine Blade Aerodynamics**					**Cityview A**
Chaired by: J. NAUGHTON, University of Wyoming and S. SCHRECK, Siemens						
0930 hrs AIAA-2019-0800 **Experimental Analysis of a Wind-Turbine Rotor Blade Airfoil by means of Temperature-Sensitive Paint** M. Costantini, C. Fuchs, U. Henne, C. Klein, German Aerospace Center (DLR), Göttingen, Germany; V. Ondrus, University of Hohenheim, Stuttgart, Germany; M. Bruse, German-Dutch Wind Tunnels (DNW), Göttingen, Germany; et al.	1000 hrs AIAA-2019-0801 **Transition characteristics measured on a 2MW 80m diameter wind turbine rotor in comparison with transition data from wind tunnel measurements** H. Madsen, Ö. Özçakmak, C. Bak, N. Troldborg, N. Sørensen, J. Sørensen, Technical University of Denmark, Roskilde, Denmark	1030 hrs AIAA-2019-0802 **Static and Dynamic Aerodynamic Performance Parameters for S814 and S825 Airfoils at Moderate Reynolds Number** A. Hassanzadeh, T. Harms, J. Naughton, University of Wyoming, Laramie, Laramie, WY	1100 hrs AIAA-2019-0803 **Towards a Vortex Generator Model for Integral Boundary Layer Methods** A. Koodly Ravishankara, University of Twente, Enschede, The Netherlands; H. Ozdemir, TNO, Petten, The Netherlands; A. Franco, University of Padua, Padua, Italy	1130 hrs AIAA-2019-0804 **A Vortex Step Method for Nonlinear Airfoil Polar Data as Implemented in KiteAeroDyn** R. Damiani, F. Wendt, J. Jonkman, National Renewable Energy Laboratory, Golden, CO; J. Sicard, Makani, Alameda, CA	1200 hrs AIAA-2019-0805 **Numerical and experimental investigations of wind-turbine blade aerodynamics in the presence of ice accretion** H. Knobbe-Eschen, J. Stemberg, K. Abdellaoui, A. Altmikus, Wobben Research and Development GmbH, Aurich, Germany; I. Knop, S. Bansmer, Technical University of Braunschweig, Braunschweig, Germany; et al.	

Tuesday, 8 January 2019		
191-RLA-3 1200 - 1400 hrs	Think Big!: A Session for Students Who Want to Break New Ground in Aerospace	Seaport G
Grab a box lunch and join this Tuesday afternoon interactive session for undergraduate and graduate students from all backgrounds to learn, grow, and get tools that help young professionals break new ground in aerospace. This session features a special keynote speaker who will lead a diverse panel discussion and a follow-up workshop for you to set SMART goals for you to accomplish this week at SciTech and beyond. Think big, build up, reach high.		

Tuesday, 8 January 2019		
192-LUNCH-1 1230 - 1400 hrs	Excellence in Aerospace Awards Luncheon - Celebrating Aerospace Sciences and Information Systems	Seaport A-E
Proof of purchase required and included in registrations where indicated.		

Tuesday, 8 January 2019		
193-HUB-1 1330 - 1400 hrs	Manufacturing - Empowering Ideas and Designs To Fly	the Hub Hangar

Tuesday, 8 January 2019		
194-HUB-2 1400 - 1430 hrs	Exploration for Everyone Plenary Session Follow-Up	the Hub Launch Pad

Tuesday, 8 January 2019						
195-AA-4	Jet Noise III					Balboa C
Chaired by: D. MCLAUGHLIN and P. MORRIS, Pennsylvania State University						
1430 hrs AIAA-2019-0806 **Two-dimensional features of correlations in the flow and near pressure fields of Mach number 0.9 jets** C. Bogey, École Centrale de Lyon, Lyon, France	1500 hrs AIAA-2019-0807 **Numerical Study of Supersonic Jet Noise Emanating from an F404 Nozzle at Model Scale** J. Liu, R. Ramamurti, Naval Research Laboratory, Washington, D.C.	1530 hrs AIAA-2019-0808 **Unsteady Simulations of Fluid Inserts for Supersonic Jet Noise Reduction** C. Prasad, P. Morris, Pennsylvania State University, University Park, PA	1600 hrs AIAA-2019-0809 **Near Field Acoustic Analysis of Cold Supersonic Rectangular Jets** A. Karnam, F. Baier, E. Gutmark, University of Cincinnati, Cincinnati, OH			

Tuesday, 8 January 2019						
196-ACD-5	Supersonic and Hypersonic Flight					Hillcrest B
Chaired by: S. SARTORIUS, -						
1430 hrs AIAA-2019-0810 **Reinterpreting the Volume Parameter in Hypersonic Flight** P. Sforza, University of Florida, Gainesville, Gainesville, FL	1500 hrs AIAA-2019-0811 **Conceptual design of a fifth generation unmanned strike fighter** E. Sepulveda, H. Smith, Cranfield University, Cranfield, United Kingdom					

Tuesday, 8 January 2019						
197-ACD-6	Air Vehicle Design Studies II					Balboa B
Chaired by: C. SVOBODA, Boeing and V. GOLLNICK, DLR						
1430 hrs AIAA-2019-0813 **Troubling Problems Configuring a Forward Swept Wing Transonic Aircraft** T. Takahashi, S. Boccieri, J. Elvig, N. McClure, J. Oroz, K. Spiller, Arizona State University, Tempe, AZ; et al.	1500 hrs AIAA-2019-0814 **Implementation of an Airfoil Information Database for Usage in Conceptual Aircraft Wing Design Process** F. Schueltke, E. Stumpf, RWTH Aachen University, Aachen, Germany	1530 hrs AIAA-2019-0815 **Discrete Lattice Material Vacuum Airship** B. Jenett, Massachusetts Institute of Technology, Cambridge, MA; C. Gregg, University of California, Berkeley, Berkeley, CA; K. Cheung, NASA Ames Research Center, Moffett Field, CA	1600 hrs AIAA-2019-0816 **Formalizing Technology Descriptions for Selection During Conceptual Design** M. Roelofs, R. Vos, Delft University of Technology, Delft, The Netherlands	1630 hrs AIAA-2019-0817 **A Systems-Level Study of Various Passenger Aircraft Electrification Scenarios** J. Smith, E. Mastorakos, University of Cambridge, Cambridge, United Kingdom	1700 hrs AIAA-2019-0818 **A Comparative Study of eVTOL Configuration using SUAVE** M. Clarke, J. Smart, E. Botero, W. Maier, J. Alonso, Stanford University, Stanford, CA	

Tuesday, 8 January 2019						
198-AFM-7	**Aircraft Flight Dynamics III**					**Vista B**
Chaired by: B. JOLLY, USAF and T. LAVIN, Sandia National Laboratories and T. RICHARDSON, University of Bristol						
1430 hrs AIAA-2019-0819 **Unsteady Model Estimation for Generic T-Tail Transport Aircraft Using Computational Data** P. Murphy, N. Frink, S. McMillin, K. Cunningham, G. Shah, NASA Langley Research Center, Hampton, VA	1500 hrs AIAA-2019-0820 **Aerodynamic and flight dynamic study of non-elliptic wing lift distributions** E. Bragado Aldana, M. Lone, Cranfield University, Cranfield, United Kingdom	1530 hrs AIAA-2019-0821 **Slung Load Stabilization Across the Flight Envelope Using an Active Cargo Hook** A. Singh, J. Enciu, J. Horn, Pennsylvania State University, University Park, PA	1600 hrs AIAA-2019-0822 **Performance Enhancement of Gust Load Alleviation Systems for Flexible Aircraft using H_∞ Optimal Control with Preview** A. Khalil, N. Fezans, German Aerospace Center (DLR), Braunschweig, Germany	1630 hrs AIAA-2019-0823 **Dependence of the Flight-path on the Aerodynamic Characteristics of Rectangular Wings due to Dynamic Ground Effect** A. Merkl, P. Boschetti, E. Cardenas, Simón Bolívar University, Naiguata, Venezuela	1700 hrs AIAA-2019-0824 **Integrated Structural, Flight Dynamics and Aeroelastic Analysis of the ANCE X-3d as a Flexible Body** L. Hernadez, P. Boschetti, Simón Bolívar University, Naiguata, Venezuela; P. González Ramirez, Technological Institute of Aeronautics (ITA), São José Dos Campos, Brazil	

Tuesday, 8 January 2019						
199-AFM-8	**Small Unmanned Aircraft II**					**Vista A**
Chaired by: P. SCHULZE, Systems Technology, Inc. and C. WOOLSEY, Virginia Tech and D. MURRI, NASA Engineering and Safety Center						
1430 hrs AIAA-2019-0825 **Defining Flight Envelope Requirements and Handling Qualities Criteria for First-Person-View Quadrotor Racing** M. Abdulrahim, T. Bates, SOFWERX, Tampa, FL; T. Nilson, J. Bloch, D. Nethary, Lumenier, Sarasota, FL; T. Smith, Performance Drone Works, New York, NY	1500 hrs AIAA-2019-0826 **System Identification of a Small UAS in Support of Handling Qualities Evaluations** P. Schulze, J. Miller, D. Klyde, Systems Technology, Inc., Hawthorne, CA; C. Regan, University of Minnesota, Twin Cities, Minneapolis, MN; N. Alexandrov, NASA Langley Research Center, Hampton, VA	1530 hrs AIAA-2019-0827 **Comparison of Open-Loop Nonlinear Simulations of Avian Scale Flapping Flight using Dynamic Models of Varying Fidelity** D. Bhattacharjee, A. Dogan, K. Subbarao, University of Texas, Arlington, Arlington, TX	1600 hrs AIAA-2019-0828 **Estimating Total Energy Compensated Climb Rates from Position Trajectories** P. Groß, S. Notter, W. Fichter, University of Stuttgart, Stuttgart, Germany	1630 hrs AIAA-2019-0829 **Periodic Flight of Rotorcraft within Thermal Columns** P. Elango, R. Mohan, Indian Institute of Technology Madras, Chennai, India	1700 hrs AIAA-2019-0830 **Energy Optimal Climb Performance of Electric Aircraft** G. Barufaldi, M. Morales, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil	

Tuesday, 8 January 2019						
200-AMT-9/PC-10	**Combustion Diagnostics III**					**Harbor H**
Chaired by: B. HALLS, Air Force Research Laboratory and D. BLUNCK, Air Force Reseach Laboratory						
1430 hrs AIAA-2019-0831 **Characterization of Flame Front Shape in a Dual-Mode Scramjet** C. Geipel, D. Lieber, V. Awate, R. Rockwell, H. Chelliah, C. Goyne, University of Virginia, Charlottesville, Charlottesville, VA; et al.	1500 hrs AIAA-2019-0832 **Single-Exposure Field-of-View Extension Using Multiplexed Structured Image Capture** C. Smith, J. Harrold, Z. Zhang, M. Gragston, University of Tennessee, Knoxville, Knoxville, TN	1530 hrs AIAA-2019-0833 **High-Speed Flame Chemiluminescence Characterization Using DMD-based Multiplexed Structured Image Capture** M. Gragston, C. Smith, University of Tennessee, Knoxville, Knoxville, TN	1600 hrs AIAA-2019-0834 **Flame temperature measurement of microwave-assisted aluminum particle combustion** K. Zhu, S. Barkley, T. Sippel, J. Michael, Iowa State University, Ames, IA	1630 hrs AIAA-2019-0835 **Interaction of Burst-Mode Laser-Induced-Plasma with an Overexpanded Supersonic Jet at 5 – 500 kHz Repetition-Rate** C. Winters, J. Wagner, Sandia National Laboratories, Albuquerque, NM	1700 hrs AIAA-2019-0836 **Benchmark Direct Numerical Simulations with Lagrangian Tracers for Evaluating Combustion Diagnostics Algorithms** C. Towery, University of Colorado, Boulder, Boulder, CO; B. Schmidt, J. Sutton, Ohio State University, Columbus, OH; P. Hamlington, University of Colorado, Boulder, Boulder, CO	

Tuesday, 8 January 2019						
201-APA-21/FD-26/SD-8/AMT-10	**Special Session: Joint Experimental-Computational Efforts in High-Speed FSI II**					**La Jolla A**
Chaired by: S. KEARNEY, Sandia National Laboratories and E. JONES						
1430 hrs Oral Presentation **Experimental Study of High-Speed Fluid-Structure Interaction of a Thin Panel Subjected to Mach 2 Flow (Invited)** T. Beberniss, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs Oral Presentation **Numerical Investigation of Post-Buckled Panel Flutter in Supersonic Flow Using Reduced Order Models (Invited)** R. Perez, Universal Technology Corporation, Dayton, OH; S. Spottswood, Air Force Research Laboratory, Wright-Patterson AFB, OH; D. Ehrhardt, Ehrhardt Engineering, LLC, Monticello, IL; T. Beberniss, Air Force Research Laboratory, Wright-Patterson AFB, OH	1530 hrs Oral Presentation **Simultaneous High-Speed Displacement and Surface Pressure Measurements of a Compliant Panel under a Mach 2 Compression Ramp Interaction (Invited)** T. Goller, M. Musta, D. Uehara, J. Sirohi, N. Clemens, University of Texas, Austin, Austin, TX	1600 hrs Oral Presentation **Thermo-elastic Interaction Between Compliant Surface and Boundary Layer (Invited)** K. Shoele, A. Shahriar, R. Kumar, Florida State University, Tallahassee, FL	1630 hrs AIAA-2019-0837 **A Finite Element Approach for Pressure Field Estimation Around Moving Boundaries** A. Pirnia, Clarkson University, Potsdam, NY; S. Peterson, University of Waterloo, Waterloo, Canada; B. Helenbrook, B. Erath, Clarkson University, Potsdam, NY	1700 hrs AIAA-2019-0838 **Temperature Sensitive Paint Technique Applicable to Deforming Surface** M. Taguchi, M. Kashitani, National Defense Academy, Yokosuka, Japan	

Tuesday, 8 January 2019						
202-APA-23	**Special Session: CREATE I**					**Harbor A**
Chaired by: N. HARIHARAN, HPCMP CREATE						
1430 hrs AIAA-2019-0839 **Overview of New Capabilities in Helios Version 9.0** A. Wissink, Army Aviation and Missile Research, Development and Engineering Command, Moffett Field, CA; W. Staruk, S. Tran, B. Roget, V. Lakshminarayan, Science and Technology Corporation, Moffett Field, CA; J. Sitaraman, Parallel Geometric Algorithms, LLC, Sunnyvale, CA; et al.	1500 hrs AIAA-2019-0840 **HPCMP CREATE™-AV Kestrel New Capabilities and Future Directions** D. McDaniel, CREATE AV Team, Birmingham, AL; T. Tuckey, CREATE AV Team, Niceville, FL	1530 hrs AIAA-2019-0841 **Advances in Domain Connectivity for high-order methods and Overlapping Surface Dual Mesh/Solver Computations** J. Sitaraman, Parallel Geometric Algorithms, LLC, Sunnyvale, CA; M. Potsdam, Army Aviation and Missile Research, Development and Engineering Command, Moffett Field, CA; B. Roget, Science and Technology Corporation, Moffett Field, CA	1600 hrs AIAA-2019-0842 **Integrated 3-D Structural Dynamics Using the Helios v9 Rotorcraft Analysis Framework** W. Staruk, B. Jayaraman, Science and Technology Corporation, Moffett Field, CA; J. Sitaraman, Parallel Geometric Algorithms, LLC, Sunnyvale, CA; A. Datta, University of Maryland, College Park, College Park, MD	1630 hrs Oral Presentation **HPCMP CREATE™Genesis Suite: A Set of Tools for Teaching the Concepts of Design and Computational Aerodynamic Analysis** E. Knarzer, S. Morton, N. Hariharan, CREATE Kestrel Team, Vicksburg, MS		

Tuesday, 8 January 2019						
203-APA-24	**Weapons Aerodynamics: Missile/Projectile/Guided-Munitions, Carriage and Store Separation II**					**Old Town B**
Chaired by: V. BHAGWANDIN, US Army Research Laboratory and B. MCGRATH, The Johns Hopkins University Applied Physics Laboratory						
1430 hrs AIAA-2019-0843 **Design and Analysis of a Spin Stabilized Projectile Using Magnetic Resonance Velocimetry** N. Siegel, A. Schlenker, K. Sullivan, I. Valdez, U.S. Military Academy, West Point, NY; G. Rodebaugh, Armament Research Development and Engineering Center, Picatinny, NJ; C. Elkins, Stanford University, Stanford, CA; et al.	1500 hrs AIAA-2019-0844 **Experimental Investigation on the Development of Asymmetric Vortices on a Long Slender Body at High Incidence** R. Sampath Kumar, T. Guha, R. Kumar, Florida State University, Tallahassee, FL	1530 hrs AIAA-2019-0845 **The Effect of Acceleration and Exit Velocity on Hypersonic Projectiles Launched by a Ground-based Railgun** H. Kasahara, A. Matsuo, Keio University, Yokohama, Japan	1600 hrs AIAA-2019-0846 **Comparative Analysis of Store Release Trajectory using Numerical and Experimental Techniques** Z. Toor, T. Khan, Air University, Islamabad, Pakistan; O. Khan, Auburn University, Auburn, AL; B. Mufti, J. Masud, Air University, Islamabad, Pakistan			

Tuesday, 8 January 2019						
204-APA-25	**Bio-Inspired Aerodynamics I**					**America's Cup B**
Chaired by: C. KANG, University of Alabama in Huntsville and R. KREEGER, NASA Glenn Research Center						
1430 hrs AIAA-2019-0847 **Impact of Coherent Structures on Aerodynamics Performance at Low Reynolds Numbers** V. Durgesh, University of Idaho, Moscow, ID; R. Padilla, E. Garcia, H. Johari, California State University, Northridge, CA	1500 hrs AIAA-2019-0848 **Experimental Study on Bio-Inspired Wings with Tubercles** M. Shorbagy, Cairo University, Giza, Egypt; B. El-hadidi, Nanyang Technological University, Singapore, Singapore; G. El-Bayoumi, O. Said, M. Fouda, Cairo University, Giza, Egypt	1530 hrs AIAA-2019-0849 **NACA 4415 Airfoil Modification Using Spherical and Sinusoidal Tubercle Leading Edge** S. Aftab, Abu Dhabi Polytechnic, Al Ain, United Arab Emirates; K. Ahmed, University Putra Malaysia, Serdang, Malaysia	1600 hrs AIAA-2019-0850 **Further Parametric Investigation of Leading Edge Tubercles on the Propeller Performance** A. Asghar, R. Perez, W. Allan, Royal Military College of Canada, Kingston, Canada	1630 hrs AIAA-2019-0851 **Application of Deployable Tubercles as High-Lift Leading-Edge Devices** W. Allan, A. Asghar, R. Perez, Royal Military College of Canada, Kingston, Canada	1700 hrs AIAA-2019-0852 **Euler-based Aerodynamic Shape Optimization of Leading Edge Tubercles in Transonic Flow** A. Levert-Beaulieu, R. Perez, P. Jansen, Royal Military College of Canada, Kingston, Canada	

Tuesday, 8 January 2019						
205-AS-4	**Morphing Wings I**					**Pier**
Chaired by: F. GANDHI, Rensselaer Polytechnic Inst and R. DE BREUKER, TU Delft						
1430 hrs AIAA-2019-0853 **Pitch Control Effectiveness of the Avian Elbow and Wrist via a Numerical Lifting Line Analysis** C. Harvey, University of Michigan, Ann Arbor, Ann Arbor, MI; V. Baliga, D. Altshuler, University of British Columbia, Vancouver, Canada; D. Inman, University of Michigan, Ann Arbor, Ann Arbor, MI	1500 hrs AIAA-2019-0854 **Flight Control Optimization and Wind Tunnel Validation of a Morphing Flying Wing** D. Keidel, U. Fasel, Swiss Federal Institute of Technology, Zürich, Switzerland; G. Molinari, RUAG Group, Zürich, Switzerland; P. Ermanni, Swiss Federal Institute of Technology, Zürich, Switzerland	1530 hrs AIAA-2019-0855 **Design of Selectively Compliant Morphing Structures with Shape-Induced Bi-stable Elements** J. Rivas-Padilla, D. Boston, A. Arrieta, Purdue University, West Lafayette, IN	1600 hrs AIAA-2019-0856 **Analysis of Morphing Trailing Edge Flap with Embedded Multistable Variable Stiffness Laminates** A. Haldar, E. Jansen, R. Rolfes, Leibniz University, Hannover, Germany	1630 hrs AIAA-2019-0857 **An active tendon concept in rotorcraft with variable speed rotors: free vibration perspective** V. Ondra, R. Dibble, B. Titurus, B. Woods, University of Bristol, Bristol, United Kingdom		

Tuesday, 8 January 2019						
206-DS-2	**Rotorcraft**					**Promenade B**
Chaired by: I. CHOPRA, University of Maryland						
1430 hrs AIAA-2019-0858 **Modeling of Laminated Reinforced Composite with Carbon Nanotube Interlayers to Estimate Structural Damping in a Rotorcraft Blade** K. Prakash, E. Smith, C. Bakis, Pennsylvania State University, University Park, PA	1500 hrs AIAA-2019-0859 **The Vibratory Control Moment Gyroscope, a New Anti-Vibration Actuator** W. Welsh, Sikorsky Aircraft Corporation, Stratford, CT	1530 hrs AIAA-2019-0860 **S-97 Raider Rotor Vibratory Loads Analysis using CFD-CSD** J. Zhao, M. Brigley, R. Modarres, W. Welsh, Sikorsky Aircraft Corporation, Fort Worth, TX	1600 hrs AIAA-2019-0861 **Simulation of Maritime Helicopter Dynamics During Approach to Landing With Time-Accurate Wind-Over-Deck** A. Sharma, J. Xu, A. Padthe, P. Friedmann, K. Duraisamy, University of Michigan, Ann Arbor, Ann Arbor, MI	1630 hrs AIAA-2019-0862 **Transient Blade Deformation Measurement of a Coaxial Rotor System** D. Uehara, J. Sirohi, University of Texas, Austin, Austin, TX	1700 hrs AIAA-2019-0863 **A Quasi-Static Solution for the Maneuvering Analysis of Vehicles with Rotors** A. Rajagopal, D. Mandal, Altair Engineering, Inc., Irvine, CA	

Tuesday, 8 January 2019						
207-EDU-3	**Advances in Aerospace Education II**					**Mission Beach B**
Chaired by: K. RAVINDRA, Saint Louis University and R. LEBEAU, Saint Louis University						
1430 hrs AIAA-2019-0864 **Classical and potential flow based aerodynamics - do we need them?** J. Katz, San Diego State University, San Diego, CA	1500 hrs AIAA-2019-0865 **Experience of the Incorporation of NASA Human Exploration Rover Challenge Program in the Mechanical Engineering Curriculum** V. Naoumov, N. Al Masoud, T. Sudac, R. Ghodsi, Central Connecticut State University, New Britain, CT	1530 hrs AIAA-2019-0866 **Design and Development of a Self-Contained Trailing Static Pressure Measurement System Prototype** Z. Rotter, L. Smit, B. Zhu, K. Taylor, University of Washington, Seattle, Seattle, WA; T. Leighton, AeroTEC, Seattle, WA; C. Lum, University of Washington, Seattle, Seattle, WA	1600 hrs AIAA-2019-0867 **A Pedagogical Example for STEM using the Glauert Inflow Equation, Mathematica and Python** R. Ganguli, Indian Institute of Science, Bengaluru, India			

Tuesday, 8 January 2019

208-EXPL-2	Robotic Precursor Missions and Technologies					Pyramid Peak
Chaired by: J. CHABOT, MIT Lincoln Laboratory						
1430 hrs AIAA-2019-0868 **Tensegrity Ocean World Landers** C. Gebara, K. Carpenter, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1500 hrs AIAA-2019-0869 **Room Temperature Superconducting System for use on a Hybrid Aerospace-Undersea Craft** S. Pais, Naval Air Systems Command, Patuxent River, MD	1530 hrs AIAA-2019-0870 **Coordination and Control of Multiple Climbing Robots in Transporting Heavy Loads through Extreme Terrain** H. Kalita, S. Morad, J. Thangavelautham, University of Arizona, Tucson, Tucson, AZ	1600 hrs AIAA-2019-0871 **Grappler: Array of Bistable Elements For Pinching Net-Like Infrastructure to Low Gravity Bodies** J. Cherston, Massachusetts Institute of Technology, Cambridge, MA; P. Strohmeier, University of Copenhagen, Copenhagen, Denmark; J. Paradiso, Massachusetts Institute of Technology, Cambridge, MA	1630 hrs AIAA-2019-0872 **The calculation of influence zone for planetary sampling based on DEM simulation** L. Qian, Chengdu University of Technology, Chengdu, China; M. Morikawa, T. Matsushiam, University of Tsukuba, Tsukuba, Japan; X. Lanlan, Chengdu University of Technology, Chengdu, China		

Tuesday, 8 January 2019

209-F360-4 1430 - 1630 hrs	Forum 360: Engineering Apollo	Seaport F

Moderator: John Tylko, Chief Innovation Officer, Aurora Flight Sciences
Panelists:
Don Eyles
Author and Former Member, Technical Staff
MIT Instrumentation Lab and Charles Stark Draper Laboratory

Tuesday, 8 January 2019

210-FD-27	Stability and Transition of High-Speed Flows II					Harbor B
Chaired by: P. PAREDES, National Institute of Aerospace and J. EPPINK, NASA Langley Research Center						
1430 hrs AIAA-2019-0873 **Joint Numerical and Experimental Investigation of Roughness Effect on Hypersonic 1st and 2nd Mode Instability and Transition** C. Haley, University of California, Los Angeles, Los Angeles, CA; K. Casper, Sandia National Laboratories, Albuquerque, NM; X. Zhong, University of California, Los Angeles, Los Angeles, CA	1500 hrs AIAA-2019-0874 **Direct Numerical Simulation of Nozzle-Wall Pressure Fluctuations in a Mach 8 Wind Tunnel** L. Duan, G. Nicholson, J. Huang, Missouri University of Science and Technology, Rolla, MO; K. Casper, R. Wagnild, N. Bitter, Sandia National Laboratories, Albuquerque, NM	1530 hrs AIAA-2019-0875 **Computational Investigation of Effective Trip Heights in Hypersonic Flows** M. Tufts, N. Bisek, R. Kimmel, Air Force Research Laboratory, Wright-Patterson AFB, OH; R. Mallinak, U.S. Air Force Academy, Colorado Springs, CO	1600 hrs AIAA-2019-0876 **Nonmodal Growth of Traveling Waves on Blunt Cones at Hypersonic Speeds** P. Paredes, National Institute of Aerospace, Hampton, VA; M. Choudhari, F. Li, NASA Langley Research Center, Hampton, VA; J. Jewell, R. Kimmel, Air Force Research Laboratory, Wright-Patterson AFB, OH	1630 hrs AIAA-2019-0877 **Effect of 3D Roughness Patch on Instability Amplification in a Supersonic Boundary Layer** M. Choudhari, F. Li, NASA Langley Research Center, Hampton, VA; P. Paredes, National Institute of Aerospace, Hampton, VA; L. Duan, Missouri University of Science and Technology, Rolla, MO	1700 hrs AIAA-2019-0878 **Freestream Disturbances Characterization in Ludwieg Tubes at Mach 6** F. Munoz, J. Wu, R. Radespiel, Technical University of Braunschweig, Braunschweig, Germany; M. Semper, R. Cummings, U.S. Air Force Academy, Colorado Springs, CO; L. Duan, Missouri University of Science and Technology, Rolla, MO; et al.	

Tuesday, 8 January 2019

211-FD-28	Flow Control I - Closed-Loop Methods					Gaslamp C
Chaired by: M. HEMATI, University of Minnesota and A. AHMED, Auburn University						
1430 hrs AIAA-2019-0879 **Active Flow Control System Design with Reduced-Order Models of the Aeroelastic X-56** H. Carlson, R. Verberg, R. Schutt, A. Neville, Clear Science Corporation, Harford, NY	1500 hrs AIAA-2019-0880 **Input-Output Analysis of a Separated Flow Past a Flat Plate** H. Zhang, C. Rowley, Princeton University, Princeton, NJ; W. Wu, C. Meneveau, R. Mittal, Johns Hopkins University, Baltimore, MD	1530 hrs AIAA-2019-0881 **Coanda Flow Characterization on Base Bleed Configurations Using Global Stability Analysis** A. Martinez-Cava, E. Valero, J. de Vicente, Technical University of Madrid, Madrid, Spain; G. Paniagua, Purdue University, West Lafayette, IN	1600 hrs AIAA-2019-0882 **Advances in Output Feedback Control of Transient Energy Growth in a Linearized Channel Flow** M. Hemati, H. Yao, University of Minnesota, Twin Cities, Minneapolis, MN	1630 hrs AIAA-2019-0883 **Pressure Feedback Active Flow Control of Unsteady Roll Moment on a UCAS Delta Wing** X. He, X. An, D. Williams, Illinois Institute of Technology, Chicago, IL; M. Le Provost, University of California, Los Angeles, Los Angeles, CA		

Tuesday, 8 January 2019						
212-FD-29	**Flow Control II - Jet Actuators**					**Gaslamp D**
Chaired by: J. WEISS, Ecole de Technologie Superieure and A. MEDINA						
1430 hrs AIAA-2019-0884 **Comparison of Various Fluidic Oscillators for Separation Control on a Wall-Mounted Hump** C. Otto, P. Tewes, J. Little, University of Arizona, Tucson, Tucson, AZ; R. Woszidlo, The Boeing Company, Hazelwood, MO	1500 hrs AIAA-2019-0885 **Effects of Rotation on a Fluidic Actuator** M. Hossain, A. Ameri, J. Gregory, J. Bons, Ohio State University, Columbus, OH	1530 hrs AIAA-2019-0886 **Strategies for Practical Implementations of Low-Input Thermal Flow Control** A. Shmilovich, E. Whalen, The Boeing Company, Huntington Beach, CA	1600 hrs AIAA-2019-0887 **Interaction between a Jet emitted by a Fluidic Oscillator and a Crossflow at a Skew Angle** F. Ostermann, R. Woszidlo, C. Nayeri, C. Paschereit, Technical University of Berlin, Berlin, Germany	1630 hrs AIAA-2019-0888 **Stability and Sensitivity Analysis of a Low-speed Jet in Cross-flow** M. Regan, K. Mahesh, University of Minnesota, Twin Cities, Minneapolis, MN	1700 hrs AIAA-2019-0889 **Controlled Aerodynamic Loads at Low Angles of Attack using Fluidic Actuation** Y. Tan, A. Glezer, Georgia Institute of Technology, Atlanta, GA	

Tuesday, 8 January 2019						
213-FD-30	**Hypersonic Flows**					**Gaslamp A**
Chaired by: T. EYMANN, Air Force Research Laboratory and S. UNNIKRISHNAN, The Ohio State University						
1430 hrs AIAA-2019-0890 **Shock-Shock Interaction over a Hemisphere in Hypersonic Flow** N. Kianvashrad, D. Knight, Rutgers University, Piscataway, NJ	1500 hrs AIAA-2019-0891 **Verification and Validation of a Morphing Continuum Approach to Hypersonic Flow Simulations** M. Ahmed, J. Chen, State University of New York, Buffalo, NY	1530 hrs AIAA-2019-0892 **Fluctuating-enthalpy source mechanisms of first- and second-mode oscillations in a hypersonic boundary layer** S. Unnikrishnan, D. Gaitonde, Ohio State University, Columbus, OH	1600 hrs AIAA-2019-0893 **Small Disturbance Theory for Hypersonic Flow over Slender Bodies** A. Wuetcher, X. Wang, University of Alabama, Tuscaloosa, Tuscaloosa, AL	1630 hrs AIAA-2019-0894 **Infrared Thermography Data Reduction Technique for Heat Transfer Measurements in the Boeing/AFOSR Mach-6 Quiet Tunnel** M. Zaccara, S. Cerasuolo, G. Cardone, University of Naples "Federico II", Naples, Italy; J. Edelman, S. Schneider, Purdue University, West Lafayette, IN	1700 hrs AIAA-2019-0895 **Sensitivity study of high-speed dusty flows over blunt bodies simulated using a discontinuous Galerkin method** E. Ching, M. Ihme, Stanford University, Stanford, CA	

Tuesday, 8 January 2019						
214-FD-31	**Special Session: Unsteady Aerodynamics - Gusts II**					**Old Town A**
Chaired by: S. WATKINS and C. BARNES, AFRL/RQVA						
1430 hrs AIAA-2019-0896 **Computational Investigation of the Effect of Sweep on Parallel Vortical-Gust/Wing Interactions** C. Barnes, M. Visbal, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs AIAA-2019-0897 **Aeroelastic trajectory selection of vortex gusts impinging upon Joukowski airfoils** H. Chen, J. Jaworski, Lehigh University, Bethlehem, PA	1530 hrs AIAA-2019-0898 **Theoretical and Experimental Study of Wake Encounters on Unsteady Airfoils** A. Medina, Air Force Research Laboratory, Wright-Patterson AFB, OH; A. Babu, North Carolina State University, Raleigh, NC; M. Rockwood, Air Force Research Laboratory, Wright-Patterson AFB, OH; A. Gopalarathnam, North Carolina State University, Raleigh, NC; A. Ahmed, Auburn University, Auburn, AL	1600 hrs AIAA-2019-0899 **The Effect of 3D Geometry on Unsteady Gust Response, Using a Vortex Lattice Model** A. Smyth, A. Young, University of Cambridge, Cambridge, United Kingdom; L. Di Mare, University of Oxford, Oxford, United Kingdom	1630 hrs AIAA-2019-0900 **Gusts Encountered by MAVs in Close Proximity to Buildings** S. Watkins, A. Mohamed, M. Ol, RMIT University, Melbourne, Australia	1700 hrs AIAA-2019-0901 **On 3D effects in Gust-Airfoil and Turbulence-Airfoil Interaction Responses** M. Kazarina, V. Golubev, Embry-Riddle Aeronautical University, Daytona Beach, FL	

Tuesday, 8 January 2019						
215-FD-32	**Novel CFD Methods I**					**Gaslamp B**
Chaired by: Y. XUAN and A. SESCU, Mississippi State University						
1430 hrs AIAA-2019-0902 **An Order NlogN Parallel Time-Spectral Solver for Quasi-Periodic Problems** D. Ramezanian, D. Mavriplis, University of Wyoming, Laramie, Laramie, WY	1500 hrs AIAA-2019-0903 **Removing Pollution in the Fourier Space Representation of Non-Periodic Signals over Finite Domains** P. Lucena Kreppel Paes, Y. Xuan, Y. Shah, Pennsylvania State University, University Park, PA; J. Brasseur, University of Colorado, Boulder, Boulder, CO	1530 hrs AIAA-2019-0904 **Analysis of Transients in Francis Turbine Using Fourier Methods** G. Cvijetic, L. Culic, H. Jasak, University of Zagreb, Zagreb, Croatia	1600 hrs AIAA-2019-0905 **Kinetic energy and entropy preserving schemes by split convective forms on hierarchical Cartesian grids with hanging nodes** Y. Kuya, Y. Fukushima, Y. Tamaki, S. Kawai, Tohoku University, Sendai, Japan	1630 hrs AIAA-2019-0906 **Making a Flux Positivity-Preserving: A General Purpose Filter for the Euler Equations** B. Parent, Pusan National University, Busan, South Korea	1700 hrs AIAA-2019-0907 **Exponential Time-Marching method for the Unsteady Navier-Stokes Equations** S. Li, Computational Science Research Center (CSRC), Beijing, China; L. Ju, University of South Carolina, Columbia, Columbia, SC	

Tuesday, 8 January 2019						
216-GNC-14	**Aerospace Applications in Control and Autonomy**					**Skyline**
Chaired by: A. HASSAN						
1430 hrs AIAA-2019-0908 **Decentralized Position and Attitude Control for Electromagnetic Formation Flight** Z. Abbasi, J. Hoagg, T. Seigler, University of Kentucky, Lexington, Lexington, KY	1500 hrs AIAA-2019-0909 **A Probabilistic Approach to Optimization of Drogue-to-Main Parachute Transition Altitude for Ballistic Airdrops** R. Aggarwal, M. Kumar, Ohio State University, Columbus, OH	1530 hrs AIAA-2019-0910 **Minimum-time Attitude Maneuver and Robust Attitude Control of Small Satellite Mounted with Communication Antenna** K. Mori, M. Takahashi, Keio University, Yokohama, Japan	1600 hrs AIAA-2019-0911 **Output Feedback Sliding Mode Control of a Fixed-Wing UAV Under Rudder Loss** U. Gunes, A. Sel, C. Kasnakoglu, TOBB University of Economics and Technology, Ankara, Turkey; U. Kaynak, Anadolu University, Eskisehir, Turkey	1630 hrs AIAA-2019-0912 **A Novel Airplane Roll Mechanism: Nonlinear Motion Planning Approach** A. Hassan, H. Taha, University of California, Irvine, Irvine, CA		

Tuesday, 8 January 2019						
217-GNC-15	**Distributed and Cooperative Systems I**					**Cowles Mountain**
Chaired by: W. WHITACRE, Draper Laboratory and M. OPPENHEIMER, Air Force Research Laboratory						
1430 hrs AIAA-2019-0913 **Implementation And Demonstration Of Coordinated Transport Of A Slung Load By A Team Of Rotorcraft** J. Geng, J. Langelaan, Pennsylvania State University, University Park, PA	1500 hrs AIAA-2019-0914 **Multi-UAV Continuum Deformation Flight Optimization in Cluttered urban environments** H. Rastgoftar, E. Atkins, University of Michigan, Ann Arbor, Ann Arbor, MI	1530 hrs AIAA-2019-0915 **Partial Replanning for Decentralized Dynamic Task Allocation** N. Buckman, Massachusetts Institute of Technology, Cambridge, MA; H. Choi, Korea Advanced Institute of Science and Technology, Daejeon, South Korea; J. How, Massachusetts Institute of Technology, Cambridge, MA	1600 hrs AIAA-2019-0916 **Navigation aware planning for tandem UAV missions in GNSS challenging environments** F. Causa, University of Naples "Federico II", Naples, Italy; M. Popović, Swiss Federal Institute of Technology, Zürich, Switzerland; G. Fasano, M. Grassi, University of Naples "Federico II", Naples, Italy; J. Nieto, R. Siegwart, Swiss Federal Institute of Technology, Zürich, Switzerland	1630 hrs AIAA-2019-0917 **Implementation of Physical Subspace Identification on a Realistic Helicopter** S. Avcioglu, Turkish Aerospace Industries, Inc., Ankara, Turkey; A. Kutay, Middle East Technical University, Ankara, Turkey		

Tuesday, 8 January 2019						
218-GNC-16	**Aircraft Path Planning**					**Cuyamuca Peak**
Chaired by: A. L'AFFLITTO, The University of Oklahoma						
1430 hrs AIAA-2019-0918 **Waypoint Based Online Trajectory Generation and Following Control for the ACT/FHS** P. Petit, J. Wartmann, B. Fragnière, S. Greiser, German Aerospace Center (DLR), Brunswick, Germany	1500 hrs AIAA-2019-0919 **Shortest Dubins path to a circle** S. Manyam, Infoscitex Corporation, Dayton, OH; D. Casbeer, A. Von Moll, Air Force Research Laboratory, Wright-Patterson AFB, OH; Z. Fuchs, Wright State University, Dayton, OH	1530 hrs AIAA-2019-0920 **Advancements for A* and RRT in 3D path planning of UAVs** C. Zammit, E. Van Kampen, Delft University of Technology, Delft, The Netherlands	1600 hrs AIAA-2019-0921 **Optimal Control for Improved UAV Communication** R. Garnett, A. Flenner, Naval Air Systems Command, China Lake, CA			

Tuesday, 8 January 2019						
219-GNC-17	**Entry, Descent, and Landing III (Invited)**					**America's Cup C**
Chaired by: J. CARSON, NASA and B. ACIKMESE, University of Washington						
1430 hrs AIAA-2019-0922 **Fusion of Multiple Terrain-Based Sensors for Descent-to-Landing Navigation (Invited)** J. Helmuth, K. Ward, K. DeMars, Missouri University of Science and Technology, Rolla, MO	1500 hrs AIAA-2019-0923 **Terrain Relative Navigation With Anonymous Features (Invited)** J. McCabe, K. DeMars, Missouri University of Science and Technology, Rolla, MO	1530 hrs AIAA-2019-0924 **A State-Triggered Line of Sight Constraint for 6-DoF Powered Descent Guidance Problems (Invited)** T. Reynolds, M. Szmuk, D. Malyuta, M. Mesbahi, B. Acikmese, University of Washington, Seattle, Seattle, WA; J. Carson, NASA Johnson Space Center, Houston, TX	1600 hrs AIAA-2019-0925 **Discretization Performance and Accuracy Analysis for the Rocket Powered Descent Guidance Problem (Invited)** D. Malyuta, T. Reynolds, M. Szmuk, M. Mesbahi, B. Acikmese, University of Washington, Seattle, Seattle, WA; J. Carson, NASA Johnson Space Center, Houston, TX	1630 hrs AIAA-2019-0926 **A Tutorial on Successive Convexification for Real-Time Rocket Landing Guidance with State-Triggered Constraints (Invited)** M. Szmuk, T. Reynolds, B. Acikmese, M. Mesbahi, University of Washington, Seattle, Seattle, WA; J. Carson, NASA Johnson Space Center, Houston, TX		

Tuesday, 8 January 2019						
220-GNC-18/IS-10	**Advances in Adaptive Control Systems I (Invited)**					**Harbor G**
Chaired by: T. YUCELEN, University of South Florida and J. MUSE, AFRL/RQQA						
1430 hrs AIAA-2019-0927 **Output-Constrained Adaptive Control for Unstart Prevention in a 2D Scramjet Combustor** A. Goel, K. Duraisamy, D. Bernstein, University of Michigan, Ann Arbor, Ann Arbor, MI	1500 hrs AIAA-2019-0928 **Adaptive Planning and Control with Convolutional Neural Network-based Perception for Autonomous Taxiing** C. Liu, S. Ferrari, Cornell University, Ithaca, NY	1530 hrs AIAA-2019-0929 **Adaptive Control Schemes for Multirotor Systems under Actuator Failures and Wind Disturbances (Invited)** Y. Sheng, G. Tao, P. Beling, University of Virginia, Charlottesville, Charlottesville, VA	1600 hrs AIAA-2019-0930 **Experimental Results with the Set-Theoretic Model Reference Adaptive Control Architecture on an Aerospace Testbed (Invited)** E. Arabi, T. Yucelen, University of South Florida, Tampa, FL	1630 hrs AIAA-2019-0931 **Sliding Mode based Path Planning and Control of Impaired Aircraft (Invited)** M. Deniz, Missouri University of Science and Technology, Rolla, MO; T. Yamasaki, National Defense Academy of Japan, Yokosuka, Japan; S. Balakrishnan, Missouri University of Science and Technology, Rolla, MO; T. Yucelen, University of South Florida, Tampa, FL		

Tuesday, 8 January 2019						
221-GNC-19	**Attitude Control**					**Twin Peaks**
Chaired by: K. BOLLINO, U.S. Air Force and H. HALLOWELL, Ball Aerospace & Technologies Corporation						
1430 hrs AIAA-2019-0932 **Nonlinear Multiple-Time-Scale Attitude Control of a Rigid Spacecraft with Uncertain Inertias** D. Saha, J. Valasek, Texas A&M University, College Station, TX	1500 hrs AIAA-2019-0933 **Fast finite-time sliding mode magnetic attitude control of satellites** D. Giri, Indian Institute of Technology Kanpur, Kanpur, India	1530 hrs AIAA-2019-0934 **Minimum-Time Model Predictive Spacecraft Attitude Control for Waypoint Following and Exclusion Zone Avoidance** R. Sutherland, I. Kolmanovsky, A. Girard, University of Michigan, Ann Arbor, Ann Arbor, MI; F. Leve, Air Force Office of Scientific Research, Arlington, VA; C. Petersen, Air Force Research Laboratory, Kirtland AFB, NM	1600 hrs AIAA-2019-0935 **Adaptive Attitude Control of Spacecraft Orbiting Around Asteroids** N. Moya, University of Nevada, Las Vegas, Las Vegas, NV; K. Lee, Catholic Kwandong University, Gangwon, South Korea; S. Singh, University of Nevada, Las Vegas, Las Vegas, NV	1630 hrs AIAA-2019-0936 **Optimal Initial Gimbal Angles for Agile Slew Maneuvers with Control Moment Gyroscopes** R. Geshnizjani, University of Stuttgart, Stuttgart, Germany; A. Kornienko, T. Ziegler, J. Loehr, Airbus, Immenstaad, Germany; W. Fichter, University of Stuttgart, Stuttgart, Germany	1700 hrs AIAA-2019-0937 **Oscillating Control Moment Gyroscope Experimental Results** B. Akbulut, O. Tekinalp, F. Arberkli, K. Azgin, Middle East Technical University, Ankara, Turkey	

Tuesday, 8 January 2019		
222-GT-3 **1430 - 1700 hrs**	**RDT&E Capabilities: Defining RDT&E Experimental/Computational Capability and Workforce Challenges (Invited)**	**Bayview**
Chair: Dr. Steven C. Dunn, Jacobs Technology Inc., NASA Langley Research Center Co-Chair: Dan Marren, AEDC Tunnel 9 White Oak, MD.		

Tuesday, 8 January 2019						
223-GT-4	**Ground Test Facility Data Acquisition, Processing, Corrections, QA, and Presentation**					**Cityview B**
Chaired by: E. HUBBARD, NASA Glenn Research Center and C. JORGENS, The Boeing Company						
1430 hrs AIAA-2019-0938 **Analysis of Different Methods for Calculation of High-Lift System Loads in Test Means Applications** K. Jandaurek, RWTH Aachen University, Aachen, Germany; M. Johst, FFT Production Systems Corporation, Bremen, Germany	1500 hrs AIAA-2019-0939 **Assessment of a Data Assimilation Technique for Wind Tunnel Wall Interference Corrections** Z. Belligoli, R. Dwight, G. Eitelberg, Delft University of Technology, Delft, The Netherlands	1530 hrs AIAA-2019-0940 **Development of Hypersonic Wind Tunnel Force Measurement using Deconvolution of Acceleration Data** J. Draper, S. Lee, University of Maryland, College Park, College Park, MD	1600 hrs AIAA-2019-0941 **Dynamic Mass Balancing of a Spacecraft Test Platform** K. Hudson, A. Lingenfelter, J. Hess, Air Force Institute of Technology, Wright-Patterson AFB, OH			

Tuesday, 8 January 2019						
224-GTE-3	**Compressors**					**Highland Peak**
Chaired by: J. HAYNES, GE Global Research Center						
1430 hrs AIAA-2019-0942 **Single Stage Axial Compressor Stability Management with Self-Recirculating Casing Treatment** S. Kumar, R. Chotalia, S. Jana, National Aerospace Laboratories, Bengaluru, India; R. Ganguli, K. Siddanagouda, Indian Institute of Science, Bengaluru, India	1500 hrs AIAA-2019-0943 **Study of Circular Chamber with Elbow Using Swirl Cooling Flow by 3-D Stereo-PIV** D. Galeana, A. Beyene, San Diego State University, San Diego, CA	1530 hrs AIAA-2019-0944 **The Design Space for the Final-Stage Centrifugal Compressor in Aero Engines** F. Lou, N. Key, Purdue University, West Lafayette, IN				

Tuesday, 8 January 2019						
225-HSABP-5	**High-Speed Inlets, Isolators and Nozzles**					**Hillcrest C**
Chaired by: O. POWELL and T. SMITH, Boeing Engineering Operations & Technology						
1430 hrs AIAA-2019-0945 **Numerical Simulation of Variable-Geometry TBCC Inlet with Smoothly Slid Mechanism** T. Yue, G. Huang, C. Xia, Nanjing University of Aeronautics and Astronautics, Nanjing, China	1500 hrs AIAA-2019-0946 **Simulation of Unstart in Hypersonic Flow with a Dual-Mode Scramjet Model** I. Hall, J. Poggie, Purdue University, West Lafayette, IN	1530 hrs AIAA-2019-0947 **Bow Shock/Vortex Interaction: Effect of Reducing the Vortex Height on Structure of the Generated Flow Field** H. Pourhashem, S. Kumar, New York University, New York, NY				

Tuesday, 8 January 2019		
226-HUB-3 **1430 - 1500 hrs**	**Career Tips for Students**	**the Hub Hangar**

Tuesday, 8 January 2019						
227-IS-11	**Flight Envelope Prediction of Impaired Aircraft (Invited)**					**Solana Beach B**
Chaired by: C. DE VISSER, Delft University of Technology and E. ATKINS, University of Michigan						
1430 hrs AIAA-2019-0948 **Quadrotor Safe Flight Envelope Prediction in the High-Speed Regime: A Monte-Carlo Approach (Invited)** S. Sun, C. de Visser, Delft University of Technology, Delft, The Netherlands	1500 hrs AIAA-2019-0949 **Sensor constrained flight envelope for urban air mobility (Invited)** P. Sharma, C. Ochoa, E. Atkins, University of Michigan, Ann Arbor, Ann Arbor, MI	1530 hrs AIAA-2019-0950 **VIRTTAC - A Family of Virtual Test Aircraft for Use in Flight Mechanics and GNC Benchmarks (Invited)** C. Deiler, N. Fezans, German Aerospace Center (DLR), Braunschweig, Germany	1600 hrs AIAA-2019-0951 **Probabilistic Flight Envelope Estimation with Application to Unstable Over-Actuated Aircraft (Invited)** M. Yin, Q. Chu, Y. Zhang, Delft University of Technology, Delft, The Netherlands; M. Niestroy, Lockheed Martin Corporation, Aledo, TX; C. de Visser, Delft University of Technology, Delft, The Netherlands			

Tuesday, 8 January 2019						
228-IS-12/GNC-20	**Quantum Control and Machine Learning (Invited)**					**Seaport H**
Chaired by: J. STECK, Wichita State University and M. BALAS, Embry-Riddle Aeronautical University						
1430 hrs AIAA-2019-0952 **A Systems Theory Approach to the Synthesis of Non-Reciprocal Phase-Insensitive Quantum Amplifiers (Invited)** I. Petersen, M. James, Australian National University, Canberra, Australia; V. Ugrinovskii, University of New South Wales at the Australian Defence Force Academy, Canberra, Australia; N. Yamamoto, Keio University, Yokohama, Japan	1500 hrs AIAA-2019-0953 **Coherent Feedback Control in Quantum Circuits and Networks (Invited)** H. Mabuchi, Stanford University, Stanford, CA	1530 hrs AIAA-2019-0954 **Universal Quantum Control through Deep Reinforcement Learning (Invited)** M. Niu, Massachusetts Institute of Technology, Cambridge, MA; S. Boixo, V. Smelyanskiy, H. Neven, Google, Venice Beach, CA	1600 hrs AIAA-2019-0955 **A Direct Adaptive Control Framework For Infinite Dimensional Quantum Systems (Invited)** M. Balas, University of Tennessee, Tullahoma, Tullahoma, TN; S. Frost, NASA Ames Research Center, Moffett Field, CA	1630 hrs AIAA-2019-0956 **Machine Learning applied to Programming Quantum Computers (Invited)** J. Steck, E. Behrman, Wichita State University, Wichita, KS		

Tuesday, 8 January 2019						
229-IS-13	**Autonomous Small UAS Urban Flight II (Invited)**					**Solana Beach A**
Chaired by: C. IPPOLITO, NASA Ames Research Center and A. CHAKRABARTY						
1430 hrs AIAA-2019-0957 **Coordinated Turn Trajectory Generation and Tracking Control for Multirotors Operating in Urban Environment (Invited)** V. Stepanyan, Universities Space Research Association, Columbia, MD; K. Krishnakumar, C. Ippolito, NASA Ames Research Center, Moffett Field, CA	1500 hrs AIAA-2019-0958 **Real-Time Path Planning for Multi-copters flying in UTM -TCL4 (Invited)** A. Chakrabarty, V. Stepanyan, K. Krishnakumar, C. Ippolito, NASA Ames Research Center, Moffett Field, CA	1530 hrs AIAA-2019-0959 **Emergency Landing Trajectory Optimization for Fixed-Wing UAV under Engine Failure (Invited)** X. Fang, Technical University of Munich, Garching, Germany; N. Wan, H. Jafarnejadsani, D. Sun, University of Illinois, Urbana-Champaign, Urbana, IL; F. Holzapfel, Technical University of Munich, Garching, Germany; N. Hovakimyan, University of Illinois, Urbana-Champaign, Urbana, IL	1600 hrs AIAA-2019-0960 **Vision-Based Object Detection and Proportional Navigation for UAS Collision Avoidance (Invited)** D. Zuehlke, N. Prabhakar, M. Clark, T. Henderson, R. Prazenica, Embry-Riddle Aeronautical University, Daytona Beach, FL	1630 hrs AIAA-2019-0961 **Dynamic Ground Risk Mitigation for Autonomous Small UAS in Urban Environments (Invited)** C. Ippolito, NASA Ames Research Center, Moffett Field, CA	1700 hrs **Open Discussion**	

Tuesday, 8 January 2019						
230-MAT-5	**Multiscale Modeling II**					**Mission Beach C**
Chaired by: S. ARNOLD, NASA Glenn Research Center and G. SEIDEL, Virginia Polytechnic Institute and State Universit						
1430 hrs AIAA-2019-0962 **Detecting "Hot-Spot" Damage in Granular Energetics Using a Thermo-electromechanical Peridynamics Model** S. Povolny, K. Talamadupula, N. Prakash, G. Seidel, Virginia Polytechnic Institute and State University, Blacksburg, VA	1500 hrs AIAA-2019-0963 **Multiscale approaches to the mechanical behavior of ceramic nanostructure in electrode using phase field model** H. Kim, T. Hwang, M. Cho, Seoul National University, Seoul, South Korea	1530 hrs AIAA-2019-0964 **Simulation of elastoplastic deformation of isotropic material using a nonlocal yield criterion and Lattice Particle Model** H. Wei, Y. Liu, Arizona State University, Tempe, AZ	1600 hrs AIAA-2019-0965 **Toward the multiscale modeling for the construction of cohesive zone model on the interface of laminated composite structure** I. Chung, H. Kim, B. Kim, S. Lee, Seoul National University, Seoul, South Korea; J. Kim, Y. Kim, Samsung, Kyunggido, South Korea; et al.	1630 hrs AIAA-2019-0966 **An integer programming approach for mesh generation for polycrystals using the EBSD map** S. Srivastava, V. Sundararaghavan, University of Michigan, Ann Arbor, Ann Arbor, MI		

Tuesday, 8 January 2019						
231-MAT-6/NDA-5	**Special Session: ICME: Uncertainty Quantification in Computational Materials**					**Torrey Hills A**
Chaired by: B. BICHON, Southwest Research Institute and Y. LIU, Arizona State University						
1430 hrs AIAA-2019-0967 **Uncertainty Propagation via Probability Measure Optimized Importance Weights with Application to Thermoelectric Materials** M. Sanghvi, P. Honarmandi, V. Attari, T. Duong, R. Arroyave, D. Allaire, Texas A&M University, College Station, TX	1500 hrs AIAA-2019-0968 **Bayesian Inference for Crystallographic Texture Uncertainty Quantification** J. Matuk, O. Chkrebtii, S. Niezgoda, Ohio State University, Columbus, OH	1530 hrs AIAA-2019-0969 **Uncertainty Quantification and Stochastic Optimization for Spatially Varying Composite Fiber Paths** P. Acar, Virginia Polytechnic Institute and State University, Blacksburg, VA; V. Sundararaghavan, University of Michigan, Ann Arbor, Ann Arbor, MI	1600 hrs AIAA-2019-0970 **Probabilistic Failure Analysis for ICME Using An Adjoint-based Lattice Particle Method.** Y. Gao, Y. Liu, Arizona State University, Tempe, AZ	1630 hrs AIAA-2019-0971 **Towards A Priori Uncertainty Quantification of Coarse-Grained Molecular Dynamics: Generalized Multipole Potentials** P. Patrone, A. Dienstfrey, G. McFadden, National Institute of Standards and Technology, Gaithersburg, MD		

Tuesday, 8 January 2019						
232-MDO-7/APA-26	**Aerodynamic Design: Analysis, Methodologies, and Optimization Techniques II**					**Mission Beach A**
Chaired by: D. ZINGG, University of Toronto and J. GRAY, NASA Glenn Research Center						
1430 hrs AIAA-2019-0972 **Airfoil Optimization Using Far-Field Analysis of the Drag Force** E. Morales Tirado, D. Quagliarella, Italian Aerospace Research Center (CIRA), Capua, Italy; R. Tognaccini, University of Naples "Federico II", Naples, Italy	1500 hrs AIAA-2019-0973 **Shape Optimization of Reentry Vehicles to Minimize Heat Loading** S. Eyi, Middle East Technical University, Ankara, Turkey; K. Hanquist, I. Boyd, University of Michigan, Ann Arbor, Ann Arbor, MI	1530 hrs AIAA-2019-0974 **Transition Prediction over Aerospace Configurations using a Non-local, Nonparallel Flow Stability Approach** G. Olichevis Halila, K. Fidkowski, J. Martins, University of Michigan, Ann Arbor, Ann Arbor, MI; A. Hanifi, Royal Institute of Technology (KTH), Stockholm, Sweden; M. Teixeira de Mendonça, Aeronautics and Space Institute (IAE), São José dos Campos, Brazil	1600 hrs AIAA-2019-0975 **A Reduced-order Model for Aerodynamic Shape Optimization** W. Yao, Queen's University Belfast, Belfast, United Kingdom; S. Marques, University of Surrey, London, United Kingdom; T. Robinson, L. Sun, Queen's University Belfast, Belfast, United Kingdom			

Tuesday, 8 January 2019						
233-MDO-8	**Emerging Methods, Algorithms and Software Development in MDO I**					**Harbor C**
Chaired by: O. WECKNER, Boeing and B. STANFORD, NASA Langley Research Center						
1430 hrs AIAA-2019-0976 **Optimal Control within the Context of Multidisciplinary Design, Analysis, and Optimization** R. Falck, J. Gray, NASA Glenn Research Center, Cleveland, OH	1500 hrs AIAA-2019-0977 **Solution Approaches and Sensitivity Analysis of Variational Inequalities** D. Damircheli, Mississippi State University, Starkville, MS	1530 hrs AIAA-2019-0978 **Particle-Based Optimization of a Conceptual Wing with Gradient Information** I. Dettwiller, J. Foster, W. England, E. Garon, E. Freeman, Army Corps of Engineers, Vicksburg, MS				

Tuesday, 8 January 2019						
234-MST-7	**Technologies for Airplane-State Awareness II (Invited)**					**Harbor I**
Chaired by: G. SHAH, NASA-Langley Research Center and S. YOUNG, NASA-Langley Research Center						
1430 hrs AIAA-2019-0979 **Motion Cueing for Stall Recovery Training in Commercial Transport Simulators (Invited)** P. Zaal, San Jose State University, Moffett Field, CA	1500 hrs AIAA-2019-0980 **Investigation of Reduced-Order Modeling for Aircraft Stability and Control Prediction (Invited)** N. Frink, B. Hiller, P. Murphy, K. Cunningham, G. Shah, NASA Langley Research Center, Hampton, VA	1530 hrs AIAA-2019-0981 **Piloted Simulation Study Findings On Stall Recovery Guidance (Invited)** S. Schuet, T. Lombaerts, V. Stepanyan, J. Kaneshige, G. Hardy, K. Shish, NASA Ames Research Center, Moffett Field, CA; et al.	1600 hrs AIAA-2019-0982 **Evaluation of Technology Concepts for Energy, Automation, and System State Awareness in Commercial Airline Flight Decks (Invited)** L. Kramer, T. Etherington, E. Evans, T. Daniels, S. Young, J. Barnes, NASA Langley Research Center, Hampton, VA; et al.	1630 hrs AIAA-2019-0983 **Performance Evaluation of Predictive Altering of Energy Methods using Flight Simulator Data (Invited)** M. Uijt De Haag, J. Engelmann, C. Mourning, Ohio University, Athens, OH	1700 hrs Oral Presentation **Intelligent Modules and Advanced Displays to Support Pilot Airplane System State Awareness (Invited)** S. Whitlow, M. Dillard, Honeywell International, Inc., Plymouth, MN	

Tuesday, 8 January 2019						
235-MST-8	**Data Analysis Techniques Applied to Simulation**					**Eagle Peak**
Chaired by: C. ATKINSON, Lockheed Martin Corporation and J. CARLSON						
1430 hrs AIAA-2019-0984 **An Analysis of Air Traffic Management Concepts of Operation Using Simulation and Formal Verification** L. Ma, Georgia Institute of Technology, Atlanta, GA; A. Houser, State University of New York, Buffalo, NY; K. Feigh, Georgia Institute of Technology, Atlanta, GA; M. Bolton, State University of New York, Buffalo, NY	1500 hrs AIAA-2019-0985 **Workload Assessment of Terminal Radar Approach Control Performance** K. Lindsay, F. Sutton, MITRE Corporation, McLean, VA	1530 hrs AIAA-2019-0986 **Machine learning FDI approach to aircraft failures using SIVOR simulator** A. Dahleni Kraemer, E. Villani, Aeronautics Institute of Technology, São José dos Campos, Brazil	1600 hrs AIAA-2019-0987 **Design of a host driven extensible graphics framework in LaSRS++** J. Neuhaus, NASA Langley Research Center, Hampton, VA	1630 hrs AIAA-2019-0988 **Preliminary Results Towards Fidelity Evaluation of an In-flight Simulator** B. Fragnière, J. Wartmann, S. Greiser, German Aerospace Center (DLR), Braunschweig, Germany	1700 hrs AIAA-2019-0989 **Modeling of the Aircraft's Low Energy State During the Final Approach Phase Using Operational Flight Data** X. Wang, J. Sembiring, P. Koppitz, L. Höhndorf, C. Wang, F. Holzapfel, Technical University of Munich, Garching, Germany	

Tuesday, 8 January 2019						
236-PC-11	**Advanced Combustion Concepts I**					**Hillcrest A**
Chaired by: C. CADOU, University of Maryland and B. RANKIN, Air Force Research Laboratory						
1430 hrs AIAA-2019-0990 **Multiple-objective Optimization of a Subsonic Small-scale Cavity-stabilized Combustor** N. Thomas, M. Rumpfkeil, A. Briones, University of Dayton, Dayton, OH; T. Erdmann, Innovative Scientific Solutions, Inc., Dayton, OH; B. Rankin, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs AIAA-2019-0991 **Fuel Effects on the Lean Operational Limits of a T63 Turboshaft Engine** E. Corporan, R. Casselberry, Air Force Research Laboratory, Wright-Patterson AFB, OH; C. Klingshirn, University of Dayton, Dayton, OH; M. Wagner, Air Force Research Laboratory, Wright-Patterson AFB, OH; M. DeWitt, University of Dayton, Dayton, OH; J. Edwards, Air Force Research Laboratory, Wright-Patterson AFB, OH; et al.	1530 hrs AIAA-2019-0992 **Effects of Porous versus Solid Inserts Pertaining to Instability Mitigation in Lean Direct Injection Combustion** M. Johnson, A. Agrawal, University of Alabama, Tuscaloosa, Tuscaloosa, AL	1600 hrs AIAA-2019-0993 **Improvement in Jet Aircraft Operation with the Use of High-Performance Drop-in Fuels** S. Kasir, L. Behnke, J. Heyne, R. Stachler, G. Flora, S. Zabarnick, University of Dayton, Dayton, OH; et al.			

Tuesday, 8 January 2019						
237-PC-12	**Future Directions for Turbulent Combustion Modeling**					**Marina Room**
Chaired by: V. RAMAN, University of Michigan and M. HASSANALY, The University of Michigan						
1430 hrs AIAA-2019-0994 **A Computationally Efficient Turnkey Approach to Turbulent Combustion Modeling: From Elusive Fantasy to Impending Reality** M. Mueller, Princeton University, Princeton, NJ	1500 hrs AIAA-2019-0995 **Accounting for complex chemistry in the simulations of future turbulent combustion systems** B. Fiorina, CentraleSupélec, Gif-sur-Yvette, France	1530 hrs AIAA-2019-0996 **Requirements Towards Predictive Simulations of Turbulent Combustion** M. Ihme, Stanford University, Stanford, CA	1600 hrs AIAA-2019-0997 **Direct Numerical Simulations: Present and Future Role in Fundamental and Applied Combustion Research** A. Gruber, SINTEF, Trondheim, Norway	1630 hrs AIAA-2019-0998 **Computational Tools for Rare Events in Turbulent Combustion** M. Hassanaly, V. Raman, University of Michigan, Ann Arbor, Ann Arbor, MI		

Tuesday, 8 January 2019						
238-PDL-10	**Plasma Actuators II**					**Iron Mountain**
Chaired by: S. MACHERET, Purdue University						
1430 hrs AIAA-2019-0999 **A Parametric Study and Analytic Model Development of Sparkjet Actuator Using CFD** J. Shin, H. Kim, S. Ahn, K. Kim, Seoul National University, Seoul, South Korea	1500 hrs AIAA-2019-1000 **Experimental Investigation of Plasma Actuator with Voltage Waveform Including Steep and Gradual Slopes** A. Nakano, Y. Oshio, H. Nishida, Tokyo University of Agriculture and Technology, Tokyo, Japan	1530 hrs AIAA-2019-1001 **Discharge Process and Gas Heating Effect in Nanosecond-Pulse-Driven Plasma Actuator** S. Sato, M. Takahashi, N. Ohnishi, Tohoku University, Sendai, Japan	1600 hrs AIAA-2019-1002 **Electric Field Distribution in Surface Plasma Flow Actuators Powered by Ns Pulse and AC Waveforms** M. Simeni Simeni, Ohio State University, Columbus, OH; Y. Tang, Tsinghua University, Beijing, China; K. Frederickson, I. Adamovich, Ohio State University, Columbus, OH			

Tuesday, 8 January 2019						
239-PDL-11	**Physics of Weakly Ionized Plasma**					**Kingston Peak**
Chaired by: M. WHITE, Air Force Research Laboratory						
1430 hrs AIAA-2019-1003 **Imaging and Measurement of High Pressure He/Ar Microplasma for DPRGL** A. Walsten, N. Latham, K. Xu, C. Sanderson, University of Alabama, Huntsville, Huntsville, AL; D. Matyas, Army Space and Missile Defense Command, Huntsville, AL	1500 hrs AIAA-2019-1004 **Modeling of microwave surface plasmas on the meta-surface at atmospheric pressure** Y. Kim, L. Raja, University of Texas, Austin, Austin, TX	1530 hrs AIAA-2019-1005 **Experimental Study of Modes of Operation of Nanosecond Repetitive Pulsed Discharges in Air** X. Wang, A. Shashurin, Purdue University, West Lafayette, IN	1600 hrs AIAA-2019-1006 **Modeling Gas Breakdown in High Quality Factor Resonators at GHz to THz Frequencies** D. Pederson, L. Raja, University of Texas, Austin, Austin, TX	1630 hrs AIAA-2019-1007 **Integrodifferential analysis of multidimensional fast ionization waves in plasma-assisted combustion and flow control** L. Massa, Virginia Polytechnic Institute and State University, Blacksburg, VA	1700 hrs AIAA-2019-1008 **Investigation of Low Energy Surface Flashover for Initiation of Pulsed Plasma Accelerators** Y. Zhang, O. Dary, A. Patel, A. Shashurin, Purdue University, West Lafayette, IN	

Tuesday, 8 January 2019						
240-PGC-5	**Detonative Pressure Gain Combustion II**					**Harbor E**
Chaired by: D. PAXSON, NASA Glenn Research Center and R. BLUEMNER, Technische Universität Berlin						
1430 hrs AIAA-2019-1009 **Flowfield analysis of a 3D simulation of a rotating detonation rocket engine** C. Lietz, Sierra Lobo, Inc., Edwards AFB, CA; Y. Desai, R. Munipalli, HyPerComp, Inc., Westlake Village, CA; S. Schumaker, V. Sankaran, Air Force Research Laboratory, Edwards AFB, CA	1500 hrs AIAA-2019-1010 **Experimentation of Measuring Pressure Gain Combustion within a Rotating Detonation Engine** I. Dunn, K. Thurmond, K. Ahmed, S. Vasu, University of Central Florida, Orlando, FL	1530 hrs AIAA-2019-1011 **Exit Condition Measurements of a Radial Rotating Detonation Engine Bleed Air Turbine** R. Huff, F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH; S. Boller, M. Polanka, Air Force Institute of Technology, Wright-Patterson AFB, OH; M. Fotia, J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH	1600 hrs AIAA-2019-1012 **Detonation Amplification and Attenuation through Geometric Area Expansion** D. Cuppoletti, T. Ombrello, Air Force Research Laboratory, Wright-Patterson AFB, OH; K. Rein, Spectral Energies, LLC, Beavercreek, OH	1630 hrs AIAA-2019-1013 **Gas Sampling Techniques for NO_x emissions in Pulse Detonation Combustion** N. Hanraths, M. Bohon, C. Paschereit, N. Djordjevic, Technical University of Berlin, Berlin, Germany	1700 hrs AIAA-2019-1014 **Mixing in Linear Detonation Channel with Discrete Injectors and Side Relief** J. Burr, K. Yu, University of Maryland, College Park, College Park, MD	

Tuesday, 8 January 2019						
241-SCS-4	**Membrane and Soft Goods in Space**					**Torrey Hills B**
Chaired by: J. SLATER, Wright State University and M. CHAMBERLAIN, NASA Langley Research Center						
1430 hrs AIAA-2019-1015 **Modeling and Simulation Challenges for Softgoods in Space Deployable Structures** V. Cormarkovic, L. Peterson, M. Mobrem, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1500 hrs AIAA-2019-1016 **Influence of Storage Configurations on the Deployment Behavior of Boom-Membrane Integrated Space Structures** B. Hohmann, H. Sakamoto, M. Okuma, Tokyo Institute of Technology, Tokyo, Japan	1530 hrs AIAA-2019-1017 **Effects of Glued Thin-Film Solar Cells on Shape of Membrane Structure** Y. Satou, O. Mori, M. Matsushita, N. Okuizumi, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan	1600 hrs AIAA-2019-1018 **Review of Habitable Softgoods Inflatable Design, Analysis, Testing, and Potential Space Applications** G. Valle, D. Litteken, NASA Johnson Space Center, Houston, TX; T. Jones, NASA Langley Research Center, Hampton, VA	1630 hrs AIAA-2019-1019 **Design and Development of a Test Bed with Active Tracking Control to Support Gravity Off-loading** Y. Betancur, M. Memon, H. Moncayo, Embry-Riddle Aeronautical University, Daytona Beach, FL		

Tuesday, 8 January 2019						
242-SD-9	**Reduced Order and Surrogate Models**					**Harbor D**
Chaired by: R. PALACIOS, Imperial College London and J. KOSMATKA, University of California, San Diego						
1430 hrs AIAA-2019-1020 **Nonlinear Reduced ROMs: Formulation and Applications** P. Song, X. Wang, M. Mignolet, Arizona State University, Tempe, AZ	1500 hrs AIAA-2019-1021 **Aeroelastic Analysis Using FUN3D-Based ROM Simultaneously Subject to Gust and Control Surface Deflections** Z. Wang, S. Yang, P. Chen, ZONA Technology, Inc., Scottsdale, AZ	1530 hrs AIAA-2019-1022 **Reduced Order Modeling for Transonic Aeroservoelastic Control Law Development** J. Waite, B. Stanford, R. Bartels, W. Silva, NASA Langley Research Center, Hampton, VA	1600 hrs AIAA-2019-1023 **Reduced order modeling based on an element-wise stiffness evaluation procedure for photo-responsive polymer structures** J. Lee, Seoul National University, Seoul, South Korea; J. Park, FunctionBay, Inc., Seongnam, South Korea; E. Kim, Korea Institute of Machinery & Materials, Daejeon, South Korea; J. Lee, Kyungnam University, Changwon, South Korea; M. Cho, Seoul National University, Seoul, South Korea	1630 hrs AIAA-2019-1024 **Expedited Aeroelastic Analysis Using Proper Orthogonal Decomposition and Reduced Order Modelling** S. Lee, H. Cho, Seoul National University, Seoul, South Korea; H. Kim, Sejong University, Seoul, South Korea; S. Shin, Seoul National University, Seoul, South Korea		

Tuesday, 8 January 2019

243-SD-10 — **Structural Dynamics of Beams, Plates, and Membranes II** — **Promenade A**

Chaired by: H. KIM, Boeing Defense, Space & Security and J. BLACK, Virginia Tech

1430 hrs	1500 hrs	1530 hrs	1600 hrs	1630 hrs		
AIAA-2019-1025	AIAA-2019-1026	AIAA-2019-1027	AIAA-2019-1028	AIAA-2019-1029		
Structural analysis of thermally induced stick-slip on deployable mast	**3-D Stress-Strain Histories for Composite Beams in Nonlinear Transient Structural Analysis**	**Dynamic Analysis of Laminated Composite Plate Using Non-Polynomial Shear Deformation Theory Under Hygrothermal Environment**	**Studies into Computational Modeling of Fabric in Inflatable Structures**	**Efficient Calculation of the Hingeless Rotor Blade Flap-Lag-Torsion Dynamics for Helicopters**		
S. Shimizu, K. Ishimura, T. Miyashita, V. Parque, Waseda University, Shinjuku, Japan	M. Gupta, K. Sarkar, D. Hodges, Georgia Institute of Technology, Atlanta, GA	B. Thakur , S. Verma, B. Singh, D. Maiti, Indian Institute of Technology Kharagpur, Kharagpur, India	A. Derkevorkian, J. Hill, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA; P. Avery, C. Farhat, Stanford University, Stanford, CA; J. Rabinovitch, L. Peterson, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	D. Adair, Nazarbayev University, Astana, Kazakhstan; M. Jaeger, University of Tasmania, Hobart, Australia		

Tuesday, 8 January 2019

244-SE-4 — **Systems Engineering IV** — **Vista C**

Chaired by: M. WHEATON, The Aerospace Corporation and M. FRENCH, Rolls-Royce Corp

1430 hrs	1500 hrs	1530 hrs	1600 hrs	1630 hrs	1700 hrs	
AIAA-2019-1030	AIAA-2019-1031	AIAA-2019-1032	AIAA-2019-1033	AIAA-2019-1034	AIAA-2019-1035	
Determination of Function-Behavior-Structure Model Transition Probabilities from Real-World Data	**Measuring Strategic Risk Dominance Using the Multi-actor Value Model: A Study of the National Polar-orbiting Operational Environmental Satellite System**	**Ontology Development for Knowledge-driven Distributed Space Mission Systems Engineering**	**Developing the "Trading Places" Boot Camp: Sharing Knowledge Between Theatre and Engineering**	**Similarities and Differences Between Goal Function Trees and Value Modeling**	**Early Stage Design of High-Lift Devices with System and Manufacturing Constraints**	
M. Bott, B. Mesmer, University of Alabama, Huntsville, Huntsville, AL	H. Lee, P. Grogan, Stevens Institute of Technology, Hoboken, NJ	L. Portelli, M. Sabatini, P. Grogan, Stevens Institute of Technology, Hoboken, NJ	G. Palma, B. Mesmer, A. Guerin, K. Weger, University of Alabama, Huntsville, Huntsville, AL	J. Clerkin, M. Gethers, B. Mesmer, University of Alabama, Huntsville, Huntsville, AL	G. Mura, A. Riaz, M. Guenov, A. Molina-Cristobal, X. Chen, Cranfield University, Cranfield, United Kingdom; S. Sharma, Airbus, Bristol, United Kingdom; et al.	

Tuesday, 8 January 2019

245-SOF-4 — **Demystifying Management and Budgeting for Software Systems** — **Cove**

1430 - 1730 hrs

Software development efforts are often perceived to be difficult to manage with cost and schedule overruns. Leaders in software management and project development will identify the aspects of software projects that are often overlooked and lead to time and resource problems, including V&V, design, documentation, and team culture.

Moderator: Chris Thames, NASA Johnson Space Center

Panelists:

Jim Murphy	**Misty Davies**	**Michael Rubin**	**Bryce Leonard Meyer**	**Joyce Tokar**	**Sebastian Benders**
NASA Ames Research Center	NASA Ames Research Center	Red Canyon	Carnegie Mellon University, Software Engineering Institute	Raytheon Company	German Aerospace Center (DLR)

Tuesday, 8 January 2019

246-STR-7 — **Failure Analysis and Prediction I** — **Golden Hill A**

Chaired by: I. RAJU, NASA-Langley Research Center and C. BISAGNI, TU Delft

1430 hrs	1500 hrs	1530 hrs	1600 hrs	1630 hrs		
AIAA-2019-1036	AIAA-2019-1037	AIAA-2019-1038	AIAA-2019-1039	AIAA-2019-1040		
Peridynamic Modeling of Drilling Process in Polymer Matrix Composites	**Cohesive Zone Models for Reduced-Order Fastener Failure**	**Numerical Investigation on the Evolution of Fiber Kinking Damage in Composites Under Ratcheting Loading**	**Progressive Failure Analysis of Composites Based on Peridynamics and Refined Zigzag Theory**	**Peridynamic Modeling of Wrinkling in a Graphene Layer**		
E. Madenci, C. Diyaroglu, V. Anicode, University of Arizona, Tucson, Tucson, AZ; S. Silling, Sandia National Laboratories, Albuquerque, NM	B. Reeder, University of Utah, Salt Lake City, Salt Lake City, UT; J. Emery, P. Grimmer, Sandia National Laboratories, Albuquerque, NM	P. Diaz Montiel, S. Venkataraman, San Diego State University, San Diego, CA; M. Ngo, H. Kim, University of California, San Diego, La Jolla, CA	E. Madenci, M. Dorduncu, A. Barut, University of Arizona, Tucson, Tucson, AZ; N. Phan, Naval Air Systems Command, Patuxent River, MD	C. Diyaroglu, D. Behera, E. Madenci, University of Arizona, Tucson, Tucson, AZ; Y. Kaya, Middle East Technical University, Ankara, Turkey; G. Kedziora, D. Nepal, Air Force Research Laboratory, Wright-Patterson AFB, OH		

Tuesday, 8 January 2019						
247-STR-8	**Composite Interlaminar Enhancement Methods and Modeling I**					**Golden Hill B**
Chaired by: S. DORMOHAMMADI, AlphaSTAR Corp. and A. SELVARATHINAM, Lockheed Martin Corporation						
1430 hrs AIAA-2019-1041 **Particle Toughened Interfaces Enhance Mechanical Response of Composites** M. Nguyen, A. Vijayachandran, P. Davidson, A. Waas, University of Michigan, Ann Arbor, Ann Arbor, MI	1500 hrs AIAA-2019-1042 **Verification of Closed-Form Mixed-Mode Strain Energy Release Rate Expressions for Unidirectional Laminate Configurations** P. Enjuto, NSE Composites, Seattle, WA; G. Mabson, The Boeing Company, Seattle, WA; M. Lobo, NSE Composites, Seattle, WA	1530 hrs AIAA-2019-1043 **Atomistically informed multiscale modeling of damage mechanisms in CNT-enhanced bonded joints** K. Venkatesan, A. Rai, A. Chattopadhyay, Arizona State University, Tempe, AZ	1600 hrs AIAA-2019-1044 **Assessment of Damage Tolerance and Static Residual Strength of Z-Pin Reinforced Composites** V. Ranatunga, S. Crampton, S. Clay, Air Force Research Laboratory, Wright-Patterson AFB, OH	1630 hrs AIAA-2019-1045 **Impact Damage Tolerance of Composite Laminates with Through-the-Thickness Stitches** V. Ranatunga, S. Crampton, Air Force Research Laboratory, Wright-Patterson AFB, OH; D. Jegley, NASA Langley Research Center, Hampton, VA		

Tuesday, 8 January 2019						
248-TF-4	**Miscellaneous Transformational Flight Topics**					**Mt. Whitney**
Chaired by: M. PATTERSON, NASA Langley Research Center						
1430 hrs AIAA-2019-1046 **Evaluation of a Commercial Surface Vorticity Flow Solver for the Modeling of Propeller-Wing Interaction** X. Fei, NASA Langley Research Center, Hampton, VA	1500 hrs AIAA-2019-1047 **Technical Challenges Associated with In-Air Wingtip Docking of Aircraft in Forward Flight** J. Quinlan, J. Pei, J. Cooper, R. Busan, P. Rothhaar, W. Milholen, NASA Langley Research Center, Hampton, VA; et al.	1530 hrs AIAA-2019-1048 **A New Bio-inspired Flying Concept: The Quad-Flapper** M. Kiani, B. Davis, F. Pablo Quevedo, N. Cabezut, S. Hince, M. Balta, University of California, Irvine, Irvine, CA; et al.	1600 hrs Oral Presentation **Enhanced ADS-B Flight Tests on F-18 Supersonic Aircraft** R. Arteaga, NASA Armstrong Flight Research Center, Edwards, CA			

Tuesday, 8 January 2019						
249-TP-5	**Non-Equilibrium Flows II**					**Balboa A**
Chaired by: J. BURT, NASA Glenn Research Center						
1430 hrs AIAA-2019-1049 **Direct molecular simulation of dissociating nitrogen in an adiabatic reactor** E. Torres, T. Schwartzentruber, University of Minnesota, Twin Cities, Minneapolis, MN	1500 hrs AIAA-2019-1050 **Computation of State to State Transport Coefficients Using *ab initio* Potential Energy Surfaces for the O + O_2 System** S. Subramaniam, K. Stephani, University of Illinois, Urbana-Champaign, Urbana, IL	1530 hrs AIAA-2019-1051 **Novel Approach for Modeling CO_2 Non-equilibrium Radiation: Application to Wake Flows** A. Sahai, B. Lopez, University of Illinois, Urbana-Champaign, Urbana, IL; C. Johnston, NASA Langley Research Center, Hampton, VA; M. Panesi, University of Illinois, Urbana-Champaign, Urbana, IL	1600 hrs AIAA-2019-1052 **A Comparative Study of a Discrete Velocity Method and a Gas-Kinetic Method for a Binary Gas Mixture** B. Todorova, R. Steijl, University of Glasgow, Glasgow, United Kingdom			

Tuesday, 8 January 2019						
250-UAS-1	**UAS Guidance, Navigation, and Control I**					**Hillcrest D**
Chaired by: P. MCNALLY, University of Michigan						
1430 hrs AIAA-2019-1053 **UAS Operation and Navigation in GPS-Denied Environments Using Multilateration of Aviation Transponders** C. Lum, H. Rotta, R. Patel, H. Kuni, T. Patana-anake, J. Longhurst, University of Washington, Seattle, Seattle, WA; et al.	1500 hrs AIAA-2019-1054 **Way-point Based Implicit Leader Cyclic Pursuit Solutions** A. Joshi, H. Arya, Indian Institute of Technology Bombay, Mumbai, India	1530 hrs AIAA-2019-1055 **Optical Geolocation for small Unmanned Aerial System** C. Dolph, R. McSwain, W. Humphreys, D. Lockard, M. Khorrami, NASA Langley Research Center, Hampton, VA	1600 hrs AIAA-2019-1056 **Emergency Flight Planning using Voronoi Diagrams** B. Grüter, D. Seiferth, M. Bittner, F. Holzapfel, Technical University of Munich, Garching, Germany	1630 hrs AIAA-2019-1057 **Autonomous Navigation of a Quadcopter in Indoor Environments** A. Acharya, S. Bhandari, Z. Aliyazicioglu, California State Polytechnic University, Pomona, CA	1700 hrs AIAA-2019-1058 **Evaluation of Decay Functions for Vector Field Based Obstacle Avoidance** Y. Zhu, T. Moleski, J. Wilhelm, Ohio University, Athens, OH	

Tuesday, 8 January 2019						
251-UAS-2	**Unmanned Systems and Enabling Technologies for Urban Operation**					**Ocean Beach**
Chaired by: M. LOGAN, NASA Langley Research Center						
1430 hrs AIAA-2019-1059 **Incorporating RF Coverage Analysis in Mission Planning for Future Airspace Operations** A. Bateman, J. Burkholder, T. Summers, N. Richards, Barron Associates, Inc., Charlottesville, VA	1500 hrs AIAA-2019-1060 **Determination of Safe Landing Zones for an Autonomous UAS using Elevation and Population Density Data.** E. Carney, L. Castano, H. Xu, University of Maryland, College Park, College Park, MD	1530 hrs AIAA-2019-1061 **3-D Trajectory Modeling for Unmanned Aerial Vehicles** B. Wang, J. Xie, Texas A&M University, Corpus Christi, TX; Y. Wan, University of Texas, Arlington, Arlington, TX; G. Guijarro Reyes, L. Garcia Carrillo, Texas A&M University, Corpus Christi, TX	1600 hrs AIAA-2019-1062 **Plume Source Inversion with Mobile UAS Sensing for Environmental Applications** R. Allamraju, B. Jayaraman, J. Jacob, Oklahoma State University, Stillwater, OK; A. El-Messidi, N. Alkadi, General Electric Company, Oklahoma City, OK	1630 hrs AIAA-2019-1063 **Morphing Concept for Multirotor UAVs Enabling Stability Augmentation and Multiple-Parcel Delivery** D. Cheng, A. Charles, S. Srigrarom, H. Hesse, University of Glasgow, Singapore, Singapore		

Tuesday, 8 January 2019						
252-WE-4	**Blade Aeroacoustics and Aerodynamics**					**Cityview A**
Chaired by: C. KELLEY, Sandia National Laboratories						
1430 hrs AIAA-2019-1064 **Aeroacoustic analysis of a wind turbine rotor with a sinusoidal leading edge.** V. Valleru, R. Taghavi, S. Farokhi, University of Kansas, Lawrence, Lawrence, KS	1500 hrs AIAA-2019-1065 **Aerodynamic Noise Generated by the NREL Phase VI Wind Turbine Rotor** R. Giridhar, S. Farokhi, R. Taghavi, University of Kansas, Lawrence, Lawrence, KS	1530 hrs AIAA-2019-1066 **A Procedure to Predict the Power Coefficient of Vertical Axis Wind Turbines at Low Tip Speed Ratios** N. Rosado Hau, L. Ma, D. Ingham, M. Pourkashanian, University of Sheffield, Sheffield, United Kingdom				

Tuesday, 8 January 2019						
253-WE-5	**Wind Turbine Experimental Design**					**Cityview A**
Chaired by: C. KELLEY, Sandia National Laboratories						
1430 hrs **No Presentations**			1600 hrs AIAA-2019-1067 **Structural Design of a 1/5th Scale Gravo-Aeroelastically Scaled Wind Turbine Demonstrator Blade for Field Testing** S. Yao, D. Griffith, M. Chetan, University of Texas, Dallas, Richardson, TX; C. Bay, R. Damiani, National Renewable Energy Laboratory, Golden, CO; M. Kaminski, University of Virginia, Charlottesville, Charlottesville, VA; et al.	1630 hrs AIAA-2019-1068 **Design and Testing of a Scaled Demonstrator Turbine at the National Wind Technology Center** C. Bay, R. Damiani, L. Fingersh, S. Hughes, National Renewable Energy Laboratory, Boulder, CO; M. Chetan, S. Yao, University of Texas, Dallas, Dallas, TX; et al.		

Tuesday, 8 January 2019		
254-HUB-4 **1500 - 1530 hrs**	**GEOshare and MILO Presents**	**the Hub Hangar**

Tuesday, 8 January 2019		
255-HUB-5 **1500 - 1600 hrs**	**Paper Airplane Contest**	**the Hub Launch Pad**

Tuesday, 8 January 2019		
256-HUB-6 **1530 - 1600 hrs**	**Wing, formerly of Google X, Overview and Opportunities**	**the Hub Hangar**

Tuesday, 8 January 2019		
257-HUB-7 1530 - 1600 hrs	Meet the Author Leland M. Nicolai	the Hub Open Area

Tuesday, 8 January 2019		
258-NW-7 1530 - 1600 hrs	Tuesday Afternoon Coffee Break	Grand Hall

Tuesday, 8 January 2019		
259-LEC-2 1730 - 1830 hrs	Dryden Lecture in Research	Seaport A-E

The Dryden Lecture in Research was named in honor of Dr. Hugh L. Dryden in 1967, succeeding the Research Award established in 1960. The Lecture emphasizes the great importance of basic and applied research to the advancement in aeronautics and astronautics and is a salute to research scientists and engineers.

Truss-Braced Wing Designs for High-Speed Transport Aircraft
Joseph A. Schetz
Holder of the Fred D. Durham Chair
Virginia Polytechnic Institute and State University

Tuesday, 8 January 2019		
260-NW-8 1830 - 2000 hrs	Opening Reception in the Exposition Hall	Grand Hall

Doors open at 6:15 pm.
Proof of purchase required and included in registration where indicated.

Wednesday

Wednesday, 9 January 2019		
261-SB-3 0730 - 0800 hrs	Wednesday Speaker Briefing	Session Rooms

Wednesday, 9 January 2019		
262-PLNRY-3 0800 - 0900 hrs	Flying Anyone from Here to There – Anytime, Anywhere	Seaport A-E

Moderator: Bruce Holmes, Vice President, Digital Aviation, SmartSky Networks, LLC

Keynote
Eduardo Dominguez-Puerta
Head, Urban Air Mobility
Airbus

Wednesday, 9 January 2019		
263-HUB-9 0900 - 0930 hrs	Rocket Contest	the Hub Open Area

Wednesday, 9 January 2019		
264-HUB-10 0900 - 1000 hrs	Meet the AIAA President-Elect Candidates	the Hub Hangar

Wednesday, 9 January 2019		
265-NW-9 0900 - 0930 hrs	Wednesday Morning Coffee Break	Grand Hall

Wednesday, 9 January 2019						
266-AA-5/TF-5	**Propeller/UAV Noise**					**Balboa C**
Chaired by: J. MENDOZA, United Technologies Research Center and S. RIZZI, NASA Langley Research Center						
0930 hrs AIAA-2019-1069 **Noise Reduction Potential of Phase Control for Distributed Propulsion Vehicles** K. Pascioni, National Institute of Aerospace, Hampton, VA; S. Rizzi, N. Schiller, NASA Langley Research Center, Hampton, VA	1000 hrs AIAA-2019-1070 **Investigation of Anti-Phase Asymmetric Quiet Rotor Technology** N. Cramer, Stinger Ghaffarian Technologies, Inc., Mountain View, CA; N. Nguyen, B. Storms, NASA Ames Research Center, Moffett Field, CA	1030 hrs AIAA-2019-1071 **An Exploration of the Performance and Acoustic Characteristics of UAV-Scale Stacked Rotor Configurations** S. Whiteside, N. Zawodny, X. Fei, N. Pettingill, M. Patterson, P. Rothhaar, NASA Langley Research Center, Hampton, VA	1100 hrs AIAA-2019-1072 **Sound Generation of Flexible Plunging Wings in Hover at Low Reynolds Numbers** K. Nedunchezian, C. Kang, University of Alabama, Huntsville, Huntsville, AL; H. Aono, Tokyo University of Science, Tokyo, Japan	1130 hrs AIAA-2019-1073 **Small UAV Acoustic Design, Analysis and Testing** M. Yang, D. Darrah, J. Eppler, W. Liu, W. Anemaat, Design, Analysis and Research Corporation, Lawrence, KS		

Wednesday, 9 January 2019		
267-ACD-7 **0930 - 1230 hrs**	**CADWG21: Lessons Learned in Aircraft Conceptual Design – Conceptual Design Tools and Processes from the 1970s, 80s and 90s**	**Harbor I**
Panelists: **Leland Nicolai** **Paul Bevilacqua** **Anthony Hays**		

Wednesday, 9 January 2019						
268-AFM-9	**Small Unmanned Aircraft III**					**Vista A**
Chaired by: T. FIELDS, University of Missouri-Kansas City and M. ABDULRAHIM, Prioria Robitics, Inc						
0930 hrs AIAA-2019-1074 **Modeling and Control of a Steerable Cruciform Parachute System Through Experimental Testing** S. Herrington, J. Renzelman, T. Fields, University of Missouri, Kansas City, Kansas City, MO; O. Yakimenko, Naval Postgraduate School, Monterey, CA	1000 hrs AIAA-2019-1075 **System Identification and Controller Optimization of Coaxial Quadrotor UAV in Hover** S. Cho, S. Bhandari, California State Polytechnic University, Pomona, CA; F. Sanders, San Jose State University, San Jose, CA; M. Tischler, Army Aviation and Missile Research, Development and Engineering Command, Moffett Field, CA; K. Cheung, Universities Space Research Association, Moffett Field, CA	1030 hrs AIAA-2019-1076 **Frequency Domain System Identification and Model Stitching of a Package-Delivery Octocopter** A. Gong, R. Hess, University of California, Davis, Davis, CA; M. Tischler, NASA Ames Research Center, Moffett Field, CA	1100 hrs AIAA-2019-1077 **Adaptive Smith Predictor for Teleoperation of UAVs using Parameter Estimation Techniques** T. Teng, P. Grant, University of Toronto, Toronto, Canada	1130 hrs AIAA-2019-1078 **A UAS Flight Test Engineering Course Modeled on Professional Methodologies and Practices** J. Valasek, E. Bowden, Texas A&M University, College Station, TX		

Wednesday, 9 January 2019						
269-AFM-10/GNC-21/FT-1	**Robust Control Flight Testing at the USAF Test Pilot School**					**Marina Room**
Chaired by: M. COTTING, US Air Force Test Pilot School and S. GINN, NASA AFRC and M. KUMAR, Ohio State University						
0930 hrs AIAA-2019-1079 **Experimental Flight Testing of Prototype Control Law Designs at the USAF Test Pilot School (Invited)** M. Cotting, Air Force Test Pilot School, Edwards AFB, CA	1000 hrs AIAA-2019-1080 **Adaptive Flight Control Systems on Calspan Learjet (Invited)** R. Edmonson, J. Kemper, Calspan Corporation, Niagara Falls, NY	1030 hrs AIAA-2019-1081 **Design, Analysis, and Flight Evaluation of a Primary Control System with Observer-Based Loop Transfer Recovery and Direct Adaptive Augmentation for The Calspan Variable Stability Simulator Learjet-25B Aircraft (Invited)** E. Lavretsky, The Boeing Company, Huntington Beach, CA	1100 hrs AIAA-2019-1082 **Piloted Handling Qualities Evaluation of an OBLTR Prototype Flight Control Law at the USAF Test Pilot School (Invited)** M. Cotting, E. Alt, C. Chappell, B. Heemstra, D. Guerrero, J. Lancaster, Air Force Test Pilot School, Edwards AFB, CA	1130 hrs AIAA-2019-1083 **An L1 Adaptive Stability Augmentation System Designed *for MIL-HDBK-1797 Level 1 Flying Qualities* (Invited)** J. Puig - Navarro, K. Ackerman, N. Hovakimyan, University of Illinois, Urbana-Champaign, Urbana, IL; M. Cotting, D. Duke, M. Carrera, Air Force Test Pilot School, Edwards, CA; et al.	1200 hrs AIAA-2019-1084 **Recovery of Desired Flying Characteristics with an L1 Adaptive Control Law: Flight Test Results on Calspan's VSS Learjet (Invited)** K. Ackerman, J. Puig - Navarro, N. Hovakimyan, University of Illinois, Urbana-Champaign, Urbana, IL; M. Cotting, D. Duke, M. Carrera, Air Force Test Pilot School, Edwards AFB, CA; et al.	

Wednesday, 9 January 2019						
270-AMT-11	**Coherent Anti-Stokes Raman Scattering Spectroscopy**					**Harbor H**
Chaired by: C. DEDIC, University of Virginia and R. LUCHT, Purdue University						
0930 hrs Oral Presentation **Recent advances in gas-phase coherent anti-Stokes Raman scattering spectroscopy** H. Stauffer, Spectral Energies, LLC, Dayton, OH	1000 hrs AIAA-2019-1085 **Characterization of supersonic flows using hybrid fs/ps CARS** C. Dedic, University of Virginia, Charlottesville, Charlottesville, VA; A. Cutler, George Washington University, Washington, D.C.; P. Danehy, NASA Langley Research Center, Hampton, VA	1030 hrs AIAA-2019-1086 **Investigation of the Chirped Probe Pulse Femtosecond Coherent Anti-Stokes Raman Scattering at High Pressure** M. Gu, A. Satija, R. Lucht, Purdue University, West Lafayette, IN	1100 hrs AIAA-2019-1087 **Dual-Broadband Coherent anti-Stokes Raman Scattering for Investigating Pure Rotational Raman Spectra of Nitric Oxide** A. Satija, M. Arendt, Purdue University, West Lafayette, IN; N. Chai, Dow Chemical, Midland, MI; R. Lucht, Purdue University, West Lafayette, IN	1130 hrs AIAA-2019-1088 **MHz-Rate Ultrafast Laser for Nonlinear Spectroscopy in Transient and Nonequilibrium Hypersonic Flows** M. Smyser, M. Slipchenko, T. Meyer, Purdue University, West Lafayette, IN; S. Roy, Spectral Energies, LLC, Dayton, OH; J. Gord, A. Caswell, Air Force Research Laboratory, Wright-Patterson AFB, OH	1200 hrs AIAA-2019-1089 **Single Shot Temperature Measurements using Coherent Anti-Stokes Raman Scattering in Mach 14 Flow at the Hypervelocity AEDC Tunnel 9** A. Dogariu, Princeton University, Princeton, NJ; L. Dogariu, Plasma TEC, Inc., Princeton, NJ; M. Smith, J. Lafferty, Arnold Engineering Development Complex, Silver Spring, MD; R. Miles, Plasma TEC, Inc., Princeton, NJ	

Wednesday, 9 January 2019						
271-APA-27	**Distributed Propulsion and Ultra-Efficient Aircraft Concepts**					**Harbor A**
Chaired by: N. HALL, Lockheed Martin Corporation and J. MILGRAM, US Navy						
0930 hrs AIAA-2019-1090 **Distributed Propulsion Using a Wing Embedded Ejector/Diffuser** C. Wisniewski, C. Fagley, U.S. Air Force Academy, Colorado Springs, CO	1000 hrs AIAA-2019-1091 **Conceptual and Numerical Analysis of Active Wingtip Vortex Cancellation in Propeller-Driven Electric Aircraft** P. Sharpe, R. Agarwal, Washington University in St. Louis, St. Louis, MO	1030 hrs AIAA-2019-1092 **The Effect of Incoming Boundary Layer Characteristics On The Performance Of a Distributed Propulsion System** P. Upadhyay, K. Zaman, NASA Glenn Research Center, Cleveland, OH	1100 hrs AIAA-2019-1093 **Aerodynamic Loads on an Aft-Mounted Propeller Induced by the Wing Wake** N. Arnhem, R. Vos, L. Veldhuis, Delft University of Technology, Delft, The Netherlands	1130 hrs AIAA-2019-1094 **Study of Wing Camber for Optimal Flight Efficiency of a Long-Endurance Solar-Powered Unmanned Aircraft** O. Dantsker, S. Yu, D. Lai, University of Illinois, Urbana-Champaign, Urbana, IL; M. Theile, M. Caccamo, Technical University of Munich, Garching, Germany		

Wednesday, 9 January 2019						
272-APA-28	**Propeller/Rotorcraft/Wind Turbine Aerodynamics I**					**Old Town B**
Chaired by: J. RAULEDER, Technical University of Munich and C. SIMAO FERREIRA, Delft University of Technology						
0930 hrs AIAA-2019-1095 **Rotorcraft Outwash and Human Stability** M. Calvert, Y. Wenren, Army Research, Development, and Engineering Command, Aviation and Missile Center, Redstone Arsenal, AL	1000 hrs AIAA-2019-1096 **Design, Fabrication and Preliminary Testing of an Experimental Measurement Rig for Co-Axial Rotors** S. Yan, D. Getz, J. Palacios, Pennsylvania State University, University Park, PA; M. Kinzel, University of Central Florida, Orlando, FL; S. Schmitz, J. Langelaan, Pennsylvania State University, University Park, PA	1030 hrs AIAA-2019-1097 **Changes In Propeller Performance Due to Ground Proximity** J. Cai, S. Gunasekaran, University of Dayton, Dayton, OH; A. Ahmed, Auburn University, Auburn, AL; M. Ol, Air Force Research Laboratory, Wright-Patterson AFB, OH	1100 hrs AIAA-2019-1098 **An Investigation of the Behavior of a Coaxial Rotor in Descent and Ground Effect** M. Kinzel, University of Central Florida, Orlando, FL; J. Cornelius, S. Schmitz, J. Palacios, J. Langelaan, Pennsylvania State University, University Park, PA; D. Adams, Johns Hopkins University Applied Physics Laboratory, Laurel, MD; et al.	1130 hrs AIAA-2019-1099 **Numerical Study of a Hovering Helicopter Rotor Blade in Ground Effect** H. Gao, R. Agarwal, Washington University In St. Louis, St. Louis, MO	1200 hrs AIAA-2019-1100 **Development and validation of a thrust-scaled counter-rotating coaxial rotor to study interactional aerodynamics** L. Silwal, K. Munz, V. Raghav, Auburn University, Auburn, AL	

Wednesday, 9 January 2019						
273-APA-29	**Airfoil/Wing/Configuration Aerodynamics III**					**Balboa B**
Chaired by: K. ABDOL-HAMID, NASA Langley Research Center and S. VIKEN, NASA Langley Research Center						
0930 hrs AIAA-2019-1101 **Aerodynamic Performance of Morphed Camber Rotor Airfoils** A. Abdelmoula, J. Rauleder, Technical University of Munich, Munich, Germany	1000 hrs AIAA-2019-1102 **A Time-Marching Aeroelastic Method Applied to Propeller Flutter** R. Higgins, A. Jimenez-Garcia, G. Barakos, University of Glasgow, Glasgow, United Kingdom; N. Bown, Dowty Propellers, Cheltenham, United Kingdom	1030 hrs AIAA-2019-1103 **A study of an aero-elastic twisted inverted wing in close ground proximity** K. Garry, J. Barzic, S. Prince, Cranfield University, Bedford, United Kingdom	1100 hrs AIAA-2019-1104 **Characteristics of Leading-Edge Tubercle Airfoil in Flow With High Freestream Turbulence** A. Martinez-Ibarra, G. Acosta, R. Freeman, I. Choutapalli, University of Texas, Rio Grande Valley, Edinburg, TX	1130 hrs AIAA-2019-1105 **An Experimental Study on Passive Ventilation Wing with Porous Surfaces for Gust Load Alleviation** S. Seki, Y. Tani, S. Aso, Kyushu University, Fukuoka, Japan		

Wednesday, 9 January 2019						
274-APA-30	**Special Session: CREATE II**					**Hillcrest C**
Chaired by: N. HARIHARAN, HPCMP CREATE						
0930 hrs AIAA-2019-1106 **CFD Analysis of the F/A-18E Super Hornet during Extension and Retraction of the Landing Gear** B. Green, R. Czerwiec, Naval Air Systems Command, Patuxent River, MD	1000 hrs AIAA-2019-1107 **CFD-Based Reduced-Order Models for Distributed Aircraft-Store Loads Analysis** J. Dansie, Air Force SEEK EAGLE Office, Eglin AFB, FL	1030 hrs AIAA-2019-1108 **Troop Door 6DOF Exit Simulations for C-130 H/J Airdrop Configurations** K. Bergeron, Army Research, Development and Engineering Command, Natick, MA; M. Ghoreyshi, A. Jirasek, U.S. Air Force Academy, Colorado Springs, CO; G. Noetscher, Army Research, Development and Engineering Command, Natick, MA	1100 hrs AIAA-2019-1109 **Simulating Stall Inception in a High-Performance Fan Using CREATE™-AV Kestrel** M. Unrau, S. Gorrell, Brigham Young University, Provo, UT	1130 hrs AIAA-2019-1110 **The Effects of the Fuselage on a Coaxial Rotorcraft Performance, Aerodynamics, and Structural Dynamics** P. Anusonti-Inthra, Army Research Laboratory, Aberdeen Proving Ground, MD	1200 hrs AIAA-2019-1111 **Transition Modeling in CREATETM-AV HELIOS v9** S. Tran, V. Lakshminarayan, Science and Technology Corporation, Moffett Field, CA; J. Sitaraman, Parallel Geometric Algorithms, LLC, Sunnyvale, CA; A. Wissink, Army Aviation and Missile Research, Development and Engineering Command, Moffett Field, CA	

Wednesday, 9 January 2019						
275-AS-5	**Material/Structural Modeling and Health Monitoring**					**Pier**
Chaired by: R. JHA, Rowan University and A. CHATTOPADHYAY, Arizona State University						
0930 hrs AIAA-2019-1112 **Experimental Characterization of Shape Memory Polymer Enhanced Thermoplastic Self-Healing Carbon/Epoxy Composites** M. Thapa, B. Jony, S. Mulani, S. Roy, University of Alabama, Tuscaloosa, Tuscaloosa, AL	1000 hrs AIAA-2019-1113 **Inverse Problem Approach for Characterization of Adhesive Layer using Wavelet Spectral Finite Element Bonded Joint Model** N. Jayakody, Mississippi State University, Mississippi State, MS; R. Jha, Rowan University, Glassboro, NJ; D. Belk, Mississippi State University, Mississippi State, MS	1030 hrs AIAA-2019-1114 **Characterization of Magneto-Mechanical Properties and Quasi-Static Physical Modelling of MR Elastomers** M. Asadi Khanouki, R. Sedaghati, M. Hemmatian, Concordia University, Montréal, Canada	1100 hrs AIAA-2019-1115 **Modeling Various Martensite Fractions Assumptions in Shape Memory Alloy Springs** C. Vazquez, J. Kauffman, University of Central Florida, Orlando, FL	1130 hrs AIAA-2019-1116 **Measurement of Aeroelastic Wing Deflections Using Modal Shapes and Strain Pattern Analysis** S. Warwick, M. Bras, J. Richards, A. Suleman, University of Victoria, Victoria, Canada	1200 hrs AIAA-2019-1117 **A Concept of Self-Shape Generation of Membrane Structures Using Shape Memory Polymer Patches** A. Senba, T. Hasegawa, Meijo University, Nagoya, Japan	

Wednesday, 9 January 2019		
276-DGE-2 **0930 - 1130 hrs**	**Digital Engineering - Information Interoperability**	**Solana Beach B**

Digital engineering utilizes terminology that means different things to different people. This panel will highlight some of the differences & seek harmonization on others.

Moderator: Mat French, Rolls-Royce LibertyWorks

Panelists:

Dan Seal	**Jason Hatakeyama**	**Natalie Straup**	**Eric Tucker**	**David Loda**
Boeing Defense, Space & Security	Boeing Defense, Space & Security	Boeing Defense, Space & Security	General Electric Research	United Technologies Research Center

Wednesday, 9 January 2019						
277-DS-3	**Fluid-Structure Interactions**					**Promenade B**
Chaired by: J. MCNAMARA, The Ohio State University and M. ROSS, Sandia National Laboratories						
0930 hrs AIAA-2019-1118 **Studies on Lateral-directional Coupled Flight Dynamics and Aeroelasticity of a PrandtlPlane** R. Cavallaro, R. Bombardieri, Charles III University of Madrid, Madrid, Spain	1000 hrs AIAA-2019-1119 **Aeroelastic Verification of a Dynamic Aerothermoelastic Analysis Framework** J. Schoneman, ATA Engineering, Inc., Huntsville, AL	1030 hrs AIAA-2019-1120 **A Surrogate-Based Optimization Framework for Hypersonic Aerothermoelastic Scaling Laws with Application to Skin Panels** D. Huang, P. Friedmann, University of Michigan, Ann Arbor, Ann Arbor, MI	1100 hrs AIAA-2019-1121 **Refinement of CFD Surrogates for Aerothermoelastic Loads Prediction in High-Speed Flows** K. Brouwer, J. McNamara, Ohio State University, Columbus, OH			

Wednesday, 9 January 2019

278-EDU-4 | **Challenges in Aerospace Education** | **Harbor F**

0930 - 1130 hrs

The aerospace industry is seeing huge opportunities enabled by big data, artificial intelligence, cyberphysical systems, and additive manufacturing. However, education in aerospace engineering has not changed much during the past two decades. What can higher education do to address the challenges and opportunities? Sponsored by Aerospace Department Chairs Association (ADCA).

Moderator: Tom Shih, Purdue University

Speakers/Panelists:

Wesley Harris Massachusetts Institute of Technology	**Eric Loth** University of Virginia	**Anastasios Lyrintzis** Embry-Riddle Aeronautical University	**Kristi Morgansen** University of Washington	**Eric Paterson** Virginia Polytechnic Institute and State University	**Amy Pritchett** Pennsylvania State University	**John Sullivan** Purdue University

Wednesday, 9 January 2019

279-EXPL-3 | **Advanced Propulsion Systems** | **Pyramid Peak**

Chaired by: J. SHEEHY, NASA Headquarters

0930 hrs AIAA-2019-1122 **The Dipole Drive: A New Concept in Space Propulsion** R. Zubrin, Pioneer Astronautics, Lakewood, CO	1000 hrs AIAA-2019-1123 **Reduced Order Model of a Barbell Electric Sail** M. Simmons, C. Montalvo, University of South Alabama, Mobile, AL	1030 hrs AIAA-2019-1124 **Overview of Solar Magnetic Sailing Configurations for Space Travel** H. Djojodihardjo, Institute for the Advancement of Aerospace Science and Technology, Jakarta, Indonesia	1100 hrs AIAA-2019-1125 **Design of an Uninterrupted Propulsion System for Spinning Planet Landers for Soft Landing** V. Sanal Kumar, Indian Space Research Organisation, Trivandrum, India; A. Mariappan, A. Sukumaran, V. V K, J. John, Kumaraguru College of Technology, Coimbatore, India; A. Kumar, Sejong University, Seoul, South Korea; et al.	1130 hrs AIAA-2019-1126 **Preliminary Design and Testing of a Small Spacecraft Steam Propulsion System** A. Rukhaiyar, J. Nadeau, F. Pastrana, J. Cornett, C. Topolski, P. Serafin, Embry-Riddle Aeronautical University, Daytona Beach, FL; et al.		

Wednesday, 9 January 2019

280-F360-5 | **Forum 360: On-Demand Aviation – Challenges and Solutions** | **Seaport F**

0930 - 1130 hrs

Moderator: Douglas Stanley, President and Executive Director, National Institute of Aerospace

Panelists:

William Crossley Professor, Aeronautics and Astronautics Purdue University	**William Fredericks** Founder and Chief Executive Officer Advanced Aircraft Company	**Brian German** Langley Associate Professor, Daniel Guggenheim School of Aerospace Engineering Georgia Institute of Technology	**Michael Patterson** Aerospace Technologist NASA Langley Research Center	**Wes Ryan** Unmanned Systems Certification Lead Policy & Innovation Division FAA

Wednesday, 9 January 2019

281-FD-33 | **High-Speed Turbulent Flows** | **Mt. Whitney**

Chaired by: S. PELTIER, U.S. Air Force Research Laboratory and K. BHAGANAGAR

0930 hrs AIAA-2019-1127 **Unsteady Surface and Flowfield Measurements in Ramp-Induced Turbulent and Transitional Shock-Wave Boundary-Layer Interactions at Mach 6** T. Whalen, R. Kennedy, S. Laurence, University of Maryland, College Park, College Park, MD; B. Sullivan, D. Bodony, University of Illinois, Urbana-Champaign, Urbana, IL; G. Buck, NASA Langley Research Center, Hampton, VA	1000 hrs AIAA-2019-1128 **Velocity-Temperature Correlations in a High-temperature Supersonic Turbulent Channel Flow for Two Gas Models** X. Chen, J. Zhang, Zhejiang Sci-Tech University, Hangzhou, China	1030 hrs AIAA-2019-1129 **The Centrifugal Instability of a Mach 10 Shock-separated Flow over a Hollow Cylinder with Flare.** V. Bhagwandin, C. Helm, P. Martin, University of Maryland, College Park, College Park, MD	1100 hrs AIAA-2019-1130 **Persistence of a Centrifugal Instability in Shock-separated Flows at Mach 3 through 10** J. Trichilo, C. Helm, P. Martin, University of Maryland, College Park, College Park, MD			

Wednesday, 9 January 2019						
282-FD-34	**Stability and Transition of High-Speed Flows III**					**Gaslamp A**
Chaired by: E. WHITE, Texas A&M University and P. PAREDES, National Institute of Aerospace						
0930 hrs AIAA-2019-1131 **Stabilization of a Mach 6 Boundary Layer Using a Two-Dimensional Cavity** J. Hao, C. Wen, Hong Kong Polytechnic University, Hong Kong, Hong Kong	1000 hrs AIAA-2019-1132 **Impact of Thermochemical Nonequilibrium Effects on the Supersonic Mode in Hypersonic Boundary Layers** C. Knisely, X. Zhong, University of California, Los Angeles, Los Angeles, CA	1030 hrs AIAA-2019-1133 **Crossflow Transition of a Swept-Wing Boundary Layer and its Sensitivity to Free-Stream Conditions and Surface Roughness** P. Rizzo, J. Serpieri, M. Kotsonis, Delft University of Technology, Delft, The Netherlands	1100 hrs AIAA-2019-1134 **Impact of Hypersonic Boundary Layer Transition on Skin Drag and Surface Heating on Blunt Cones** C. Knisely, C. Haley, X. Zhong, University of California, Los Angeles, Los Angeles, CA			

Wednesday, 9 January 2019						
283-FD-35	**Flow Control III - Passive and Hybrid Methods**					**Gaslamp C**
Chaired by: M. MUNSON, U.S. Army Research Office and M. HEMATI, University of Minnesota						
0930 hrs AIAA-2019-1135 **Laminar Boundary Layer Scaling Over a Conformal Vortex Generator** N. Lucido, R. KC, T. Wilson, J. Jacob, A. Alexander, B. Elbing, Oklahoma State University, Stillwater, OK; et al.	1000 hrs AIAA-2019-1136 **POD Study on vortex Structures in MVG wake** X. Dong, Nanjing University of Science and Technology, Nanjing, China; S. Charkrit, X. Truong, C. Liu, University of Texas, Arlington, Arlington, TX	1030 hrs AIAA-2019-1137 **An Experimental Investigation of the Effect of Surface Perforation on Unsteady Aerodynamic Force Reduction for a Hollow Cylinder** V. Sudalaimuthu, X. Liu, San Diego State University, San Diego, CA	1100 hrs AIAA-2019-1138 **Dynamic Stall Alleviation through Mini-tabs** S. Bull, N. Chiereghin, I. Gursul, D. Cleaver, University of Bath, Bath, United Kingdom	1130 hrs AIAA-2019-1139 **Turbulent Drag Reduction in Taylor-Couette Flows Using Super-Hydrophobic Surfaces and Liquid-Infused Surfaces** M. Naim, O. Khawar, M. Baig, M. Varshney, Aligarh Muslim University, Aligarh, India	1200 hrs AIAA-2019-1140 **Numerical Investigation of Transition Delay by Dynamic Surface Deformation** D. Rizzetta, M. Visbal, Air Force Research Laboratory, Wright-Patterson AFB, OH	

Wednesday, 9 January 2019						
284-FD-36	**Vortex Dominated Flows**					**Gaslamp D**
Chaired by: F. ALVI, Florida State University and D. GAITONDE, The Ohio State University						
0930 hrs AIAA-2019-1141 **Flow topology of the slanted cylinder afterbody** F. Zigunov, P. Sellappan, F. Alvi, Florida State University, Tallahassee, FL	1000 hrs AIAA-2019-1142 **High-Fidelity Simulations of Afterbody Vortex Flows** D. Garmann, M. Visbal, Air Force Research Laboratory, Wright-Patterson AFB, OH	1030 hrs AIAA-2019-1143 **Vortex Flows Formed by Flow-Control Fences on a Spherical Turret** B. Pawlowski, M. Rennie, E. Jumper, University of Notre Dame, Notre Dame, IN	1100 hrs AIAA-2019-1144 **A Comparison of Implicit and Explicit Simulations of Vortex Breakdown** X. Zhang, J. Chung, C. Kaplan, E. Oran, University of Maryland, College Park, College Park, MD			

Wednesday, 9 January 2019						
285-FD-37	**Special Session: Unsteady Aerodynamics - Gusts III**					**Harbor B**
Chaired by: D. RIVAL and J. JAWORSKI, Lehigh University						
0930 hrs AIAA-2019-1145 **An Investigation into Gust Shear Layer Vorticity and the Added Mass Force for a Transverse Wing-Gust Encounter** S. Corkery, H. Babinsky, University of Cambridge, Cambridge, United Kingdom	1000 hrs AIAA-2019-1146 **Lift modeling and regulation for a finite wing during transverse gust encounters** G. Sedky, A. Jones, University of Maryland, College Park, College Park, MD; F. Lagor, State University of New York, Buffalo, NY	1030 hrs AIAA-2019-1147 **Progress Towards Modelling Unsteady Forces Using a Drift-Volume Approach** J. Galler, Queen's University, Kingston, Canada; G. Weymouth, University of Southampton, Southampton, United Kingdom; D. Rival, Queen's University, Kingston, Canada	1100 hrs AIAA-2019-1148 **Machine Learning Based Detection of Flow Disturbances Using Surface Pressure Measurements** W. Hou, D. Darakananda, J. Eldredge, University of California, Los Angeles, Los Angeles, CA	1130 hrs AIAA-2019-1149 **Lift, drag, and moment response of a UCAS model experiencing longitudinal von Karman gust spectra** D. Williams, Q. Stasse, Illinois Institute of Technology, Chicago, IL; M. Rennie, University of Notre Dame, Notre Dame, IN		

Wednesday, 9 January 2019						
286-FD-38	**High-Order CFD Methods and Applications I**					**Harbor C**
Chaired by: H. LUO, North Carolina State University and P. PERSSON						
0930 hrs AIAA-2019-1150 **High-Order Hyperbolic Navier-Stokes Reconstructed Discontinuous Galerkin Method** L. Li, J. Lou, H. Luo, North Carolina State University, Raleigh, NC; H. Nishikawa, National Institute of Aerospace, Hampton, VA	1000 hrs AIAA-2019-1151 **A Full Space Solver for Optimization-Based, High-Order Shock Tracking using a Discontinuous Galerkin Discretization** M. Mirhoseini, University of Notre Dame, Notre Dame, IN; P. Persson, University of California, Berkeley, Berkeley, CA; M. Zahr, University of Notre Dame, Notre Dame, IN	1030 hrs AIAA-2019-1152 **High-order wall-resolved large eddy simulation of transonic buffet on the OAT15A airfoil** W. Pazner, Lawrence Livermore National Laboratory, Livermore, CA; M. Franco, P. Persson, University of California, Berkeley, Berkeley, CA	1100 hrs AIAA-2019-1153 **Implicit High-Order Flux Reconstruction Positivity Preserving LLAV Scheme for Viscous High-Speed Flows** R. Vandenhoeck, A. Lani, von Kármán Institute for Fluid Dynamics, Rhode-Saint-Genèse, Belgium		

Wednesday, 9 January 2019						
287-FD-39	**Novel CFD Methods II**					**Gaslamp B**
Chaired by: J. BAEDER, University of Maryland and H. NISHIKAWA, National Institute of Aerospace						
0930 hrs AIAA-2019-1154 **A Strongly-coupled Non-parametric Integral Boundary Layer Method for Aerodynamic Analysis with Free Transition** S. Zhang, M. Drela, S. Allmaras, M. Galbraith, D. Darmofal, Massachusetts Institute of Technology, Cambridge, MA	1000 hrs AIAA-2019-1155 **An Implicit Gradient Method for Cell-Centered Finite-Volume Solver on Unstructured Grids** H. Nishikawa, National Institute of Aerospace, Hampton, VA	1030 hrs AIAA-2019-1156 **A Stable numerical scheme for the cross-diffusion term of near-wall k-ω turbulence models** Y. Mor-Yossef, Israeli Computational Fluid Dynamics Center (ISCFDC), Caesarea Industrial Park, Israel	1100 hrs AIAA-2019-1157 **A study of DG methods for diffusion using the combined-mode analysis** M. Alhawwary, Z. Wang, University of Kansas, Lawrence, Lawrence, KS	1130 hrs AIAA-2019-1158 **CUDA Implementation of GPU-Accelerated Spectrally Accurate Algorithm** L. Jiao, L. Zhao, K. Xue, Beijing Institute of Technology, Beijing, China; Q. Li, Sheffield Hallam University, Sheffield, United Kingdom		

Wednesday, 9 January 2019						
288-GNC-22	**Distributed and Cooperative Systems II**					**Cowles Mountain**
Chaired by: W. WHITACRE, Draper Laboratory and M. OPPENHEIMER, Air Force Research Laboratory						
0930 hrs AIAA-2019-1159 **Kalman Filter Aiding MDS for Projectile Localization** B. Allik, M. Hamaoui, M. Don, C. Miller, Army Research Laboratory, Aberdeen Proving Ground, MD	1000 hrs AIAA-2019-1160 **Consensus-based Moment Allocator for Distributed Nonlinear Actuators onboard a Conceptual SUAS** A. Mark, Y. Xu, University of Central Florida, Orlando, FL; B. Dickinson, Air Force Research Laboratory, Eglin AFB, FL	1030 hrs AIAA-2019-1161 **Decentralized Consensus Control of Rigid Bodies Using Exponential Coordinates** M. Maadani, E. Butcher, University of Arizona, Tucson, Tucson, AZ; M. Nazari, Embry-Riddle Aeronautical University, Daytona Beach, FL; T. Yucelen, University of South Florida, Tampa, FL	1100 hrs AIAA-2019-1162 **Multiple Pursuer Single Evader Border Defense Differential Game** A. Von Moll, E. Garcia, D. Casbeer, Air Force Research Laboratory, Wright-Patterson AFB, OH; S. Manickam, S. Swar, Defence Research & Development Organisation, Bengaluru, India	1130 hrs AIAA-2019-1163 **Consensus Estimation of Rigid Body Motion Using Lie Algebra se(3) and the Consensus Extended Kalman Filter** J. Wang, E. Butcher, University of Arizona, Tucson, Tucson, AZ; T. Yucelen, University of South Florida, Tampa, FL		

Wednesday, 9 January 2019						
289-GNC-23	**Aircraft Swarms and Formations**					**Cuyamuca Peak**
Chaired by: X. BAI and T. YUCELEN, University of South Florida						
0930 hrs AIAA-2019-1164 **Autonomous Unmanned Heterogeneous Vehicles for Persistent Monitoring** V. Lappas, V. Kostopoulos, University of Patras, Patras, Greece; H. Shun, A. Tsourdos, Cranfield University, Cranfield, United Kingdom; M. Detratti, European Defense Agency, Brussels, Belgium	1000 hrs AIAA-2019-1165 **Receding-Horizon Trajectory Planning for Multiple UAVs Using Particle Swarm Optimization** D. Vijayakumari, S. Kim, J. Suk, H. Mo, Chungnam National University, Daejeon, South Korea	1030 hrs AIAA-2019-1166 **Optimal Path Generation for Simultaneous Rendezvous of Fixed-Wing UAVs in 3D Dynamic Environments** B. Mitra, S. Hota, Indian Institute of Technology Kharagpur, Kharagpur, India	1100 hrs AIAA-2019-1167 **Modified Particle Swarm Optimization based Path Planning for Multi-Uav Formation** A. Patley, A. Bhatt, A. Maity, Indian Institute of Technology Bombay, Mumbai, India; K. Das, Tata Consultancy Services (TSC), Bengaluru, India; S. Ranjan Kumar, Indian Institute of Technology Bombay, Mumbai, India	1130 hrs AIAA-2019-1168 **Formation Control of Fixed-Wing Unmanned Aircraft: Theory and Experiments** C. Heintz, S. Bailey, J. Hoagg, University of Kentucky, Lexington, Lexington, KY		

Wednesday, 9 January 2019

290-GNC-24	Specialized Guidance and Control for Aerial Systems I					Skyline
Chaired by: E. JOHNSON, Pennsylvania State University and W. FICHTER, University of Stuttgart						
0930 hrs AIAA-2019-1169 **Model Predictive Control for Autonomous Ship Landing in a Search and Rescue Scenario** L. Persson, B. Wahlberg, Royal Institute of Technology (KTH), Stockholm, Sweden	1000 hrs AIAA-2019-1170 **Fixed-Wing UAV Guidance for Autonomous Landing on a Translating Platform** S. Suresh, A. Ratnoo, Indian Institute of Science, Bengaluru, India	1030 hrs AIAA-2019-1171 **Model Based Robust Control and Automation Design for a Micro-Gravity Enabling Multi-Rotor Test Bed** S. Kedarisetty, Indian Institute of Technology Madras, Chennai, India	1100 hrs AIAA-2019-1172 **Path Following Control of Multiple Quadrotors Carrying A Rigid-body Slung Payload** L. Qian, H. Liu, University of Toronto, North York, Canada			

Wednesday, 9 January 2019

291-GNC-25	Attitude Estimation and Determination					Twin Peaks
Chaired by: J. VALASEK, Texas A&M University and M. MAMANAKIS, Sandia National Laboratories						
0930 hrs AIAA-2019-1173 **Spacecraft Attitude Estimation with a Single Magnetometer Using Matrix Fisher Distributions on SO(3)** T. Lee, George Washington University, Washington, D.C.	1000 hrs AIAA-2019-1174 **Generalized Attitude Determination with One Dominant Vector Observation** J. Crassidis, State University of New York, Buffalo, NY; Y. Cheng, Mississippi State University, Mississippi State, MS	1030 hrs AIAA-2019-1175 **Using a Complimentary Filter for Attitude Estimation During Sun Acquisition** L. Sobiesiak, M. Langelier, J. Hamel, NGC Aerospace, Ltd., Sherbrooke, Canada	1100 hrs AIAA-2019-1176 **A Total Least-Squares Estimate for Attitude Determination** Y. Cheng, Mississippi State University, Mississippi State, MS; J. Crassidis, State University of New York, Amherst, NY			

Wednesday, 9 January 2019

292-GNC-38	Entry, Descent, and Landing IV (Invited)					Old Town A
Chaired by: J. CARSON, NASA and B. ACIKMESE, University of Washington						
0930 hrs AIAA-2019-1177 **No GPS? No Problem! Exploring the Dunes of Titan with *Dragonfly* Using Visual Odometry (Invited)** I. Witte, D. Bekker, M. Chen, T. Criss, S. Jenkins, N. Mehta, Johns Hopkins University Applied Physics Laboratory, Laurel, MD; et al.	1000 hrs AIAA-2019-1178 **Optical Terrain Relative Navigation Approaches to Lunar Orbit, Descent and Landing (Invited)** S. Steffes, F. Monterroza, L. Benhacine, C. Mario, Draper Laboratory, Cambridge, MA	1030 hrs AIAA-2019-1179 **Extended Kalman Filtering for Vision Based Terrain Relative Navigation (Invited)** N. Davidson, A. Wixner, M. Majji, A. Blake, Texas A&M University, College Station, TX; C. Restrepo, NASA Johnson Space Center, Houston, TX				

Wednesday, 9 January 2019

293-GT-5 0930 - 1230 hrs	High Reynolds Number Aerodynamics and Testing (Invited)	Cityview B

Speakers:

"Boundary Layer Transition Detection on Wind Tunnel Models in PETW During Continuous Pitch Traverse"
Christian Klein
German Aerospace Center (DLR)

"Investigation of Hybrid Laminar Flow Control (HLFC) on a 2D-Model in the Cryogenic Pilot European Transonic Windtunnel (PETW)"
Ann-Katrin Hensch
European Transonic Windtunnel

"Testing at the Edge of the Envelope Using the Feature Rich Testing Philosophy"
Paul White
Airbus Operations Ltd.

"National Transonic Facility – Recent Projects / Upgrades"
Roman Paryz
NASA Langley Research Center

"Impact and Advanced Implementation of Cryogenics in Aerodynamic Testing - Course Prospectus"
Eric Walker
NASA Langley Research Center

Wednesday, 9 January 2019

294-GT-6 0930 - 1230 hrs	National Partnership for Aeronautical Testing (NPAT) Mini-Facility Users Meeting (FUM)	Bayview

What keeps you up at night as a test facility user and/or provider? This mini FUM session will be an interactive roundtable discussion. Come prepared to discuss areas of concern and how they might be addressed with other users and operators.

Wednesday, 9 January 2019						
295-GTE-4	**Fans, Compressors, Diffusers and Turbines**					**Highland Peak**
Chaired by: S. LYNCH, Penn State						
0930 hrs AIAA-2019-1182 **Blended Fan Blade Effects on Aerodynamic Forces** C. Knapke, M. Wolff, Wright State University, Dayton, OH; D. Johnston, Air Force Research Laboratory, Wright-Patterson AFB, OH	1000 hrs AIAA-2019-1183 **Zone-based reliability analysis on fatigue life of GH720Li turbine disk concerning the correlation** J. Fan, L. Li, Beihang University, Beijing, China	1030 hrs AIAA-2019-1184 **Numerical Investigation of a New Unsteady Control Method to Suppress Tip Flow Separation in Compressors** Y. Yang, G. Huang, Z. Zhang, S. Hong, Nanjing University of Aeronautics and Astronautics, Nanjing, China	1100 hrs AIAA-2019-1185 **Dynamics of Unsteady Tip Leakage Vortex in a Transonic Fan** M. Prashanth, S. Farokhi, R. Taghavi, University of Kansas, Lawrence, Lawrence, KS	1130 hrs AIAA-2019-1186 **Evaluation of a CFD Design Tool for Gas Turbine Diffusers** L. Smith, Z. Dai, D. McCormick, United Technologies Corporation, East Hartford, CT		

Wednesday, 9 January 2019						
296-IS-14	**Autonomy in Aerospace Control Applications I**					**Seaport H**
Chaired by: E. ATKINS, University of Michigan and R. SAVELY, NASA-Johnson Space Center						
0930 hrs Oral Presentation **Risk-Centric Certification for Urban Air Mobility: Airworthiness and Operational Concerns** N. Neogi, NASA Langley Research Center, Hampton, VA	1000 hrs AIAA-2019-1187 **Formal Verification of System States for Spacecraft Automatic Maneuvering** K. Hobbs, Air Force Research Laboratory, Wright-Patterson AFB, OH; I. Perez, National Institute of Aerospace, Hampton, VA; A. Fifarek, LinQuest Corporation, Dayton, OH; E. Feron, Georgia Institute of Technology, Atlanta, GA	1030 hrs AIAA-2019-1188 **Autonomous Detection and Tracking of a High-Speed Ground Vehicle using a Quadrotor UAV** A. Shastry, H. Sinha, M. Kothari, Indian Institute of Technology Kanpur, Kanpur, India	1100 hrs AIAA-2019-1189 **Visual Depth Mapping from Monocular Images using Recurrent Convolutional Neural Networks** J. Mern, K. Julian, R. Tompa, M. Kochenderfer, Stanford University, Stanford, CA	1130 hrs AIAA-2019-1190 **Experimental Validation of a Distributed Control Approach Based on Multiplex Networks on Formations of Unmanned Aerial Vehicles** J. Jaramillo, T. Wieczorek, D. Tran, V. Dadi, T. Yucelen, S. Chellappan, University of South Florida, Tampa, FL		

Wednesday, 9 January 2019						
297-IS-15	**Autonomous Small UAS Urban Flight III (Invited)**					**Solana Beach A**
Chaired by: V. STEPANYAN, Universities Space Research Association and A. CHAKRABARTY						
0930 hrs AIAA-2019-1191 **Input Constrained M-MRAC for Multirotors Operating in an Urban Environment (Invited)** V. Stepanyan, Universities Space Research Association, Columbia, MD; K. Krishnakumar, NASA Ames Research Center, Moffett Field, CA	1000 hrs AIAA-2019-1192 **Geometric control of a quadrotor in wind with flow sensing and thrust constraints: Attitude and position control (Invited)** W. Craig, D. Yeo, D. Paley, University of Maryland, College Park, College Park, MD	1030 hrs AIAA-2019-1193 **Fusion of Weather Forecasts and In Situ Observations for sUAS Autonomy (Invited)** K. Glasheen, University of Colorado, Boulder, Boulder, CO; M. Steiner, J. Pinto, National Center for Atmospheric Research (NCAR), Boulder, CO; E. Frew, University of Colorado, Boulder, Boulder, CO	1100 hrs AIAA-2019-1194 **Multiresolution-Based 3-D Terrain Estimation Algorithms for Complex Urban Environments (Invited)** P. Vergara, M. Tiwari, R. Prazenica, T. Henderson, Embry-Riddle Aeronautical University, Daytona Beach, FL	1130 hrs **Open Discussion**		

Wednesday, 9 January 2019						
298-MAT-7	**Multifunctional Materials**					**Mission Beach C**
Chaired by: G. SEIDEL, Virginia Polytechnic Institute and State Universit and M. NARAGHI, Texas A & M university						
0930 hrs AIAA-2019-1195 **A Three-Dimensional Constitutive Modeling for Shape Memory Alloys Considering Two-Way Shape Memory Effect and Transformation-Induced Plasticity** L. Xu, A. Solomou, Texas A&M University, College Station, TX; T. Baxevanis, University of Houston, Houston, TX; D. Lagoudas, Texas A&M University, College Station, TX	1000 hrs AIAA-2019-1196 **Characterization and Processing of High Temperature Shape Memory Alloys for Aerospace Applications** M. Young, N. Ley, S. Segovia, R. Wheeler, University of North Texas, Denton, TX; O. Karakoc, A. Demblon, Texas A&M University, College Station, TX; et al.	1030 hrs AIAA-2019-1197 **Photo-softening effect on molecule structure and properties change in densely crosslinked azo-incorporated liquid crystalline polymers** H. Kim, C. Li, J. Moon, M. Cho, Seoul National University, Seoul, South Korea	1100 hrs AIAA-2019-1198 **Multiscale Investigation of Piezoresistive Response of Nanocomposite Bonded Explosives (NCBXs) Derived From Electron Tunneling Effects** K. Talamadupula, G. Seidel, Virginia Polytechnic Institute and State University, Blacksburg, VA	1130 hrs AIAA-2019-1199 **Nanoengineered *In Situ* Cure Status Monitoring Technique Based on Carbon Nanotube Network** J. Lee, B. Wardle, Massachusetts Institute of Technology, Cambridge, MA		

Wednesday, 9 January 2019

299-MAT-8	Manufacturing and Characterization of Composites					Ocean Beach
Chaired by: S. WICKS, Lockheed Martin Corporation and W. YU, Purdue University						
0930 hrs AIAA-2019-1200 **Adsorbed Aramid Nanofiber Interphase for Enhanced Aramid Fiber Reinforced Composites** J. Nasser, J. Lin, K. Steinke, H. Sodano, University of Michigan, Ann Arbor, Ann arbor, MI	1000 hrs AIAA-2019-1201 **Experimental Investigation of Interlaminar Fracture Micro-mechanisms of Aligned Carbon Nanotube-reinforced Aerospace Laminated Composites** X. Ni, B. Wardle, Massachusetts Institute of Technology, Cambridge, MA	1030 hrs AIAA-2019-1202 **Novel Multiscale Approach for the Virtual Manufacturing of Thermoset Composites within ICME** U. Ahmed, University of Massachusetts, Lowell, Lowell, MA; M. Radue, G. Odegard, Michigan Technological University, Houghton, MI; M. Maiaru, University of Massachusetts, Lowell, Lowell, MA	1100 hrs AIAA-2019-1203 **Multiscale Modeling of Thermoviscoelasticity for Composite Manufacturing Simulation Using Mechanics of Structure** O. Rique Garaizar, W. Yu, Purdue University, West Lafayette, IN	1130 hrs AIAA-2019-1204 **An Integrated Processing and Damage Model for Predicting Failure in a Curved Composite Beam** W. Chen, D. Zhang, University of Connecticut, Storrs, Storrs, CT	1200 hrs AIAA-2019-1205 **Flexible Hypervelocity Impact Shield by Dragon skin Bumper and Hybrid Fabric Rear Wall** Y. Kim, C. Choi, S. Kumar, J. Cha, V. Ankem, C. Kim, Korea Advanced Institute of Science and Technology, Daejeon, South Korea	

Wednesday, 9 January 2019

300-MAT-9/MDO-9/STR-9 — **ICME Software Panel - Addressing 2040 Grand Challenges** — **La Jolla A**

0930 - 1230 hrs

This question and answer panel session involving commercial software vendors will address their current strategies and future plans to address the various gaps and actions in linkage and integration associated with the recently released 2040 Vision study, a roadmap for Integrated, Multiscale Materials and System Modeling and Simulation, described in NASA CR 2018-219771, which defines the potential 25-year future state. The ultimate goal is to provide a forum for discussion of academia, industrial, and government needs and role with respect to building the 2040 cyber-physical-social ecosystem that enable successful implementation of ICME best practices and culture.

Panelists:

Craig Collier	Dave Conover	Tod Dalrymple	Will Marsden	Doug Neill	Mark Samonds	Jeff Wollschlager
President Collier Research Corporation-HyperSizer	Chief Technologist for Mechanical Products ANSYS	R&D Applications Director, Mechanics Technology Dassault Systemes	Director Industry Relations Granta Design Limited	Vice President, Product Development MSC Software Corporation	Director of Engineering ESI North America	Senior Technical Director Altair Engineering

Wednesday, 9 January 2019

301-MDO-10/APA-31	Aerodynamic Design: Analysis, Methodologies, and Optimization Techniques III					Mission Beach A
Chaired by: M. BHATIA, Mississippi State University and L. LEIFSSON, Iowa State University						
0930 hrs AIAA-2019-1206 **Optimisation of Multi-Modal Aerodynamic Shape and Topology Problems** A. Payot, L. Kedward, T. Rendall, C. Allen, University of Bristol, Bristol, United Kingdom	1000 hrs AIAA-2019-1207 **A Knowledge-Based Optimization Method for Aerodynamic Design** R. Campbell, M. Lynde, NASA Langley Research Center, Hampton, VA	1030 hrs AIAA-2019-1208 **Degree of similitude estimation for sub-scale flight testing** A. Raju Kulkarni, G. La Rocca, L. Veldhuis, Delft University of Technology, Delft, The Netherlands	1100 hrs AIAA-2019-1209 **Gradient-Limiting Shape Control for Efficient Aerodynamic Wing Optimisation** L. Kedward, C. Allen, T. Rendall, University of Bristol, Bristol, United Kingdom	1130 hrs AIAA-2019-1210 **An Object-oriented Framework for Rapid Discrete Adjoint Development using OpenFOAM** P. He, C. Mader, J. Martins, K. Maki, University of Michigan, Ann Arbor, Ann Arbor, MI	1200 hrs AIAA-2019-1211 **Aerodynamic Design of a Compressor Rotor using an Optimization-under-Uncertainty Approach** M. Meyer, B. Becker, Rolls-Royce Group plc, Blankenfelde, Germany; C. Poloni, M. Gambitta, University of Trieste, Trieste, Italy	

Wednesday, 9 January 2019

302-MDO-11/SD-11	Multidisciplinary Optimization and Sensitivity Analysis with Aeroelasticity and FSI I					Promenade A
Chaired by: E. STEWART, NASA Marshall Space Flight Center and K. SINGH, Miami University						
0930 hrs AIAA-2019-1212 **A Gradient-Based Flutter Constraint Including Geometrically Nonlinear Deformations** C. Lupp, C. Cesnik, University of Michigan, Ann Arbor, Ann Arbor, MI	1000 hrs AIAA-2019-1213 **Sensitivity of Aeroservoelastic Stability Characteristics Using Parametric Flutter Margins** F. Roizner, M. Karpel, Technion-Israel Institute of Technology, Haifa, Israel	1030 hrs AIAA-2019-1214 **Optimization of Aircraft Wing Performance via Aeroelastic Tailoring the Non-Linear VAT Composites** S. Li, University of Strathclyde, Glasgow, United Kingdom; Z. Wu, Cardiff University, Cardiff, United Kingdom; X. Zhou, Tongji University, Shanghai, China; Y. Zhang, University of Strathclyde, Glasgow, United Kingdom	1100 hrs AIAA-2019-1215 **Linearization and Analytical Aerodynamic Sensitivity of Unsteady Vortex-Lattice Aerodynamics** Y. Huang, W. Su, University of Alabama, Tuscaloosa, Tuscaloosa, AL	1130 hrs AIAA-2019-1216 **Optimal Compliant Airfoils Using Fully Non-Linear FSI Models** C. Venkatesan-Crome, P. Carrusca Gomes, R. Palacios, Imperial College London, London, United Kingdom	1200 hrs AIAA-2019-1217 **Aeroservoelastic Optimization of Morphing Airborne Wind Energy Wings** U. Fasel, D. Keidel, G. Molinari, P. Ermanni, Swiss Federal Institute of Technology, Zürich, Switzerland	

Wednesday, 9 January 2019						
303-MDO-12	**Multidisciplinary Design Optimization for Vehicle Design III**					**Mission Beach B**
Chaired by: D. ALLAIRE, Texas A&M University and A. CUCO, EMBRAER S.A.						
0930 hrs AIAA-2019-1218 **Large-scale design-economics optimization of eVTOL concepts for urban air mobility** T. Ha, K. Lee, J. Hwang, University of California, San Diego, San Diego, CA	1000 hrs AIAA-2019-1219 **Gradient-Based Propeller Optimization with Acoustic Constraints** D. Ingraham, J. Gray, NASA Glenn Research Center, Cleveland, OH; L. Lopes, NASA Langley Research Center, Hampton, VA	1030 hrs AIAA-2019-1220 **Load Flow Analysis with Analytic Derivatives for Electric Aircraft Design Optimization** E. Hendricks, J. Chapman, E. Aretskin-Hariton, NASA Glenn Research Center, Cleveland, OH	1100 hrs AIAA-2019-1221 **Combined Trajectory and Propulsion Optimization for Solar-Regenerative High-Altitude Long Endurance Unmanned Aircraft** N. Gates, K. Moore, A. Ning, J. Hedengren, Brigham Young University, Provo, UT			

Wednesday, 9 January 2019						
304-MDO-13/NDA-6/STR-10	**Special Session: Honoring Professor Rafi Haftka II**					**Torrey Hills A**
Chaired by: M. RAIS-ROHANI, University of Maine and B. SMARSLOK, AFRL/RQH						
0930 hrs AIAA-2019-1222 **Reusing Information for Multifidelity Active Learning in Reliability-Based Design Optimization** A. Chaudhuri, A. Marques, R. Lam, K. Willcox, Massachusetts Institute of Technology, Cambridge, MA	1000 hrs AIAA-2019-1223 **An Equivalent Reliability Index Approach for Surrogate Model-based RBDO** M. Li, Z. Wang, Michigan Technological University, Houghton, MI; P. Wang, University of Illinois, Urbana-Champaign, Urbana, IL	1030 hrs AIAA-2019-1224 **Anomaly Detection of Aircraft System using Kernel-based Learning Algorithm** H. Lee, G. Li, A. Rai, A. Chattopadhyay, Arizona State University, Tempe, AZ	1100 hrs AIAA-2019-1225 **Onshore wind turbine main bearing reliability and its implications in fleet management** Y. Yucesan, F. Viana, University of Central Florida, Orlando, FL	1130 hrs AIAA-2019-1226 **Efficient Adaptive Sparse Polynomial Chaos Expansion with l_1-minimization and Sequential Sampling** M. Thapa, S. Mulani, University of Alabama, Tuscaloosa, Tuscaloosa, AL; R. Walters, Virginia Polytechnic Institute and State University, Blacksburg, VA		

Wednesday, 9 January 2019						
305-MST-9	**Human Factors, Perception, and Cueing**					**Eagle Peak**
Chaired by: F. CARDULLO, State University of NY and C. REYNERSON						
0930 hrs AIAA-2019-1227 **Evaluating Augmented Reality in a Three-Axis Manual Tracking Task** J. Karasinski, S. Robinson, University of California, Davis, Davis, CA	1000 hrs AIAA-2019-1228 **Pilot Workload Estimation: Synthesis of Spectral Requirements Analysis and Weber's Law** E. Bachelder, M. Godfroy-Cooper, San Jose State University, San Jose, CA	1030 hrs AIAA-2019-1229 **Assessment of Maximum Unnoticeable Added Lag-Lead or Lead-Lag Dynamics with a Cybernetic Approach** M. Butijn, T. Lu, D. Pool, M. van Paassen, Delft University of Technology, Delft, The Netherlands	1100 hrs AIAA-2019-1230 **Manual Control Adaptation to Variations in Short-Period Natural Frequency and Damping** S. Fasiello, T. Lu, D. Pool, M. van Paassen, Delft University of Technology, Delft, The Netherlands	1130 hrs AIAA-2019-1231 **Revisiting Active Manipulators in Aircraft Flight Control** W. Fu, M. van Paassen, M. Mulder, Delft University of Technology, Delft, The Netherlands	1200 hrs AIAA-2019-1232 **An Adaptive Haptic Aid Based on Pilot Performance** A. Arenella, University of Pisa, Pisa, Italy; G. D'Intino, M. Olivari, S. Geluardi, H. Bülthoff, Max Planck Society, Tübingen, Germany; L. Pollini, University of Pisa, Pisa, Italy	

Wednesday, 9 January 2019						
306-PC-13	**Rocket and Air-Breathing Propulsion I**					**Hillcrest A**
Chaired by: R. BAURLE, NASA-Langley Research Center and W. KULATILAKA, Texas A & M University						
0930 hrs AIAA-2019-1233 **A Study on O/F Shift of Aft Counter-Swirl Oxidizer Injection with Multi-Section Swirl Injection Method for Hybrid Rocket** S. Saiga, A. Shirahama, S. Aso, Y. Tani, Kyushu University, Fukuoka, Japan; T. Shimada, Japan Aerospace Exploration Agency (JAXA), Kanagawa, Japan	1000 hrs AIAA-2019-1234 **Driver velocity and residence time effects on cavity-stabilized flame structure** K. Brady, National Research Council, Wright-Patterson AFB, OH; A. Caswell, Air Force Research Laboratory, Wright-Patterson AFB, OH	1030 hrs AIAA-2019-1235 **Flamelet Modeling of Transverse Thermo-Acoustic Instability in a Multi-Element Combustor** T. Pant, H. Wang, Purdue University, West Lafayette, IN				

Wednesday, 9 January 2019

307-PC-14	Heterogeneous Combustion					Hillcrest B
Chaired by: J. O'CONNOR, Pennsylvania State University and C. LI, Air Force Office of Scientific Research						
0930 hrs AIAA-2019-1236 **Mesoscale Modeling of Solid Propellant Burn Rates** K. Brown, V. Sankaran, Air Force Research Laboratory, Edwards AFB, CA; T. Jackson, University of Florida, Gainesville, Gainesville, FL	1000 hrs AIAA-2019-1237 **Catalytic Decomposition of Low Pressure Hydrogen Peroxide Vapor on Platinum and Silver: Kinetics and Implications** B. Rhodes, The Aerospace Corporation, El Segundo, CA; P. Ronney, University of Southern California, Los Angeles, CA; J. DeSain, The Aerospace Corporation, El Segundo, CA	1030 hrs AIAA-2019-1238 **Evaluation of Composite Propellants Utilizing Various Nano-Scale Aluminum and Boron Incorporation Methods** C. Dillier, A. Demko, J. Thomas, Texas A&M University, College Station, TX; K. Grossman, S. Seal, University of Central Florida, Orlando, FL; E. Petersen, Texas A&M University, College Station, TX	1100 hrs AIAA-2019-1239 **Microwave Control of Composite Solid Propellant Flame Spread Through Eddy Current Heating of Wired/Foiled Propellant** S. Barkley, K. Zhu, J. Michael, T. Sippel, Iowa State University, Ames, IA	1130 hrs AIAA-2019-1240 **Investigating Dimensional Effects on Predicting Burning Rates of Heterogeneous Solid Propellants** B. Bojko, M. Gross, Naval Air Warfare Center, China Lake, CA; T. Jackson, University of Florida, Gainesville, Gainesville, FL		

Wednesday, 9 January 2019

308-PC-26 0930 - 1130 hrs	3rd Model Validation for Propulsion - Closing	La Jolla B

This session of Model Validation for Propulsion III will examine potential unit physics cases for future workshop validation efforts. Unit physics cases eliminate the effects of geometry and offer a DNS reference solution for more rigorous evaluations of reacting LES results. Presentations and discussions of the following cases are planned: freely propagating turbulent premixed flames, turbulent reacting mixing layers, kernels of reactants inside products, and shock-flame interactions. Invited speakers include:

Jackie Chen
Sandia National Laboratories

Matthias Ihme
Stanford University

Alexei Poludnenko
Texas A&M University

Xinyu Zhao
University of Connecticut

Wednesday, 9 January 2019

309-PDL-12	Plasma Propulsion					Iron Mountain
Chaired by: K. XU, University of Alabama in Huntsville and A. SHASHURIN, Purdue University- Sch of Aero and Astro						
0930 hrs AIAA-2019-1241 **Analysis of Thrust Performance and Cathode Phenomena on a Megawatt-Class MPD Thruster** S. Tauchi, Graduate University for Advanced Studies, Sagamihara, Japan; Y. Oshio, Tokyo University of Agriculture and Technology, Koganei, Japan; A. Kawasaki, Nagoya University, Nagoya, Japan; K. Kubota, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan; I. Funaki, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan	1000 hrs AIAA-2019-1242 **Numerical Study of Discharge and Thrust Generation in a Microwave Rocket** M. Takahashi, N. Ohnishi, Tohoku University, Sendai, Japan	1030 hrs AIAA-2019-1243 **Far Field Plume Distribution and Divergence for NEXT: DART Mission** J. Young, T. Matlock, M. Nakles, M. Crofton, The Aerospace Corporation, El Segundo, CA; M. Patterson, N. Arthur, NASA Glenn Research Center, Cleveland, OH; et al.	1100 hrs AIAA-2019-1244 **Design of Electric Propulsion Testing Facility with Custom Cryopumping System** D. Schoeffler, M. Crofton, The Aerospace Corporation, El Segundo, CA	1130 hrs AIAA-2019-1245 **Multi-Objective Optimization and Particle-In-Cell Simulation of Cusped Field Thruster for Micro-Satellites Platform** S. Yeo, T. Fahey, H. Ogawa, RMIT University, Melbourne, Australia; A. Muffatti, Aerospace Systems Pty, Ltd., Prahran, Australia; P. Maya, P. Matthias, University of Greifswald, Greifswald, Germany; et al.	1200 hrs AIAA-2019-1246 **LIF Erosion Rate Measurements of NEXT Ion Engine for DART Mission** M. Crofton, D. Schoeffler, J. Young, The Aerospace Corporation, El Segundo, CA; M. Patterson, NASA Glenn Research Center, Cleveland, OH; J. John, Johns Hopkins University Applied Physics Laboratory, Laurel, MD	

Wednesday, 9 January 2019

310-PDL-13	Plasma and EM Computational Modeling					Kingston Peak
Chaired by: T. MOELLER, University of Tennessee Space Institute and D. HAN, Missouri University of Science and Technology						
0930 hrs AIAA-2019-1247 **Coilgun Acceleration Model Containing Multiple Interacting Coils** K. Polzin, A. Cipriano, A. Martin, NASA Marshall Space Flight Center, Huntsville, AL; C. Liu, Georgia Institute of Technology, Atlanta, GA	1000 hrs AIAA-2019-1248 **Divergence-Preserving Conservation Law Scheme for Magnetohydrodynamic Plasmas** R. Thompson, T. Moeller, University of Tennessee, Tullahoma, Tullahoma, TN	1030 hrs AIAA-2019-1249 **An Adaptive High-Order Finite-Volume Algorithm for Electromagnetic Fields** S. Polak, X. Gao, Colorado State University, Fort Collins, CO	1100 hrs AIAA-2019-1250 **Modeling of Air Breakdown by Single-Mode and Multi-Mode Lasers** A. Alberti, A. Munafò, C. Pantano, J. Freund, M. Panesi, University of Illinois, Urbana-Champaign, Urbana, IL			

Wednesday, 9 January 2019						
311-PGC-6	**Rotating Detonation and Pulsed Pressure Gain Combustion II**					**Harbor E**
Chaired by: M. GAMBA, University of Michigan and C. BEDICK, U.S. Department of Energy National Energy Technology Laboratory						
0930 hrs AIAA-2019-1251 **Experimental Study of a Linear RDE Section Coupled to an Operating RDE** R. Fievisohn, National Research Council, Wright-Patterson AFB, OH; J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH; F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH; K. Cho, Innovative Scientific Solutions, Inc., Dayton, OH	1000 hrs AIAA-2019-1252 **An Experimental Comparison of the Inner and Outer Wall Heat Flux in an RDE** C. Stevens, M. Fotia, J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH; F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH	1030 hrs AIAA-2019-1253 **Experimental Flow Visualization in a Radial Rotating Detonation Engine** S. Boller, M. Polanka, Air Force Institute of Technology, Wright-Patterson AFB, OH; R. Huff, F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH; M. Fotia, J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH	1100 hrs AIAA-2019-1254 **Modelling of Fuel Transport for a Shockless Explosion Combustion Process** F. Arnold, R. King, F. Yücel, F. Völzke, C. Paschereit, Technical University of Berlin, Berlin, Germany	1130 hrs AIAA-2019-1255 **Propagation of Detonation Waves in a Premixed Mach 5 Crossflow** G. Goodwin, C. Bachman, Naval Research Laboratory, Washington, D.C.; E. Oran, C. Kaplan, University of Maryland, College Park, College Park, MD; J. Sosa, K. Ahmed, University of Central Florida, Orlando, FL	1200 hrs AIAA-2019-1256 **Auto-Ignition and Detonation of H2/Air Mixtures in Hypersonic Flows** J. Sosa, D. Rosato, K. Ahmed, University of Central Florida, Orlando, FL; E. Oran, C. Kaplan, University of Maryland, College Park, College Park, MD; G. Goodwin, Naval Research Laboratory, Washington, D.C.	

Wednesday, 9 January 2019						
312-SCS-5	**Deployable Trusses and Booms I**					**Torrey Hills B**
Chaired by: S. JEON, MOOG CSA Engineering						
0930 hrs AIAA-2019-1257 **Bistability of Collapsible Tubular Mast Booms with High-Strain Thin-Ply Composites** J. Fernandez, NASA Langley Research Center, Hampton, VA; A. Lee, University of Michigan, Ann Arbor, Ann Arbor, MI	1000 hrs AIAA-2019-1258 **Minimal Unpowered Strain-Energy Deployment Mechanism for Rollable Spacecraft Booms** J. Firth, B. Adamcik, E. Hannah, North Carolina State University, Raleigh, NC; D. Firth, Prinston Laboratories, Charlotte, NC; M. Pankow, North Carolina State University, Raleigh, NC	1030 hrs AIAA-2019-1259 **Parametric Design of Conforming Joints for Thin-Shell Coilable Structures** D. Türk, S. Pellegrino, California Institute of Technology, Pasadena, CA	1100 hrs AIAA-2019-1260 **Deployable Bistable Composite Helical Antennas for Small Satellite Applications** G. Knott, University of Surrey, Guildford, United Kingdom; C. Wu, Chinese Academy of Sciences, Shenyang, China; A. Viquerat, University of Surrey, Guildford, United Kingdom			

Wednesday, 9 January 2019						
313-SE-5	**Systems Engineering V**					**Vista C**
Chaired by: W. HAMMOND, unknown and M. MILLER						
0930 hrs AIAA-2019-1261 **Verification, Validation and Accreditation Processes for Rotorcraft Acquisition** W. McCandless, C. Hamm, Army Aviation and Missile Research, Development and Engineering Command, Redstone Arsenal, AL; J. Foster, Army Corps of Engineers, Vicksburg, MS	1000 hrs AIAA-2019-1262 **Flight Data Acquisition Platform Development, Integration, and Operation on Small- to Medium-Sized Unmanned Aircraft** O. Dantsker, AI Volo, LLC, Urbana, IL; R. Mancuso, Boston University, Boston, MA					

Wednesday, 9 January 2019						
314-SEN-2	**Fusion I**					**Cove**
Chaired by: G. FASANO, University of Naples "Federico II" and K. ENGEBRETSON, Lockheed Martin						
0930 hrs AIAA-2019-1263 **A Neural Network Classifier for Fault Correlation and Root Cause Determination in an Electronic Warfare System** R. Moseley, Lockheed Martin Corporation, Fort Worth, TX	1000 hrs AIAA-2019-1264 **Multi-Model Approach to RSSI Based RFID Localization for International Space Station Deployment** J. Carnes, E. Lightsey, Georgia Institute of Technology, Atlanta, GA	1030 hrs AIAA-2019-1265 **A Particle Filter for Ground Obstacle Tracking in the Airfield** K. Theuma, D. Zammit-Mangion, J. Gauci, K. Chircop, University of Malta, Msida, Malta; N. Riviere, ONERA, Toulouse, France	1100 hrs AIAA-2019-1266 **Assessing Particle Filter Algorithms for Tracking Radio Emitters using Small Unmanned Aircraft** R. Kanlapuli Rajasekaran, E. Frew, University of Colorado, Boulder, Boulder, CO	1130 hrs AIAA-2019-1267 **Signal Processing of Landing Radar Considering Irradiated Surface Characteristics by Using CNN** M. Hidaka, M. Takahashi, Keio University, Yokohama, Japan; T. Ishida, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan; K. Kariya, Graduate University for Advanced Studies, Sagamihara, Japan; T. Mizuno, S. Fukuda, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan		

Wednesday, 9 January 2019						
315-STR-11	**Impact Damage in Composite Structures**					**Golden Hill A**
Chaired by: C. MERRETT, Clarkson University and Z. HU, The Boeing Company						
0930 hrs AIAA-2019-1268 **A minimally invasive impact event detection system for aircraft movables** V. Soltangharaei, R. Anay, D. Begrajka, University of South Carolina, Columbia, Columbia, SC; M. van Tooren, Delft University of Technology, Delft, The Netherlands; M. ElBatanouny, P. Ziehl, University of South Carolina, Columbia, Columbia, SC; et al.	1000 hrs AIAA-2019-1269 **Experimental and Numerical Study on Low Velocity Impact Damage of a Shear Dominated Composite Laminate** S. Lin, A. Waas, University of Washington, Seattle, Seattle, WA	1030 hrs AIAA-2019-1270 **Bird strike analyses on RACER fast rotocraft** M. May, T. Haase, Y. Léost, Fraunhofer, Freiburg, Germany; M. Wegmann, M. Blacha, Airbus, Donauwörth, Germany				

Wednesday, 9 January 2019						
316-STR-12/MAT-10	**ICME - Additive Manufacturing Modeling**					**Golden Hill B**
Chaired by: S. TERMAATH, University of Tennessee and J. MATLIK, Rolls-Royce Corp						
0930 hrs AIAA-2019-1271 **In-plane tow deformations due to steering in automated fiber placement** R. Wehbe, R. Harik, Z. Gurdal, University of South Carolina, Columbia, Columbia, SC	1000 hrs AIAA-2019-1272 **Analysis of a Celestial Shell like Structure** D. Graves, A. Palazotto, K. Moore, Air Force Institute of Technology, Wright-Patterson AFB, OH	1030 hrs AIAA-2019-1273 **Modeling-Driven Damage Tolerant Design of Graphene Nanoplatelet/ Carbon Fiber/Epoxy Hybrid Composite Panels for Full-Scale Aerospace Structures** J. Tomasi, W. Pisani, S. Chinkanjanarot, A. Krieg, D. Jaszczak, Michigan Technological University, Houghton, MI; E. Pineda, NASA Glenn Research Center, Cleveland, OH; et al.				

Wednesday, 9 January 2019						
317-TES-4	**Energy Systems: New Horizons**					**Vista B**
Chaired by: E. KHALIL, Cairo University and N. LOVE, The University of Texas El Paso						
0930 hrs AIAA-2019-1274 **Using drogues as a low-cost alternative for energy extraction from tides and low-speed flows** J. Santos, P. Valsecchi, Hyper-Chute Systems, LLC, San Carlos, CA	1000 hrs AIAA-2019-1275 **Heat Transfer Enhancement in Stationary and Rotating Internal Cooling Channels using Angled Ribs** M. Saravani, R. Amano, University of Wisconsin, Milwaukee, Milwaukee, WI	1030 hrs AIAA-2019-1276 **Energy Value Analysis (EVA) of an Office Building: Case Study** R. Amano, M. Al-Haddad, A. Abbas, M. Qandil, M. Saravani, University of Wisconsin, Milwaukee, Milwaukee, WI	1100 hrs AIAA-2019-1277 **Computations of Aerodynamic Behaviour of Small Horizontal Axis Wind Turbine with NACA4418 airfoil** E. Khalil, G. ElHarriri, Cairo University, Cairo, Egypt; E. AbdelGhany, Aviation Institute, Cairo, Egypt; M. Farghaly, Cairo University, Cairo, Egypt	1130 hrs AIAA-2019-1278 **Air Flow Regimes, Thermal Comfort and Energy Efficiency In Public Transportation Trains** E. Khalil, M. Elbandarawy, Cairo University, Cairo, Egypt		

Wednesday, 9 January 2019						
318-TP-6	**Transport and Thermophysical Properties**					**Balboa A**
Chaired by: T. SCHWARTZENTRUBER, University of Minnesota						
0930 hrs AIAA-2019-1279 **Thermal Property Estimation of Fibrous Insulation: Heat Transfer Modeling and the Continuous Genetic Algorithm** E. Frye, K. Daryabeigi, NASA Langley Research Center, Hampton, VA	1000 hrs AIAA-2019-1280 **Thermophysical Model for the Infrared Emissivity of Metals** J. Orosco, C. Coimbra, University of California, San Diego, La Jolla, CA	1030 hrs AIAA-2019-1281 **Gas-Surface Model in DSMC for Molecules Passing Through a Funnel-Type Gas Concentrator** S. Poovathingal, C. Xu, V. Murray, T. Minton, Montana State University, Bozeman, MT; T. Schwartzentruber, University of Minnesota, Twin Cities, Minneapolis, MN	1100 hrs AIAA-2019-1282 **Modeling FiberForm Oxidation in a Flow Tube using a Universal Solver** H. Weng, A. Martin, University of Kentucky, Lexington, Lexington, KY	1130 hrs AIAA-2019-1283 **Surface Properties on Thermal Protection System Microstructure during Hypersonic Ablation** A. Achambath, S. Ramjatan, T. Schwartzentruber, University of Minnesota, Twin Cities, Minneapolis, MN	1200 hrs AIAA-2019-1284 **Characterizing Thermodynamic Properties of Pure Components and Binary Mixtures at Rocket Conditions Using Molecular Dynamics** T. Weathers, Combustion Research and Flow Technology, Inc., Pipersville, PA; A. Vishnyakov, Y. Chiew, Rutgers University, New Brunswick, NJ; A. Hosangadi, Combustion Research and Flow Technology, Inc., Pipersville, PA	

Wednesday, 9 January 2019						
319-UAS-3/ACD-15	**Design of Unmanned Aircraft Systems I**					**Harbor D**
Chaired by: M. ANDERSON						
0930 hrs AIAA-2019-1285 **Methods for Deploying Payloads from Multi-Rotor Unmanned Aerial Systems** A. Bauer, M. Anderson, R. DePaola, C. Chimento, C. Gwaltney, N. Taylor, U.S. Air Force Academy, Colorado Springs, CO; et al.	1000 hrs AIAA-2019-1286 **UAV Icing: Comparison of LEWICE and FENSAP-ICE for Anti-Icing and De-Icing Loads** R. Hann, Norwegian University of Science and Technology (NTNU), Trondheim, Norway	1030 hrs AIAA-2019-1287 **Performance and Controls of a Scalable Quadrotor Biplane Tailsitter** J. Reddinger, Army Research Laboratory, Aberdeen Proving Ground, MD	1100 hrs AIAA-2019-1288 **A Novel System for Long-range Deployment of Small Unmanned Aerial Systems** R. Beveridge, M. Anderson, K. Teope, J. Burnett, T. Coplen, Z. Froembling, U.S. Air Force Academy, Colorado Springs, CO; et al.			

Wednesday, 9 January 2019						
320-UAS-4	**UAS Guidance, Navigation, and Control II**					**Hillcrest D**
Chaired by: J. BROWN, Honeywell Aerospace						
0930 hrs AIAA-2019-1289 **Flight Control System for NASA's Mars Helicopter** H. Grip, J. Lam, D. Bayard, D. Conway, G. Singh, R. Brockers, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA; et al.	1000 hrs AIAA-2019-1290 **Comparison of MRAC and L1 Adaptive Controllers for a Gimbaled Mini-Free Flyer** J. Verberne, Y. Betancur, K. Rivera Lopez, N. Coulter, H. Moncayo, Embry-Riddle Aeronautical University, Daytona Beach, FL	1030 hrs AIAA-2019-1291 **Control Design for an Aerial Manipulator for Pick-and-Place Tasks** D. Sun, N. Wan, University of Illinois, Urbana-Champaign, Urbana, IL; W. Dai, Y. Zhang, Zhejiang University, Hangzhou, China; N. Hovakimyan, University of Illinois, Urbana-Champaign, Urbana, IL	1100 hrs AIAA-2019-1292 **Identification of Hazardous Flight Conditions to Establish a Safe Flight Envelope for Autonomous Multirotor Aircraft** D. Hartman, Drexel University, Philadelphia, PA	1130 hrs AIAA-2019-1293 **Ranger EX 757 - A Flight Control Testbed for Future Flutter Analysis** D. Posada, C. Moreno, Embry-Riddle Aeronautical University, Daytona Beach, FL		

Wednesday, 9 January 2019						
321-WE-6	**Advanced Wind Turbine Designs**					**Cityview A**
Chaired by: T. KIM, Technical University of Denmark and E. LOTH, University of Virginia						
0930 hrs AIAA-2019-1294 **On the Effect of the Tip Clearance on the Aerodynamic and Aeroacoustics of a Diffuser-Augmented Wind Turbine** F. Avallone, D. Casalino, D. Ragni, Delft University of Technology, Delft, The Netherlands	1000 hrs AIAA-2019-1295 **Experimental Investigation of The Aerodynamic Interaction Between Ducts and Actuator Discs** J. Tang, G. Bussel, Delft University of Technology, Delft, The Netherlands	1030 hrs AIAA-2019-1296 **Multi-Rotor Systems Using Five Ducted Wind Turbines for Power Output Increase (Multi Lens Turbine)** Y. Ohya, Kyushu University, Kasuga, Japan	1100 hrs AIAA-2019-1297 **Retrofit Winglets for Wind Turbines** V. Matheswaran, L. Miller, Wichita State University, Wichita, KS	1130 hrs AIAA-2019-1298 **Flutter Predictions in the Design of Extreme-Scale Segmented Ultralight Morphing Rotor Blades** M. Chetan, D. Griffith, S. Yao, University of Texas, Dallas, Richardson, TX	1200 hrs AIAA-2019-1299 **Load predicting shutdown controller for a Segmented Ultralight Morphing Rotor wind turbine** S. Kianbakht, K. Johnson, Colorado School of Mines, Golden, CO	

Wednesday, 9 January 2019		
322-HUB-10 1000 - 1030 hrs	**Helping High School Students to Launch their Dreams**	**the Hub Hangar**

Wednesday, 9 January 2019		
323-HUB-11 1030 - 1130 hrs	**Design Challenge: Mars Marshmallow Lander**	**the Hub Open Area**

Wednesday, 9 January 2019		
324-HUB-12 1130 - 1200 hrs	**Join the Boeing-sponsored GoFly Prize and win $2,000,000 in prizes**	**the Hub Hangar**

Wednesday, 9 January 2019		
325-HUB-12 1200 - 1230 hrs	**STEM Education, Innovation & the Future of Aviation with Erik Lindbergh**	**the Hub Hangar**

Wednesday, 9 January 2019		
326-HUB-13 1230 - 1300 hrs	**Q&A with Eduardo Dominguez-Puerta, Airbus**	**the Hub Launch Pad**

Wednesday, 9 January 2019		
327-LUNCH-2 1230 - 1400 hrs	**Luncheon in the Exposition Hall**	**Grand Hall**
Proof of purchase required and included in registration where indicated.		

Wednesday, 9 January 2019		
328-HUB-14 1300 - 1400 hrs	**Interactive Panel Session: Start-Up Companies on Development and Application of Novel Materials**	**the Hub Hangar**

Wednesday, 9 January 2019		
329-HUB-15 1400 - 1430 hrs	**Meet the Author: Daniel P. Raymer**	**the Hub Hangar**

Wednesday, 9 January 2019						
330-AA-6	**Jet Noise IV**					**Balboa C**
Chaired by: M. SAMIMY, The Ohio State University and J. LIU, Naval Research Laboratory						
1430 hrs AIAA-2019-1300 **Experimental Investigation on the Acoustic Field and Convection Velocity of Structures in a Heated Jet With Centered Thermal Non-Uniformity** K. Daniel, D. Mayo, K. Lowe, W. Ng, Virginia Polytechnic Institute and State University, Blacksburg, VA	1500 hrs AIAA-2019-1301 **Aeroacoustic and Flow Field Characterization of Dual Stream Rectangular Supersonic Jets** S. Hromisin, Pennsylvania State University, University Park, PA; J. Akatsuka, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan; D. McLaughlin, P. Morris, Pennsylvania State University, University Park, PA	1530 hrs AIAA-2019-1302 **Near-field Measurements of a Low Aspect Ratio Supersonic Nozzle Interacting with a Surface** F. Baier, A. Karnam, E. Gutmark, University of Cincinnati, Cincinnati, OH	1600 hrs AIAA-2019-1303 **Vorticity Dynamics and Flow Statistics Near the Edge of High-Speed Multi-Stream Jets** A. Adam, D. Papamoschou, J. Xiong, F. Liu, University of California, Irvine, Irvine, CA	1630 hrs AIAA-2019-1304 **Mean Flow Measurements in Supersonic Jets with Noise Reduction Devices** J. Akatsuka, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan; S. Hromisin, J. Falcone, D. McLaughlin, P. Morris, Pennsylvania State University, University Park, PA		

Wednesday, 9 January 2019						
331-ACD-8	**Design for Performance**					**Cityview B**
Chaired by: I. CHAKRABORTY, Auburn University and M. DRAKE, Boeing Commercial Airplanes						
1430 hrs AIAA-2019-1305 **A Bad Moon Rising: The Puzzling Inaccuracies of the Work-Energy Theorem in Aircraft Performance** T. Takahashi, Arizona State University, Tempe, AZ	1500 hrs AIAA-2019-1306 **Effect of Propeller Installation on Performance Indicators of Regional Turboprop Aircraft** T. Schouten, M. Hoogreef, R. Vos, Delft University of Technology, Delft, The Netherlands	1530 hrs AIAA-2019-1307 **Forward Wing Tip Design for Induced Drag Reduction of Quad Tilt Wing VTOL Un-Manned Plane in Cruise** Y. Aoki, K. Muraoka, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan	1600 hrs AIAA-2019-1308 **The effect of winglets on the aircraft wing aerodynamics; numerical studies using LES** M. Ilie, M. White, V. Soloiu, M. Rahman, Georgia Southern University, Statesboro, GA	1630 hrs AIAA-2019-1309 **Aircraft Performance Impacts of Power and Bleed Air Extraction on a COTS Engine Powered UAS** T. Takahashi, N. Stone, Arizona State University, Tempe, AZ	1700 hrs AIAA-2019-1310 **Aerodynamic Performance Accounting for Ultra-Integrated Air Vehicle Configurations** D. Hall, M. Lieu, N. Titchener, Aurora Flight Sciences, Cambridge, MA; M. Drela, Massachusetts Institute of Technology, Cambridge, MA	

Wednesday, 9 January 2019						
332-AFM-11	**Sub-Orbital Earth Test of Deployable Aeroshells for Planetary Entry - ADEPT-SR1**					**Vista A**
Chaired by: S. DUTTA, NASA Langley Research Center and J. GREEN, NASA LaRC						
1430 hrs AIAA-2019-1311 **ADEPT Sounding Rocket One Flight Test Overview (Invited)** B. Smith, P. Wercinski, A. Cassell, B. Yount, S. Ghassemieh, NASA Ames Research Center, Moffett Field, CA; S. Dutta, NASA Langley Research Center, Hampton, VA	1500 hrs AIAA-2019-1312 **Aerodynamics for the ADEPT SR-1 Flight Experiment (Invited)** A. Korzun, NASA Langley Research Center, Hampton, VA; R. McDaniel, NASA Ames Research Center, Moffett Field, CA; S. Dutta, NASA Langley Research Center, Hampton, VA; J. Tynis, C. Karlgaard, Analytical Mechanics Associates, Inc., Hampton, VA	1530 hrs AIAA-2019-1313 **Subsonic Dynamic Testing of a Subscale ADEPT Entry Vehicle (Invited)** J. Cruz, J. Green, NASA Langley Research Center, Hampton, VA	1600 hrs AIAA-2019-1314 **Reconstruction of the Adaptable Deployable Entry and Placement Technology Sounding Rocket One Flight Test (Invited)** J. Tynis, C. Karlgaard, Analytical Mechanics Associates, Inc., Hampton, VA	1630 hrs AIAA-2019-1315 **Flight Mechanics Modeling and Post-flight Analysis of ADEPT SR-1 (Invited)** S. Dutta, J. Green, NASA Langley Research Center, Hampton, VA	1700 hrs AIAA-2019-1316 **Pterodactyl: Developing a Design, Build, and Test Capability for Lifting Nano-ADEPT Control System Integration (Invited)** S. D'Souza, W. Okolo, B. Nikaido, B. Smith, NASA Ames Research Center, Moffett Field, CA; B. Johnson, NASA Johnson Space Center, Houston, TX; J. Barton, Johns Hopkins University Applied Physics Laboratory, Laurel, MD	

Wednesday, 9 January 2019						
333-AFM-12	**Flight Test and System Identification II**					**Vista B**
Chaired by: J. GRAUER, NASA Langley Research Center and A. DA RONCH, University of Southampton and T. BERGER, US Army Aviation Development Directorate-AFDD						
1430 hrs AIAA-2019-1317 **Identification of Multi-Input Systems in the Presence of Highly-Correlated Inputs** T. Berger, M. Tischler, Army Aviation and Missile Research, Development and Engineering Command, Moffett Field, CA; M. Knapp, San Jose State University, Moffett Field, CA; M. Lopez, Army Aviation and Missile Research, Development and Engineering Command, Moffett Field, CA	1500 hrs AIAA-2019-1318 **A Method for Real-Time Pilot Modeling and Multisine Tracking Input Design** B. Martos, A. Noriega, Flight Level Engineering, Daytona Beach, FL; J. Grauer, NASA Langley Research Center, Hampton, VA	1530 hrs AIAA-2019-1319 **Optimal input design for flight vehicle system identification via dynamic programming and the direct method for optimal control** S. Hosseini, C. Göttlicher, F. Holzapfel, Technical University of Munich, Munich, Germany	1600 hrs AIAA-2019-1320 **Distributed approach for Aerodynamic Model Identification of the ICE aircraft using multivariate splines** M. van den Aarssen, T. Visser, C. de Visser, Delft University of Technology, Delft, The Netherlands	1630 hrs AIAA-2019-1321 **The Analysis of Vehicle's In-Flight Behaviour Using Quasi-LPV and Nonlinear Models** D. Machala, S. Dobre, M. Albisser, French-German Research Institute of Saint-Louis (ISL), Saint-Louis, France; M. Gilson, F. Collin, University of Lorraine, Nancy, France	1700 hrs AIAA-2019-1322 **Frequency Responses Identification from Multi-axis Multisine Manoeuvre** P. Lichota, Warsaw University of Technology, Warsaw, Poland; M. Tischler, Army Aviation and Missile Research, Development and Engineering Command, Moffett Field, CA; J. Szulczyk, Warsaw University of Technology, Warsaw, Poland; T. Berger, Army Aviation and Missile Research, Development and Engineering Command, Moffett Field, CA	

Wednesday, 9 January 2019						
334-AMT-13	**Rayleigh Scattering Techniques - Recent Advances**					**Solana Beach B**
Chaired by: J. SUTTON, Ohio State University and D. RICHARDSON						
1430 hrs AIAA-2019-1323 **100-kHz rate Rayleigh Imaging for Combustion and Flow Diagnostics** N. Jiang, P. Hsu, S. Roy, Spectral Energies, LLC, Beavercreek, OH; P. Danehy, NASA Langley Research Center, Hampton, VA; Z. Zhang, University of Tennessee, Knoxville, Knoxville, TN	1500 hrs AIAA-2019-1324 **Filtered Rayleigh Scattering for Instantaneous Measurements of Pressure and Temperature in Gaseous Flows** T. Jenkins, J. George, MetroLaser, Inc., Laguna Hills, CA; D. Feng, Princeton University, Princeton, NJ; R. Miles, Texas A&M University, College Station, TX	1530 hrs AIAA-2019-1325 **Simultaneous Species Concentration and Flow Velocity Imaging Using 2D Raman Scattering at Elevated Pressure** M. Gragston, C. Smith, Y. Wu, University of Tennessee, Knoxville, Knoxville, TN; P. Hsu, N. Jiang, S. Roy, Spectral Energies, LLC, Dayton, OH; et al.	1600 hrs AIAA-2019-1326 **Towards single shot gas flow velocity and temperature measurements with coherent Rayleigh-Brillouin scattering** A. Gerakis, Texas A&M University, College Station, TX; M. Shneider, Princeton University, Princeton, NJ	1630 hrs AIAA-2019-1327 **Progress of Pressure-Sensitive Measurements Via Filtered Rayleigh Scattering** D. Feng, B. Goldberg, M. Shneider, Princeton University, Princeton, NJ; R. Miles, Texas A&M University, College Station, TX		

Wednesday, 9 January 2019						
335-APA-32	**Propeller/Rotorcraft/Wind Turbine Aerodynamics II**					**La Jolla A**
Chaired by: M. CALVERT, U.S. Army RDECOM, Aviation and Missile Center and G. GATLIN, NASA Langley Research Center						
1430 hrs AIAA-2019-1328 **Effects of Waves, Motions and Atmospheric Turbulence on Ship Airwakes** G. Dooley, P. Carrica, J. Martin, A. Krebill, J. Buchholz, University of Iowa, Iowa City, Iowa City, IA	1500 hrs AIAA-2019-1329 **Hybrid Analysis for Quadrotor Type UAV and Modified Blade Element Momentum Theory Considering Gust and Flight Condition** S. Park, Seoul National University, Seoul, South Korea; W. Eun, Samsung, Suwon, South Korea; S. Shin, Seoul National University, Seoul, South Korea	1530 hrs AIAA-2019-1330 **An Experimental Study on Multistage Outrunner Motor Propeller System for Electric Airplanes** Y. Tani, A. Yasuda, S. Aso, Kyushu University, Fukuoka, Japan	1600 hrs AIAA-2019-1331 **Experimental Analysis of Propeller Forces and Moments at High Angle of Incidence** Y. Leng, T. Jardin, Higher Institute of Aeronautics and Space, Toulouse, France; M. Bronz, French Civil Aviation University, Toulouse, France; J. Moschetta, Higher Institute of Aeronautics and Space, Toulouse, France	1630 hrs AIAA-2019-1332 **Aerodynamic Modeling of Propeller Forces and Moments at High Angle of Incidence** Y. Leng, H. Yoo, T. Jardin, Higher Institute of Aeronautics and Space, Toulouse, France; M. Bronz, French Civil Aviation University, Toulouse, France; J. Moschetta, Higher Institute of Aeronautics and Space, Toulouse, France		

Wednesday, 9 January 2019

336-APA-33	Applied Computational Aerodynamics: Methods and Results IV					Harbor A
Chaired by: S. TIMME, The University of Liverpool and A. VOEGELE, The Aerospace Corporation						
1430 hrs AIAA-2019-1333 **Lattice-Boltzmann Simulations of the JAXA JSM High-Lift Configuration in a Wind Tunnel** D. Singh, B. Konig, E. Fares, Dassault Systemes Deutschland GmbH, Stuttgart, Germany; M. Murayama, Y. Ito, Y. Yokokawa, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan; et al.	1500 hrs AIAA-2019-1334 **Is the Problem with the Mesh, the Turbulence Model, or the Solver? Statistical Analysis of High Lift and Drag Prediction Workshop Data** C. Ollivier Gooch, University of British Columbia, Vancouver, Canada	1530 hrs AIAA-2019-1335 **Indicial Method in Reduced Order Modeling using CFD at NAVAIR** E. Kandler, Y. Lee, J. Lee, D. Findlay, Naval Air Systems Command, Patuxent River, MD	1600 hrs AIAA-2019-1336 **Computational Fluid Dynamics Analysis of Inverted Multi-Element Airfoils in Ground Effect** M. Grabis, R. Agarwal, Washington University in St. Louis, St. Louis, MO	1630 hrs AIAA-2019-1337 **Overflow Analysis of Unmanned Aircraft Systems** P. Stremel, Science and Technology Corporation, Hampton, VA; J. Ahmad, NASA Ames Research Center, Moffett Field, CA		

Wednesday, 9 January 2019

337-APA-34	Aero-Structural Applications					Promenade A
Chaired by: J. AZEVEDO and M. POST, USAF Academy						
1430 hrs AIAA-2019-1338 **Effect of Flexible Inverted PVDF in Free Shear Layer Wake** S. Gunasekaran, G. Ross, D. Curry, University of Dayton, Dayton, OH	1500 hrs AIAA-2019-1339 **Influence of control surface deflections on a thin aerofoil at transonic buffet conditions** N. Giannelis, A. Murray, G. Vio, University of Sydney, Sydney, Australia	1530 hrs AIAA-2019-1340 **Geometry effects on the galloping instability of rectangular cylinders at low Reynolds number** M. Feero, A. Naguib, M. Koochesfahani, Michigan State University, East Lansing, MI	1600 hrs AIAA-2019-1341 **Application of the Hilbert-Huang Transform in the identification of frequency synchronisation in transonic aeroelastic systems** N. Giannelis, A. Murray, G. Vio, University of Sydney, Sydney, Australia			

Wednesday, 9 January 2019

338-APA-35	Special Session: CREATE III					La Jolla B
Chaired by: N. HARIHARAN, HPCMP CREATE						
1430 hrs Oral Presentation **Software Development Practices in HPCMP-CREATE™** N. Hariharan, R. Kendall, CREATE AV Team, Lorton, VA	1500 hrs AIAA-2019-1342 **A Summary of the Turbulence Models in the CREATE-AV Kestrel Flow Solvers** R. Nichols, University of Alabama, Birmingham, Birmingham, AL	1530 hrs AIAA-2019-1343 **Addition of a Local Correlation-Based Boundary Layer Transition model to the CREATE™-AV *Kestrel* Unstructured Flow Solver** R. Nichols, University of Alabama, Birmingham, Birmingham, AL	1600 hrs AIAA-2019-1344 **Evaluation and Improvement of Robustness, Speed, and Accuracy of the COFFE CFD Solver** D. Prosser, Naval Air Systems Command, Patuxent River, MD; R. Glasby, University of Tennessee, Knoxville, Knoxville, TN	1630 hrs AIAA-2019-1345 **High-Order Shock Capturing Techniques using HPCMP CREATE-AV Kestrel** K. Holst, Arnold Engineering Development Complex, Arnold AFB, TN; R. Glasby, J. Erwin, D. Stefanski, J. Coder, University of Tennessee, Knoxville, Knoxville, TN	1700 hrs AIAA-2019-1346 **A Comparison of Approaches to Multi-Body Relative Motion using the Kestrel Solver** H. Huang, Defence Science and Technology Group, Melbourne, Australia; R. Blyth, M. Prior, Air Force SEEK EAGLE Office, Eglin AFB, FL; M. Giacobello, Defence Science and Technology Group, Melbourne, Australia; R. Perez, Air Force SEEK EAGLE Office, Eglin AFB, FL; M. Young, Defence Science and Technology Group, Melbourne, Australia	

Wednesday, 9 January 2019

339-APA-36/PDL-14	Plasmas in Supersonic Flows and Shocks					Old Town B
Chaired by: S. LEONOV, University of Notre Dame and B. CYBYK, The Johns Hopkins University Applied Physics Laboratory						
1430 hrs AIAA-2019-1347 **Towards Trajectory Control of a Supersonic Projectile Using Laser Energy Deposition** A. Pournadali Khamseh, E. DeMauro, Rutgers University, Piscataway, NJ	1500 hrs AIAA-2019-1348 **Plasma-based Control of Mach-2 Supersonic Flow over Compression Ramp** Y. Watanabe, University of Tokyo, Tokyo, Japan; S. Leonov, A. Houpt, University of Notre Dame, Notre Dame, IN	1530 hrs AIAA-2019-1349 **Spark discharge application for mixing enhancement in supersonic airflow** A. Firsov, S. Leonov, Russian Academy of Sciences, Moscow, Russia	1600 hrs AIAA-2019-1350 **Nonequilibrium Radiation of Shock-heated Plasmas with Precursor phenomena** G. Yamada, M. Kajino, H. Kawazoe, Tokai University, Hiratsuka, Japan	1630 hrs AIAA-2019-1351 **Shock Wave/Boundary Layer Control Using Nanosecond Repetitively Pulsed Dielectric Barrier Discharges** A. Devarajan, R. Jagannath, L. Rajendran, K. Newnam, S. Bane, Purdue University, West Lafayette, IN	1700 hrs AIAA-2019-1352 **Effect of Magnetic Field on the Quasi-DC Discharge Dynamics in Mach 2 Airflow** A. Houpt, B. Hedlund, S. Elliott, S. Leonov, University of Notre Dame, Notre Dame, IN; T. Ombrello, C. Carter, Air Force Research Laboratory, Wright-Patterson AFB, OH	

Wednesday, 9 January 2019						
340-AS-6	**Structural Concepts for Improved Aerodynamics and Reduced Vibration**					**Pier**
Chaired by: J. KAUFFMAN, University of Central Florida and M. KHOSHLAHJEH						
1430 hrs AIAA-2019-1353 **Bimorph-driven synthetic jet actuators optimized for various piezoelectric materials using a low-order coupled electro-elastic-acoustic model** T. Yu, G. Lesieutre, Pennsylvania State University, University Park, PA; S. Griffin, A. Sassoon, The Boeing Company, Chicago, IL	1500 hrs AIAA-2019-1354 **Turbulent Boundary Layer over a Piezoelectrically Excited Traveling Wave Surface** P. Musgrave, P. Tarazaga, Virginia Polytechnic Institute and State University, Blacksburg, VA	1530 hrs AIAA-2019-1355 **Aeroelastic eigenvalue analysis of a variable speed rotor blade with an applied compressive load** R. Dibble, V. Ondra, B. Woods, B. Titurus, University of Bristol, Bristol, United Kingdom	1600 hrs AIAA-2019-1356 **Piezoelectric-Based Vibration Reduction on Pre-Twisted Blades with Centrifugal Loads** C. Kelley, J. Kauffman, University of Central Florida, Orlando, FL	1630 hrs AIAA-2019-1357 **Optimization of the Blade-Dependent Switch Triggers for Reducing Mistuned Bladed Disk Vibration via Piezoelectric-Based Resonance Frequency Detuning** G. Lopp, J. Kauffman, University of Central Florida, Orlando, FL	1700 hrs AIAA-2019-1358 **Variable Twist Blade with Piecewise Linear Twist Control for Rotor Power Reduction** X. Zhang, Z. Wan, C. Yang, D. Yan, Beihang University, Beijing, China	

Wednesday, 9 January 2019						
341-DA-1	**Digital Avionics - Air Traffic Management I**					**Bayview**
Chaired by: M. UIJT DE HAAG, Ohio University and A. VIDEMSEK						
1430 hrs AIAA-2019-1359 **Fuel-Saving Climb Procedure by Reduced Thrust Near Top of Climb** R. Mori, Electronic Navigation Research Institute, Chofu, Japan	1500 hrs AIAA-2019-1360 **An Optimal Trajectory-based Trajectory Prediction Method for Automated Traffic Flow Management** A. Harada, Kochi University of Technology, Kami, Japan; N. Takeichi, Tokyo Metropolitan University, Hino, Japan; K. Oka, Kochi University of Technology, Kami, Japan	1530 hrs AIAA-2019-1361 **Separation Risk Evaluation for NextGen Air Traffic Management System** P. Zhao, Y. Liu, Arizona State University, Tempe, AZ	1600 hrs AIAA-2019-1362 **Feasibility Study of Layered Air Corridor through Direct Operational Cost Evaluation** Y. Morooka, N. Takeichi, S. Yamamoto, Tokyo Metropolitan University, Hino, Japan; A. Harada, Kochi University of Technology, Kami, Japan	1630 hrs AIAA-2019-1363 **Aircraft operating technique for efficient sequencing arrival enabling environmental benefits through CDO in TMA** A. Errico, V. Di Vito, Italian Aerospace Research Center (CIRA), Capua, Italy		

Wednesday, 9 January 2019						
342-DGE-3	**Digital Engineering**					**Harbor F**
Chaired by: J. MATLIK, Rolls-Royce Corp and M. FRENCH, Rolls-Royce Corp						
1430 hrs AIAA-2019-1364 **Decision Analytics in a Lifecycle Digital Engineering Environment** E. Kraft, University of Tennessee, Tullahoma, Tullahoma, TN	1500 hrs AIAA-2019-1365 **Improving Prediction Capability of Quadcopter Through Digital Twin** H. Jeon, C. Justin, D. Mavris, Georgia Institute of Technology, Atlanta, GA					

Wednesday, 9 January 2019						
343-DS-4	**Tiltrotor I**					**Promenade B**
Chaired by: A. DATTA, University of Maryland, College Park and V. BABUSKA, Sandia National Laboratories						
1430 hrs AIAA-2019-1366 **Optimization of Tiltrotor Blade Twist to Increase Whirl-Flutter Stability** V. Muscarello, G. Quaranta, Technical University of Milan, Milan, Italy	1500 hrs AIAA-2019-1367 **Drive Train Modeling Effects on Tiltrotor Aeroelastic Analysis** A. Rigo, V. Muscarello, P. Masarati, G. Quaranta, Technical University of Milan, Milan, Italy; M. Favale, Leonardo, Cascina Costa di Samarate, Italy	1530 hrs AIAA-2019-1368 **Wing Extension Design and Tailoring for a Scaled Tiltrotor Wind Tunnel Model** J. Zhang, Pennsylvania State University, University Park, PA; H. Kang, Army Research Laboratory, Aberdeen Proving Ground, MD; E. Smith, Pennsylvania State University, University Park, PA	1600 hrs AIAA-2019-1369 **Preparation for a Wind Tunnel Demonstration of a Pure-Electric, Swashplateless Individual Blade Control System for a High Speed Rotor** U. Arnold, T. Auspitzer, D. Fuerst, ZF Luftfahrttechnik GmbH, Kassel, Germany; C. Sutton, P. Bates, Lockheed Martin Corporation, Stratford, CT	1630 hrs AIAA-2019-1370 **Achieving Automated Rotor Track and Balance through use of Active Trim Tab and Pitch Control Rod Technologies** P. Reilly, J. Roucken, J. Sheldon, Sikorsky Aircraft Corporation, Stratford, CT; J. Szefi, Invercon, LLC, State College, PA; T. Auspitzer, ZF Luftfahrttechnik GmbH, Calden, Germany		

Wednesday, 9 January 2019

344-EXPL-4 — **In-Space Infrastructure** — **Pyramid Peak**

Chaired by: S. SHARMA, NASA Ames Research Center

1430 hrs	1500 hrs	1530 hrs	1600 hrs	1630 hrs		
AIAA-2019-1371	AIAA-2019-1372	AIAA-2019-1373	AIAA-2019-1374	AIAA-2019-1375		
Comparison of Propellant Settling Approaches for On-Orbit Propellant Depots During Propellant Transfer Maneuvers	**Cost Breakeven Analysis of Cis-lunar ISRU for Propellant**	**Dynamic Implementation of Resource Management Strategies for a Resilient Advanced Life Support System**	**A Multiple Model Based Approach for Deep Space Power System Fault Management**	**Lunar In-situ Thermal Regolith Storage and Power Generation using Thermoelectric Generators**		
M. Skuhersky, T. Go, D. Kirk, M. Wilde, Florida Institute of Technology, Melbourne, FL; V. Duraisamy, C. Kor, Embry-Riddle Aeronautical University, Daytona Beach, FL; et al.	C. Jones, J. Klovstad, E. Judd, D. Komar, NASA Langley Research Center, Hampton, VA	M. Rines, M. Balchanos, D. Mavris, Georgia Institute of Technology, Atlanta, GA	M. Carbone, J. Csank, B. Tomko, J. Follo, M. Muscatello, NASA Glenn Research Center, Cleveland, OH	V. Lappas, V. Kostopoulos, University of Patras, Patras, Greece; A. Tsourdos, Cranfield University, Cranfield, United Kingdom; S. Kindylides, EU ECO Technologies, Ltd., Blackburn, United Kingdom		

Wednesday, 9 January 2019

345-F360-6 — **Forum 360: Lindbergh Innovation Forum** — **Seaport F**

1430 - 1630 hrs

Moderator: Erik Lindbergh, President, VerdeGo Aero

Part 1 Panel

John S. Langford III
President and Chief Executive Officer, Aurora Flight Sciences, and President, AIAA

Ben Marcus
Co-Founder and Chairman, AirMap
"The Advent of Unmanned Air Traffic Management"

Kevin Noertker
Co-Founder and Chief Executive Officer, Ampaire, Inc.
"The Path to High Performance Electric Aircraft"

Part 2 Panel

Edgar Waggoner
Director, Integrated Aviation Systems Program,
Aeronautics Research Mission Directorate, NASA
"Innovations Opening up the Commercial Supersonic Flight Market, Including the X-59"

Michael Hinderberger
Senior Vice President, Aircraft Development, Aerion Corporation
"The Return of Commercial Supersonic Flight"

John L. Petersen
Chairman, The Charles A. and Anne Morrow Lindbergh Foundation
"A Survey of the Leading Edge of a Rapidly Building Revolution in Aerospace"

There will be a reception held in the Seaport F Foyer starting at 1630 hours for those in attendance who wish to mingle with the session participants.

Wednesday, 9 January 2019

346-FD-40 — **Bio-Inspired Fluid Dynamics** — **Gaslamp C**

Chaired by: H. DONG, University of Virginia and W. VAN DER VELDEN, Exa GmbH

1430 hrs	1500 hrs	1530 hrs	1600 hrs	1630 hrs		
AIAA-2019-1376	AIAA-2019-1377	AIAA-2019-1378	AIAA-2019-1379	AIAA-2019-1380		
Wake Structure and Aerodynamic performance of Passively Pitching Revolving Plates	**A Geometrically Non-Linear Time-Domain Unsteady Lifting-Line Theory**	**The impact of deformation on the aerodynamics of flapping dragonfly wings**	**Foil shapes for efficient fish-like propulsion**	**Experimental Study of the Three-Dimensional Wakes Produced by Trapezoidal Panels with Varying Trailing Edge Geometry and Pitching Amplitude**		
J. Wang, University of Virginia, Charlottesville, Charlottesville, VA; C. Li, Villanova University, Villanova, PA; R. Zhu, University of Virginia, Charlottesville, Charlottesville, VA; G. Liu, University of Maine, Orono, ME; H. Dong, University of Virginia, Charlottesville, Charlottesville, VA	H. Bird, University of Glasgow, Glasgow, United Kingdom; S. Otomo, University of Edinburgh, Edinburgh, United Kingdom; K. Ramesh, University of Glasgow, Glasgow, United Kingdom; I. Viola, University of Edinburgh, Edinburgh, United Kingdom	N. Shumway, S. Laurence, University of Maryland, College Park, College Park, MD	T. Van Buren, D. Floryan, Princeton University, Princeton, NJ; A. Bode-Oke, P. Han, H. Dong, University of Virginia, Charlottesville, Charlottesville, VA; A. Smits, Princeton University, Princeton, NJ	J. King, M. Green, Syracuse University, Syracuse, NY		

Wednesday, 9 January 2019						
347-FD-41	**Stability and Transition of High-Speed Flows IV**					**Harbor B**
Chaired by: B. WHEATON, JHU Applied Physics Laboratory and M. BELISLE, Northrop Grumman Corporation						
1430 hrs AIAA-2019-1381 **Boundary-Layer Stability Analysis on a Parametric Hypersonic Finned Circular Cone** C. Mullen, A. Moyes, H. Reed, Texas A&M University, College Station, TX	1500 hrs AIAA-2019-1382 **Receptivity of High-Speed Boundary Layers in Binary Mixture of Gases to Kinetic Fluctuations** K. Luna, A. Tumin, University of Arizona, Tucson, Tucson, AZ	1530 hrs AIAA-2019-1383 **Input-output analysis of complex hypersonic boundary layers** J. Nichols, G. Candler, University of Minnesota, Twin Cities, Minneapolis, MN				

Wednesday, 9 January 2019						
348-FD-42	**Vortex and Wake Dynamics**					**Gaslamp D**
Chaired by: M. AMITAY, Rensselaer Polytechnic Institute and K. TAIRA, Florida State University						
1430 hrs AIAA-2019-1384 **Wake Dynamics of Finite Aspect Ratio Wings. Part I: An Experimental Study** S. Hayostek, M. Amitay, Rensselaer Polytechnic Institute, Troy, NY; K. Zhang, K. Taira, Florida State University, Tallahassee, FL; W. He, V. Theofilis, University of Liverpool, Liverpool, United Kingdom	1500 hrs AIAA-2019-1385 **Wake Dynamics of Finite Aspect Ratio Wings. Part II: Computational Study** K. Zhang, K. Taira, Florida State University, Tallahassee, FL; S. Hayostek, M. Amitay, Rensselaer Polytechnic Institute, Troy, NY; W. He, V. Theofilis, University of Liverpool, Liverpool, United Kingdom	1530 hrs AIAA-2019-1386 **Wake Dynamics of Finite Aspect Ratio Wings. Part III: TriGlobal Linear Stability Analysis** W. He, A. Burtsev, V. Theofilis, University of Liverpool, Liverpool, United Kingdom; K. Zhang, K. Taira, Florida State University, Tallahassee, FL; S. Hayostek, Rensselaer Polytechnic Institute, Troy, NY; et al.	1600 hrs AIAA-2019-1387 **Definition of Arbitrary Swirl Distortions by Solutions to the Helmholtz Equation** J. Gillespie, D. Frohnapfel, K. Lowe, W. O'Brien, Virginia Polytechnic Institute and State University, Blacksburg, VA	1630 hrs AIAA-2019-1388 **Modal Analysis of 3-D iced-airfoil aerodynamics based on Proper Orthogonal Decomposition Techniques** C. Zhang, S. Hu, Shanghai Jiao Tong University, Shanghai, China; Y. Li, Civil Aviation Administration of China (CAAC), Shanghai, China; H. Liu, W. Xu, Shanghai Jiao Tong University, Shanghai, China	1700 hrs AIAA-2019-1389 **Construction of the Linear Reduced-order Model based on PIV Data of Flow Field around Airfoil** K. Nankai, K. Asai, T. Nonomura, Tohoku University, Sendai, Japan	

Wednesday, 9 January 2019						
349-FD-43	**High-Speed Flows I**					**Gaslamp A**
Chaired by: L. DUAN, Missouri University of Science and Technology and J. VASILE, U. S. Army Research Laboratory (APG)						
1430 hrs AIAA-2019-1390 **Comparison of Boundary Layer Similarity Transformations for High Mach Number Flows** N. DiGregorio, T. Drozda, NASA Langley Research Center, Hampton, VA; C. Madnia, State University of New York, Buffalo, NY	1500 hrs AIAA-2019-1391 **High-Order Flux Reconstruction Scheme for Thermo-Chemical Nonequilibrium High-Speed Flows** F. Ameur, R. Vandenhoeck, A. Lani, von Kármán Institute for Fluid Dynamics, Rhode-Saint-Genèse, Belgium	1530 hrs AIAA-2019-1392 **Numerical Study of Unsteady High Enthalpy Flow in an Expansion Tube** K. Kitazono, M. Takahashi, N. Ohnishi, Tohoku University, Sendai, Japan; H. Tanno, Japan Aerospace Exploration Agency (JAXA), Kakuda, Japan	1600 hrs AIAA-2019-1393 **Low-Frequency Unsteadiness in Compressible Flow Separations Induced by External Flow Deviations** L. Larchevêque, Aix-Marseille University, Marseille, France			

Wednesday, 9 January 2019						
350-FD-44	**Special Session: Unsteady Aerodynamics - Dynamic Motion**					**Old Town A**
Chaired by: J. FARNSWORTH, University of Colorado Boulder and R. SEMAAN						
1430 hrs AIAA-2019-1394 **Pitch Rate Induced Separation Delay Modeling of Dynamic Stall and Stall Flutter** E. Culler, J. Farnsworth, University of Colorado, Boulder, Boulder, CO	1500 hrs AIAA-2019-1395 **High-Fidelity Simulation and Flow Control of a Plunging Airfoil under Deep Dynamic Stall** B. Ramos, W. Wolf, University of Campinas, Campinas, Brazil; K. Taira, Florida State University, Tallahassee, FL	1530 hrs AIAA-2019-1396 **Dynamic lift measurements on an airfoil with periodic flap motion at high Reynolds number** J. Pohl, R. Semaan, Technical University of Braunschweig, Braunschweig, Germany; A. Jones, University of Maryland, College Park, College Park, MD	1600 hrs AIAA-2019-1397 **Lift response of rapidly actuated leading-edge and trailing-edge control surfaces for MAVs** A. Panta, S. Watkins, M. Marino, A. Fisher, A. Mohamed, RMIT University, Melbourne, Australia			

Wednesday, 9 January 2019						
351-FD-45	**High-Order CFD Methods and Applications II**					**Mission Beach A**
Chaired by: M. YU, University of Maryland, Baltimore County and X. LIU, Los Alamos National Laboratory						
1430 hrs AIAA-2019-1398 **Very High-Order Upwind Multi-Layer Compact (MLC) Schemes with Spectral-Like Resolution II: Two-Dimensional Case** Z. Bai, X. Zhong, University of California, Los Angeles, Los Angeles, CA	1500 hrs AIAA-2019-1399 **A High Order Overset FR/CPR Method for Dynamic Moving Grids** Z. Duan, Z. Wang, University of Kansas, Lawrence, Lawrence, KS	1530 hrs AIAA-2019-1400 **Towards high-order accurate numerical simulation of unsteady flow physics over domains with large deformation** M. Yu, K. Liu, L. Wang, University of Maryland, Baltimore County, Baltimore, MD	1600 hrs AIAA-2019-1401 **A robust and accurate third-order Lagrangian discontinuous Galerkin hydrodynamic method for the compressible Euler equations on curvilinear meshes** X. Liu, N. Morgan, D. Burton, Los Alamos National Laboratory, Los Alamos, NM	1630 hrs AIAA-2019-1402 **Direct Reconstruction Method for Volume Integration of Discontinuous Galerkin Methods on High-order Mixed-Curved Meshes** H. You, C. Kim, Seoul National University, Seoul, South Korea	1700 hrs AIAA-2019-1403 **High-order-accurate kinetic energy and entropy preserving schemes on curvilinear meshes** K. Totani, Y. Kuya, S. Kawai, Tohoku University, Sendai, Japan	

Wednesday, 9 January 2019						
352-FD-46	**Novel CFD Methods III**					**Gaslamp B**
Chaired by: D. INGRAHAM, NASA Glenn Research Center and R. STEIJL, University of Glasgow						
1430 hrs AIAA-2019-1404 **Towards a performance-portable high-order implicit flow solver** J. Eichstaedt, Imperial College London, London, United Kingdom; D. Moxey, University of Exeter, Exeter, United Kingdom; J. Peiro, Imperial College London, London, United Kingdom	1500 hrs AIAA-2019-1405 **BlueRidge: A Higher-Order Finite-Volume Solver** W. Tyson, C. Jackson, C. Roy, Virginia Polytechnic Institute and State University, Blacksburg, VA	1530 hrs AIAA-2019-1406 **Quantum Algorithm for Collisionless Boltzmann Equation based on the Reservoir Technique** B. Todorova, R. Steijl, University of Glasgow, Glasgow, United Kingdom	1600 hrs AIAA-2019-1407 **Flow Modal Decomposition and Deep Neural Networks for the Construction of Reduced Order Models of Compressible Flows** H. Lui, W. Wolf, University of Campinas, Campinas, Brazil			

Wednesday, 9 January 2019						
353-GNC-26	**Intelligent/Autonomous Guidance and Navigation**					**Cowles Mountain**
Chaired by: A. LAMPTON, Systems Technology, Inc. and L. POLLINI, University of Pisa						
1430 hrs AIAA-2019-1408 **Laser Range-Finder Based Obstacle Avoidance for Quadcopters** S. Shougaev, M. Idan, Technion–Israel Institute of Technology, Haifa, Israel	1500 hrs AIAA-2019-1409 **Vision-based Model Predictive Control for Unmanned Aerial Vehicles Automatic Trajectory Generation and Tracking** M. Razzanelli, M. Innocenti, G. Pannocchia, L. Pollini, University of Pisa, Pisa, Italy	1530 hrs AIAA-2019-1410 **Visual-Inertial Odometry for Unmanned Aerial Vehicle using Deep Learning** H. Lee, M. McCrink, J. Gregory, Ohio State University, Columbus, OH	1600 hrs AIAA-2019-1411 **Vision-Based Navigation for the NASA Mars Helicopter** D. Bayard, D. Conway, R. Brockers, J. Delaune, L. Matthies, H. Grip, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA; et al.	1630 hrs AIAA-2019-1412 **Navigation of Indoor Spaces Using Multiple Quadrotors** B. Katona, K. Morgansen, University of Washington, Seattle, Seattle, WA		

Wednesday, 9 January 2019						
354-GNC-27	**Intelligent/Autonomous Guidance and Control**					**Cuyamuca Peak**
Chaired by: G. INALHAN and M. IDAN						
1430 hrs AIAA-2019-1413 **Minimum-Time Relocation Maneuver of a Micro Air Vehicle Considering Uncertain Parameters** M. Harada, A. Okubo, National Defense Academy, Yokosuka, Japan	1500 hrs AIAA-2019-1414 **Boundary Tracking Using Sampling Based Model Predictive Control Law** K. Patnaik, A. Ratnoo, Indian Institute of Science, Bengaluru, India	1530 hrs AIAA-2019-1415 **Collision Avoidance Algorithm between Quadrotors Using Optimal Control and Pseudospectral Method** Y. Jiang, S. Hu, Shanghai Jiao Tong University, Shanghai, China; C. Damaren, University of Toronto, Toronto, Canada	1600 hrs AIAA-2019-1416 **Terrain-Following Paradigm Employing Laser-Range-Finders and Preview Control** A. Livshitz, M. Idan, Technion–Israel Institute of Technology, Haifa, Israel			

Wednesday, 9 January 2019						
355-GNC-28	**Specialized Guidance and Control for Aerial Systems II**					**Skyline**
Chaired by: J. LANGELAAN, Pennsylvania State University and E. JOHNSON, Pennsylvania State University						
1430 hrs AIAA-2019-1417 **A New Vibrational Control System in Nature: Flapping Flight** H. Taha, M. Kiani, University of California, Irvine, Irvine, CA	1500 hrs AIAA-2019-1418 **Modeling and Control of a Flapping Wing Hawkmoth Micro Air Vehicle using Generalized Mixed Sensitivity Hierarchical Design Approach** P. Pradhan, K. Puttannaiah, K. Mondal, A. Rodriguez, S. Biswal, Arizona State University, Tempe, AZ	1530 hrs AIAA-2019-1419 **A Modular Control Architecture for Airborne Wind Energy Systems** S. Rapp, R. Schmehl, Delft University of Technology, Delft, The Netherlands; E. Oland, S. Smidt, Kitemill AS, Voss, Norway; T. Haas, J. Meyers, Catholic University of Leuven, Leuven, Belgium	1600 hrs AIAA-2019-1420 **Reinforced Learning to Cross-Country Soar in the Vertical Plane of Motion** S. Notter, M. Zürn, P. Groß, W. Fichter, University of Stuttgart, Stuttgart, Germany	1630 hrs AIAA-2019-1421 **Optimal Speed Scheduling for Hybrid Solar Aircraft with Arrival Time Condition** J. Bird, J. Langelaan, Pennsylvania State University, University Park, PA	1700 hrs AIAA-2019-1422 **Finite-time Autonomous Shipboard Landing Control of a Helicopter with Time-varying Output Constraints** Y. Huang, M. Zhu, Z. Zheng, T. Chen, Beihang University, Beijing, China	

Wednesday, 9 January 2019						
356-GNC-29/IS-16	**Advances in Adaptive Control Systems II (Invited)**					**Harbor G**
Chaired by: J. MUSE, AFRL/RQQA and T. YUCELEN, University of South Florida						
1430 hrs AIAA-2019-1423 **Stabilization of Fixed Gain Controlled Nonminimum Phase Infinite Dimensional Systems with Actuator Dynamics by Augmentation with Direct Adaptive Control (Invited)** M. Balas, University of Tennessee, Tullahoma, Tullahoma, TN; S. Frost, NASA Ames Research Center, Moffett Field, CA	1500 hrs AIAA-2019-1424 **A New Model Reference Adaptive Control Law to Address Actuator Amplitude Saturation (Invited)** B. Gruenwald, S. Sarsilmaz, T. Yucelen, University of South Florida, Tampa, FL; J. Muse, Air Force Research Laboratory, Wright-Patterson AFB, OH	1530 hrs AIAA-2019-1425 **Optimal Control Design with Adaptive Nominal Loop (Invited)** K. Hashemi, NASA Ames Research Center, Moffett Field, CA; R. Greenough, University of California, San Diego, San Diego, CA; N. Nguyen, NASA Ames Research Center, Moffett Field, CA	1600 hrs AIAA-2019-1426 **Predictive Learning via Lookahead Simulation** A. Kanellopoulos, K. Vamvoudakis, Virginia Polytechnic Institute and State University, Blacksburg, VA; Y. Wardi, Georgia Institute of Technology, Atlanta, GA	1630 hrs AIAA-2019-1427 **Application of a Distributed Adaptive Control Approach to a Heterogeneous Multiagent Mechanical Platform (Invited)** E. Yildirim, S. Sarsilmaz, T. Yucelen, University of South Florida, Tampa, FL		

Wednesday, 9 January 2019						
357-GNC-30	**Proximity Operations and Rendezvous**					**Twin Peaks**
Chaired by: J. RAMAKRISHNAN, Bastion Technologies, Inc. and J. GROSS, West Virginia University						
1430 hrs AIAA-2019-1428 **Sliding Mode Control for Six-Degrees-of-Freedom Spacecraft Proximity Operations Based on Dual Quaternions** J. Yang, E. Stoll, Technical University of Braunschweig, Braunschweig, Germany	1500 hrs AIAA-2019-1429 **Impulsive Rendezvous Maneuvers in the Restricted Three-Body Problem** G. Franzini, M. Innocenti, University of Pisa, Pisa, Italy; M. Casasco, ESA, Noordwijk, The Netherlands	1530 hrs AIAA-2019-1430 **Low-Thrust Real-Time Guidance Algorithm for Proximity Operations about an Asteroid** A. Canale, E. Mooij, Delft University of Technology, Delft, The Netherlands; M. Akella, University of Texas, Austin, Austin, TX	1600 hrs AIAA-2019-1431 **Feasibility of Active Debris Removal Testing on the International Space Station using Free-flyers** V. Lappas, University of Patras, Patras, Greece; A. Tsourdos, Cranfield University, Cranfield, United Kingdom; T. Peters, GMV, Madrid, Spain; H. Schaub, University of Colorado, Boulder, Boulder, CO; R. Biesbroek, ESA, Noordwijk, The Netherlands	1630 hrs AIAA-2019-1432 **Spacecraft Swarm Formation Control via Bifurcation Dynamics and Adaptive Sliding Mode Control with Tracking Differentiator** W. Lin, H. Chen, J. Sun, Beihang University, Beijing, China; K. Li, China Academy of Space Technology (CAST), Beijing, China; H. Liu, Beihang University, Beijing, China		

Wednesday, 9 January 2019						
358-GTE-5	**Combustors: Alternative Fuels and Emissions**					**Highland Peak**
Chaired by: A. CASWELL, USAF AFRL/RQTC						
1430 hrs AIAA-2019-1433 **Dynamics of Spray Flames under Near-Lean Blowoff Conditions** N. Rock, B. Emerson, J. Seitzman, T. Lieuwen, Georgia Institute of Technology, Atlanta, GA	1500 hrs AIAA-2019-1434 **Analyzing the Relative Impact of Spray and Volatile Fuel Properties on Gas Turbine Combustor Ignition in Multiple Rig Geometries** K. Opacich, J. Heyne, E. Peiffer, University of Dayton, Dayton, OH; S. Stouffer, University of Dayton Research Institute, Dayton, OH	1530 hrs AIAA-2019-1435 **Investigation of Emissions for Concentric Staged Lean Direct Injection Combustor** H. Yu, J. Suo, P. Zhu, L. Zheng, Northwestern Polytechnical University, Xi'an, China	1600 hrs AIAA-2019-1436 **Investigation of the effect of dilution air on soot production and oxidation in a lab scale Rich-Quench-Lean (RQL) burner** I. El Helou, A. Skiba, E. Mastorakos, J. Sidey, University of Cambridge, Cambridge, United Kingdom			

Wednesday, 9 January 2019						
359-HIS-3	**Space History**					**Marina Room**
Chaired by: B. DAVIS						
1430 hrs AIAA-2019-1437 **The History of Aerospace Engineering at SDSU** J. Katz, San Diego State University, San Diego, CA	1500 hrs AIAA-2019-1438 **Mega Trends in Systems, Systems Engineering, and Sustainment** C. Vono, Self, Ogden, UT	1530 hrs AIAA-2019-1439 **Spirituality and Space: An Historical Perspective** B. Davis, Davis Group, Columbia, MD	1600 hrs AIAA-2019-1440 **Flight Trajectory of the Mercury Redstone: Investigation through a STEM Project** M. Kinstle, Self, Dublin, CA	1630 hrs AIAA-2019-1441 **The Major Technical Challenges of the Hexagon Spy in the Sky Satellite** P. Pressel, Quartus Engineering, San Diego, CA	1700 hrs AIAA-2019-1442 **The Viking Mars Missions Education and Preservation Project** R. Tillman, Viking Mars Missions Education and Preservation Project, Portland, OR	

Wednesday, 9 January 2019						
360-HSABP-6	**High Fidelity Combustion Modeling for High Speed Propulsion**					**Hillcrest C**
Chaired by: J. EDWARDS and C. MARLEY						
1430 hrs AIAA-2019-1443 **Ignition and Flame Propagation in Cavity-Fueled Supersonic Flameholder** E. Hassan, T. Ombrello, D. Peterson, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs AIAA-2019-1444 **Discontinuous-Galerkin Simulations of Premixed Ethylene-Air Combustion in a Cavity Combustor** R. Johnson, G. Goodwin, A. Corrigan, A. Kercher, Naval Research Laboratory, Washington, D.C.; H. Chelliah, University of Virginia, Charlottesville, Charlottesville, VA	1530 hrs AIAA-2019-1445 **Hybrid LES/RANS Simulation of a Premixed Ethylene-fueled Dual-mode Scramjet Combustor: Small Cavity Configuration** T. Nielsen, J. Edwards, North Carolina State University, Raleigh, NC; H. Chelliah, D. Lieber, C. Geipel, C. Goyne, University of Virginia, Charlottesville, Charlottesville, VA; et al.	1600 hrs AIAA-2019-1446 **Large Eddy Simulation of Supersonic Combustion using the Flamelet/Progress-Variable Approach and the Evolution-Variable Manifold Approach** H. Mrema, G. Candler, University of Minnesota, Twin Cities, Minneapolis, MN			

Wednesday, 9 January 2019		
361-HUB-16 **1430 - 1500 hrs**	**Manufacturing - Empowering Ideas and Designs To Fly**	**the Hub Hangar**

Wednesday, 9 January 2019		
362-HUB-17 **1430 - 1530 hrs**	**Book Author Reception**	**the Hub Open Area**

Wednesday, 9 January 2019						
363-INPSI-1	**Inlet Aerodynamics**					**Kingston Peak**
Chaired by: D. CROWE, Air Force Institute of Technology and L. GEA, Boeing Engineering Operations & Technology						
1430 hrs AIAA-2019-1447 **Refinement of Vortex Generators in a Streamline-Traced, External-Compression Supersonic Inlet** J. Slater, NASA Glenn Research Center, Cleveland, OH	1500 hrs AIAA-2019-1448 **Validation of Fan Source Term Model Constructed Without Blade Geometry** S. Sato, The Boeing Company, Seattle, WA; N. Spotts, X. Gao, Colorado State University, Fort Collins, CO	1530 hrs AIAA-2019-1449 **A Method to Compute Thermal Distortion in Non-Circular Ducts** D. Crowe, R. Depaola, Air Force Institute of Technology, Wright-Patterson AFB, OH	1600 hrs AIAA-2019-1450 **A Performance Methodology for Ducted Boundary Layer Ingesting Propulsion** W. Lord, Parametric Solutions, Inc., Jupiter, FL; G. Tillman, S. Ochs, X. Cai, B. Moffitt, United Technologies Corporation, East Hartford, CT	1630 hrs AIAA-2019-1451 **Topographic study of the ice accretion roughness on a generic aero-engine intake.** J. Velandia, S. Bansmer, Technical University of Braunschweig, Braunschweig, Germany		

Wednesday, 9 January 2019						
364-IS-17	**Autonomy in Aerospace Control Applications II**					**Seaport H**
Chaired by: F. FIGUEROA and J. WILHELM, Ohio University						
1430 hrs AIAA-2019-1452 **Development of a Velocity Controller for Following a Human Using Target Velocity in a GPS-Denied Environment** C. Hartman, R. Sharma, University of Cincinnati, Cincinnati, OH	1500 hrs AIAA-2019-1453 **Implementation of Leader-Wingman Flight Formation with Sampled-Data Controller** D. Casbeer, Air Force Research Laboratory, Wright-Patterson AFB, OH; S. Rasmussen, Miami Valley Aerospace, Wright-Patterson AFB, OH; D. Kingston, D. Baker, E. Garcia, Air Force Research Laboratory, Wright-Patterson AFB, OH	1530 hrs AIAA-2019-1454 **Adaptive Stress Testing of Trajectory Planning Systems** R. Lee, Carnegie Mellon University, Moffett Field, CA; J. Puig - Navarro, University of Illinois, Urbana-Champaign, Urbana, IL; A. Agogino, D. Giannakoupoulou, NASA Ames Research Center, Moffett Field, CA; O. Mengshoel, Carnegie Mellon University, Moffett Field, CA; M. Kochenderfer, Stanford University, Stanford, CA; et al.	1600 hrs AIAA-2019-1455 **A Supervisory Neural Network and Fuzzy Inference System Approach to an Unmanned Aerial Vehicle Tail-Chase Scenario** T. Arnett, K. Cohen, B. Cook, University of Cincinnati, Cincinnati, OH; D. Casbeer, Air Force Research Laboratory, Wright-Patterson AFB, OH		

Wednesday, 9 January 2019						
365-IS-18	**Autonomous Small UAS Urban Flight IV (Invited)**					**Solana Beach A**
Chaired by: A. CHAKRABARTY and C. IPPOLITO, NASA Ames Research Center						
1430 hrs AIAA-2019-1456 **Learning to Communicate: A Machine Learning Framework for Heterogeneous Multi-Agent Robotic Systems (Invited)** H. Yoon, H. Chen, K. Long, H. Zhang, A. Gahlawat, D. Lee, University of Illinois, Urbana-Champaign, Urbana, IL; et al.	1500 hrs AIAA-2019-1457 **Onboard Decision-Making for Nominal and Contingency sUAS Flight (Invited)** J. Baculi, C. Ippolito, NASA Ames Research Center, Moffett Field, CA	1530 hrs AIAA-2019-1458 **Propeller Phase Synchronization for Small Distributed Electric Vehicles (Invited)** A. Patterson, A. Gahlawat, N. Hovakimyan, University of Illinois, Urbana-Champaign, Urbana, IL	1600 hrs AIAA-2019-1459 **An Interface-based Cybersecurity Analysis Methodology for Untrusted Sub-Systems on Unmanned Aerial Systems (Invited)** C. Ippolito, K. Krishnakumar, NASA Ames Research Center, Moffett Field, CA	1630 hrs **Open Discussion**		

Wednesday, 9 January 2019						
366-MAT-11	**Nanostructured Materials I**					**Mission Beach C**
Chaired by: S. ROY, The University of Alabama and N. YAMAMOTO, Penn State University						
1430 hrs AIAA-2019-1460 **Facile Patterning of Aligned Carbon Nanotube Architectures via Capillary-mediated Densification** A. Kaiser, I. Stein, K. Cui, B. Wardle, Massachusetts Institute of Technology, Cambridge, MA	1500 hrs AIAA-2019-1461 **Numerical and Experimental Investigation of the Sensitivity of Carbon Nanotube and Graphene Nanocomposites to MMOD Impact Damage for Inflatable Structures** A. Gbaguidi, S. Namilae, D. Kim, Embry-Riddle Aeronautical University, Daytona Beach, FL	1530 hrs AIAA-2019-1462 **Anomalous Fracture Behavior in Graphene Nanoplatelets due to Length Scale Effect** A. Roy, S. Roy, University of Alabama, Tuscaloosa, Tuscaloosa, AL	1600 hrs AIAA-2019-1463 **RVE size of nanocomposite homogenization model considering agglomeration of nano particles** M. Cho, K. Baek, Seoul National University, Seoul, South Korea; H. Shin, Yeungnam University, Gyongsan, South Korea; W. Lee, Seoul National University, Seoul, South Korea	1630 hrs AIAA-2019-1464 **Unidirectional Hierarchical Laminates with Interlaminar Shear Reinforcement** R. Li, C. Mitchel, B. Wardle, Massachusetts Institute of Technology, Cambridge, MA		

Wednesday, 9 January 2019						
367-MDO-14	**Shape and Topology Optimization I**					**Harbor C**
Chaired by: B. STANFORD, NASA Langley Research Center and H. KIM, University of California, San Diego						
1430 hrs AIAA-2019-1465 **Design and validation of topology optimized heat exchangers** K. Saviers, R. Ranjan, R. Mahmoudi, United Technologies Corporation, East Hartford, CT	1500 hrs AIAA-2019-1466 **Aeroelastic Topology Optimization of a Morphing Airfoil in Supersonic Flow using Evolutionary Design** J. Hodson, Hodson Aerospace, LLC, Beavercreek, OH; A. Christopherson, J. Deaton, A. Pankonien, G. Reich, P. Beran, Air Force Research Laboratory, Wright-Patterson AFB, OH	1530 hrs AIAA-2019-1467 **Level Set-Based Topology Optimization with Manufacturing Constraint with Manufacturing Directions via Fictitious Physical Model** D. Hur, Y. Sato, T. Yamada, K. Izui, S. Nishiwaki, Kyoto University, Kyoto, Japan	1600 hrs AIAA-2019-1468 **Time Scale Effects in Topology Optimization of the Interior Material Distribution of a Body Subject to Transient Conjugate Heat Transfer** D. Makhija, Lateral Unbounded Software, LLC, Beavercreek, OH; P. Beran, Air Force Research Laboratory, Wright-Patterson AFB, OH	1630 hrs AIAA-2019-1469 **Structural Topology Optimisation with R-Snakes Volume of Solid** A. Taylor, A. Payot, C. Allen, T. Rendall, University of Bristol, Bristol, United Kingdom	1700 hrs AIAA-2019-1470 **Nonlinear Thermoelastic Topology Optimization with the Level-Set Method** H. Chung, University of California, San Diego, San Diego, CA; O. Amir, Technion–Israel Institute of Technology, Haifa, Israel; H. Kim, University of California, San Diego, San Diego, CA	

Wednesday, 9 January 2019						
368-MDO-15/APA-37	**Aerodynamic Design: Analysis, Methodologies, and Optimization Techniques IV**					**Mission Beach B**
Chaired by: N. RAJMOHAN, Aerion Technologies Inc. and P. JOHNSON, Boeing Commercial Airplanes						
1430 hrs AIAA-2019-1471 **Utilization of Data Fusion Techniques in Aerodynamic Modeling** K. Harada, M. Huguenin, S. Schafer, H. Schwartz, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1500 hrs AIAA-2019-1472 **Parametric Surfaces with Volume of Solid Control for Optimisation of Three Dimensional Aerodynamic Topologies** A. Payot, T. Rendall, C. Allen, University of Bristol, Bristol, United Kingdom	1530 hrs AIAA-2019-1473 **ADGAR: A GPU Accelerated Adjoint Solver for Shape Optimization in Viscous Flows** A. Mishra, D. Jude, J. Baeder, University of Maryland, College Park, College Park, MD	1600 hrs AIAA-2019-1474 **Comparative Analysis of Aerodynamic Characteristics of a Transport Aircraft and its AWACS Variant** Z. Toor, J. Masud, T. Khan, Air University, Islamabad, Pakistan; O. Khan, S. Shah, Auburn University, Auburn, AL	1630 hrs AIAA-2019-1475 **Hybrid Inverse/Optimization Design Approach for Transonic Natural-Laminar-Flow Airfoils** J. Chi, Z. Han, T. Fan, Z. Zhu, W. Song, Northwestern Polytechnical University, Xi'an, China		

Wednesday, 9 January 2019						
369-MST-10	**Model and Simulation Integration**					**Eagle Peak**
Chaired by: S. KOWALCHUK, Sandia National Laboratories and N. MACCHIARELLA, Embry-Riddle Aeronautical University						
1430 hrs AIAA-2019-1476 **Encounter-Based Simulation Architecture for Detect-And-Avoid Modeling** M. Refai, M. Abramson, S. Lee, Crown Consulting, Inc., Moffett Field, CA; G. Wu, NASA Ames Research Center, Moffett Field, CA	1500 hrs AIAA-2019-1477 **Piloted Full-Motion Simulation with Simulink®** E. Lewis, NASA Ames Research Center, Moffett Field, CA	1530 hrs AIAA-2019-1478 **A Tactical Simulation in Simulink with Object Oriented Design Approach** A. Ozturk, Turkish Aerospace Industries, Inc., Ankara, Turkey; G. Aydin, ROKETSAN Missile Industries, Inc., Ankara, Turkey	1600 hrs AIAA-2019-1479 **Verification and Testing of Embedded Software with Model Based Design** J. A, P. Urban, P. Canny, MathWorks, Natick, MA	1630 hrs AIAA-2019-1480 **A Model Based Flight Control System Design Approach for Micro Aerial Vehicle Using Integrated Flight Testing and HIL Simulation** B. Yuksek, E. Saldiran, A. Cetin, R. Yeniceri, G. Inalhan, Istanbul Technical University, Istanbul, Turkey		

Wednesday, 9 January 2019						
370-MST-11	**Simulation Scenario Development I**					**Harbor H**
Chaired by: R. YENICERI, Istanbul Technical University and S. JAFER, Embry-Riddle Aeronautical University						
1430 hrs AIAA-2019-1481 **Scenario-Driven Development and Testing of ATC Conflict Detection** K. Richard, S. Jafer, M. Moallemi, Embry-Riddle Aeronautical University, Daytona Beach, FL; N. Thigpen, Federal Aviation Administration, Oklahoma City, OK; K. Patel, Embry-Riddle Aeronautical University, Daytona Beach, FL	1500 hrs AIAA-2019-1482 **Building ATC Simulator through Scenario-Driven Requirements Engineering** M. Moallemi, C. Shannon, S. Jafer, A. Raja, Embry-Riddle Aeronautical University, Daytona Beach, FL; N. Thigpen, Federal Aviation Administration, Oklahoma City, OK	1530 hrs AIAA-2019-1483 **Evaluation of Scenario-Centric Training in ATC Simulators** B. Chhaya, S. Jafer, M. Moallemi, Embry-Riddle Aeronautical University, Daytona Beach, FL	1600 hrs AIAA-2019-1484 **Fast and Efficient Aviation Analysis with Metrosim and the Predictive Query Language** F. Wieland, R. Sharma, K. Vlachou, A. Hoban, T. Trapaidze, Intelligent Automation, Inc., Rockville, MD	1630 hrs AIAA-2019-1485 **Subjective Noticeability of Variations in Quasi-Steady Aerodynamic Stall Dynamics** S. Smets, C. de Visser, D. Pool, Delft University of Technology, Delft, The Netherlands	1700 hrs AIAA-2019-1486 **A Benefit Analysis of Satellite-based Surveillance and Communication Technologies for Oceanic Flights – Benefit Estimates for Airlines and Air Traffic Controllers** T. Li, North Carolina State University, Raleigh, NC	

Wednesday, 9 January 2019						
371-NDA-7	**Model Calibration and Validation**					**Torrey Hills A**
Chaired by: S. MAHADEVAN, Vanderbilt University and Y. ZHANG						
1430 hrs AIAA-2019-1487 **Simulation Resource Optimization for Multi-Fidelity Model Calibration** G. Absi, S. Mahadevan, Vanderbilt University, Nashville, TN	1500 hrs AIAA-2019-1488 **Real-Space Model Validation and Predictor-Corrector Extrapolation applied to the Sandia Cantilever Beam End-to-End UQ Problem** V. Romero, Sandia National Laboratories, Albuquerque, NM	1530 hrs AIAA-2019-1489 **Adaptive Infill Criteria for Non-Deterministic Kriging Considering Aleatory and Epistemic Uncertainties** D. Clark, Air Force Research Laboratory, Wright-Patterson AFB, OH; H. Bae, Wright State University, Dayton, OH; J. Deaton, E. Forster, Air Force Research Laboratory, Wright-Patterson AFB, OH	1600 hrs AIAA-2019-1490 **A Nonparametric-based Approach for the Characterization and Propagation of Epistemic Uncertainty due to Small Datasets** Z. Gao, D. Lim, K. Schwartz, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1630 hrs AIAA-2019-1491 **Model error propagation in coupled multi-physics systems** A. Subramanian, S. Mahadevan, Vanderbilt University, Nashville, TN	1700 hrs AIAA-2019-1492 **Application of a CFD Uncertainty Quantification Framework for Industrial-Scale Aerodynamic Analysis** J. Schaefer, A. Cary, The Boeing Company, St. Louis, MO; E. Duque, S. Lawrence, Intelligent Light, Rutherford, NJ	

Wednesday, 9 January 2019						
372-PC-15	**High-Pressure Combustion**					**Hillcrest B**
Chaired by: W. SUN, Georgia Institute of Technology and B. CHEHROUDI, Arkansas Tech University						
1430 hrs AIAA-2019-1493 **Modeling of the Turbulent Reaction Rate in High-Pressure Flows** C. Devaud, University of Waterloo, Waterloo, Canada; K. Bushe, University of British Columbia, Vancouver, Canada; J. Bellan, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1500 hrs AIAA-2019-1494 **Preliminary Modeling Approach of Carbon Deposits in Fuel Rich RP-2/GOX Combustion at Rocket Conditions** R. Kulakhmetov, T. Pourpoint, Purdue University, West Lafayette, IN	1530 hrs AIAA-2019-1495 **A priori Analysis of Subfilter Scalar Covariance Fields in Turbulent Reacting LOX-CH4 Mixing Layers** U. Unnikrishnan, J. Oefelein, V. Yang, Georgia Institute of Technology, Atlanta, GA	1600 hrs AIAA-2019-1496 **Transported PDF Modeling of Thermo-Acoustic Instability in a Self-Excited Model Rocket Combustor using Eulerian Monte Carlo Fields Method** T. Pant, H. Wang, Purdue University, West Lafayette, IN	1630 hrs AIAA-2019-1497 **A computational study for combustion flow fields of a high-pressure gaseous hydrogen/oxygen coflow jet behind a splitter plate** S. Murakami, H. Terashima, N. Oshima, Hokkaido University, Sapporo, Japan		

Wednesday, 9 January 2019						
373-PC-16/PGC-7	**Rotating Detonation Engines**					**Hillcrest A**
Chaired by: S. VASU, University of Central Florida and T. SATO						
1430 hrs AIAA-2019-1498 **Three-dimensional Numerical Simulation of Disk Rotating Detonation Engine; Unsteady Flow Structure** T. Watanabe, N. Jourdaine, N. Tsuboi, Kyushu Institute of Technology, Kitakyushu, Japan; T. Kojima, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan; K. Hayashi, Aoyama Gakuin University, Tokyo, Japan	1500 hrs AIAA-2019-1499 **Structure of Rotating Detonation Wave in Methane-Oxygen Mixtures** V. Katta, Innovative Scientific Solutions, Inc., Dayton, OH	1530 hrs AIAA-2019-1500 **Propulsion Performance of Inner-Cylinder-Less Rotating Detonation Engine** R. Yokoo, K. Goto, J. Kim, A. Kawasaki, K. Matsuoka, J. Kasahara, Nagoya University, Nagoya, Japan; et al.	1600 hrs AIAA-2019-1501 **Experimental Performance Validation of a Rotating Detonation Engine toward a Flight Demonstration** K. Goto, R. Yokoo, J. Kim, A. Kawasaki, K. Matsuoka, J. Kasahara, Nagoya University, Nagoya, Japan; et al.	1630 hrs AIAA-2019-1502 **Detailed Chemistry Investigation of Hydrogen and Hydrocarbon Based Fuel Mixture for Detonation Engine** A. Ispir, L. Nista, B. Saracoglu, T. Magin, von Kármán Institute for Fluid Dynamics, Brussels, Belgium		

Wednesday, 9 January 2019						
374-PDL-15/AMT-14	**Optical and Laser Diagnostics in Plasmas**					**Vista C**
Chaired by: R. MILES, Texas A&M University and J. MICHAEL, Iowa State University						
1430 hrs AIAA-2019-1503 **Light Field Analysis of optically thin Plasma Flows** M. Eberhart, S. Loehle, University of Stuttgart, Stuttgart, Germany	1500 hrs AIAA-2019-1504 **Spectral Measurements in Electrical Discharge Glow Plasma Produced in Hypersonic Separated Flow** H. Itoh, H. Tanabe, M. Mizoguchi, National Defense Academy, Yokosuka, Japan	1530 hrs AIAA-2019-1505 **Coupled CARS-EFISHG: Progressing towards electric field measurements in gas mixtures and elevated temperatures** J. Retter, G. Elliott, University of Illinois, Urbana-Champaign, Urbana, IL	1600 hrs AIAA-2019-1506 **Two-Photon Induced Polarization Spectroscopy for Atomic Oxygen in Atmospheric Plasma and Xenon** A. Meindl, S. Loehle, I. Kistner, A. Schulz, S. Fasoulas, University of Stuttgart, Stuttgart, Germany	1630 hrs AIAA-2019-1507 **Femtosecond Two-Photon Absorption Laser Induced Fluorescence (fs-TALIF) Imaging of Atomic Nitrogen in Nanosecond Repetitive Discharges** C. Dumitrache, A. Gallant, G. Stancu, C. Laux, CentraleSupélec, Paris, France	1700 hrs AIAA-2019-1508 **1D Spatially Resolved Electric Fields in Atmospheric Pressure Nanosecond Pulse Discharges Using Ultrashort Laser Pulses** B. Goldberg, S. Reuter, A. Dogariu, Princeton University, Princeton, NJ; R. Miles, Texas A&M University, College Station, TX	

Wednesday, 9 January 2019						
375-PGC-8	**Rotating Detonation Pressure Gain Combustion II**					**Harbor E**
Chaired by: C. BROPHY, Naval Postgraduate School and N. TSUBOI, Kyushu Institute of Technology						
1430 hrs AIAA-2019-1509 **Development of a High Efficiency System with a Rotating Detonation Engine for a Gas Turbine Engine (RDE-GTE) using Pressure Gain Combustion** A. Hayashi, X. Tang, Cosmo Silva, Inc., Tokyo, Japan; N. Tsuboi, K. Ozawa, Kyushu Institute of Technology, Fukuoka, Japan; K. Ishii, Yokohama National University, Kanagawa, Japan; T. Obara, Saitama University, Saitama, Japan; et al.	1500 hrs AIAA-2019-1510 **Parametric Survey of a Natural Gas-Air Rotating Detonation Engine at Elevated Pressure** I. Walters, C. Journell, A. Lemcherfi, R. Gejji, S. Heister, C. Slabaugh, Purdue University, West Lafayette, IN	1530 hrs AIAA-2019-1511 **The Effect of Fuel Stratification on the Detonation Wave Structure** S. Prakash, R. Fiévet, V. Raman, University of Michigan, Ann Arbor, Ann Arbor, MI	1600 hrs AIAA-2019-1512 **Investigation of the Exhaust Flow of a Pulse Detonation Combustor at different Operating Conditions based on High-Speed Schlieren and PIV** M. Rezay Haghdoost, Technical University of Berlin, Berlin, Germany; D. Edgington-Mitchell, Monash University, Melbourne, Australia; C. Paschereit, K. Oberleithner, Technical University of Berlin, Berlin, Germany	1630 hrs AIAA-2019-1513 **Transient Response of a Liquid Injector to an Ethylene-Oxygen Detonation Wave** D. Lim, H. Celebi, S. Heister, Purdue University, West Lafayette, IN	1700 hrs AIAA-2019-1514 **Time-Resolved PIV Diagnostics to Measure Flow Field Exiting Methane-Fueled Rotating Detonation Combustor** D. Depperschmidt, R. Miller, J. Tobias, M. Uddi, A. Agrawal, University of Alabama, Tuscaloosa, Tuscaloosa, AL; J. Stout, Aerojet Rocketdyne, Canoga Park, CA	

Wednesday, 9 January 2019		
376-RLA-4 **1430 - 1600 hrs**	**Speed Mentoring**	**Seaport G**
Leaders in the aerospace industry will be taking time to meet with the Rising Leaders participants and share their experiences. This event is a great way to get insight and make new contacts. And, maybe, they will end up being a mentor for more than just the 15 minutes at this event.		

Wednesday, 9 January 2019						
377-SAT-1	**Society and Aerospace Technology**					**Iron Mountain**
Chaired by: M. KUESTER, Virginia Tech and A. GOHARDANI, Springs of Dreams Corporation						
1430 hrs AIAA-2019-1515 **Reenergizing U.S. Space Nuclear Power Generation** M. Obal, Obal Technologies Group, Inc., Manassas, VA; M. Concha, Relative Dynamics, Inc., Greenbelt, MD	1500 hrs AIAA-2019-1516 **Mitigations to Reduce the Law of Unintended Consequences for Autonomy and other Technological Advances** A. Morris, Y. Santiago-Espada, NASA Langley Research Center, Hampton, VA	1530 hrs AIAA-2019-1517 **Astrosociology and the Search for Technosignatures** J. Pass, Astrosociology Research Institute, Huntington Beach, CA				

Wednesday, 9 January 2019						
378-SATS-1	**Small Satellites**					**Mt. Whitney**
Chaired by: J. STRAUB, North Dakota State University						
1430 hrs AIAA-2019-1518 **Extended Orbital Flight of a CubeSat in the Lower Thermosphere with Active Attitude Control** A. Krishna Moorthy, J. Blandino, N. Gatsonis, M. Demetriou, Worcester Polytechnic Institute, Worcester, MA	1500 hrs AIAA-2019-1519 **Enabling Revolutionary Power Components for Future Space Missions: Progress in Metal-Oxide-Semiconductor Field-Effect Transistors** A. Gohardani, International Rectifier HiRel Products, El Segundo, CA	1530 hrs AIAA-2019-1520 **Application of Direct Adaptive Control to Autonomous Satellite Docking** N. Prabhakar, M. Tiwari, T. Henderson, R. Prazenica, Embry-Riddle Aeronautical University, Daytona Beach, FL	1600 hrs AIAA-2019-1521 **A Low Cost Thermoelectric Generator for Small Satellites** V. Lappas, University of Patras, Patras, Greece; A. Tsourdos, Cranfield University, Cranfield, United Kingdom; S. Kindylides, EU ECO Technologies, Ltd., Blackburn, United Kingdom; V. Kostopoulos, University of Patras, Patras, Greece			

Wednesday, 9 January 2019						
379-SCS-6	**Deployable Trusses and Booms II**					**Torrey Hills B**
Chaired by: H. FANG and B. DAVIS, Roccor LLC						
1430 hrs AIAA-2019-1522 **Reducing Stress Concentration in the Transition Region of Coilable Ultra-Thin-Shell Booms** C. Leclerc, S. Pellegrino, California Institute of Technology, Pasadena, CA	1500 hrs AIAA-2019-1523 **Stability Analysis of Coiled Tape Springs** A. Pedivellano, S. Pellegrino, California Institute of Technology, Pasadena, CA	1530 hrs AIAA-2019-1524 **Topology Optimization of Composite Self-Deployable Thin Shells with Cutouts** S. Ferraro, S. Pellegrino, California Institute of Technology, Pasadena, CA	1600 hrs AIAA-2019-1525 **Design Method of Self-deployable Truss to Prevent Jamming of Stored Booms** M. Fukunaga, Y. Miyazaki, S. Shitara, D. Kousaka, D. Kawarabayashi, S. Kataoka, Nihon University, Chiba, Japan	1630 hrs AIAA-2019-1526 **Cable-Actuated Articulated Cylindrical Tensegrity Booms** K. Roffman, G. Lesieutre, Pennsylvania State University, University Park, PA		

Wednesday, 9 January 2019						
380-SD-12	**Computational Aeroelasticity II**					**Harbor I**
Chaired by: S. SHIN, Seoul National University and D. GRIFFITH						
1430 hrs AIAA-2019-1527 **A Computational Framework for Assessment of Fuel Sloshing Effects on Transonic Wing Flutter Characteristics** S. Srivastava, M. Damodaran, B. Khoo, National University of Singapore, Singapore, Singapore	1500 hrs AIAA-2019-1528 **Expedient Evaluation of Capacitance and Conductance Matrices of Thermal Reduced Order Models of Heated Structures with Temperature-Dependent Properties** R. Murthy, M. Mignolet, Arizona State University, Tempe, AZ	1530 hrs AIAA-2019-1529 **Updating of Dynamic Model of Aircraft Structure with Wing Tip-tanks According to Results of Ground Vibration Test** J. Cecrdle, Aerospace Research and Test Establishment (VZLÚ), Prague, Czechia	1600 hrs AIAA-2019-1530 **Computationally Efficient Gust Load Analysis at High Angles of Attack** W. Mallik, D. Raveh, Technion–Israel Institute of Technology, Haifa, Israel	1630 hrs AIAA-2019-1531 **Aeroelastic flutter flight test data analysis using a high order dynamic mode decomposition approach** C. Mendez, S. Le Clainche, J. Vega, Technical University of Madrid, Madrid, Spain; R. Moreno-Ramos, Altran, Madrid, Spain; P. Taylor, Gulfstream Aerospace Corporation, Savannah, GA		

Wednesday, 9 January 2019						
381-SD-13	**Dynamic Testing and System Identification**					**Ocean Beach**
Chaired by: R. MALLA, University of Connecticut and G. COPPOTELLI, University of Rome						
1430 hrs AIAA-2019-1532 **Modal Identification of Aerodynamic Models for Spanwise Lift Distribution Control** J. Dias, University of Maryland University College, Hampton, VA; J. Hubbard, Texas A&M University, College Station, TX	1500 hrs AIAA-2019-1533 **Real-Time System Identification for Fixed and Rotary Wing Aircraft** G. Coppotelli, F. Di Giandomenico, University of Rome "La Sapienza", Rome, Italy; P. Marzocca, M. Marino, RMIT University, Melbourne, Australia	1530 hrs AIAA-2019-1534 **Data-driven Stochastic Identification for Fly-by-feel Aerospace Structures: Critical Assessment of Non-parametric and Parametric Approaches** F. Kopsaftopoulos, Rensselaer Polytechnic Institute, Troy, NY	1600 hrs AIAA-2019-1535 **Frequency Domain Decomposition for manual and automated tracking of modes using flight data** A. Caprara, E. Conti, G. Coppotelli, University of Rome "La Sapienza", Rome, Italy; J. Covioli, S. Ragaglini, F. Beccarisi, Italian Air Force, Pratica Di Mare, Italy	1630 hrs AIAA-2019-1536 **Study on a modified mode tracking technique in support of aeroelastic stability verification by flight testing** J. Covioli, Italian Air Force, Pomezia, Italy; G. Coppotelli, University of Rome "La Sapienza", Rome, Italy; P. De Paolis, A. D' Argenio, S. Mariani, Italian Air Force, Pomezia, Italy	1700 hrs AIAA-2019-1537 **Strain-based Shape Prediction for Flexible Beam-like Structures** Y. Meng, C. Xie, Z. Wan, Beihang University, Beijing, China	

Wednesday, 9 January 2019						
382-SEN-3	**Fusion II**					**Cove**
Chaired by: A. HARRIVEL, NASA Langley Research Center and D. ACCARDO, University of Naples						
1430 hrs AIAA-2019-1538 **Development of a Data Fusion Framework to support the Analysis of Aviation Big Data** E. Mangortey, J. Gilleron, G. Dard, O. Pinon-Fischer, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1500 hrs AIAA-2019-1539 **Design, Implementation And Experimental Testing Of An Inertial Sensor System To Quantify Wing Deflection** G. Schirmer, J. Steck, A. Chakravarthy, Wichita State University, Wichita, KS	1530 hrs AIAA-2019-1540 **Multipoint Angle of Attack sensing for Avoidance of Loss of Control in Flight** T. Milward, M. Bromfield, N. Horri, R. Ali, S. Scott, Coventry University, Coventry, United Kingdom	1600 hrs AIAA-2019-1541 **Enhancing Automated Aerial Reconnaissance Onboard UAVs Using Sensor Data Processing-Characteristics and Pareto Front Optimization** C. Ruf, M. Zwick, S. Morawietz, P. Stuetz, University of the German Federal Armed Forces, Neubiberg, Germany	1630 hrs AIAA-2019-1542 **Agriculture Application with Airborne Hyperspectral Images from Two-Dimensional Concave Grating System** C. Ko, National Taiwan University of Science and Technology, Taipei, Taiwan; H. Ren, National Central University, Taoyuan, Taiwan; J. Tsai, B. Wang, S. Lin, National Space Organization, Hsinchu, Taiwan; C. Huang, National Central University, Taoyuan, Taiwan; et al.		

Wednesday, 9 January 2019						
383-STR-13	**Failure Analysis and Prediction II**					**Golden Hill A**
Chaired by: V. GOYAL, The Aerospace Corporation and A. NAJAFI, ANSYS, Inc.						
1430 hrs AIAA-2019-1543 **Spool Insert Capability Determination Using Numerical Assessment and Test** H. Soliman, P. Wagner, Northrop Grumman Corporation, Dulles, VA	1500 hrs AIAA-2019-1544 **Compressive Failure Modeling of Composites with Defects** D. Pham, X. Cui, A. Karuppiah, J. Lua, Global Engineering and Materials, Inc., Princeton, NJ	1530 hrs AIAA-2019-1545 **A Numerical Approach for the Evaluation of the Local Stress Ratio in Fatigue-Driven Delamination Analysis** A. Raimondo, C. Bisagni, Delft University of Technology, Delft, The Netherlands	1600 hrs AIAA-2019-1546 **Multiscale fatigue modeling of composites** P. Davidson, University of Washington, Seattle, Seattle, WA; A. Hasanyan, University of Michigan, Ann Arbor, Ann Arbor, MI; A. Waas, University of Washington, Seattle, Seattle, WA			

Wednesday, 9 January 2019						
384-STR-14	**NASA ACC**					**Golden Hill B**
Chaired by: L. FOSTER, Pratt & Whitney and J. MIN, NASA Glenn Research Center						
1430 hrs AIAA-2019-1547 **An Experimental Investigation Concerning the Effects of AFP Defects on Progressive Failure of Tensile Coupons** R. Anay, P. Ziehl, A. Tessema, R. Wehbe, L. Assi, A. Kidane, University of South Carolina, Columbia, Columbia, SC; et al.	1500 hrs AIAA-2019-1548 **A Three-Dimensional Mesoscale Model for In-Plane and Out-of-Plane Fiber Kinking** A. Bergan, NASA Langley Research Center, Hampton, VA	1530 hrs AIAA-2019-1549 **Validation of Floating Node Method Using Three-Point Bend Doubler Under Quasi-Static Loading** A. Selvarathinam, Lockheed Martin Corporation, Fort Worth, TX; N. Vieira De Carvalho, B. Seshadri, NASA Langley Research Center, Hampton, VA; V. Johnson, Lockheed Martin Corporation, Marietta, GA	1600 hrs AIAA-2019-1550 **A global-local discrete damage modeling framework for composite laminates** J. McQuien, H. Adluru, E. Iarve, University of Texas, Arlington, Fort Worth, TX; A. Harman, Department of Defence, Fishermans Bend, Australia	1630 hrs AIAA-2019-1551 **The implementation of Regularized Extended Finite Element Method (Rx-FEM) in Abaqus** Y. Liang, E. Iarve, University of Texas, Arlington, Arlington, TX		

Wednesday, 9 January 2019						
385-TP-7	**Measurement and Testing**					**Balboa B**
Chaired by: P. YEE, The Aerospace Corporation						
1430 hrs AIAA-2019-1552 **Testing a Transpiration Cooled Zirconium-Di-Boride sample in the Plasma Tunnel at IRS** M. Ewenz Rocher, M. McGilvray, T. Hermann, H. Ifti, University of Oxford, Oxford, United Kingdom; F. Hufgard, M. Eberhart, University of Stuttgart, Stuttgart, Germany; et al.	1500 hrs AIAA-2019-1553 **Heat Flux Data Reduction using a Natural Filter Test Function** J. Frankel, H. Chen, University of Tennessee, Knoxville, Knoxville, TN	1530 hrs AIAA-2019-1554 **Calibration of the Co-Axial Thermocouple Using a Quantified High Heat Flux AlN Heater** H. Chen, J. Frankel, University of Tennessee, Knoxville, Knoxville, TN	1600 hrs AIAA-2019-1555 **Hypervelocity Measurements of Mid-Wave Infrared CO2 Radiation Impinging on Blunt Bodies** M. Leibowitz, J. Austin, California Institute of Technology, Pasadena, CA	1630 hrs AIAA-2019-1556 **High-speed visualization for test-time evaluation of a JAXA HEK-X free-piston driven expansion tube** K. Shimamura, University of Tsukuba, Tsukuba, Japan; A. Okamoto, Shizuoka University, Hamamatsu, Japan; Y. Fujiwara, Waseda University, Tokyo, Japan; Y. Higo, Tokai University, Hiratsuka, Japan; K. Yamada, T. Komuro, Japan Aerospace Exploration Agency (JAXA), Kakuda, Japan; et al.	1700 hrs AIAA-2019-1557 **Measurement of Surface Heat Flux Distribution on a Transpiration Cooled Wedge in a Supersonic High-Enthalpy Air Flow** S. Loehle, F. Hufgard, University of Stuttgart, Stuttgart, Germany; H. Boehrk, C. Dittert, German Aerospace Center (DLR), Stuttgart, Germany	

Wednesday, 9 January 2019						
386-TP-8	**Computational Fluid Dynamics**					**Balboa A**
Chaired by: W. TSAI, California State University, Maritime Academy						
1430 hrs AIAA-2019-1558 **Adaptive Wavelet-based Delayed Detached Eddy Simulations of Anisothermal Channel Flows with High Transverse Temperature Gradients** X. Ge, Florida State University, Tallahassee, FL; Y. Zhou, Lawrence Livermore National Laboratory, Livermore, CA; O. Vasilyev, Skolkovo Institute of Science and Technology, Moscow, Russia; M. Hussaini, Florida State University, Tallahassee, FL	1500 hrs AIAA-2019-1559 **Impingement of a Supercritical Carbon Dioxide Jet on a Planar Surface** M. Martin, S. Yellapantula, National Renewable Energy Laboratory, Golden, CO; M. Day, J. Bell, Lawrence Berkeley National Laboratory, Berkeley, CA; R. Grout, National Renewable Energy Laboratory, Golden, CO	1530 hrs AIAA-2019-1560 **Reduced-Order CFD-Based Multi-Rating of Aviation Heat Exchangers** F. Ladeinde, Stony Brook University, Stony Brook, NY; K. Alabi, W. Li, TTC Technologies, Inc., Centereach, NY	1600 hrs AIAA-2019-1561 **Stable and Optimal Interface Treatment for Partitioned Conjugate Heat Transfer Problems** M. Errera, R. Moretti, Y. Bachelier, ONERA, Châtillon, France; T. Soubrié, ANDHEO, Châtillon, France			

Wednesday, 9 January 2019						
387-UAS-5	**UAS Guidance, Navigation, and Control III**					**Hillcrest D**
Chaired by: S. SMITH, University of Kentucky						
1430 hrs AIAA-2019-1562 **Dynamic Mutation and Adaptive Tracking Control of Omni-Directional Multirotor Systems** Y. Sheng, G. Tao, P. Beling, University of Virginia, Charlottesville, Charlottesville, VA	1500 hrs AIAA-2019-1563 **UAV Brushless DC motor Speed Control via Adaptive Neuro Fuzzy Inference Systems (ANFIS) and Self-Adaptive PID** A. Sarhan, A. Hafez, Military Technical College, Cairo, Egypt	1530 hrs AIAA-2019-1564 **Nonlinear Simulation Framework Based on Bifurcation Analysis for Controlled Airship Maneuvering** G. Duraisamy, N. Sinha, Indian Institute of Technology Madras, Chennai, India	1600 hrs AIAA-2019-1565 **Nonlinear Model Predictive Control based Cooperative Plume Tracking using Unmanned Aerial Vehicles** D. Bhattacharjee, K. Subbarao, University of Texas, Arlington, Arlington, TX; K. Bhaganagar, University of Texas, San Antonio, San Antonio, TX	1630 hrs AIAA-2019-1566 **Obstacle Avoidance For A Quadrotor Using A* Path Planning And LQR-based Trajectory Tracking** A. Taoudi, C. Luo, Mississippi State University, Starkville, MS	1700 hrs AIAA-2019-1567 **Viking-400 UAS Dynamic Analysis** A. McKinnis, I. Schmitiz, J. Rose, B. Hartwell, University of Kansas, Lawrence, Lawrence, KS	

Wednesday, 9 January 2019						
388-UAS-6/IS-19/SOF-5	**Unmanned Systems Mission Management, Coordination, Planning, and Autonomy I**					**Harbor D**
Chaired by: Z. MIAN, Alphabet/Google - Loon and R. STANSBURY, Embry-Riddle Aeronautical University						
1430 hrs AIAA-2019-1568 **Cooperative Multi-UAV Sensor and Perception Management for Helicopter Landinge Zone Reconnaissance: Implementation and Experimental Evaluation** M. Schmitt, P. Stuetz, University of the German Federal Armed Forces, Neubiberg, Germany	1500 hrs AIAA-2019-1569 **Multi-UAV Trajectory Optimization and Deep Learning-based Imagery Analysis for a UAS-based Inventory Tracking Solution** Y. Choi, S. Briceno, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1530 hrs AIAA-2019-1570 **Flight Testing of a Multiple UAV RF Emission and Vision Based Target Localization Method** O. Herekoglu, M. Hasanzade, E. Saldiran, A. Cetin, I. Ozgur, A. Kucukoglu, Istanbul Technical University, Istanbul, Turkey; et al.	1600 hrs AIAA-2019-1571 **Modeling and Simulation of UAV Swarm Formation Control in Response to Wind Gusts** D. Findeis, M. Balchanos, G. Vachtsevanos, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1630 hrs AIAA-2019-1572 **Fleet size optimization and collaborative route planning for multi-vehicle task allocation** S. Yoon, J. Kim, Korea Advanced Institute of Science and Technology, Daejeon, South Korea	1700 hrs AIAA-2019-1573 **Effect of Communication on the Surveillance Performance of a Large Swarm of UAVs** J. Newcomb, A. Ning, Brigham Young University, Provo, UT	

Wednesday, 9 January 2019						
389-WE-7	**Intersections Between Wind Energy and Rotorcraft**					**Cityview A**
Chaired by: M. SMITH, Georgia Institute of Technology						
1430 hrs AIAA-2019-1574 **Simulation of Multiple Turbine Aerodynamic Interaction using a Multilevel Method** J. Saverin, D. Marten, C. Nayeri, C. Paschereit, Technical University of Berlin, Berlin, Germany	1500 hrs AIAA-2019-1575 **Aerodynamic behavior of a floating offshore wind turbine** C. Lienard, R. Boisard, C. Daudin, ONERA, Meudon, France	1530 hrs AIAA-2019-1576 **Hybrid RANS-LES modeling using smooth and rough wall functions** M. Stoellinger, R. Mokhtarpoor, S. Heinz, University of Wyoming, Laramie, Laramie, WY	1600 hrs AIAA-2019-1577 **Centimeter Scale Micro Wind Turbine Modelling Correction Using Wind Tunnel Experiments** M. Zakaria, A. Nemnem, A. Dayhoum, T. Elnady, Military Technical College, Cairo, Egypt; A. Elzahaby, Tanta University, Tanta, Egypt	1630 hrs AIAA-2019-1578 **Evaluation of Wall Interference Corrections for 360 Degree Testing of Wind Turbine Airfoils** N. Intaratep, A. Borgoltz, W. Devenport, Virginia Polytechnic Institute and State University, Blacksburg, VA		

Wednesday, 9 January 2019		
390-HUB-18 1530 - 1600 hrs	Rocket Contest	the Hub Open Area

Wednesday, 9 January 2019		
391-NW-10 1530 - 1600 hrs	Wednesday Afternoon Coffee Break	Grand Hall

Wednesday, 9 January 2019		
392-SD-14 1800 - 1900 hrs	Structural Dynamics Lecture	Harbor I
"Bell V-280 Valor: Demonstrating Readiness for FVL" **Paul Wilson** Bell		

Thursday

Thursday, 10 January 2019		
393-SB-4 0730 - 0800 hrs	Thursday Speaker Briefing	Session Rooms

Thursday, 10 January 2019		
394-PLNRY-4 0800 - 0900 hrs	Applying Disruptive Technologies in Disney Parks, Experiences and Consumer Products	Seaport A-E
Moderator: Amy Pritchett, Professor and Head, Department of Aerospace Engineering, Pennsylvania State University Keynote **Kathy de Paolo** Vice President, Technology The Walt Disney Company		

Thursday, 10 January 2019		
395-HUB-19 0900 - 0930 hrs	Rocket Contest	the Hub Open Area

Thursday, 10 January 2019		
396-NW-11 0900 - 0930 hrs	Thursday Morning Coffee Break	Grand Hall

Thursday, 10 January 2019						
397-AA-7	Turbomachinery/Core Noise					Balboa C
Chaired by: J. ANDERSON, Naval Surface Warfare Center and D. ZHAO, University of Canterbury						
0930 hrs AIAA-2019-1579 **Acoustic Mode Analysis of Rocket Thrust Chambers** W. Flores, O. Michelle, K. Ahmed, University of Central Florida, Orlando, FL	1000 hrs AIAA-2019-1580 **Design and Evaluation of Microphone Cavity Geometries for Wind-Tunnel Acoustic Measurements** C. VanDercreek, P. Majunath, D. Ragni, M. Snellen, Delft University of Technology, Delft, The Netherlands	1030 hrs AIAA-2019-1581 **Outdoor Acoustic Measurements of the Virginia Tech Heated Supersonic Jet Rig Using Ground Microphones** A. Quinn, K. Daniel, K. Lowe, W. Ng, Virginia Polytechnic Institute and State University, Blacksburg, VA	1100 hrs AIAA-2019-1582 **Combustion Noise Dependency on Thermal Load and Global Equivalence Ratio in a Swirl-Stabilized Combustor** F. Grimm, F. Setzwein, S. Werner, M. Stöhr, German Aerospace Center (DLR), Stuttgart, Germany; J. Dierke, R. Ewert, German Aerospace Center (DLR), Braunschweig, Germany; et al.			

Thursday, 10 January 2019						
398-ACD-9	**Electric Aircraft Design Concepts I**					**Harbor C**
Chaired by: R. VOS and G. CROUSE, Aurora						
0930 hrs AIAA-2019-1583 **Feasibility Study of a Liquefied Natural Gas Fuel-Cooled Small Scale Hybrid Electric Flight Vehicle** J. Hartwig, NASA Glenn Research Center, Cleveland, OH; B. Niezgoda, Carnegie Mellon University, Pittsburgh, PA; L. Kohlman, NASA Langley Research Center, Hampton, VA	1000 hrs AIAA-2019-1584 **Conceptual Design of the Co-Flow Jet Hybrid Electric Regional Airplane** Y. Yang, G. Zha, University of Miami, Coral Gables, FL	1030 hrs AIAA-2019-1585 **Multidisciplinary Exploration of DRAGON: an ONERA Hybrid Electric Distributed Propulsion Concept** P. Schmollgruber, ONERA, Toulouse, France; O. Atinault, ONERA, Meudon, France; I. Cafarelli, ONERA, Châtillon, France; C. Döll, ONERA, Toulouse, France; C. François, ONERA, Meudon, France; J. Hermetz, ONERA, Toulouse, France; et al.	1100 hrs AIAA-2019-1586 **Well-to-Prop – A Holistic Analysis of Emerging Powertrain Concepts for On-Demand Air Mobility Vehicles** J. Lueckhof, E. Stumpf, RWTH Aachen University, Aachen, Germany	1130 hrs AIAA-2019-1587 **A Method for the Conceptual Design of Hybrid Electric Aircraft** J. Zamboni, R. Vos, Delft University of Technology, Delft, The Netherlands; M. Emeneth, A. Schneegans, PACE America, Inc., Seattle, WA	1200 hrs AIAA-2019-0812 **Assessment of a Fuel Cell Powered Air Taxi in Urban Flight Conditions** M. Husemann, C. Glaser, E. Stumpf, RWTH Aachen University, Aachen, Germany	

Thursday, 10 January 2019						
399-ACD-10	**Design with Boundary Layer Control**					**La Jolla B**
Chaired by: D. LEVY, Sierra Nevada Corporation and D. WELLS, Lockheed Martin Aeronautics						
0930 hrs AIAA-2019-1588 **Conceptual Design of a BLI Propulsor Capturing Aero-Propulsive Coupling and Distortion Impacts** M. Pokhrel, M. Shi, J. Ahuja, J. Gladin, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1000 hrs AIAA-2019-1589 **An Impact Assessment of Degrading Elements on the Overall Benefit of Aircraft with Hybrid Laminar Flow Control** A. Pohya, K. Wicke, German Aerospace Center (DLR), Hamburg, Germany	1030 hrs AIAA-2019-1590 **Modeling Fidelity Requirements of Mission-Level Analysis on Boundary Layer Ingestion Propulsion System** M. Shi, M. Pokhrel, J. Gladin, E. Garcia, D. Mavris, Georgia Institute of Technology, Atlanta, GA				

Thursday, 10 January 2019						
400-AFM-13	**Aeroservoelastic (ASE) Control, Modeling, Simulation, and Optimization**					**Vista C**
Chaired by: M. LONE, Cranfield University and B. JOLLY, USAF						
0930 hrs AIAA-2019-1591 **Model Predictive Control Architectures for Maneuver Load Alleviation in Very Flexible Aircraft** M. Virgilio Pereira, I. Kolmanovsky, C. Cesnik, University of Michigan, Ann Arbor, Ann Arbor, MI; F. Vetrano, Airbus, Toulouse, France	1000 hrs AIAA-2019-1592 **High Aspect Ratio Wing Design Using the Minimum Exergy Destruction Principle** D. Hayes, A. Pontillo, S. Yusuf, M. Lone, J. Whidborne, Cranfield University, Bedford, United Kingdom	1030 hrs AIAA-2019-1593 **Aerodynamics and Aeroelasticity for Canard Control Actuation Technology on a Subsonic, Gun-Launched Munition** J. Bryson, I. Celmins, F. Fresconi, Army Research Laboratory, Aberdeen Proving Ground, MD	1100 hrs AIAA-2019-1594 **Aeroelastic Scaling for Flexible High Aspect Ratio Wings** S. Yusuf, D. Hayes, A. Pontillo, M. Carrizales, G. Dussart, M. Lone, Cranfield University, Cranfield, United Kingdom	1130 hrs AIAA-2019-1595 **Trim and Flight – Elastic Coupling Characteristics of a Flexible Air-breathing Hypersonic Vehicle** H. Liu, H. Chen, W. Lin, P. Tang, Beihang University, Beijing, China		

Thursday, 10 January 2019						
401-AFM-14	**UAS-Based Wind Measurement**					**Vista A**
Chaired by: C. WOOLSEY, Virginia Tech and J. GONZALEZ-ROCHA						
0930 hrs AIAA-2019-1596 **Estimating Wind Velocity with a Neural Network using Quadcopter Trajectories (Invited)** S. Allison, H. Bai, B. Jayaraman, Oklahoma State University, Stillwater, OK	1000 hrs AIAA-2019-1597 **UAS-based Wind Estimation Using Sinusoidal Gust Model (Invited)** P. Tian, H. Chao, H. Wu, University of Kansas, Lawrence, Lawrence, KS	1030 hrs AIAA-2019-1598 **Model-based Wind profiling in the Lower Atmosphere with Multirotor UAS (Invited)** J. Gonzalez-Rocha, C. Woolsey, C. Sultan, Virginia Polytechnic Institute and State University, Blacksburg, VA; S. De Wekker, University of Virginia, Charlottesville, Charlottesville, VA	1100 hrs AIAA-2019-1599 **Effects of Model Simplification on Wind Reconstruction During Open-Loop Longitudinal Flight (Invited)** H. McClelland, C. Woolsey, Virginia Polytechnic Institute and State University, Blacksburg, VA	1130 hrs AIAA-2019-1600 **Estimation of Atmospheric Boundary Layer Turbulence Structure using Modelled Small UAS Dynamics within LES (Invited)** B. Jayaraman, S. Allison, H. Bai, Oklahoma State University, Stillwater, OK	1200 hrs AIAA-2019-1601 **Investigation of Measurement Noise Effect on Wind Field Estimation using Multiple UAVs (Invited)** H. Sevil, University of Texas, Arlington Research Institute, Fort Worth, TX; A. Dogan, University of Texas, Arlington, Arlington, TX	

Thursday, 10 January 2019						
402-AMT-15	**Advances in 3D/4D Optical Diagnostics**					**Harbor G**
Chaired by: J. GORD, Air Force Reseach Laboratory(AFRL/RQTC) and P. HSU, Spectral Energies, LLC						
0930 hrs AIAA-2019-1602 **Ultra-high-speed Pulse-burst Phase Conjugate Digital In-line Holography for Imaging Through Shock-wave Distortions** Y. Chen, J. Heyborne, D. Guildenbecher, Sandia National Laboratories, Albuquerque, NM; M. Smyser, M. Slipchenko, Purdue University, West Lafayette, IN	1000 hrs AIAA-2019-1603 **High-Speed 4D Velocity and Flame Measurements of a Stabilized Premixed Flame** J. Reyes, K. Ahmed, University of Central Florida, Orlando, FL; B. Davis, D. Knaus, D. Micka, Creare, LLC, Hanover, NH	1030 hrs AIAA-2019-1604 **3D Planar Laser-Induced Fluorescence (PLIF) Reconstruction of a Hairpin Vortex** X. Zhu, D. Sabatino, T. Rossmann, Lafayette College, Easton, PA	1100 hrs AIAA-2019-1605 **High Speed Particle Image Velocimetry and Particle Tracking Methods in Reactive and Non-Reactive Flows** D. Lauriola, M. Gomez, T. Meyer, S. Son, M. Slipchenko, Purdue University, West Lafayette, IN; S. Roy, Spectral Energies, LLC, Beavercreek, OH	1130 hrs AIAA-2019-1606 **Three-dimensional fine structure of shock-containing free jets from supersonic square nozzles** S. Maeda, S. Nakao, Y. Miyazato, University of Kitakyushu, Kitakyushu, Japan		

Thursday, 10 January 2019						
403-AMT-16	**Absorption Spectroscopy II - Combustion and Energetics**					**Harbor H**
Chaired by: S. VASU, University of Central Florida and G. RIEKER						
0930 hrs AIAA-2019-1607 **Time-Resolved Optically Gated Absorption (TOGA) Spectroscopy: A Background-Free, Single-Shot Broadband Absorption Method for Combusting Flows** H. Stauffer, P. Walsh, S. Roy, Spectral Energies, LLC, Beavercreek, OH; J. Gord, Air Force Research Laboratory, Wright-Patterson AFB, OH	1000 hrs AIAA-2019-1608 **Supercontinuum measurements in the visible to the infrared in combustion environments** A. LoCurto, K. Zhu, T. Sippel, J. Michael, Iowa State University, Ames, IA	1030 hrs AIAA-2019-1609 **Wavelength-Modulation Spectroscopy for MHz Thermometry and H2O Sensing in Combustion Gases of Energetic Materials** G. Mathews, C. Goldenstein, Purdue University, West Lafayette, IN	1100 hrs AIAA-2019-1610 **Infrared laser absorption thermometry and CO sensing in high-pressure rocket combustion flows from 25 to 105 bar** F. Bendana, D. Lee, R. Spearrin, University of California, Los Angeles, Los Angeles, CA; S. Schumaker, S. Danczyk, Air Force Research Laboratory, Edwards AFB, CA	1130 hrs AIAA-2019-1611 **Temperature Measurements using H2O Absorption Spectroscopy in Bluff-Body-Stabilized Turbulent Premixed Propane-Air Flames** J. Lopez, K. Rein, C. Fugger, Spectral Energies, LLC, Beavercreek, OH; B. Paxton, Innovative Scientific Solutions, Inc., Dayton, OH; J. Gord, B. Rankin, Air Force Research Laboratory, Wright-Patterson AFB, OH; et al.	1200 hrs AIAA-2019-1612 **Spectrally-Resolved Absorption and Laser-Induced Fluorescence of High-Temperature Gases** S. Wang, C. Strand, R. Hanson, Stanford University, Stanford, CA	

Thursday, 10 January 2019						
404-APA-38	**Aerodynamic Results from Ground/Flight Tests**					**La Jolla A**
Chaired by: L. ZIENTARSKI, AFRL/RQVC and M. TUFTS, AFRL/RQHF						
0930 hrs AIAA-2019-1613 **Screened Expanding Turning Vane Concept** M. Drela, A. Huang, D. Darmofal, Massachusetts Institute of Technology, Cambridge, MA	1000 hrs AIAA-2019-1614 **Effect of Curved Boundary Layer Fences on Aerodynamic Efficiency** A. Palmer, S. Gunasekaran, University of Dayton, Dayton, OH	1030 hrs AIAA-2019-1615 **Solar-Powered Uninhabited Aerial Vehicle for Autonomous Soaring** J. Rosales, E. Engel, G. Igwe, A. Gross, New Mexico State University, Las Cruces, NM; J. Millette, Physical Science Laboratory, Las Cruces, NM	1100 hrs AIAA-2019-1616 **Flight Testing Data Set for Subscale GA Aircraft: 26%-scale Cub Crafters CC11-100 Sport Cub S2** O. Dantsker, Al Volo, LLC, Urbana, IL; R. Mancuso, Boston University, Boston, MA	1130 hrs AIAA-2019-1617 **Wake Measurements on Blended Wing Body with Gurney Flaps in Low Speed Flows** T. Yamada, M. Taguchi, N. Duong, M. Kashitani, K. Kusunose, Y. Takita, National Defense Academy, Yokosuka, Japan		

Thursday, 10 January 2019						
405-APA-39	**Bio-Inspired Aerodynamics II**					**Marina Room**
Chaired by: K. MULLENERS, EPFL and R. RAMAMURTI, Naval Research Laboratory						
0930 hrs AIAA-2019-1618 **Propulsion Characteristics of Flapping Caudal Fins and its Upstream Interaction with Pectoral Fins** R. Ramamurti, J. Geder, K. Viswanath, M. Pruessner, Naval Research Laboratory, Washington, D.C.	1000 hrs AIAA-2019-1619 **Numerical Study on Aerodynamics and Flow Physics of a Flapping Wing Hovering in Ground Effect** Q. Qu, L. Xu, P. Liu, Y. Zheng, Beihang University, Beijing, China; R. Agarwal, Washington University in St. Louis, St. Louis, MO	1030 hrs AIAA-2019-1620 **Numerical and Experimental Investigation of Tandem Wing Flyers** T. Lambert, University of Liège, Liège, Belgium; N. Warbecq, P. Hendrick, Université Libre de Bruxelles, Brussels, Belgium; R. Nudds, Manchester University, Manchester, United Kingdom; T. Andrianne, G. Dimitriadis, University of Liège, Liège, Belgium	1100 hrs AIAA-2019-1621 **Skin Friction Drag Reduction in Turbulent Boundary Layer Conditions over Riblet Surfaces** H. Iijima, H. Takahashi, S. Koga, M. Sasamori, Y. Iijima, H. Abe, Japan Aerospace Exploration Agency (JAXA), Mitaka, Japan; et al.	1130 hrs AIAA-2019-1622 **Soaring Energetics for a Nature Inspired Unmanned Aerial Vehicle** I. Mir, A. Maqsood, National University of Sciences and Technology, Islamabad, Pakistan; H. Taha, S. Eisa, University of California, Irvine, Irvine, CA		

Thursday, 10 January 2019

406-APA-40 — **Special Session: Engineered Surfaces, Materials, and Coatings, for Viscous Drag Reduction** — **Old Town B**

Chaired by: W. FELDER, Stevens Institute of Technology and D. HOPE

0930 hrs	1000 hrs	1030 hrs	1100 hrs	1130 hrs	1200 hrs	
AIAA-2019-1623	AIAA-2019-1624	AIAA-2019-1625	AIAA-2019-1626	AIAA-2019-1627	AIAA-2019-1628	
Practical Viscous Drag Reduction: Charting a Course out of the Valley	**Viscous Drag Measurements on Non-Smooth Surfaces**	**Experimental and numerical investigation of the reduction in skin friction due to riblets applied on the surface of a Taylor-Couette cell**	**Direct Contactless Microfabrication of 3D Riblets: Improved Capability, Metrology and Durability**	**Computational Simulation of 3-D Riblets for Skin Friction Drag Reduction**	**Effect of Reynolds Number on Cylinder Drag Reduction Using Micro-Fiber Coating**	
W. Felder, Stevens Institute of Technology, Hoboken, NJ; G. Dale, Air Force Research Laboratory, Wright-Patterson AFB, OH; C. Cash, Ohio Aerospace Institute, Cleveland, OH	J. Naughton, N. Husen, E. DeMillard, University of Wyoming, Laramie, Laramie, WY; G. Dale, Air Force Research Laboratory, Wright-Patterson AFB, OH	K. Pfingsten, Lufthansa Technik, Hamburg, Germany	H. Bilinsky, MircoTau, Sydney, Australia	B. Smith, P. Yagle, P. McClure, Lockheed Martin Corporation, Fort Worth, TX	M. Hasegawa, H. Sakaue, University of Notre Dame, Notre Dame, IN	

Thursday, 10 January 2019

407-APA-41/FD-47/SD-15/AMT-17 — **Special Session: Joint Experimental-Computational Efforts in High-Speed FSI III** — **Hillcrest B**

Chaired by: C. PASILIAO, AFRL/RW and S. BERESH, Sandia National Laboratories

0930 hrs	1000 hrs	1030 hrs	1100 hrs	1130 hrs	1200 hrs	
AIAA-2019-1629	Oral Presentation	Oral Presentation	AIAA-2019-1630	AIAA-2019-1631	Oral Presentation	
ASPIRE Supersonic Parachute Shape Reconstruction	**Dynamics of Interactions between Turbulent Boundary Layers and Compliant Surfaces (Invited)**	**Numerical Analysis of High-Speed Boundary Layers Interacting With a Compliant Surface (Invited)**	**Highly Parallel, Multi-stage Mesh Motion using Radial Basis Functions for Fluid-Structure Interaction (Invited)**	**Quantifying the Structural Response of a Slender Cone to Turbulent Spots at Mach 6 (Invited)**	**Predictions of the Hypersonic Experimental Aerothermoelastic Test (Invited)**	
J. Rabinovitch, G. Griffin, W. Seto, C. O'Farrell, C. Tanner, I. Clark, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	M. Neet, J. Austin, California Institute of Technology, Pasadena, CA	A. Becks, V. Shinde, J. McNamara, D. Gaitonde, Ohio State University, Columbus, OH	A. Murray, B. Thornber, M. Flaig, G. Vio, University of Sydney, Sydney, Australia	B. Robbins, K. Casper, M. Mesh, Sandia National Laboratories, Albuquerque, NM	D. Reasor, E. Robertson, Air Force Research Laboratory, Eglin AFB, FL	

Thursday, 10 January 2019

408-AS-7 — **Design and Optimization for Adaptive Structures** — **Pier**

Chaired by: D. DOYLE, AFRL/Space Vehicles Directorate and F. ABDI, AlphaStar Corporation

0930 hrs	1000 hrs	1030 hrs	1100 hrs	1130 hrs		
AIAA-2019-1632	AIAA-2019-1633	AIAA-2019-1634	AIAA-2019-1635	AIAA-2019-1636		
Biomimicry of the Armadillo Carapace for the Design of Bending Cylinders for Aerospace Applications	**Efficient Design of a Smooth Bending Cylinder via Parametric Studies and Optimization**	**Size Estimation Tools for Conventional Actuator System Prototyping in Aerospace**	**Multiscale Concurrent Optimization Towards Additively Manufactured Structures**	**Effect of Turbomachinery Blade Root Flexibility on Electromechanical Coupling for Piezoelectric-Based Vibration Reduction**		
M. Ward Rashidi, Universal Technology Corporation, Dayton, OH; G. Frank, University of Dayton, Dayton, OH; R. Seifert, W. Chapkin, Universal Technology Corporation, Dayton, OH; J. Baur, Air Force Research Laboratory, Wright-Patterson AFB, OH; P. Walgren, Texas A&M University, College Station, TX	P. Walgren, Texas A&M University, College Station, TX; R. Seifert, W. Chapkin, Air Force Research Laboratory, Wright-Patterson AFB, OH; G. Frank, University of Dayton, Dayton, OH; J. Baur, Air Force Research Laboratory, Wright-Patterson AFB, OH; D. Hartl, Texas A&M University, College Station, TX	G. Dussart, M. Lone, Cranfield University, Cranfield, United Kingdom; C. O'Rourke, Airbus, Bristol, United Kingdom	R. Murphy, C. Imediegwu, R. Hewson, M. Santer, Imperial College London, London, United Kingdom; M. Muir, Airbus, Bristol, United Kingdom	G. Lopp, C. Kelley, J. Kauffman, University of Central Florida, Orlando, FL		

Thursday, 10 January 2019

409-CASE-2 — **Operationalizing Artificial Intelligence** — **Cove**

0930 - 1100 hrs

Artificial Intelligence (AI) is broadly considered by industry and government to be an emerging disruptive technology, with worldwide investment on the order of tens of billions of dollars annually. Regardless of the application, AI employment is more than a software development and algorithm training problem – success requires a systems approach focused on operational/business objectives, and must include trust, organizational culture, workforce, work flow, policy, legal and risk considerations. This panel will explore the contextual factors that leaders and managers need to account for when contemplating how to integrate AI into their activities and organizations, and what it takes for AI to yield transformational impact.

Panelists:

John Piorkowski
Chief Engineer, Asymmetric Operations Sector
Johns Hopkins University Applied Physics Laboratory

Ryan Quick
Principal and Co-Founder
Providentia Worldwide

Laurel Riek
Director, Healthcare Robotics Lab
University of California at San Diego

Stoney Trent
Chief, Implementation Team
DoD Joint Artificial Intelligence Center

Thursday, 10 January 2019						
410-DA-2	**Digital Avionics - Air Traffic Management II**					**Bayview**
Chaired by: A. VIDEMSEK and M. UIJT DE HAAG, Ohio University						
0930 hrs AIAA-2019-1637 **A Methodology for Wake Turbulence Categorization of New Large Aircraft Types Combining LiDAR, RADAR and Wind Tunnel Data with Numerical Simulation and Manufacturer's Data** I. De Visscher, Wake Prediction Technologies (WaPT), Louvain-la-Neuve, Belgium; F. Rooseleer, V. Treve, R. Graham, EUROCONTROL, Brussels, Belgium; A. Reinke, U. Scholz, Airbus, Blagnac, France	1000 hrs AIAA-2019-1638 **Development of an Algorithm to Determine the Attention Required by Aircraft Under Control Using Fuzzy Logic** K. Capiot, Delft University of Technology, Delft, The Netherlands; B. Korn, German Aerospace Center (DLR), Braunschweig, Germany; M. Mulder, Delft University of Technology, Delft, The Netherlands	1030 hrs AIAA-2019-1639 **Robust Optimal Guidance Algorithm for Required Time of Arrival Operations Using Probabilistic Weather Forecasts** Y. Matsuno, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan; R. Kikuchi, Fujitsu Laboratories, Ltd., Kanagawa, Japan; N. Matayoshi, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan	1100 hrs AIAA-2019-1640 **Risk-hedged Multistage Stochastic Programming Model for Setting Flow Rates in Collaborative Trajectory Options Programs (CTOP)** G. Zhu, P. Wei, Iowa State University, Ames, IA; R. Hoffman, B. Hackney, Metron Aviation, Inc., Dulles, VA	1130 hrs AIAA-2019-1641 **Vision-Augmented Automatic Landing of a General Aviation Fly-by-Wire Demonstrator** M. Kügler, N. Mumm, F. Holzapfel, Technical University of Munich, Garching, Germany; A. Schwithal, M. Angermann, Technical University of Braunschweig, Braunschweig, Germany		

Thursday, 10 January 2019		
411-DS-5 **0930 - 1030 hrs**	**Dynamics Specialists Lecture**	**Harbor E**
"The Future of Rotorcraft – the Sikorsky X-2 High Speed Helicopter" **Nick Lappos** Lockheed Martin Corporation		

Thursday, 10 January 2019		
412-F360-7 **0930 - 1130 hrs**	**Forum 360: Autonomy Across Domains**	**Seaport F**
Panelists: **James Cutler** Associate Professor, Department of Aerospace Engineering University of Michigan **Aaron Kahn** Flight Controls Engineer U.S. Naval Research Laboratory **Fritz Langford** Program Manager Aurora Flight Sciences		

Thursday, 10 January 2019						
413-FD-48	**Turbulent Combustion**					**Old Town A**
Chaired by: Y. LV, Mississippi State University						
0930 hrs AIAA-2019-1642 **Novel Lagrangian-Particle Tracking Method for Highly Compressible, Turbulent, Reacting Flows** Y. Kozak, S. Dammati, Texas A&M University, College station, TX; L. Bravo, Army Research Laboratory, Aberdeen Proving Ground, MD; P. Hamlington, University of Colorado, Boulder, Boulder, CO; A. Poludnenko, Texas A&M University, College station, TX	1000 hrs AIAA-2019-1643 **Lagrangian Chemical Explosive Mode Analysis of Highly Turbulent Premixed Flames** C. Towery, P. Hamlington, University of Colorado, Boulder, Boulder, CO; X. Zhao, C. Xu, T. Lu, University of Connecticut, Storrs, Storrs, CT; A. Poludnenko, Texas A&M University, College Station, TX	1030 hrs AIAA-2019-1644 **A Novel Strategy to Identify Dynamically Dominant Inter-Scale Couplings for Application to Large-Eddy Simulation of Premixed Turbulent Combustion** P. Lucena Kreppel Paes, Pennsylvania State University, University Park, PA; J. Brasseur, University of Colorado, Boulder, Boulder, CO; Y. Xuan, Pennsylvania State University, University Park, PA				

Thursday, 10 January 2019						
414-FD-49	**LES I**					**Gaslamp D**
Chaired by: M. STOELLINGER, University of Wyoming and S. WOODRUFF						
0930 hrs AIAA-2019-1645 **Residual and Solution Filtering for Explicitly-Filtered Large-Eddy Simulations** T. Gallagher, Innovative Scientific Solutions, Inc., Dayton, OH; A. Edoh, ERC, Inc., Edwards AFB, CA; V. Sankaran, Air Force Research Laboratory, Edwards AFB, CA	1000 hrs AIAA-2019-1646 **Large-eddy simulation of airfoil flows at near-stall conditions using equilibrium/non-equilibrium wall models** Y. Tamaki, Y. Fukushima, Y. Kuya, S. Kawai, Tohoku University, Sendai, Japan	1030 hrs AIAA-2019-1647 **Dynamic Smagorinsky Modeled Large-Eddy Simulations of Turbulence Using Tetrahedral Meshes** C. Chang, NASA Langley Research Center, Hampton, VA; B. Venkatachari, National Institute of Aerospace, Hampton, VA	1100 hrs AIAA-2019-1648 **Dynamic SGS modeling in LES using DG with kinetic energy preserving flux schemes** M. Stoellinger, A. Edmonds, A. Kirby, D. Mavriplis, S. Heinz, University of Wyoming, Laramie, Laramie, WY	1130 hrs AIAA-2019-1649 **Adaptive Embedded LES of the NASA Hump** S. Woodruff, NASA Langley Research Center, Hampton, VA		

Thursday, 10 January 2019						
415-FD-50	**High-Speed Flows II**					**Gaslamp C**
Chaired by: J. SEIDEL, USAF Academy						
0930 hrs AIAA-2019-1650 **The Influence of Nozzle Geometry on Corner Flows in Supersonic Wind Tunnels** K. Sabnis, University of Cambridge, Cambridge, United Kingdom; D. Galbraith, Air Force Research Laboratory, Wright-Patterson AFB, OH; H. Babinsky, University of Cambridge, Cambridge, United Kingdom; J. Benek, Air Force Research Laboratory, Wright-Patterson AFB, OH	1000 hrs AIAA-2019-1651 **Supersonic Crossflow Transition Control in Ground and Flight Tests** L. Owens, G. Beeler, R. King, A. Chou, P. Balakumar, NASA Langley Research Center, Hampton, VA; D. Banks, NASA Armstrong Flight Research Center, Edwards, CA	1030 hrs AIAA-2019-1652 **Receptivity of turbulent compressible mixing layers to localized energy deposition** L. Wu, A. Tumin, University of Arizona, Tucson, Tucson, AZ	1100 hrs AIAA-2019-1653 **Effect of Jet Spacing in Separation Control with Air Jet Vortex Generators** D. Ramaswamy, A. Schreyer, RWTH Aachen University, Aachen, Germany	1130 hrs AIAA-2019-1654 **Flow features of annular pulsed-laser induced blast waves and the impulsive performance on a sphere** C. Xie, D. Tran, K. Mori, Nagoya University, Nagoya, Japan		

Thursday, 10 January 2019		
416-FD-51 **0930 - 1230 hrs**	**Transition Open Forum**	**Harbor A**

Thursday, 10 January 2019						
417-FD-53	**Applied CFD I**					**Gaslamp B**
Chaired by: J. EKATERINARIS, Embry-Riddle Aeronautical University and X. DENG, University of Virginia						
0930 hrs AIAA-2019-1655 **Computational study of fish-shaped panel with simultaneously heaving and bending motion** R. Zhu, J. Wang, H. Dong, H. Bart-Smith, D. Quinn, University of Virginia, Charlottesville, Charlottesville, VA; D. Wainwright, Harvard University, Cambridge, MA; et al.	1000 hrs AIAA-2019-1656 **Numerical Investigation of Strategies Aimed at Reduction of Low-Pressure Turbine Endwall Losses** S. Romero Martinez, A. Gross, New Mexico State University, Las Cruces, NM	1030 hrs AIAA-2019-1657 **Modal Decomposition of Dynamic Stall for Helicopter Blade Section** G. Wen, A. Gross, New Mexico State University, Las Cruces, NM	1100 hrs AIAA-2019-1658 **An Efficient CFD Approach for Co-Axial Rotor Simulations** J. Cornelius, Pennsylvania State University, University Park, PA; M. Kinzel, University of Central Florida, Orlando, FL; S. Schmitz, Pennsylvania State University, University Park, PA	1130 hrs AIAA-2019-1659 **Three-Dimensional Computational Simulation of Glaze Ice Accretion on a Rotorcraft Engine Intake** P. Lawrence Raj, R. Myong, Gyeongsang National University, Jinju, South Korea	1200 hrs AIAA-2019-1660 **Direct Numerical Simulation of bubbly flows with phase transition** X. Deng, University of Virginia, Charlottesville, Charlottesville, VA; K. Fu, P. Wang, Beijing Computational Science Research Center, Beijing, China	

Thursday, 10 January 2019						
418-GNC-31	**Aircraft Learning and Optimization**					**Mt. Whitney**
Chaired by: A. CHAKRAVARTHY, University of Texas, Arlington						
0930 hrs AIAA-2019-1661 **Chained Predictions of Flight Delay Using Machine Learning** J. Chen, San Diego State University, San Diego, CA; M. Li, Purdue University, West Lafayette, IN	1000 hrs AIAA-2019-1662 **Aircraft Thermal Endurance Optimization Part I: Using A Mixed Dual Tank Topology And Robust Temperature Regulation** D. Sigthorsson, Infoscitex Corporation, Dayton, OH; M. Oppenheimer, D. Doman, Air Force Research Laboratory, Wright-Patterson AFB, OH	1030 hrs AIAA-2019-1663 **Aircraft Thermal Endurance Optimization Part II: Using A Simple Dual Tank Topology And Robust Temperature Regulation** D. Sigthorsson, Infoscitex Corporation, Dayton, OH; M. Oppenheimer, D. Doman, Air Force Research Laboratory, Wright-Patterson AFB, OH	1100 hrs AIAA-2019-1664 **Stochastic Model Predictive Control for Airspeed Optimization Using Successive Convexification** N. Yokoyama, National Defense Academy of Japan, Kanagawa, Japan; Y. Matsuno, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan	1130 hrs AIAA-2019-1665 **Deep Recurrent and Convolutional Networks for Robust Fault Tolerant Autonomous Landing Control System Design Under Severe Conditions** C. Sahin, B. Eroglu, N. Üre, Istanbul Technical University, Istanbul, Turkey; H. Kurt, Turkish Aerospace Industries, Inc., Ankara, Turkey	1200 hrs AIAA-2019-1666 **Comparison of Convex Optimization-Based Approaches to Solve Nonconvex Optimal Control Problems** R. Yang, X. Liu, Beijing Institute of Technology, Beijing, China	

Thursday, 10 January 2019						
419-GNC-32	**Spacecraft and Launch Vehicle GNC**					**Twin Peaks**
Chaired by: M. MCFARLAND, Raytheon and H. HALLOWELL, Ball Aerospace & Technologies Corporation						
0930 hrs AIAA-2019-1667 **Multi-Phase Spacecraft Mission Optimization by Quadratically Constrained Quadratic Programming** C. Sun, R. Dai, Ohio State University, Columbus, OH; P. Lu, San Diego State University, San Diego, CA	1000 hrs AIAA-2019-1668 **Three-Dimensional Interplanetary Hybrid Trajectory Optimization of Solar Sails** S. Selvaraj, P. Shankar, California State University, Long Beach, CA	1030 hrs AIAA-2019-1669 **Flying Qualities and Controllability of Hypersonic Spaceplanes** G. Viavattene, E. Mooij, Delft University of Technology, Delft, The Netherlands	1100 hrs AIAA-2019-1670 **Cut-Off Insensitive Guidance Algorithm for Instantaneous Impact Point (IIP) change of Rocket** B. Jo, J. Ahn, Korea Advanced Institute of Science and Technology, Daejeon, South Korea			

Thursday, 10 January 2019						
420-GRE-1	**Green Engineering**					**Harbor I**
Chaired by: T. ABDEL-SALAM, East Carolina University and N. HICKS						
0930 hrs AIAA-2019-1671 **Advanced Space Power Technology Development at the Air Force Research Laboratory** K. Montgomery, J. Buckner, Z. Levin, J. Cromer, D. Wilt, Air Force Research Laboratory, Kirtland AFB, NM	1000 hrs AIAA-2019-1672 **High Efficient Energy System for Electric Passenger Aircraft Propulsion** J. Kallo, J. Schirmer, S. Flade, S. Poggel, T. Stephan, German Aerospace Center (DLR), Stuttgart, Germany; C. Willich, University of Ulm, Ulm, Germany	1030 hrs AIAA-2019-1673 **Gas-Battery vs. Gas-Only Serial Hybrid Propulsion System Comparison** J. Rosales Fajardo, R. Anderson, Embry-Riddle Aeronautical University, Daytona Beach, FL	1100 hrs AIAA-2019-1674 **Computational and experimental studies of point absorber wave energy converter** M. Ilie, I. Riley, M. Rahman, Georgia Southern University, Statesboro, GA			

Thursday, 10 January 2019						
421-GTE-6	**Combustors and System Evaluation**					**Highland Peak**
Chaired by: J. HEYNE, University of Dayton						
0930 hrs AIAA-2019-1675 **Numerical Investigation of a Jet-Stabilized Combustion System Operated with Low-Calorific SOFC Off-Gas** T. Lingstädt, F. Grimm, A. Drude, P. Kutne, M. Aigner, German Aerospace Center (DLR), Stuttgart, Germany	1000 hrs AIAA-2019-1676 **Control Strategy for a SOFC Micro Gas Turbine Hybrid Power Plant Emulator Test Rig** A. Marcellan, M. Hohloch, M. Herbst, T. Lingstädt, T. Krummrein, M. Henke, German Aerospace Center (DLR), Stuttgart, Germany; et al.	1030 hrs AIAA-2019-1677 **Atmospheric Experimental Investigations of a Jet-Stabilized SOFC Off-Gas Combustor for a Hybrid Power Plant operated with Biogas** T. Lingstädt, F. Grimm, T. Krummrein, P. Kutne, M. Aigner, German Aerospace Center (DLR), Stuttgart, Germany				

Thursday, 10 January 2019						
422-HSABP-7	**Experimental Investigation of Scramjet Engines**					**Hillcrest C**
Chaired by: G. PANIAGUA and K. BOWCUTT, The Boeing Company						
0930 hrs AIAA-2019-1678 **Statistical Measurements of Fuel Mole Fraction in Scramjet Cavity Flameholder with a Fuel Surrogate** B. McGann, T. Lee, University of Illinois, Urbana-Champaign, Urbana, IL; T. Ombrello, C. Carter, S. Hammack, Air Force Research Laboratory, Wright-Patterson AFB, OH; H. Do, Seoul National University, Seoul, South Korea	1000 hrs AIAA-2019-1679 **Closed-Loop Control of Unstart in a Mach 1.8 Isolator** L. Vanstone, A. Bosco, Y. Saleh, M. Akella, N. Clemens, University of Texas, Austin, Austin, TX; S. Gogineni, Spectral Energies, LLC, Dayton, OH	1030 hrs AIAA-2019-1680 **Fundamental Experiments of Fluidic Thrust Vectoring for a Hypersonic Vehicle** M. McGilvray, University of Oxford, Oxford, United Kingdom; A. Neely, University of New South Wales at the Australian Defence Force Academy, Canberra, Australia; C. Hambidge, W. Ivison, T. Hermann, L. Doherty, University of Oxford, Oxford, United Kingdom	1100 hrs AIAA-2019-1681 **Combustion Stabilization in an Axisymmetric Scramjet in Mach 4.5 Flows** Q. Liu, D. Baccarella, T. Lee, University of Illinois, Urbana-Champaign, Urbana, IL			

Thursday, 10 January 2019						
423-INPSI-2	**Propulsion Aerodynamics**					**Kingston Peak**
Chaired by: T. BERENS, Airbus Defense and Space and L. GEA, Boeing Engineering Operations & Technology						
0930 hrs AIAA-2019-1682 **Design and Analysis of Rocket Ejectors with Experimental and Flight Test Validation** B. Leege, B. Miller, T. Pflibsen, C. Knowlen, University of Washington, Seattle, Seattle, WA	1000 hrs AIAA-2019-1683 **Resonance Prediction and the Limitations for Linear Methods** R. Gundevia, F. Liu, University of California, Irvine, Irvine, CA	1030 hrs AIAA-2019-1684 **On the Accuracy of Harmonic Methods and a New Similarity Rule for Unsteady Transonic Flow** R. Gundevia, F. Liu, University of California, Irvine, Irvine, CA	1100 hrs AIAA-2019-1685 **Pitch Thrust Vectoring Studies for the Eurofighter Typhoon Combat Aircraft with Impact from External Aerodynamics** T. Berens, Airbus, Manching, Germany	1130 hrs AIAA-2019-1686 **Investigation on a new concept of shock vector control nozzle assisted by flashboard** J. Shi, Z. Wang, L. Zhou, X. Sun, Northwestern Polytechnical University, Xi'an, China	1200 hrs AIAA-2019-1687 **Numerical Investigation of a VTOL Power Unit Based on Gas-Driven Fan** Y. Zhou, G. Huang, L. Li, Nanjing University of Aeronautics and Astronautics, Nanjing, China	

Thursday, 10 January 2019						
424-IS-20	**Aware Methods in Unmanned Air Systems (Invited)**					**Solana Beach A**
Chaired by: J. BRADLEY, University of Nebraska and M. AYOUBI, Santa Clara University						
0930 hrs AIAA-2019-1688 **A Control Authority Switching System for Avoiding Multicopter Loss of Control Using a Markov Decision Process (Invited)** L. Kruse, J. Bradley, University of Nebraska, Lincoln, Lincoln, NE; M. Wolf, Georgia Institute of Technology, Atlanta, GA	1000 hrs AIAA-2019-1689 **A Cyber-Physical Approach to Stall Avoidance and Turbulence Mitigation for Fixed-Wing Unmanned Aerial Systems (Invited)** D. Yeo, N. Rehm, University of Maryland, College Park, College Park, MD; J. Bradley, University of Nebraska, Lincoln, Lincoln, NE; I. Chopra, University of Maryland, College Park, College Park, MD	1030 hrs AIAA-2019-1690 **Uncertainty Aware Geo-localization of Multi-Targets with Multi-UAV using Neural Network and Extended Kalman Filter (Invited)** E. Khanapuri, R. Sharma, University of Cincinnati, Cincinnati, OH	1100 hrs AIAA-2019-1691 **Goal-aware Navigation of Quadrotor UAV for Infrastructure Inspection (Invited)** S. Biswas, R. Sharma, University of Cincinnati, Cincinnati, OH			

Thursday, 10 January 2019						
425-MAT-12	**Nanostructured Materials II**					**Mission Beach C**
Chaired by: J. PINESS, Northrop Grumman and N. YAMAMOTO, Penn State University						
0930 hrs AIAA-2019-1692 **Damage Micro-mechanisms in Notched Hierarchical Nanoengineered Thin-ply Composite Laminates Studied by *In Situ* Synchrotron X-ray Microtomography** R. Kopp, X. Ni, E. Kalfon-Cohen, Massachusetts Institute of Technology, Cambridge, MA; C. Furtado, A. Arteiro, University of Porto, Porto, Portugal; G. Borstnar, University of Southampton, Southampton, United Kingdom; et al.	1000 hrs AIAA-2019-1693 **A Kirigami Based PDMS/CNT NanoComposite Sheet with Variable Poisson's Ratio and Large Stretchability** A. Avila, Federal University of Minas Gerais, Belo Horizonte, Brazil	1030 hrs AIAA-2019-1694 **Field Assisted Sintering of Nanoporous Boron Carbide with Hierarchical Microstructure** J. Dai, J. Singh, N. Yamamoto, Pennsylvania State University, University Park, PA	1100 hrs AIAA-2019-1695 **Magnetic Assembly of Polymer Nanocomposites and their Properties** Y. Atescan, M. Spencer, N. Yamamoto, Pennsylvania State University, University Park, PA	1130 hrs AIAA-2019-1696 **Multiscale simulation of nanostructured ceramics in secondary battery's electrode system considering phase separation** T. Hwang, H. Kim, M. Cho, Seoul National University, Seoul, South Korea		

Thursday, 10 January 2019						
426-MDO-16/SD-16	**Multidisciplinary Optimization and Sensitivity Analysis with Aeroelasticity and FSI II**					**Ocean Beach**
Chaired by: S. CHOI, Virginia Tech and G. KENNEDY, Georgia Institute of Technology						
0930 hrs AIAA-2019-1697 **A high-order partitioned solver for general multiphysics problems and its applications in optimization** D. Huang, Stanford University, Stanford, CA; M. Zahr, P. Persson, University of California, Berkeley, Berkeley, CA	1000 hrs AIAA-2019-1698 **Derivation of Damping Sensitivities Using Finite-Differencing, Complex-Step, and Adjoints** D. Easterling, University of Dayton, Dayton, OH; L. Welch, P. Beran, Air Force Research Laboratory, Wright-Patterson AFB, OH	1030 hrs AIAA-2019-1699 **High-Fidelity Multidisciplinary Sensitivity Analysis Framework for Multipoint Rotorcraft Optimization** L. Wang, B. Diskin, National Institute of Aerospace, Hampton, VA; R. Biedron, E. Nielsen, NASA Langley Research Center, Hampton, VA; V. Sonneville, O. Bauchau, University of Maryland, College Park, College Park, MD	1100 hrs AIAA-2019-1700 **Transonic Aeroelastic Global Structural Optimization using an Efficient CFD-based Reduced Order Model with Flutter Constraints** L. Dongfeng, G. Chen, Y. Li, Xi'an Jiaotong University, Xi'an, China; A. Da Ronch, University of Southampton, Southampton, United Kingdom	1130 hrs AIAA-2019-1701 **Efficient Aero-Structural Wing Optimization Using Compact Aerofoil Decomposition** D. Poole, C. Allen, T. Rendall, University of Bristol, Bristol, United Kingdom		

Thursday, 10 January 2019						
427-MDO-17/NDA-8/STR-15	**Special Session: Honoring Professor Rafi Haftka III**					**Mission Beach B**
Chaired by: V. BALABANOV, Boeing Commercial Airplanes and V. TOROPOV, Queen Mary, University of London						
0930 hrs AIAA-2019-1702 **Enabling Large-scale Multidisciplinary Design Optimization through Adjoint Sensitivity Analysis** J. Martins, University of Michigan, Ann Arbor, Ann Arbor, MI; G. Kennedy, Georgia Institute of Technology, Atlanta, GA	1000 hrs AIAA-2019-1703 **Structural Material Property Tailoring Using Deep Neural Networks** R. Noraas, N. Somanath, Pratt & Whitney, East Hartford, CT; M. Giering, O. Olusegun, United Technologies Corporation, East Hartford, CT	1030 hrs AIAA-2019-1704 **Self-Learning, Adaptive Software for Aerospace Engineering Applications: Example of Oblique Shocks in Supersonic Flow** M. Jrad, R. Kapania, J. Schetz, L. Watson, Virginia Polytechnic Institute and State University, Blacksburg, VA	1100 hrs AIAA-2019-1705 **Level Set Topology Optimization of Heat Dissipation Devices** S. Kambampati, University of California, San Diego, San Diego, CA; R. Picelli, Cardiff University, Cardiff, United Kingdom; H. Kim, University of California, San Diego, San Diego, CA	1130 hrs AIAA-2019-1706 **Application of a CFD-Based Surrogate Approach for Active Flow Control Modeling** R. Patterson, P. Friedmann, University of Michigan, Ann Arbor, Ann Arbor, MI		

Thursday, 10 January 2019						
428-MST-12/SOF-9	**Simulation-Based Software Development and Verification II**					**Eagle Peak**
Chaired by: R. YENICERI, Istanbul Technical University and E. KOYUNCU and C. TORENS, DLR - German Aerospace Center						
0930 hrs AIAA-2019-1707 **Developments Targeting Hybrid Test Systems for HIL Testing (Invited)** A. Himmler, L. Stockmann, S. Walter, S. Laux, dSPACE GmbH, Paderborn, Germany	1000 hrs AIAA-2019-1708 **The Role of Software Simulators in the Independent Verification and Validation of Commercial Space Vehicles (Invited)** M. Rubin, Red Canyon Engineering & Software, Denver, CO	1030 hrs AIAA-2019-1709 **Cluster Node Computing for Target Generation Systems in Aircraft Simulations (Invited)** S. Monheim, M. Feher, NASA Ames Research Center, Moffett Field, CA; B. Andro-Avila, MIRACORP, Inc., Mountain View, CA; J. Murphy, NASA Ames Research Center, Moffett Field, CA				

Thursday, 10 January 2019						
429-MST-13	**Simulation Scenario Development II**					**Eagle Peak**
Chaired by: E. KOYUNCU and S. JAFER, Embry-Riddle Aeronautical University and C. TORENS, DLR - German Aerospace Center						
0930 hrs **No Presentations**			1100 hrs AIAA-2019-1710 **Automated Scenario Generation for Meeting Human-in-the-Loop Simulation Requirements** G. Chatterji, Y. Zheng, Crown Consulting, Inc., Moffett Field, CA	1130 hrs AIAA-2019-1711 **Scenario-Based Development of DSL Models using Domain-Specific Scenario (DoSS) Framework** B. Chhaya, S. Jafer, Embry-Riddle Aeronautical University, Daytona Beach, FL; U. Durak, German Aerospace Center (DLR), Braunschweig, Germany	1200 hrs AIAA-2019-1712 **Tools for Scenario Development Using System Entity Structures** B. Chandra Karmokar, Leibniz University Hannover, Hannover, Germany; U. Durak, German Aerospace Center (DLR), Göttingen, Germany; S. Jafer, B. Chhaya, Embry-Riddle Aeronautical University, Daytona Beach, FL; S. Hartmann, Clausthal University of Technology, Clausthal-Zellerfeld, Germany	

Thursday, 10 January 2019						
430-MST-14	**Modeling and Simulation of Space Vehicle Dynamics, Systems, and Environments**					**Pyramid Peak**
Chaired by: D. KEATING, The Charles Stark Draper Laboratory, Inc. and M. BOZEMAN						
0930 hrs AIAA-2019-1713 **Virtual Reality As a Testbed for Star Tracker Algorithms** N. McHenry, T. Hunt, G. Chamitoff, D. Mortari, Texas A&M University, College Station, TX	1000 hrs AIAA-2019-1714 **Optimization of a Non-Classical Trajectory** A. Moorman, A. Rukhaiyar, P. Serafin, F. Pastrana, J. Nadeau, D. Seo, Embry-Riddle Aeronautical University, Daytona Beach, FL; et al.					

Thursday, 10 January 2019						
431-MVCE-1	**Geometry**					**Iron Mountain**
Chaired by: J. DANNENHOFFER, Syracuse University and N. BHAGAT						
0930 hrs AIAA-2019-1715 **Digital Geometry to Support a Gas Turbine Digital Twin** W. Dawes, University of Cambridge, Cambridge, United Kingdom; N. Meah, A. Kudryavtsev, R. Evans, M. Hunt, P. Tiller, Cambridge Flow Solutions, Ltd., Cambridge, United Kingdom	1000 hrs AIAA-2019-1716 **HPCMP CREATE™Capstone Design and Architecture & Feature Modeling Improvements** E. Mestreau, R. Aubry, S. Dey, Naval Research Laboratory, Washington, D.C.; M. Richardson, ETI, American Fork, UT	1030 hrs AIAA-2019-1717 **Generalized Fillets via B-splines** Z. Eager, J. Dannenhoffer, Syracuse University, Syracuse, NY	1100 hrs AIAA-2019-1718 **Extrusion of Complex Surface Meshes Utilizing Face Offsetting and Mean Curvature Smoothing** P. McCloud, ERC, Inc., Houston, TX	1130 hrs AIAA-2019-1719 **An Open Source, Geometry Kernel Based High-Order Element Mesh Generation Tool** H. Yang, X. Zhou, R. Harris, S. Yang, CFD Research Corporation, Huntsville, AL	1200 hrs AIAA-2019-1720 **Tolerant geometric extraction of fluid domains to assist CFD analyses of aero-engines** C. Tierney, F. Boussuge, T. Robinson, D. Nolan, C. Armstrong, Queen's University Belfast, Belfast, United Kingdom	

Thursday, 10 January 2019						
432-MVCE-2	**Grid Generation I**					**Gaslamp A**
Chaired by: K. VOGIATZIS, ENGILITY and J. CHAWNER, Pointwise, Inc.						
0930 hrs AIAA-2019-1721 **Automatic Unstructured Mesh Generation with Geometry Attribution** S. Karman, N. Wyman, Pointwise, Inc., Fort Worth, TX	1000 hrs AIAA-2019-1722 **Recent improvements in HPCMP CREATE™ Capstone unstructured meshing** R. Aubry, Naval Research Laboratory, Washington, D.C.	1030 hrs AIAA-2019-1723 **Verification of Unstructured Grid Adaptation Components** M. Park, A. Balan, W. Anderson, NASA Langley Research Center, Hampton, VA; M. Galbraith, P. Caplan, H. Carson, Massachusetts Institute of Technology, Cambridge, MA; et al.	1100 hrs AIAA-2019-1724 **Scalable Deformation of Unstructured Computational Meshes** J. Masters, A. Denny, W. Cothran, Arnold Engineering Development Complex, Arnold AFB, TN	1130 hrs AIAA-2019-1725 **A semi-structured approach to curvilinear mesh generation around streamlined bodies** J. Marcon, J. Peiro, Imperial College London, London, United Kingdom; D. Moxey, University of Exeter, Exeter, United Kingdom; C. Pollard, H. Bucklow, M. Gammon, International TechneGroup, Inc., Cambridge, United Kingdom		

Thursday, 10 January 2019						
433-NDA-9	**Uncertainty Quantification and Management**					**Torrey Hills A**
Chaired by: T. WEST, NASA Langley Research Center and H. BAE, Wright State University						
0930 hrs AIAA-2019-1726 **Stochastic Characterization Utilizing Walsh Functions for Uncertainty Quantification of Finite Element Analysis** E. Forster, P. Beran, R. Kolonay, Air Force Research Laboratory, Wright-Patterson AFB, OH; H. Bae, Wright State University, Dayton, OH	1000 hrs AIAA-2019-1727 **Towards affordable Uncertainty Quantification in the Simulation of Turbulent Spray Combustion via Surrogate Modeling** B. Enderle, B. Rauch, F. Grimm, M. Aigner, German Aerospace Center (DLR), Stuttgart, Germany	1030 hrs AIAA-2019-1728 **Uncertainty Quantification of a Rotorcraft Conceptual Sizing Toolsuite** M. Khurana, Science and Technology Corporation, Moffett Field, CA; C. Russell, NASA Ames Research Center, Moffett Field, CA; R. Scott, Army Aviation and Missile Research, Development and Engineering Command, Moffett Field, CA	1100 hrs AIAA-2019-1729 **Control Design with Guaranteed Statistical Performance and Application to Flight Control** D. Shi, F. Holzapfel, Technical University of Munich, Garching, Germany	1130 hrs AIAA-2019-1730 **Learning Uncertainty using Clustering and Local Gaussian Process Regression** Y. Zhang, S. Ghosh, I. Asher, Y. Ling, L. Wang, General Electric Company, Niskayuna, NY		

Thursday, 10 January 2019						
434-PC-17	**Flame Stability**					**Harbor F**
Chaired by: R. SANKARAN, Oak Ridge National Laboratory and Y. JU, Princeton University						
0930 hrs AIAA-2019-1731 **Dynamics Analysis of a Turbulent Methane Flame in MILD Combustion Conditions** D. Manias, A. Tingas, H. Im, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia; Y. Minamoto, Tokyo Institute of Technology, Meguro, Japan	1000 hrs AIAA-2019-1732 **Modeling of Transverse Combustion Instability** M. Harvazinski, Air Force Research Laboratory, Edwards AFB, CA; R. Gejji, Purdue University, West Lafayette, IN; D. Talley, Air Force Research Laboratory, Edwards AFB, CA; M. Orth, W. Anderson, T. Pourpoint, Purdue University, West Lafayette, IN	1030 hrs AIAA-2019-1733 **Controlling Flame Stability in a High-Speed Combustor through Pressure Gradients** A. Morales, I. Lasky, J. Reyes, K. Ahmed, University of Central Florida, Orlando, FL; I. Boxx, German Aerospace Center (DLR), Cologne, Germany	1100 hrs AIAA-2019-1734 **The Characteristics of Flame Stability at High Turbulence Conditions in a Bluff-Body Stabilized Combustor** I. Lasky, A. Morales, J. Reyes, K. Ahmed, University of Central Florida, Orlando, FL; I. Boxx, German Aerospace Center (DLR), Cologne, Germany			

Thursday, 10 January 2019						
435-PC-18	**Sprays and Multiphase Combustion II**					**Hillcrest A**
Chaired by: T. OMBRELLO, Air Force Research Laboratory and P. DE OLIVEIRA						
0930 hrs AIAA-2019-1735 **Study on Dynamic Characteristics of Flame using External Excitation in Gas-Centered Swirl Coaxial Injector** W. Song, J. Lee, J. Koo, Korea Aerospace University, Goyang, South Korea	1000 hrs AIAA-2019-1736 **Fundamental Pre-Filming Atomizer Performance Predictions with Autonomous Meshing** S. Drennan, G. Kumar, Convergent Science, Inc., New Braunfels, TX; B. Akin, Convergent Science GmbH, Linz, Austria	1030 hrs AIAA-2019-1737 **Experimental Study of Spray Characteristics at Cold Start and Elevated Ambient Pressure using Hybrid Airblast Pressure-Swirl Atomizer** D. Shin, A. Bokhart, N. Rodrigues, P. Sojka, J. Gore, R. Lucht, Purdue University, West Lafayette, IN	1100 hrs AIAA-2019-1738 **Characteristics of Liquid Jet-In-Crossflow of Air Force Bio-Fuels** W. Flores, O. Michelle, K. Ahmed, University of Central Florida, Orlando, FL	1130 hrs AIAA-2019-1739 **Validation of a low-order model for ignition of sprays** P. de Oliveira, M. Sitte, E. Mastorakos, University of Cambridge, Cambridge, United Kingdom	1200 hrs AIAA-2019-1740 **Experimental and Numerical Investigation of Coaxial Pressure Swirl Injectors** O. Baran, TUBITAK, Ankara, Turkey; Y. Ozyoruk, Middle East Technical University, Ankara, Turkey; B. Sumer, TUBITAK, Ankara, Turkey	

Thursday, 10 January 2019						
436-PGC-9	**Detonative Pressure Gain Combustion III**					**Promenade B**
Chaired by: B. SARACOGLU, von Karman Institute for Fluid Dynamics and V. TANGIRALA, General Electric						
0930 hrs AIAA-2019-1741 **A Parametric Analysis of a Rotating Detonation Rocket Engine Cycle Using CEA** R. Kimura, ERC, Inc., Edwards AFB, CA; E. Paulson, V. Sankaran, Air Force Research Laboratory, Edwards AFB, CA	1000 hrs AIAA-2019-1742 **Optimal Control for Firing Synchronization in an Annular Pulsed Detonation Combustor Mockup by Mixed-Integer Programming** S. Wolff, R. King, Technical University of Berlin, Berlin, Germany	1030 hrs AIAA-2019-1743 **Experimental Thrust Sensitivity of a Rotating Detonation Engine to Various Aerospike Plug-Nozzle Configurations** M. Fotia, T. Kaemming, Innovative Scientific Solutions, Inc., Dayton, OH; J. Codoni, Naval Postgraduate School, Monterey, CA; J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH; F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH	1100 hrs AIAA-2019-1744 **Thermodynamic Considerations and Interpretation of Continuous Tube Attenuated Pressure (CTAP) Measurements in RDEs** C. Brophy, R. Wright, Naval Postgraduate School, Monterey, CA; J. Codoni, Innovative Scientific Solutions, Inc., Dayton, OH	1130 hrs AIAA-2019-1745 **Quasi-Steady-State Analysis of a High Resolution Detonation Simulation** C. Nordeen, New Cycle Engineering LLC, Manchester, CT; D. Schwer, Naval Research Laboratory, Washington, D.C.		

Thursday, 10 January 2019		
437-RLA-5 **0930 - 1030 hrs**	**Contemporary Emerging Trends in Aerospace**	**Seaport G**

Thursday, 10 January 2019						
438-SCS-7	**High-Strain Composite Materials and Structures I**					**Torrey Hills B**
Chaired by: L. DATASHVILI, Large Space Structures GmbH and J. SAUDER, Jet Propulsion Laboratory						
0930 hrs AIAA-2019-1746 **Analysis of the Column Bending Test for Large Curvature Bending of High Strain Composites** A. Sharma, University of Colorado, Boulder, Boulder, CO; T. Rose, Roccor, LLC, Longmont, CO; A. Seamone, University of Colorado, Boulder, Boulder, CO; T. Murphey, Opterus Research and Development, Inc., Fort Collins, CO; F. Lopez Jimenez, University of Colorado, Boulder, Boulder, CO	1000 hrs AIAA-2019-1747 **Non-Symmetric Behavior of High Strain Composite Tape Spring Hinges for Folding Structures** J. Fulton, H. Schaub, University of Colorado, Boulder, Boulder, CO	1030 hrs AIAA-2019-1748 **Stowage Testing and Modeling of Viscoelastic Composite Tape Springs** M. Scherbarth, Air Force Research Laboratory, Kirtland AFB, NM; M. Taha, University of New Mexico, Albuquerque, Albuquerque, NM	1100 hrs AIAA-2019-1749 **Ultralight Spacecraft Structure Prototype** E. Gdoutos, C. Leclerc, F. Royer, D. Türk, S. Pellegrino, California Institute of Technology, Pasadena, CA	1130 hrs AIAA-2019-1750 **The Deployment of Large De-Orbit Sails Utilizing High Strain Composite Booms** B. Davis, D. Turse, W. Francis, Roccor, LLC, Longmont, CO	1200 hrs AIAA-2019-1751 **Micromechanical Modeling of High-Strain Thin-Ply Composites** M. Yapa Hamillage, K. Kwok, University of Central Florida, Orlando, FL; J. Fernandez, NASA Langley Research Center, Hampton, VA	

Thursday, 10 January 2019						
439-SD-17	**Model Uncertainty and Randomness in Aeroelastic Problems**					**Harbor B**
Chaired by: J. SILLS and S. SMITH, University of Kentucky						
0930 hrs AIAA-2019-1752 **Effects of Nonlinear Structural Damping Uncertainty on F-16 Limit Cycle Oscillations** X. Wang, Arizona State University, Tempe, AZ; Z. Zhang, Z. Zhou, ZONA Technology, Inc., Scottsdale, AZ; M. Mignolet, Arizona State University, Tempe, AZ; P. Chen, ZONA Technology, Inc., Scottsdale, AZ	1000 hrs AIAA-2019-1753 **Stochastic fiber volume random field propagation in the aeroelastic evaluation of tow steered plates** T. Guimarães, H. Silva, Federal University of Uberlândia, Uberlândia, Brazil; C. Cesnik, University of Michigan, Ann Arbor, Ann Arbor, MI; D. Rade, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil	1030 hrs AIAA-2019-1754 **Probabilistic Control Optimization of Aeroservoelastic Systems with Uncertainty** L. Adamson, S. Fichera, J. Mottershead, University of Liverpool, Liverpool, United Kingdom	1100 hrs AIAA-2019-1755 **High Resolution Operational Modal Analysis and Virtual Sensor Expansion** S. Koschel, R. Carrese, N. Joseph, M. Candon, P. Marzocca, RMIT University, Melbourne, Australia; O. Levinski, Defence Science and Technology Group, Melbourne, Australia			

Thursday, 10 January 2019						
440-SD-18	**Structural Health Monitoring and Prognosis**					**Promenade A**
Chaired by: B. WILLIS, Jacobs Technology and K. SPAK, Exponent						
0930 hrs AIAA-2019-1756 **Shape Sensing for Wings with Spars and Ribs using Strain Data** C. Pak, NASA Armstrong Flight Research Center, Edwards, CA	1000 hrs AIAA-2019-1757 **Simulation of Lamb waves via refined FE models with SHM applications** A. Garcia de Miguel, A. Pagani, E. Carrera, Technical University of Turin, Turin, Italy	1030 hrs AIAA-2019-1758 **In-Situ Health Monitoring of Aerospace Structures via Dynamic Strain Measurements** B. Martins, J. Kosmatka, University of California, San Diego, La Jolla, CA	1100 hrs AIAA-2019-1759 **Impact of Material Uncertainty on Delamination Detection in Composite Plate Structures using Modal Curvatures and Fuzzy Logic** M. Chandrasekhar, Indian Space Research Organisation, Ahmedabad, India; R. Ganguli, Indian Institute of Science, Bengaluru, India			

Thursday, 10 January 2019						
441-STR-16	**Composite Interlaminar Enhancement Methods and Modeling II**					**Golden Hill A**
Chaired by: G. MABSON, Boeing Engineering Operations & Technology and L. DEMASI, San Diego State University College of Engineering						
0930 hrs AIAA-2019-1760 **Global/local analysis of free-edge stresses in composite laminates** E. Carrera, A. Garcia de Miguel, G. Fiordilino, A. Pagani, Technical University of Turin, Turin, Italy	1000 hrs AIAA-2019-1761 **An Extended Dual Spring Modeling Approach for Static and Fatigue Failure Assessment of Composite Laminates with Stitching** X. Cui, J. Xiao, J. Lua, Global Engineering and Materials, Inc., Princeton, NJ	1030 hrs AIAA-2019-1762 **Multiscale Reinforcing Interlayers of Self-same P(St-co-GMA) Nanofibers Loaded with MCF for Polymer Composites and Nanocomposites** F. Arpatappeh, M. Papila, B. Aydemir, Sabanci University, Tuzla, Turkey	1100 hrs AIAA-2019-1763 **Efficient 3D Stress Capture of Variable Stiffness and Sandwich Beam Structures** M. Patni, S. Minera, R. Groh, P. Weaver, A. Pirrera, University of Bristol, Bristol, United Kingdom	1130 hrs AIAA-2019-1764 **Vertically Aligned Carbon Nanotubes as Interlaminar Reinforcement in Carbon Fiber Composite Laminates** H. Conway, C. Gouldstone, N12 Technologies, Somerville, MA		

Thursday, 10 January 2019						
442-STR-17	**Innovative Approaches in Structures II**					**Golden Hill B**
Chaired by: M. MOHAGHEGH, Boeing Commercial Airplanes and S. WANTHAL, Boeing Research & Technology						
0930 hrs AIAA-2019-1765 **Best Theory Diagrams for Shell Finite Elements** M. Petrolo, E. Carrera, Technical University of Turin, Turin, Italy	1000 hrs AIAA-2019-1766 **Comparing the effect of geometry and stiffness on the effective load paths in non-symmetric laminates** S. Minera, M. Patni, P. Weaver, A. Pirrera, M. O'Donnell, University of Bristol, Bristol, United Kingdom	1030 hrs AIAA-2019-1767 **Experimental and Numerical Analysis of Skin-Stiffener Separation Using a Seven Point Bend Configuration** C. Kosztowny, C. Davila, K. Song, C. Rose, W. Jackson, NASA Langley Research Center, Hampton, VA	1100 hrs AIAA-2019-1768 **Elastic Tailoring and Scaling of 3D Printed Models Using Fused Deposition Modeling** R. Taylor, E. Mares, R. Rane, University of Texas, Arlington, Arlington, TX; M. Love, Self, Fort Worth, TX			

Thursday, 10 January 2019						
443-TES-5	**Combustion and Pyrolosis in Energy Systems**					**Vista B**
Chaired by: F. MILLER and J. CAMACHO						
0930 hrs AIAA-2019-1769 **Multi-wavelength speciation of high-temperature alternative and conventional jet fuel pyrolysis** N. Pinkowski, D. Davidson, R. Hanson, Stanford University, Stanford, CA	1000 hrs AIAA-2019-1770 **Flowfield Investigation in a Non-Reacting Reverse Flow Isothermal Combustor** J. Feser, A. Gupta, University of Maryland, College Park, College Park, MD	1030 hrs AIAA-2019-1771 **High-Speed Imaging of Homogeneous and Inhomogeneous Ignition in a High Pressure Shock Tube** J. Shao, R. Choudhary, Y. Peng, D. Davidson, R. Hanson, Stanford University, Stanford, CA	1100 hrs AIAA-2019-1772 **The effect of the fuel change from petroleum kerosene to HEFA alternative jet fuel on the number of nvPM emission of an RQL gas turbine combustor** K. Okai, H. Fujiwara, M. Makida, K. Shimodaira, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan	1130 hrs AIAA-2019-1773 **Control Methods to Improve Combustor Exit Temperature Uniformity** R. Amano, O. Elsayed, University of Wisconsin, Milwaukee, Milwaukee, WI	1200 hrs AIAA-2019-1774 **Conversion of Absorbent Polymer Wastes to Syngas using Pyrolysis and CO_2 Assisted Gasification** K. Burra, P. Singh, A. Gupta, University of Maryland, College Park, College Park, MD	

Thursday, 10 January 2019						
444-TP-9	**High-Temperature Aerothermodynamics**					**Balboa B**
Chaired by: M. HOWARD, Sandia National Laboratories						
0930 hrs AIAA-2019-1775 **Carbon monoxide radiation in an equilibrium plasma torch facility** S. McGuire, A. Tibère-Inglesse, C. Laux, CentraleSupélec, Gif-sur-Yvette, France; B. Cruden, Analytical Mechanics Associates, Inc., Moffett Field, CA	1000 hrs AIAA-2019-1776 **Contamination Modeling of Window Seeker Materials in a Realistic Environment Using Molecular Dynamics** A. Rayabharam, N. Mehta, D. Levin, University of Illinois, Urbana-Champaign, Urbana, IL	1030 hrs AIAA-2019-1777 **Thermal Response of Low Density Ablative Materials Subjected To High Temperature** B. Owiti, T. Sakai, H. Kawabata, Tottori University, Tottori, Japan; Y. Ishida, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan	1100 hrs AIAA-2019-1778 **Performance of Transpiration Cooled Heat Shields for Hypersonic Vehicles** T. Hermann, I. Naved, M. McGilvray, University of Oxford, Oxford, United Kingdom	1200 hrs AIAA-2019-1779 **Refitting of Ro-Vibrational Specific CO2 Radiation Database to Vibrationally Specific** J. Vargas, Technical University of Lisbon, Lisbon, Portugal; B. Lopez, M. Panesi, University of Illinois, Urbana-Champaign, Urbana, IL; M. Lino Da Silva, Technical University of Lisbon, Lisbon, Portugal	

Thursday, 10 January 2019						
445-TP-10	**Multiphase, Droplets, Jets, and Sprays**					**Balboa A**
Chaired by: K. ANDERSON, CAL POLY POMONA						
0930 hrs AIAA-2019-1780 **High Power Density Electronics Immersed in a Subcooled Two-Phase Dielectric Fluid** K. Weed, J. Harvey, Ball Corporation, Westminster, CO; W. Schwarz, ANSYS, Inc., Canonsburg, PA	1000 hrs AIAA-2019-1781 **Discretized Enthalpy Method for Analysis of Two-phase Flow in Heat Exchangers Using FAME-MLL and Ammonia Working Fluids** K. Anderson, T. Gross, A. Flores, California State Polytechnic University, Pomona, CA; A. Gatti, Ingenium Technical Services, Inc., Cupertino, CA	1030 hrs AIAA-2019-1782 **Stabilizing Transient Operation of Loop Heat Pipes with a Condenser Bypass** T. Holman, R. Baldauff, D. Khrustalev, Naval Research Laboratory, Washington, D.C.	1100 hrs AIAA-2019-1783 **Numerical Modeling of a Cooling Water Droplet Using a Two-Phase Flow Approach** A. Franco, J. Barata, A. Silva, University of Beira Interior, Covilha, Portugal	1130 hrs AIAA-2019-1784 **Visualization and Temperature Measurement of Cryogenic Cooling Channel Flow at Supercritical Pressure** T. Toki, M. Morita, S. Teramoto, K. Yamaguchi, University of Tokyo, Tokyo, Japan; K. Okamoto, University of Tokyo, Chiba, Japan		

Thursday, 10 January 2019						
446-UAS-7/ACD-16	**Design of Unmanned Aircraft Systems II**					**Hillcrest D**
Chaired by: R. STANSBURY, Embry-Riddle Aeronautical University						
0930 hrs AIAA-2019-1785 **A Demonstration of Reliability and Certification Standards for Unmanned Aircraft System Control Links** R. Melnyk, U.S. Military Academy, West Point, NY	1000 hrs AIAA-2019-1786 **Assessment of the Impact of Maintenance-Induced Failures on Unmanned Aircraft Systems to Operations in National Airspace System** R. Stansbury, R. Gillespie, M. Geraci, J. Robbins, Embry-Riddle Aeronautical University, Daytona Beach, FL	1030 hrs AIAA-2019-1787 **Controllability and Design of Unmanned Multirotor Aircraft Robust to Rotor Failure** K. Kim, S. Rahili, X. Shi, S. Chung, M. Gharib, California Institute of Technology, Pasadena, CA	1100 hrs AIAA-2019-1788 **Performance Analysis and Aerodynamoc Modeling of Contra-Rotating Ducted fan UAV** M. Zakaria, A. Nemnem, K. Gad, M. Abdelwahab, Military Technical College, Cairo, Egypt	1130 hrs AIAA-2019-1789 **Sound and Thrust Characterization of a Small Turboprop Engine** M. Durkee, Oklahoma State University, Stillwater, OK	1200 hrs AIAA-2019-1790 **Extending Endurance of Multicopters: The Current State-of-the-Art** M. Lussier, J. Bradley, C. Detweiler, University of Nebraska, Lincoln, Lincoln, NE	

Thursday, 10 January 2019						
447-UAS-8/IS-21/SOF-6	**Unmanned Systems Mission Management, Coordination, Planning, and Autonomy II**					**Harbor D**
Chaired by: J. WILHELM, Ohio University						
0930 hrs AIAA-2019-1791 **Circumnavigation and obstacle avoidance guidance for UAVs using Gradient Vector Fields** J. Wilhelm, G. Clem, Ohio University, Athens, OH; D. Casbeer, Air Force Research Laboratory, Wright-Patterson AFB, OH	1000 hrs AIAA-2019-1792 **Unmanned Aerial Vehicle Fleet Selection and Allocation Optimization** A. Payan, L. Jara de Carvalho, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1030 hrs AIAA-2019-1793 **On UAS Sensor Flight Pattern Determination for Studies in Atmospheric Science** T. Weyer, N. Engelhardt, Karlsruhe Institute of Technology, Karlsruhe, Germany; S. Smith, University of Kentucky, Lexington, Lexington, KY	1100 hrs AIAA-2019-1794 **Optimal Path Planning for Unmanned Aerial Systems to Cover Multiple Regions** J. Xie, L. Jin, L. Garcia Carrillo, Texas A&M University, Corpus Christi, TX	1130 hrs AIAA-2019-1795 **Distributed Clustering Algorithm for UAV Systems** S. Jeong, U. Choi, J. Ahn, Korea Advanced Institute of Science and Technology, Daejeon, South Korea	1200 hrs AIAA-2019-1796 **An Extended Savings Algorithm for UAS-based Delivery Systems** Y. Choi, Y. Choi, S. Briceno, D. Mavris, Georgia Institute of Technology, Atlanta, GA	

Thursday, 10 January 2019						
448-WE-8	**Wind Energy Modeling Approaches**					**Cityview A**
Chaired by: S. KANNER, Principle Power Inc						
0930 hrs AIAA-2019-1797 **Parametric Study on the Velocity Sampling Techniques for the Actuator Line Method in 2D** R. Merabet, E. Laurendeau, Polytechnique Montréal, Montréal, Canada	1000 hrs AIAA-2019-1798 **Temporal Coherence Importance Sampling for Wind Turbine Extreme Loads Estimation** P. Graf, R. King, K. Dykes, J. Quick, L. Kilcher, National Renewable Energy Laboratory, Golden, CO; J. Rinker, Delft University of Technology, Roskilde, Denmark	1030 hrs AIAA-2019-1799 **A review of momentum models for the actuator disk in yaw** C. Hur, T. Berdowski, C. Simao Ferreira, Delft University of Technology, Delft, The Netherlands; K. Boorsma, G. Schepers, TNO, Petten, The Netherlands	1100 hrs AIAA-2019-1800 **Development of Ice Throw Model for Wind Turbine Simulation Software QBlade** M. Lennie, S. Dominin, D. Marten, G. Pechlivanoglou, C. Paschereit, Technical University of Berlin, Berlin, Germany	1130 hrs AIAA-2019-1801 **A Harmonic Model for Loads Analysis and Control Design of a 2-bladed Wind Turbine** D. Zalkind, L. Pao, University of Colorado, Boulder, Boulder, CO	1200 hrs AIAA-2019-1802 **Assessing Control of a Floating Wind Turbine Based on Harmonic Loads Analysis** N. Abbas, D. Zalkind, L. Pao, University of Colorado, Boulder, Boulder, CO	

Thursday, 10 January 2019		
449-HUB-20 **1000 - 1030 hrs**	**A Guide to Successful Grassroots Advocacy**	**the Hub Hangar**

Thursday, 10 January 2019		
450-HUB-21 **1030 - 1130 hrs**	**Bridging the Technology Readiness Valley of Death**	**the Hub Hangar**

Thursday, 10 January 2019		
451-CASE-3 **1100 - 1230 hrs**	**Systems Thinking for Software Engineering (and Vice Versa)**	**Cove**

Software is ubiquitous in almost all systems contexts, whether embedded in the product itself or as an integral enabler of the operational, engineering and test environments. As a result, it is increasingly important that 1) software engineers to understand broader systems considerations in software development and software project management activities, and 2) the software production environments and tools to assist in accounting for forces that the overall system context exerts on its software components. Likewise, systems engineers need a strong understanding of how software-intensive systems and development processes are different in nature than other engineering endeavors, operating at different timescales, having access to different–more agile –engineering approaches, and possessing different cultures. While this can make it difficult for these engineering communitiesto work together, there are also opportunities for synergy. This panel will explore the creative tension between the disciplines of software and systems engineering, discuss how their practice is evolving, and examine how each community can benefit from the frameworks and approaches of the other.

Panelists:

Ron Kohl	**John Matlik**	**Natasha Neogi**	**Michael Rubin**
AIAA Software Systems Committee	Rolls-Royce	NASA Langley Research Center	Red Canyon Software

Thursday, 10 January 2019		
452-HUB-22 **1100 - 1200 hrs**	**Design Challenge: Balloon Rocket Car**	**the Hub Open Area**

Thursday, 10 January 2019		
453-GNC-33 **1130 - 1230 hrs**	**Guidance, Navigation, and Control Lecture**	**Harbor E**

"Aerial Co-Robots of the Future"
Naira Hovakimyan
W. Grafton and Lillian B. Wilkins Professor of Mechanical Science and Engineering
University of Illinois at Urbana Champaign

Thursday, 10 January 2019		
454-HUB-23 **1130 - 1200 hrs**	**NASA Flight Opportunities: Maturing New Spacetech Through Commercial Suborbital Flight Demonstration**	**the Hub Hangar**

Thursday, 10 January 2019		
455-LUNCH-3 1200 - 1400 hrs	Excellence in Aerospace Awards Luncheon - Celebrating Aerospace Design, Structures and Literature	Seaport A-E

Speaker
Matthew Hutchinson
Vice President of Engineering
Aurora Flight Sciences

Proof of purchase required and included in registration where indicated.

Thursday, 10 January 2019		
456-SP-1 1200 - 1400 hrs	Diversity in Aerospace Engineering and the Future of the Aerospace Industry	Seaport G

Hear how diversity in the aerospace industry can help enhance collaborative and creative team environments. Panelists will discuss how diversity in the workplace has increased their excitement about work, and what diversity means to them. Panelists will include representatives from different stages in their career as well as panelists from different parts of the aerospace industry. Box lunch provided on a first-come, first-served basis.

Cosponsored by Women of Aeronautics and Astronautics and AIAA Diversity Working Group.

Thursday, 10 January 2019		
457-HUB-24 1230 - 1300 hrs	Disruptive Persistence Enabled Through Autonomous Systems	the Hub Hangar

Thursday, 10 January 2019		
458-HUB-25 1300 - 1400 hrs	Space for Humanity	the Hub Launch Pad

Thursday, 10 January 2019						
459-AA-8	Computational Aeroacoustics (CAA)					Balboa C
Chaired by: A. PILON, Lockheed Martin Aeronautics						
1400 hrs AIAA-2019-1803 **Pressure Oscillations in Aft-Finocyl SRMs** M. Laureti, B. Favini, University of Rome "La Sapienza", Rome, Italy	1430 hrs AIAA-2019-1804 **A Nonreflecting Formulation for Turbomachinery Boundaries and Blade Row Interfaces** D. Lindblad, Chalmers University of Technology, Göteborg, Sweden; N. Wukie, University of Cincinnati, Cincinnati, OH; G. Montero Villar, N. Andersson, Chalmers University of Technology, Göteborg, Sweden	1500 hrs AIAA-2019-1805 **A sponge layer for accurate aeroacoustic simulations using high-order discontinuous Galerkin methods** H. Asada, Y. Ogami, Ritsumeikan University, Kusatsu, Japan	1530 hrs AIAA-2019-1806 **SEA analysis in the cabin of a regional turboprop with metamaterial lining panels** M. Cinefra, Technical University of Turin, Turin, Italy; G. Petrone, University of Naples "Federico II", Naples, Italy			

Thursday, 10 January 2019						
460-ACD-11	Electric Aircraft Design Concepts II					Harbor F
Chaired by: P. SCHMOLLGRUBER, ONERA and R. MCDONALD, Self						
1400 hrs AIAA-2019-1807 **Conceptual Assessment of Hybrid Electric Aircraft with Distributed Propulsion and Boosted Turbofans** M. Hoogreef, R. Vos, R. de Vries, L. Veldhuis, Delft University of Technology, Delft, The Netherlands	1430 hrs AIAA-2019-1808 **ECO-150-300 Design and Performance: A Tube-and-Wing Distributed Electric Propulsion Airliner** B. Schiltgen, J. Freeman, Empirical Systems Aerospace, Inc., San Luis Obispo, CA	1500 hrs AIAA-2019-1809 **Propeller-Wing Integration on the Parallel Electric-Gas Architecture with Synergistic Utilization Scheme (PEGASUS) Aircraft** N. Blaesser, NASA Langley Research Center, Hampton, VA	1530 hrs AIAA-2019-1810 **Study of flying quality evaluation on electric powered light aircraft** S. Mochida, G. Minorikawa, Hosei University, Tokyo, Japan	1600 hrs AIAA-2019-1811 **Preliminary Sizing of a Hybrid-Electric Passenger Aircraft Featuring Over-the-Wing Distributed-Propulsion** R. de Vries, M. Hoogreef, R. Vos, Delft University of Technology, Delft, The Netherlands	1630 hrs AIAA-2019-1812 **Influence of Performance and Safety Requirements on the Design Point of Hybrid-Electric GA Aircraft** D. Finger, C. Braun, Aachen University of Applied Sciences, Aachen, Germany; C. Bil, RMIT University, Melbourne, Australia	

Thursday, 10 January 2019

461-AFM-16 — **Progress, Challenges, and Results on Flexible Aircraft: A Summary of the PAAW and FlexOp Projects** — **Vista C**

Chaired by: P. SEILER, University of Minnesota and B. VANEK, MTA-Sztaki

1400 hrs	1430 hrs	1500 hrs	1530 hrs	1600 hrs	1630 hrs
AIAA-2019-1813	AIAA-2019-1814	AIAA-2019-1815	AIAA-2019-1816	AIAA-2019-1817	AIAA-2019-1818
Aircraft Design and Testing of FLEXOP Unmanned Flying Demonstrator to Test Load Alleviation and Flutter Suppression of High Aspect Ratio Flexible Wings (Invited)	**Finite Element Model Updating of Composite Flying-wing Aircraft using Global/Local Optimization (Invited)**	**Aircraft Aeroservoelastic Modelling of the FLEXOP Unmanned Flying Demonstrator (Invited)**	**Flight-Dynamics and Flutter Analysis and Control of an MDAO-Designed Flying-Wing Research Drone (Invited)**	**Flight control design for a highly flexible flutter demonstrator (Invited)**	**Real-Time Shape Estimation for a Small Flexible Flying-Wing Aircraft (Invited)**
C. Roessler, P. Stahl, F. Sendner, A. Hermanutz, S. Koeberle, J. Bartasevicius, Technical University of Munich, Garching, Germany; et al.	W. Zhao, Virginia Polytechnic Institute and State University, Blacksburg, VA; A. Gupta, University of Minnesota, Twin Cities, Minneapolis, MN; J. Miglani, Virginia Polytechnic Institute and State University, Blacksburg, VA; C. Regan, University of Minnesota, Twin Cities, Minneapolis, MN; R. Kapania, Virginia Polytechnic Institute and State University, Blacksburg, VA; P. Seiler, University of Minnesota, Twin Cities, Minneapolis, MN	Y. Meddaikar, J. Dillinger, T. Klimmek, W. Krueger, German Aerospace Center (DLR), Göttingen, Germany; M. Wuestenhagen, T. Kier, German Aerospace Center (DLR), Oberpfaffenhofen, Germany; et al.	D. Schmidt, D.K. Schmidt and Associates, Monument, CO; B. Danowsky, Systems Technology, Inc., Hawthorne, CA; P. Seiler, University of Minnesota, Twin Cities, Minneapolis, MN; R. Kapania, Virginia Polytechnic Institute and State University, Blacksburg, VA	T. Luspay, Hungarian Academy of Sciences, Budapest, Hungary; D. Ossmann, M. Wuestenhagen, German Aerospace Center (DLR), Wessling, Germany; D. Teubl, T. Baár, Hungarian Academy of Sciences, Budapest, Hungary; M. Pusch, German Aerospace Center (DLR), Wessling, Germany; et al.	A. Kotikalpudi, B. Danowsky, Systems Technology, Inc., Hawthorne, CA; D. Schmidt, D.K. Schmidt and Associates, Monument, CO; C. Regan, A. Gupta, University of Minnesota, Twin Cities, Minneapolis, MN

Thursday, 10 January 2019

462-AFM-17 — **BladeSense - A Novel Approach for Measuring Helicopter Rotor Blade Deformation** — **Vista A**

1400 - 1700 hrs

"Project Overview"	"A Novel Direct Fibre Optic Shape Sensing Approach"	"Hardware Integration for Rotor Blade Health and Monitoring"	"Structural Model Development of a Bearingless Main Rotor"	"Development of Stochastic Model to be Used for Real-Time Structural Health Monitoring"	"Application of Novel Direct Fibre Optic Shape Sensing Approach to Measure Rotor Blade Structural Dynamics"
Simone Weber, Airbus Helicopters **Mudassir Lone**, Cranfield University	**Stephen James** Cranfield University	**Dominic Southgate** Helitune	**Simone Weber** Airbus Helicopters	**Waldo Rosales** BHR Group	**Simone Weber** Airbus Helicopters

Thursday, 10 January 2019

463-AMT-18 — **Velocimetry II - Transitional and Supersonic Flows** — **Harbor G**

Chaired by: Y. ZHANG, Sandia National Laboratories and P. DANEHY, NASA Langley Research Center

1400 hrs	1430 hrs	1500 hrs	1530 hrs	1600 hrs	1630 hrs	1700 hrs
AIAA-2019-1819	AIAA-2019-1820	AIAA-2019-1821	AIAA-2019-1822	AIAA-2019-1823	AIAA-2019-1824	AIAA-2019-1825
Demonstration of 250 kHz Three-Component Velocity Measurements using TRDGV at 32 Simultaneous Points	**SNR Comparison of Various Krypton Tagging Velocimetry Excitation Schemes in the Stevens Shock Tube**	**Acetone-condensation Nano-particle Image Velocimetry in A Supersonic Boundary Layer**	**Burst-Mode 100 kHz - 1 MHz Velocimetry in Supersonic and Hypersonic Flows**	**Pulse-burst cross-correlation Doppler global velocimetery**	**Particle tracer comparison in a Mach 3 Tunnel**	**Validation and Uncertainty Analysis of Stereo Time-Resolved PIV Measurements for Boundary-Layer Transition Research**
A. Saltzman, K. Lowe, W. Ng, Virginia Polytechnic Institute and State University, Blacksburg, VA	M. Mustafa, N. Parziale, Stevens Institute of Technology, Hoboken, NJ	T. Kouchi, S. Fukuda, S. Miyai, Y. Nagata, S. Yanase, Okayama University, Okayama, Japan	J. Fisher, M. Smyser, T. Meyer, M. Slipchenko, Purdue University, West Lafayette, IN; A. Caswell, J. Gord, Air Force Research Laboratory, Wright-Patterson AFB, OH; et al.	T. Fahringer, National Institute of Aerospace, Hampton, VA; P. Danehy, NASA Langley Research Center, Hampton, VA; P. Bardet, George Washington University, Washington, D.C.	L. Paquin, S. Laurence, University of Maryland, College Park, College Park, MD	J. Eppink, NASA Langley Research Center, Hampton, VA

Thursday, 10 January 2019						
464-AMT-19/APA-42	**Aerodynamic Measurements I - Data Analysis and Uncertainty**					**Harbor H**
Chaired by: A. FAGAN, NASA Glenn Research Center and M. SHEPLAK, University of Florida						
1400 hrs Oral Presentation **Heat flux measurements in high speed internal flows** G. Paniagua, Purdue University, West Lafayette, IN	1430 hrs AIAA-2019-1826 **Influence of Strain-Gage Balance Characteristics on the Precision Error of the Drag Coefficient** N. Ulbrich, Jacobs, Moffett Field, CA; A. L'Esperance, NASA Ames Research Center, Moffett Field, CA	1500 hrs AIAA-2019-1827 **Characterization of Unsteady Pressures on a Blunt Trailing Edge Using a Direct-Mount Pressure Scanner** P. Nikoueeyan, M. Hind, J. Strike, M. Singh, Resono Pressure Systems, LLC, Laramie, WY; J. Naughton, University of Wyoming, Laramie, Laramie, WY; S. Keeter, TE Connectivity Company, Hampton, VA; et al.	1530 hrs AIAA-2019-1828 **Development of Modal Analysis Based Clustering Technique Using Pitching Airfoil Measurements** A. Sanayei, Science and Technology Corporation, Moffett Field, CA; M. Ramasamy, J. Wilson, P. Martin, Army Aviation and Missile Research, Development and Engineering Command, Moffett Field, CA	1600 hrs AIAA-2019-1829 **Assessment of Model Validation and Calibration Approaches in the Presence of Uncertainty** N. Whiting, C. Roy, Virginia Polytechnic Institute and State University, Blacksburg, VA; E. Duque, S. Lawrence, Intelligent Light, Rutherford, NJ	1630 hrs AIAA-2019-1830 **PIV Data Clustering of a Buoyant Jet in a Stratified Environment** A. Serani, D. Durante, M. Diez, National Research Council (CNR), Rome, Italy; D. D'Agostino, University of Rome "La Sapienza", Rome, Italy; S. Clement, J. Badra, George Washington University, Washington, D.C.; et al.	1700 hrs AIAA-2019-1831 **Skin Friction Sensor Measurement Uncertainty** N. Molinaro, R. Meritt, Ahmic Aerospace, LLC, Dayton, OH

Thursday, 10 January 2019						
465-APA-43/FD-54/SD-19/ AMT-20	**Special Session: Joint Experimental-Computational Efforts in High-Speed FSI IV**					**La Jolla B**
Chaired by: D. BODONY, University of Illinois at Urbana-Champaign and S. LAURENCE, University of Maryland, College Park						
1400 hrs Oral Presentation **Fluid-Structure Coupling of a Compliant Panel Installed in a Compression Ramp at Mach 6: Numerical Simulations (Invited)** B. Sullivan, D. Bodony, University of Illinois, Urbana-Champaign, Urbana, IL	1430 hrs Oral Presentation **Dynamic Unit Cases for Hypersonic Thermal-Fluid-Structural Interaction (Invited)** A. Neely, G. Currao, L. McQuellin, S. Bhattrai, University of New South Wales, Canberra, Australia; D. Buttsworth, University of Southern Queensland, Toowoomba, Australia; I. Jahn, University of Queensland, Brisbane, Australia	1500 hrs Oral Presentation **Fluid-structure coupling of a compliant panel installed in a compression ramp at Mach 6: Experiments (Invited)** S. Laurence, University of Maryland, College Park, College Park, MD	1530 hrs Oral Presentation **Implementation and Comparison of Advanced Models for Joint and Interfaces within Finite Element Models (Invited)** D. Quinn, University of Akron, Akron, OH; A. Brink, Sandia National Laboratories, Albuquerque, NM; A. Mathis, University of Akron, Akron, OH	1600 hrs Oral Presentation **Computation of panel response to shock-wave/boundary-layer interaction. (Invited)** P. Subbareddy, North Carolina State University, Raleigh, NC	1630 hrs Oral Presentation **Simultaneous PSP and DIC measurements for fluid-structure interactions in a shock tube (Invited)** K. Lynch, E. Jones, J. Wagner, Sandia National Laboratories, Albuquerque, NM	1700 hrs Oral Presentation **Flowfield quantification of Shock Wave/Turbulent Boundary Layer Interactions over a Vibrating Panel (Invited)** V. Narayanaswamy, North Carolina State University, Raleigh, NC

Thursday, 10 January 2019						
466-APA-44	**Special Session: PowerFLOW LBM Applications in Aerospace**					**La Jolla A**
Chaired by: E. FARES, Exa Corporation						
1400 hrs AIAA-2019-1832 **Capturing Laminar to Turbulent Transition within the LBM based CFD solver PowerFLOW** B. Duda, Exa GmbH, Munich, Germany; E. Fares, Exa GmbH, Stuttgart, Germany; R. Kotapati, Y. Li, I. Staroselsky, R. Zhang, Exa Corporation, Burlington, MA; et al.	1430 hrs AIAA-2019-1833 **Very-Large Eddy Simulations of the M219 Cavity at High-Subsonic and Supersonic Conditions** S. Mancini, A. Kolb, Airbus, Manching, Germany; I. Gonzalez-Martino, Exa Corporation, Paris, France; D. Casalino, Delft University of Technology, Delft, The Netherlands	1500 hrs AIAA-2019-1834 **Community Noise of Urban Air Transportation Vehicles** D. Casalino, W. van der Velden, G. Romani, Dassault Systemes Deutschland GmbH, Stuttgart, Germany	1530 hrs AIAA-2019-1835 **Predicting Flow Separation on the Axisymmetric Transonic Bump with a Lattice-Boltzmann Method** B. Duda, Exa GmbH, Munich, Germany; E. Fares, Exa GmbH, Stuttgart, Germany	1600 hrs AIAA-2019-1836 **Numerical Simulation of Main Landing Gear Noise Reduction in FQUROH Flight Demonstration** M. Murayama, T. Takaishi, Y. Ito, Y. Yokokawa, K. Yamamoto, R. Sakai, Japan Aerospace Exploration Agency (JAXA), Mitaka, Japan; et al.	1630 hrs AIAA-2019-1837 **Simulations of Chevrons on Single Flow Hot Jets** M. Nickerson, Gulfstream Aerospace Corporation, Savannah, GA; R. Ferris, Exa Corporation, Burlington, MA; W. van der Velden, Exa GmbH, Stuttgart, Germany	

Thursday, 10 January 2019						
467-APA-45	**Special Session: Space Launch System Aerosciences I**					**Hillcrest C**
Chaired by: J. PINIER, NASA LaRC						
1400 hrs AIAA-2019-1838 **Advances in the Characterization of NASA's Space Launch System Aerodynamic Environments** J. Pinier, NASA Langley Research Center, Hampton, VA	1430 hrs AIAA-2019-1839 **Aerodynamic Characterization and Improved Testing Methods for the Space Launch System Liftoff and Transition Environment** D. Chan, J. Paulson, P. Shea, K. Toro, P. Parker, S. Commo, NASA Langley Research Center, Hampton, VA	1500 hrs AIAA-2019-1840 **Selection of Computational Fluid Dynamics Tools Used in Development of the Space Launch System Liftoff and Transition Lineloads Databases** N. Ratnayake, S. Krist, F. Ghaffari, NASA Langley Research Center, Hampton, VA	1530 hrs AIAA-2019-1841 **Kestrel Results at Liftoff Conditions for a Space Launch System Configuration in Proximity to the Launch Tower** S. Krist, N. Ratnayake, F. Ghaffari, NASA Langley Research Center, Hampton, VA	1600 hrs AIAA-2019-1842 **Liftoff and Transition Database Generation for Launch Vehicles Using Data Fusion Based Modeling** T. Wignall, NASA Langley Research Center, Hampton, VA	1630 hrs AIAA-2019-1843 **Modeling and Simulation Techniques for the NASA SLS Service Module Panel Separation Event; From Loosely-Coupled Euler to Full-Coupled 6-DOF, Time-Accurate, Navier Stokes Methodologies** L. Hall, W. Eppard, M. Applebaum, D. Purinton, CRM Solutions, Huntsville, AL	

Thursday, 10 January 2019						
468-APA-46	**Transonic Aerodynamics**					**Hillcrest B**
Chaired by: J. FREEMAN, Air Force Institute of Technology and R. DOWGWILLO, Boeing Engineering Operations & Technology						
1400 hrs AIAA-2019-1844 **Effect of Lip Shape on Shock Wave-Boundary Layer Interactions in Transonic Intakes at Incidence** A. Coschignano, H. Babinsky, University of Cambridge, Cambridge, United Kingdom	1430 hrs AIAA-2019-1845 **FSI study of 2D adaptive shock control bumps** M. Gramola, P. Bruce, M. Santer, Imperial College London, London, United Kingdom	1500 hrs AIAA-2019-1846 **Self-sustained shock-wave oscillation mechanisms of transonic airfoil buffet** Y. Fukushima, S. Kawai, Tohoku University, Sendai, Japan	1530 hrs AIAA-2019-1847 **Secondary Crossflow Instabilities on the JAXA Transonic Aircraft Wing** Y. Ide, T. Ishida, N. Tokugawa, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan	1600 hrs AIAA-2019-1848 **Drag Minimization of Co-Flow Jet Control Surfaces at Cruise Conditions** K. Xu, J. Zhang, G. Zha, University of Miami, Coral Gables, FL		

Thursday, 10 January 2019						
469-APA-47	**Unsteady Aerodynamics II**					**Seaport H**
Chaired by: C. TILMANN, AFRL/RQV and A. VOEGELE, The Aerospace Corporation						
1400 hrs AIAA-2019-1849 **Techniques for Improving Neural Network-based Aerodynamics Reduced-order Models** Q. Wang, R. Medeiros, C. Cesnik, K. Fidkowski, University of Michigan, Ann Arbor, Ann Arbor, MI; J. Brezillon, H. Bleecke, Airbus, Toulouse, France	1430 hrs AIAA-2019-1850 **Novel Reduced Order Modeling Methods for CFD Data: Application to Ship Airwake Data** X. Wang, Arizona State University, Tempe, AZ; D. Sarhaddi, Z. Wang, ZONA Technology, Inc., Scottsdale, AZ; M. Mignolet, Arizona State University, Tempe, AZ; P. Chen, ZONA Technology, Inc., Scottsdale, AZ	1500 hrs AIAA-2019-1851 **Modal Decomposition Analysis of Subsonic Unsteady Flow Around An Atmospheric Entry Capsule with Forced Oscillation** K. Kobayashi, Tokyo Metropolitan University, Hino, Japan; Y. Ohmichi, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan; M. Kanazaki, Tokyo Metropolitan University, Hino, Japan	1530 hrs AIAA-2019-1852 **Viscous Extension of the Unsteady Vortex Lattice Method** P. Mesalles Ripoll, A. Rezaei, H. Taha, University of California, Irvine, Irvine, CA	1600 hrs AIAA-2019-1853 **On the Dynamics of Unsteady Lift and Circulation and the Circulatory-Non-circulatory Classification** H. Taha, A. Rezaei, University of California, Irvine, Irvine, CA	1630 hrs AIAA-2019-1854 **Computation of Leishman-Beddoes model parameters using a combination of experiments and simulations** M. Sanchez Martinez, J. Boutet, University of Liège, Liège, Belgium; X. Amanodlese, École Polytechnique, Paris, France; V. Terrapon, G. Dimitriadis, University of Liège, Liège, Belgium	

Thursday, 10 January 2019						
470-AS-8	**Morphing Wings II**					**Pier**
Chaired by: A. ARRIETA, Purdue University and G. REICH						
1400 hrs AIAA-2019-1855 **In-flight Folding Wingtip System: Inspiration from the XB-70 Valkyrie** G. Dussart, M. Lone, Cranfield University, Cranfield, United Kingdom; C. O'Rourke, T. Wilson, Airbus, Bristol, United Kingdom	1430 hrs AIAA-2019-1856 **Passive Load Alleviation in Wind Turbine Blades from Selectively Compliant Bi-stable Morphing Flaps** A. Arrieta, Purdue University, West Lafayette, IN; W. Cavens, TMC, Eindhofen, The Netherlands; A. Chopra, Rutgers University, New Brunswick, NJ	1500 hrs AIAA-2019-1857 **Stretchable Structure for a Benchtop-Scale Morphed Leading Edge Demonstration** M. Jakubinek, S. Roy, M. Palardy-Sim, B. Ashrafi, F. Shadmehri, G. Renaud, National Research Council Canada, Ottawa, Canada; et al.	1530 hrs AIAA-2019-1858 **Manufacture and Testing of a Large-displacement Droop-Nose Morphing Wing Leading Edge** S. Vasista, J. Riemenschneider, H. Monner, German Aerospace Center (DLR), Braunschweig, Germany; F. Nolte, P. Horst, Technical University of Braunschweig, Braunschweig, Germany	1600 hrs AIAA-2019-1859 **Surrogate Model of Fish Bone Active Camber concept** S. Fournier, B. Woods, University of Bristol, Bristol, United Kingdom	1630 hrs AIAA-2019-1860 **A novel quasi-zero stiffness vibration isolator based on hybrid bistable composite laminate** H. Li, Shanghai Institute of Satellite Engineering, Shanghai, China; Z. Wu, Cardiff University, Cardiff, United Kingdom; T. Jiang, Shanghai Institute of Satellite Engineering, Shanghai, China	1700 hrs AIAA-2019-1861 **Design Approximation and Proof Test Methods for a Cellular Material Structure** N. Cramer, NASA Ames Research Center, Moffett Field, CA; B. Jenett, Massachusetts Institute of Technology, Cambridge, MA; S. Swei, K. Cheung, NASA Ames Research Center, Moffett Field, CA

Thursday, 10 January 2019

471-DS-6 — **Aeroelasticity II** — **Promenade B**

Chaired by: E. BLADES, ATA Engineering, Inc. and R. RUSOVICI, Florida Institute of Technology

1400 hrs	1430 hrs	1500 hrs	1530 hrs	1600 hrs	1630 hrs
AIAA-2019-1862	AIAA-2019-1863	AIAA-2019-1864	AIAA-2019-1865	AIAA-2019-1866	AIAA-2019-1867
Investigation of the Nonlinear Interaction of a Flutter/Limit Cycle Oscillation of a Cantilevered Wing with a Gust Excitation	**Testing of Folding Wing-Tip for Gust Load Alleviation in High Aspect Ratio Wing**	**Fundamental understanding of propeller whirl flutter through multibody dynamics**	**Utilizing Analytic and Direct Methods for the Verification and Validation of Whirl Flutter Analyses**	**Nonlinear Aeroelasticity: a CFD-based Adaptive Methodology for Flutter Prediction**	**Nonlinear Dynamics of Fluttering Multibay Panels in Supersonic Regime**
E. Dowell, J. Doherty, M. Joshi, M. Sharma, R. Kielb, M. Rauseo, Duke University, Durham, NC	R. Cheung, D. Rezgui, J. Cooper, University of Bristol, Bristol, United Kingdom; T. Wilson, Airbus, Bristol, United Kingdom	C. Hoover, J. Shen, University of Alabama, Tuscaloosa, Tuscaloosa, AL	N. Reveles, J. Schoneman, C. Rupp, E. Blades, ATA Engineering, Inc., San Diego, CA	R. Bombardieri, R. Cavallaro, Charles III University of Madrid, Madrid, Spain; M. Karpel, Technion–Israel Institute of Technology, Haifa, Israel	F. Marques, University of São Paulo, São Carlos, Brazil; A. Ferreira, University of Porto, Porto, Portugal

Thursday, 10 January 2019

472-F360-8 — **Forum 360: Verification & Validation in the Age of Autonomy** — **Seaport F**

1400 - 1600 hrs

Moderator: Julie Parish, Principal Member of Technical Staff, Navigation, Guidance, and Control, Sandia National Laboratories

Panelists:

Kris Kearns	**John Koelling**	**Natasha Neogi**	**James L. Paunicka**	**John Valasek**
Director, Strategy Soar Technology, Inc.	Project Manager, System Wide Safety NASA	Senior Research Scientist NASA Langley Research Center	Technical Fellow, Senior Researcher Boeing Research & Technology, The Boeing Company	Director, Vehicle Systems & Control Laboratory and Professor, Department of Aerospace Engineering Texas A&M University

Thursday, 10 January 2019

473-FD-55 — **Turbulence** — **Gaslamp A**

Chaired by: M. ANDINO, NASA-Langley Research Center and N. TICHENOR, Texas A&M University

1400 hrs	1430 hrs	1500 hrs	1530 hrs	1600 hrs	1630 hrs
AIAA-2019-1868	AIAA-2019-1869	AIAA-2019-1870	AIAA-2019-1871	AIAA-2019-1872	AIAA-2019-1873
Modified horizontal visibility graph and its application in turbulence	**Statistical Characterization of Atmospheric Turbulent Scales in Hot-Dry and Hot-Humid Climates**	**POD Analysis of Losing Symmetry in Late Flow Transition**	**Evaluation of Inflow Turbulent Fluctuation Effects on Laminar Separation Bubbles Using Large Eddy Simulations**	**Direct Calculation of a k-ε Model Parameter from Jet-in-Crossflow PIV Data**	**Effect of Co-flow Velocity Ratio on Compressible Round Jet: An LES Study**
X. Tao, H. Wu, University of Kansas, Lawrence, Lawrence, KS	H. Takahashi, T. Yuhara, M. Kanamori, Y. Makino, Japan Aerospace Exploration Agency (JAXA), Kakuda, Japan	S. Charkrit, X. Dong, C. Liu, University of Texas, Arlington, Arlington, TX	S. Kawai, University of Tokyo, Sagamihara, Japan; K. Asada, Tokyo University of Science, Tokyo, Japan; A. Oyama, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan	N. Miller, S. Beresh, M. Barone, Sandia National Laboratories, Albuquerque, NM	P. Thaker, S. Ghosh, Indian Institute of Technology Kharagpur, Kharagpur, India

Thursday, 10 January 2019

474-FD-56 — **Turbulent Mixing** — **Old Town B**

Chaired by: B. SMITH, Lockheed Martin Aeronautics and K. BHAGANAGAR

1400 hrs	1430 hrs	1500 hrs	1530 hrs
AIAA-2019-1874	AIAA-2019-1875	AIAA-2019-1876	AIAA-2019-1877
Unsteadiness in a Compressible Reattaching Shear Layer	**A Wind Tunnel Experiment for Symmetric Wakes in Adverse Pressure Gradients**	**The Structure of Side Jets in Globally-Unstable Round and Elliptical Jets**	**Influence of the Splitter Plate Thickness on the Near-Wake Dynamics of Compressible Turbulent Mixing Layers**
A. Deshpande, J. Poggie, Purdue University, West Lafayette, IN	W. Breitenstein, P. Scholz, R. Radespiel, Technical University of Braunschweig, Braunschweig, Germany; M. Burnazzi, T. Knopp, German Aerospace Center (DLR), Göttingen, Germany; E. Guseva, Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia; et al.	A. Tinklenberg, B. Tierney, D. Forliti, University of St. Thomas, St. Paul, MN	C. Stack, M. Adler, D. Gaitonde, Ohio State University, Columbus, OH

Thursday, 10 January 2019						
475-FD-57	**RANS Modeling and Applications**					**Mt. Whitney**
Chaired by: K. ABDOL-HAMID, NASA Langley Research Center and R. AGARWAL, Washington University in St Louis						
1400 hrs AIAA-2019-1878 **Development of kL-Based Linear, Nonlinear, and Full Reynolds Stress Turbulence Models** K. Abdol-Hamid, NASA Langley Research Center, Hampton, VA	1430 hrs AIAA-2019-1879 **A One-Equation Turbulence Model Based on k-kL Closure** S. Shuai, R. Agarwal, Washington University in St. Louis, St. Louis, MO	1500 hrs AIAA-2019-1880 **A New One Equation Turbulence Model Based on k-? Closure with Elliptic Blending** C. Peng, X. Han, R. Agarwal, Washington University in St. Louis, St. Louis, MO	1530 hrs AIAA-2019-1881 **A New Extension of Wray-Agarwal Wall Distance Free Turbulence Model to Rough Wall Flows** T. Wen, R. Agarwal, Washington University in St. Louis, St. Louis, MO	1600 hrs AIAA-2019-1882 **On the Use of Optimization Techniques for Turbulence Model Calibration** D. Yoder, NASA Glenn Research Center, Cleveland, OH; P. Orkwis, University of Cincinnati, Cincinnati, OH	1630 hrs AIAA-2019-1883 **Turbulence Model Development Using Markov Chain Monte Carlo Approximate Bayesian Computation** O. Doronina, C. Towery, J. Christopher, I. Grooms, P. Hamlington, University of Colorado, Boulder, Boulder, CO	1700 hrs AIAA-2019-1884 **Towards Integrated Field Inversion and Machine Learning With Embedded Neural Networks for RANS Modeling** J. Holland, J. Baeder, University of Maryland, College Park, College Park, MD; K. Duraisamy, University of Michigan, Ann Arbor, Ann Arbor, MI

Thursday, 10 January 2019						
476-FD-58	**LES II**					**Gaslamp D**
Chaired by: M. VYAS, NASA Glenn Research Center and R. KELLY						
1400 hrs AIAA-2019-1885 **Very Large Eddy Simulation (VLES) of a UH-60 Rotor in Hover** R. Kelly, A. Jemcov, University of Notre Dame, Notre Dame, IN	1430 hrs AIAA-2019-1886 **Evaluation of the Stretched-Vortex Subgrid-Scale Model for Large-Eddy Simulation with a Fourth-Order Finite Volume Algorithm** S. Walters, X. Gao, S. Guzik, Colorado State University, Fort Collins, CO	1500 hrs AIAA-2019-1887 **Wall bounded turbulent flows up to high Reynolds numbers: LES resolution assessment** G. Ahmadi, H. Kassem, B. Stoevesandt, J. Peinke, University of Oldenburg , Oldenburg, Germany; S. Heinz, University of Wyoming, Laramie, Laramie, WY	1530 hrs AIAA-2019-1888 **Numerical Study of the Transitional Flow around DU93-W-210 Airfoil using Large Eddy Simulation** Y. Wang, M. Chen, W. Song, Z. Han, Northwestern Polytechnical University, Xi'an, China	1600 hrs AIAA-2019-1889 **Entropy Behavior for Underresolved Discontinuous Galerkin Discretization of the Navier-Stokes Equations** C. Frontin, D. Darmofal, S. Allmaras, Massachusetts Institute of Technology, Cambridge, MA; S. Murman, NASA Ames Research Center, Moffett Field, CA	1630 hrs AIAA-2019-1890 **Sidewall Effects on Exact Reynolds-stress Budgets in an Impinging Shock Wave/Boundary Layer Interaction** M. Vyas, D. Yoder, NASA Glenn Research Center, Cleveland, OH; D. Gaitonde, Ohio State University, Columbus, OH	

Thursday, 10 January 2019						
477-FD-59	**Fluid-Structure/Membrane Interaction**					**Old Town A**
Chaired by: J. SEIDEL, USAF Academy and F. AVALLONE, Delft University of Technology						
1400 hrs AIAA-2019-1891 **An Experimental Investigation of the Dynamics of an Inverted Serrated Flag** K. Murugesan Pazhani, S. Acharya, Illinois Institute of Technology, Chicago, IL	1430 hrs AIAA-2019-1892 **Verification of a conjugate heat transfer tool with US3D** J. Reinert, A. Dwivedi, G. Candler, University of Minnesota, Twin Cities, Minneapolis, MN	1500 hrs AIAA-2019-1893 **Effects of Rib Number and Rigid Trailing Edge on Flexible-Skinned Thick Wing at Low Reynolds Number** K. Fujita, K. Uechi, K. Takahashi, H. Nagai, Tohoku University, Sendai, Japan	1530 hrs AIAA-2019-1894 **A 3D variational multibody aeroelastic formulation for bio-inspired flight dynamics in turbulent flow** G. Li, Y. Law, National University of Singapore, Singapore, Singapore; R. Jaiman, University of British Columbia, Vancouver, Canada	1600 hrs AIAA-2019-1895 **Control of Transitional Shock Boundary Layer Interaction using Surface Morphing** V. Shinde, D. Gaitonde, J. McNamara, Ohio State University, Columbus, OH	1630 hrs AIAA-2019-1896 **Fluid-Structure Interactions with Geometrically Nonlinear Deformations** J. Boustani, O. Browne, J. Wenk, University of Kentucky, Lexington, Lexington, KY; M. Barad, C. Kiris, NASA Ames Research Center, Moffett Field, CA; C. Brehm, University of Kentucky, Lexington, Lexington, KY	

Thursday, 10 January 2019						
478-FD-60	**Flow Control IV - Fundamentals and Applications**					**Gaslamp C**
Chaired by: D. BRZOZOWSKI, The Boeing Company and S. BHATTACHARYA, University of Central Florida						
1400 hrs AIAA-2019-1897 **Solving Generalized Eigenvalue Problem: an Alternative Approach for Dynamic Mode Decomposition** W. Zhang, M. Wei, Kansas State University, Manhattan, KS	1430 hrs AIAA-2019-1898 **Model Adaptation of an Improved Global POD-Galerkin Model** H. Gao, M. Wei, K. Jia, Kansas State University, Manhattan, KS	1500 hrs AIAA-2019-1899 **Designing Machine Learning Control Law of Dynamic Bubble Burst Control Plate for Stall Suppression** S. Asai, H. Yamato, Y. Sunada, K. Rinoie, University of Tokyo, Tokyo, Japan	1530 hrs AIAA-2019-1900 **Control of a Closed Separation Domain in Adverse Pressure Gradient Over a Curved Surface** C. Peterson, B. Vukasinovic, A. Glezer, Georgia Institute of Technology, Atlanta, GA			

Thursday, 10 January 2019						
479-FD-62	**Applied CFD II**					**Gaslamp B**
Chaired by: A. CORRIGAN, Naval Research Laboratory and D. WESTON, AFRL-RQVA						
1400 hrs AIAA-2019-1901 **Comparison of Computational and Experimental Results on a Transonic Hemisphere** D. Weston, S. Sherer, Air Force Research Laboratory, Wright-Patterson AFB, OH	1430 hrs AIAA-2019-1902 **Direct numerical simulation of an impinging jet in crossflow** N. Stegmeier, J. Kimn, J. Doom, South Dakota State University, Brookings, SD	1500 hrs AIAA-2019-1903 **DNS of High-Enthalpy Effects on Turbulent Flows** P. Kerkar, S. Ghosh, Indian Institute of Technology Madras, Chennai, India	1530 hrs AIAA-2019-1904 **Numerical Simulation of High Temperature Effects on High Enthalpy Flow Over Double Wedge Geometry** P. Thirunavukkarasu, S. Ghosh, Indian Institute of Technology Madras, Chennai, India	1600 hrs AIAA-2019-1905 **An Original and Consistent Method to Calculate Drag Increments Using CFD** M. Ferrari, F. Odaguil, Embraer, São José dos Campos, Brazil	1630 hrs AIAA-2019-1906 **The application and verification of modified nonlinear coupled constitutive relations model** Z. Yuan, W. Zhao, Z. Jiang, W. Chen, Zhejiang University, Hangzhou, China	

Thursday, 10 January 2019						
480-FD-63	**Stability and Transition of High-Speed Flows V**					**Mission Beach A**
Chaired by: M. BORG, Air Force Research Laboratory and M. GAMBA, University of Michigan						
1400 hrs AIAA-2019-1907 **Accurate and Efficient Modeling of Boundary-Layer Instabilities** A. Moyes, E. Beyak, T. Kocian, H. Reed, Texas A&M University, College Station, TX	1430 hrs AIAA-2019-1908 **Boundary Layer Transition on a Generic Model of Control Flaps in Hypersonic Flow** M. Leinemann, R. Radespiel, F. Muñoz, Technical University of Braunschweig, Braunschweig, Germany; S. Esquieu, French Alternative Energies and Atomic Energy Commission, Le Barp, France; G. McKiernan, S. Schneider, Purdue University, West Lafayette, IN	1500 hrs AIAA-2019-1909 **Crossflow Transition Acceleration with Plasma Actuators in Hypersonic Quiet Flow** H. Yates, T. Juliano, E. Matlis, University of Notre Dame, Notre Dame, IN; M. Tufts, Air Force Research Laboratory, Wright-Patterson AFB, OH	1530 hrs AIAA-2019-1910 **Unsteady scales of a supersonic backward-facing step flow via perturbation analysis** L. Riley, R. Ranjan, D. Gaitonde, Ohio State University, Columbus, OH			

Thursday, 10 January 2019						
481-GNC-34	**Space Robotic Systems**					**Cuyamuca Peak**
Chaired by: S. ULRICH, Carleton University						
1400 hrs AIAA-2019-1911 **Autonomous Docking for Exploration of Extraterrestrial Lakes** B. Page, J. Naglak, C. Kase, N. Mahmoudian, Michigan Technological University, Houghton, MI	1430 hrs AIAA-2019-1912 **Free-flying Spacecraft-mounted Manipulators: A Tool for Simulating Dynamics and Control** A. Antonello, University of Padua, Padua, Italy; A. Valverde, P. Tsiotras, Georgia Institute of Technology, Atlanta, GA	1500 hrs AIAA-2019-1913 **Local Trajectory Generation for Hopping Robots Exploring Celestial Bodies** S. Upadhyay, A. Aguiar, University of Porto, Porto, Portugal	1530 hrs AIAA-2019-1914 **Safe Spacecraft Rendezvous Using Dual Quaternions on Time-Dependent Trajectories Generated by Model Predictive Control** A. Buyukkocak, O. Tekinalp, Middle East Technical University, Ankara, Turkey	1600 hrs AIAA-2019-1915 **Autonomous Aerial Exploration for Topological Mapping of Mars Environments** E. Kaufman, T. Lee, George Washington University, Washington, D.C.	1630 hrs AIAA-2019-1916 **Multibody Approach to the Controlled Removal of Large Space Debris with Flexible Appendages** S. Singh, E. Mooij, D. Gransden, Delft University of Technology, Delft, The Netherlands	

Thursday, 10 January 2019						
482-GNC-35	**Aircraft Control**					**Skyline**
Chaired by: E. ARABI						
1400 hrs AIAA-2019-1917 **Control of Fuel Thermal Management Systems with Transport Delays** M. Oppenheimer, Air Force Research Laboratory, Wright-Patterson AFB, OH; D. Sigthorsson, Infoscitex Corporation, Dayton, OH; D. Doman, Air Force Research Laboratory, Wright-Patterson AFB, OH	1430 hrs AIAA-2019-1918 **Flight Controller Design Using μ-synthesis for Quad Tilt-Wing UAV** K. Masuda, K. Uchiyama, Nihon University, Funabashi, Japan	1500 hrs AIAA-2019-1919 **Design of a Pitch Axis Autopilot Control Law for an Executive Transport Aircraft** L. Kaviratna, G. Chung, J. Shin, R. Chandramohan, Gulfstream Aerospace Corporation, Savannah, GA	1530 hrs AIAA-2019-1920 **Terminal Sliding Mode Control for Spatial Descent of a Stratospheric Airship** **Keywords—Stratospheric Airship, Spatial Descent, Terminal Sliding Mode Control** Y. Zhang, M. Zhu, T. Chen, Beihang University, Beijing, China	1600 hrs AIAA-2019-1921 **Analysis of Stability Margins w.r.t Aircraft Dynamics and Augmenting Handling Qualities of an Aircraft with Direct Adaptive Controller** N. Prabhakar, R. Prazenica, Embry-Riddle Aeronautical University, Daytona Beach, FL; M. Balas, University of Tennessee, Tullahoma, Tullahoma, TN	1630 hrs AIAA-2019-1922 **Modeling and Incremental Nonlinear Dynamic Inversion Control for a Highly Redundant Flight System** J. Zhang, Technical University of Munich, Munich, Germany; J. Wang, Autelrobotics Europe, GmbH, Munich, Germany; F. Zhang, Beijing Institute of Technology, Beijing, China; F. Holzapfel, Technical University of Munich, Munich, Germany	1700 hrs AIAA-2019-1923 **Adaptive Augmentation of Incremental Nonlinear Dynamic Inversion Controller for an Extended F-16 Model** P. Bhardwaj, V. Akkinapalli, J. Zhang, S. Saboo, F. Holzapfel, Technical University of Munich, Garching, Germany

Thursday, 10 January 2019						
483-GNC-36	**Missile Impact Angle Control**					**Cowles Mountain**
Chaired by: B. BISWELL, Raytheon Missile Systems and A. RATNOO, Indian Institute of Science						
1400 hrs AIAA-2019-1924 **Impact Time Control with Generalized Look Angle Formulation under Constraint** R. Tekin, ASELSAN, Inc., Ankara, Turkey; K. Erer, ROKETSAN Missile Industries, Inc., Ankara, Turkey; F. Holzapfel, Technical University of Munich, Munich, Germany	1430 hrs AIAA-2019-1925 **Impact Time Control Methods Based on Time Dependent Shaping of the Fundamental States** R. Tekin, ASELSAN, Inc., Ankara, Turkey; K. Erer, ROKETSAN Missile Industries, Inc., Ankara, Turkey; F. Holzapfel, Technical University of Munich, Munich, Germany	1500 hrs AIAA-2019-1926 **Off-Target Look Angle Control Guidance Law for Moving Targets** I. Jeon, Agency for Defense Development, Daejeon, South Korea; M. Karpenko, Naval Postgraduate School, Monterey, CA	1530 hrs AIAA-2019-1927 **Field-of-View Constrained Impact Angle Control Guidance Guaranteeing Error Convergence before Interception** J. Kim, N. Cho, Y. Kim, Seoul National University, Seoul, South Korea	1600 hrs AIAA-2019-1928 **Optimal Guidance Solutions for Tactical Missiles by Maximizing Impact Angle** S. Snider, Naval Air Warfare Center, China Lake, CA	1630 hrs AIAA-2019-1929 **Detailed Analysis of Nonlinear Impact Angle Guidance Law via Controlling Line-Of-Sight Dynamics** U. Ates, ROKETSAN Missile Industries, Inc., Ankara, Turkey	

Thursday, 10 January 2019						
484-GNC-37	**Navigation, Estimation, and Tracking II**					**Twin Peaks**
Chaired by: M. MAJJI, State University of New York at Buffalo and H. CHAO, University of Kansas						
1400 hrs AIAA-2019-1930 **Optimal Multistatic Ultrasonic Sensors Based Indoor Navigation System** R. Kapoor, A. Gardi, R. Sabatini, RMIT University, Bundoora, Australia	1430 hrs AIAA-2019-1931 **Maximum Likelihood Analysis of the Total Least Squares Problem with Correlated Errors** J. Crassidis, State University of New York, Buffalo, NY; Y. Cheng, Mississippi State University, Mississippi State, MS	1500 hrs AIAA-2019-1932 **Laplace S\ell_1S Robust Kalman Smoother Based on Majorization Minimization** H. Wang, H. Li, Stevens Institute of Technology, Hoboken, NJ; W. Zhang, J. Zuo, H. Wang, Northwestern Polytechnical University, Xi'an, China	1530 hrs AIAA-2019-1933 **An Improved Maneuvering Target Tracking using State Dependent Adaptive Estimation with Probabilistic Data Association** R. Manish, D. Kim, Purdue University, West Lafayette, IN	1600 hrs AIAA-2019-1934 **Aerodynamic Variables and Loads Estimation Using Bio-Inspired Distributed Sensing** S. Araujo-Estrada, S. Windsor, University of Bristol, Bristol, United Kingdom		

Thursday, 10 January 2019						
485-GT-7	**Development, Application, and Validation of Flow Diagnostics in Ground Test Facilities**					**Harbor A**
Chaired by: W. HUMPHREYS, NASA Langley Research Center and S. SIMERLY, NASA Glenn Research Center						
1400 hrs AIAA-2019-1935 **A Qualitative Investigation of Selected Infrared Flow Visualization Image Processing Techniques** T. Garbeff, J. Baerny, NASA Ames Research Center, Moffett Field, CA	1430 hrs AIAA-2019-1936 **Development and Calibration of a new Anechoic Wall Jet Wind Tunnel** W. Devenport, W. Alexander, A. Kleinfelter, R. Repasky, N. Hari, L. Organski, Virginia Polytechnic Institute and State University, Blacksburg, VA; et al.	1500 hrs AIAA-2019-1937 **Concept of Solid Electrolyte Sensors for Atomic Oxygen Detection in High-Enthalpy Flows** I. Hörner, R. Öfele, M. Eberhart, S. Loehle, S. Fasoulas, University of Stuttgart, Stuttgart, Germany	1530 hrs AIAA-2019-1938 **Project Atlas - A Mobile, Trailer-Mounted, Rocket Engine Test Stand** A. Rajan, C. Herold Wright, E. Gravenhorst, I. Demirkiran, C. Mickels, N. Soderquist, Embry-Riddle Aeronautical University, Daytona Beach, FL; et al.			

Thursday, 10 January 2019						
486-GT-8	**Design/Development/Performance of New/Modified Ground Test Facilities and Subsystems**					**Bayview**
Chaired by: P. GOULDING, National Full-Scale Aerodynamics Complex, ARC and J. HOPF, Arnold Engineering Development Complex						
1400 hrs AIAA-2019-1939 **Shockwave/Boundary-Layer Interaction Studies Performed in the NASA Langley 20-Inch Mach 6 Air Tunnel** B. Bathel, S. Jones, N. Watkins, S. Berry, K. Goodman, W. Lipford, NASA Langley Research Center, Hampton, VA; et al.	1430 hrs AIAA-2019-1940 **HIFiRE-1 Post-Flight Experiments in the University of Oxford's High Density Tunnel** S. Wylie, M. McGilvray, University of Oxford, Oxford, United Kingdom	1500 hrs AIAA-2019-1941 **Commissioning of the T6 Stalker Tunnel** P. Collen, L. Doherty, M. McGilvray, I. Naved, R. Penty Geraets, T. Hermann, University of Oxford, Oxford, United Kingdom; et al.	1530 hrs AIAA-2019-1942 **A free-piston driven shock tube for generating extreme aerodynamic environments** K. Lynch, J. Wagner, Sandia National Laboratories, Albuquerque, NM	1600 hrs AIAA-2019-1943 **Review of the VKI Longshot Hypersonic Tunnel Operation for Martian Entries** Z. Ilich, G. Grossir, S. Paris, O. Chazot, von Kármán Institute for Fluid Dynamics, Rhode-Saint-Genèse, Belgium	1630 hrs AIAA-2019-1944 **Kirsten Wind Tunnel Flow Quality Assessment: 2018** C. Knowlen, M. Hudgins, University of Washington, Seattle, Seattle, WA	

Thursday, 10 January 2019						
487-GTE-7	**Innovations in Gas Turbine Engines**					**Highland Peak**
Chaired by: K. AHMED, University of Central Florida						
1400 hrs AIAA-2019-1945 **A New Technology Engine** C. Richards, Richards Research, Thousand Oaks, CA	1430 hrs AIAA-2019-1946 **Recuperator Integration with Small Turbine Engine** K. Moosmann, N. Grannan, J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH; F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs AIAA-2019-1947 **Investigation of a Geared Turbofan for Small Unmanned Aircraft Systems** R. KC, A. Ngo, C. Rhyne, K. Rouser, Oklahoma State University, Stillwater, OK	1530 hrs AIAA-2019-1948 **Multi-point Design and Optimization of a Turboshaft Engine for Tiltwing Turboelectric VTOL Air Taxi** J. Chapman, NASA Glenn Research Center, Cleveland, OH	1600 hrs AIAA-2019-1949 **Analytical Modelling and Validation of a Turbofan Engine at Design Conditions** I. Arif, National University of Sciences and Technology (NUST), Islamabad, Pakistan; J. Masud, Air University, Islamabad, Pakistan; A. Javed, National University of Sciences and Technology (NUST), Islamabad, Pakistan; Z. Toor, Air University, Islamabad, Pakistan; S. Shah, National University of Sciences and Technology (NUST), Islamabad, Pakistan		

Thursday, 10 January 2019						
488-GTE-8	**Turbines**					**Vista B**
Chaired by: M. POLANKA, US Air Force and J. BONS, Ohio State University						
1400 hrs AIAA-2019-1950 **The Impact of Manufacturing Variability on Multi-Passage High Pressure Turbine Aerodynamics** W. Lee, W. Dawes, J. Coull, University of Cambridge, Cambridge, United Kingdom; F. Goenaga, Rolls-Royce Group plc, Filton, United Kingdom	1430 hrs AIAA-2019-1951 **The Effect of Temperature and Melting Relative to Particle Deposition in Gas Turbines** N. Libertowski, N. Plewacki, J. Bons, Ohio State University, Columbus, OH	1500 hrs AIAA-2019-1952 **Performance Analysis of Labyrinth Seals Using Analytical Methods and Numerical Techniques** A. Yar, Z. Sohail, H. Anwar, J. Masud, Z. Toor, Air University, Islamabad, Pakistan				

Thursday, 10 January 2019						
489-HIS-4	**International Aerospace History**					**Marina Room**
Chaired by: J. BLANTON, Classic Engineering, LLC						
1400 hrs AIAA-2019-1953 **The South Atlantic aerial crossing of Joao Ribeiro de Barros in 1927** F. Marques, University of São Paulo, São Carlos, Brazil; R. Vasconcellos, São Paulo State University, São João da Boa Vista, Brazil	1430 hrs AIAA-2019-1954 **Precision Sextant: An Early Portuguese Landmark on Aeronautical History** F. Neves, A. Silva, J. Barata, University of Beira Interior, Covilha, Portugal	1500 hrs AIAA-2019-1955 **Avro Arrow: World-Beater and Myth** W. Gordon, Moog, Inc., East Aurora, NY	1530 hrs AIAA-2019-1956 **Ferdinand Ferber, the Initiator of Modern French Flying** F. Culick, California Institute of Technology, Pasadena, CA	1600 hrs AIAA-2019-1957 **What Happened to the Wright Brothers after 1903 and 1908?** F. Culick, California Institute of Technology, Pasadena, CA	1630 hrs AIAA-2019-1958 **Frosty Weather: The Regulatory History of Aircraft Operations in Freezing Conditions** R. Leader, T. Takahashi, Arizona State University, Tempe, AZ	

Thursday, 10 January 2019		
490-HUB-26 **1400 - 1430 hrs**	**Manufacturing - Empowering Ideas and Designs To Fly**	**the Hub Hangar**

Thursday, 10 January 2019						
491-IS-22	**Systems Health Management (SHM) (Invited)**					**Solana Beach A**
Chaired by: C. KULKARNI, NASA Ames Research Center and W. MAUL						
1400 hrs AIAA-2019-1959 **Underwater Thruster Fault Detection and Isolation (Invited)** M. Kemp, Monterey Bay Aquarium Research Institute (MBARI), Moss Landing, CA	1430 hrs AIAA-2019-1960 **System Health Management for Safe Automatic Take-off (Invited)** A. Zollitsch, N. Mumm, F. Holzapfel, J. Schumann, Technical University of Munich, Garching, Germany	1500 hrs AIAA-2019-1961 **Model-based System Health Management and Contingency Planning for Autonomous UAS (Invited)** J. Schumann, Stinger Ghaffarian Technologies, Inc., Moffett Field, CA; N. Mahadevan, Vanderbilt University, Nashville, TN; A. Sweet, A. Bajwa, M. Lowry, NASA Ames Research Center, Moffett Field, CA; G. Karsai, Vanderbilt University, Nashville, TN	1530 hrs AIAA-2019-1962 **Optimal Level Crossing Predictions for Electronic Prognostics (Invited)** J. Wang, J. Liu, H. Chen, J. Guinness, Cornell University, Ithaca, NY; R. Martin, NASA Ames Research Center, Moffett Field, CA; C. Kulkarni, Stinger Ghaffarian Technologies, Inc., Moffett Field, CA	1600 hrs AIAA-2019-1963 **NASA Platform for Autonomous Systems (NPAS) (Invited)** F. Figueroa, NASA Stennis Space Center, Stennis Space Center, MS; M. Walker, D2K Technologies, Oceanside, CA; L. Underwood, NASA Stennis Space Center, Stennis Space Center, MS	1630 hrs AIAA-2019-1964 **A Tensor-based Structural Health Monitoring Approach for Aeroservoelastic Systems (Invited)** P. Cheema, University of Sydney, Sydney, Australia; K. Nguyen, Commonwealth Scientific and Industrial Research Organisation (CSIRO), Sydney, Australia; M. Kidd, University of Manchester, Manchester, United Kingdom; G. Vio, University of Sydney, Sydney, Australia	

Thursday, 10 January 2019						
492-MAT-13	**Material Testing and Characterization**					**Mission Beach C**
Chaired by: R. NAIK and J. RANSOM, NASA Langley Research Center						
1400 hrs AIAA-2019-1965 **Interpretation of Experimental Tensile Test Results and Its Implication on Damage Modeling** S. Arnold, B. Lerch, T. Ricks, NASA Glenn Research Center, Cleveland, OH	1430 hrs AIAA-2019-1966 **Effect of Transverse Shear Deformation on Static and Dynamic Responses of Classes of Thick Fnctionally Graded Panels** S. Ghazzawi, W. Abdelrahman, King Fahd University of Petroleum and Minerals, Dhahran, Saudi Arabia	1500 hrs AIAA-2019-1967 **Fracture fatigue properties of Inconel 718 manufactured with Selective Laser Melting** F. Golinveaux, K. Riviera, University of California, Los Angeles, Los Angeles, CA; J. Rome, C. Sagrillo, Z. Kier, V. Goyal, The Aerospace Corporation, El Segundo, CA; et al.	1530 hrs AIAA-2019-1968 **Determining the Master Curve of Aged Solid Propellant Using a Dynamic Mechanical Analyzer** C. Wojnar, Missouri University of Science and Technology, Rolla, MO; T. Miller, K. Ghiassi, Air Force Research Laboratory, Edwards AFB, CA	1600 hrs AIAA-2019-1969 **Application of Stress Sensing Coatings on Metal Substrates with a Sub-surface Notch** M. Abdelgader, R. Esteves, R. Hoover, K. Vo, S. Jahan, S. Haldar, University of Central Florida, Orlando, FL; et al.	1630 hrs AIAA-2019-1970 **In-situ Evaluation of Epoxide Density for Airframe Epoxy Adhesives** T. Morimoto, H. Katoh, H. Kumazawa, Japan Aerospace Exploration Agency (JAXA), Mitaka, Japan	

Thursday, 10 January 2019						
493-MDO-18	**Emerging Methods, Algorithms and Software Development in MDO II**					**Harbor B**
Chaired by: F. ENGELSEN, The Boeing Company and S. DE, Virginia Tech						
1400 hrs AIAA-2019-1971 **Surrogate model based optimization of constrained mixed variable problems: application to the design of a launch vehicle thrust frame** J. Pelamatti, L. Brevault, M. Balesdent, ONERA, Palaiseau, France; E. Talbi, National Institute for Research in Computer Science and Control (INRIA), Lille, France; Y. Guerin, French Space Agency (CNES), Paris, France	1430 hrs AIAA-2019-1972 **Multidisciplinary Optimization and Performance Analysis Tool for Ballistic Missiles** M. Adsiz, ROKETSAN Missile Industries, Inc., Ankara, Turkey; A. Kutay, Middle East Technical University, Ankara, Turkey	1500 hrs AIAA-2019-1973 **Multi-objective optimization using Deep Gaussian Processes: Application to Aerospace Vehicle Design** A. Hebbal, L. Brevault, M. Balesdent, ONERA, Palaiseau, France; E. Talbi, N. Melab, National Institute for Research in Computer Science and Control (INRIA), Lille, France				

Thursday, 10 January 2019						
494-MST-15/SOF-10	**Simulation-Based Software Development and Verification III**					**Eagle Peak**
Chaired by: H. AYDEMIR, TAI - Turkish Aerospace Industries and C. TORENS, DLR - German Aerospace Center						
1400 hrs AIAA-2019-1974 **Rapid Virtual Object Development using Photogrammetric Imagery Obtained with Small Unmanned Aircraft Systems -Applications for Disaster Assessment and Cultural Heritage Preservation (Invited)** N. Macchiarella, J. Robbins, D. Cashdollar, Embry-Riddle Aeronautical University, Daytona Beach, FL	1430 hrs AIAA-2019-1975 **Utilizing Operation-Specific Scenario Description Language for Description of UAS Concept of Operations (Invited)** C. Torens, U. Durak, F. Nikodem, S. Schirmer, J. Dauer, J. Dittrich, German Aerospace Center (DLR), Braunschweig, Germany	1500 hrs AIAA-2019-1976 **Flight Simulator-Based Verification for Model-Based Avionics Applications on Multi-Core Targets (Invited)** P. Ulbig, D. Müller, C. Torens, German Aerospace Center (DLR), Braunschweig, Germany; C. Insaurralde, University of the West of England, Bristol, United Kingdom; T. Stripf, Emmtrix Technologies, Karlsruhe, Germany; U. Durak, German Aerospace Center (DLR), Braunschweig, Germany	1530 hrs AIAA-2019-1977 **Advanced Logging And Analytics Infrastructure For Simulation Based Verification (Invited)** H. Aydemir, U. Zengin, Turkish Aerospace Industries, Inc., Ankara, Turkey	1600 hrs AIAA-2019-1978 **A Simulation-Based Machine Learning Approach for Flight Control System Design of Agile Maneuvering Multicopters (Invited)** B. Yuksek, S. Uzun, B. Akbiyik, Istanbul Technical University, Istanbul, Turkey; A. Bayrak, U. Demirezen, Defense Technologies Engineering and Trade Inc. (STM), Ankara, Turkey; G. Inalhan, Istanbul Technical University, Istanbul, Turkey	1630 hrs AIAA-2019-1979 **A Simulation-Based Development and Verification Architecture for Micro UAV Teams and Swarms (Invited)** M. Akcakoca, B. Atici, B. Gever, S. Oguz, Defense Technologies Engineering and Trade Inc. (STM), Ankara, Turkey; U. Demirezen, M. Demir, Istanbul Technical University, Istanbul, Turkey; et al.	

Thursday, 10 January 2019						
495-MST-16	**Topics in Modeling and Simulation Topics**					**Pyramid Peak**
Chaired by: S. BHANDARI, Cal Poly Pomona and J. CARLSON						
1400 hrs AIAA-2019-1980 **Modeling and Simulation of Vehicle Performance in a UAV Swarm Using Horizon Simulation Framework** A. Frye, E. Mehiel, California Polytechnic State University, San Luis Obispo, CA	1430 hrs AIAA-2019-1981 **Modeling and Simulation of UAV Carrier Landings** G. Misra, T. Gao, X. Bai, Rutgers University, Piscataway, NJ	1500 hrs AIAA-2019-1982 **Practical System Identification for Small VTOL Unmanned Aerial Vehicle** M. Gandhi, L. Whitcher, E. Theodorou, Georgia Institute of Technology, Atlanta, GA; E. Johnson, Pennsylvania State University, University Park, PA	1530 hrs AIAA-2019-1983 **A 2-DoF Haptic Support System for Helicopter Control Tasks based on Pilot Intent Estimation** G. D'Intino, M. Olivari, S. Geluardi, Max Planck Society, Tübingen, Germany; L. Pollini, University of Pisa, Pisa, Italy; H. Bülthoff, Max Planck Society, Tübingen, Germany	1600 hrs AIAA-2019-1984 **Evaluating RPAS Integration with General Aviation Traffic by means of Real-Time Human-in-the-Loop Simulations** E. De Lellis, E. Bove, U. Ciniglio, F. Corraro, G. Corraro, E. Filippone, Italian Aerospace Research Center (CIRA), Capua, Italy; et al.	1630 hrs AIAA-2019-1985 **Differential Flatness-based Optimal Air Combat Maneuver Strategy Generation** B. Baspinar, E. Koyuncu, Istanbul Technical University, Istanbul, Turkey	

Thursday, 10 January 2019						
496-MVCE-3	**Grid Generation II**					**Iron Mountain**
Chaired by: H. THORNBURG, Egility PETTT						
1400 hrs AIAA-2019-1986 **An Overset Mesh Framework for an Isentropic ALE Navier-Stokes HDG Formulation** J. Kauffman, W. George, National Institute of Standards and Technology, Gaithersburg, MD; J. Pitt, Virginia Polytechnic Institute and State University, Blacksburg, VA	1430 hrs AIAA-2019-1987 **Further Development and Performance Assessment of Automatic Partitioning Algorithms for Structured Overset Grids** S. Sherer, D. Garmann, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs AIAA-2019-1988 **Smooth Quad Meshing via Vertex Regularization and Curvature Driven Optimization** J. Docampo-Sanchez, R. Haimes, Massachusetts Institute of Technology, Cambridge, MA	1530 hrs AIAA-2019-1989 **QUAD-GEN: An indirect method to create all-quadrilateral grids** Z. Zhu, University of California, Irvine, Irvine, CA; Y. Jung, J. Baeder, A. Costenoble, University of Maryland, College Park, College Park, MD	1600 hrs AIAA-2019-1990 **Comparing Medial Axis and Cross-Field Approaches to Automatic 2D CFD Mesh Generation** J. Bucklow, P. Beben, R. Fairey, International TechneGroup, Inc., Cambridge, United Kingdom	1630 hrs AIAA-2019-1991 **Stable, High-Order and Conservative Cut-Cell Methods** P. Brady, D. Livescu, Los Alamos National Laboratory, Los Alamos, NM	

Thursday, 10 January 2019						
497-MVCE-4	**Grid Adaptation**					**Kingston Peak**
Chaired by: T. MICHAL, Boeing Engineering Operations & Technology and S. KARMAN, Pointwise, Inc.						
1400 hrs AIAA-2019-1992 **Extension of local cavity operators to 3d+t space-time mesh adaptation** P. Caplan, R. Haimes, D. Darmofal, M. Galbraith, Massachusetts Institute of Technology, Cambridge, MA	1430 hrs AIAA-2019-1993 **Parallel high-order anisotropic meshing using discrete metric tensors** D. Ekelschot, M. Ceze, S. Murman, A. Garai, NASA Ames Research Center, Moffett Field, CA	1500 hrs AIAA-2019-1994 **Reacting Gas Adjoint-Based Grid Adaptation in FUN3D** K. Basore, Universities Space Research Association, Hampton, VA	1530 hrs AIAA-2019-1995 **Parallel Anisotropic Unstructured Grid Adaptation** C. Tsolakis, N. Chrisochoides, Old Dominion University, Norfolk, VA; M. Park, NASA Langley Research Center, Hampton, VA; A. Loseille, National Institute for Research in Computer Science and Control (INRIA), Palaiseau, France; T. Michal, The Boeing Company, St. Louis, MO	1600 hrs AIAA-2019-1996 **Mesh Adaptation for Wakes via Surface Insertion** S. Malik, C. Ollivier Gooch, University of British Columbia, Vancouver, Canada	1630 hrs AIAA-2019-1997 **Physics-Based Mesh Fitting Algorithms for Hypersonic Flows Simulations** F. Ben Ameur, A. Lani, von Kármán Institute for Fluid Dynamics, Rhode-Saint-Genèse, Belgium	

Thursday, 10 January 2019						
498-NDA-10	**Model Order Reduction and Surrogate Modeling Approaches**					**Torrey Hills A**
Chaired by: E. FORSTER, AFRL - Air Force Research Laboratory(AFRL/RQ) and A. CHAUDHURI, Massachusetts Institute of Technology						
1400 hrs AIAA-2019-1998 **Multi-Fidelity Sparse Polynomial Chaos Surrogate Models for Flutter Database Generation** M. Rumpfkeil, University of Dayton, Dayton, OH; D. Bryson, P. Beran, Air Force Research Laboratory, Wright-Patterson AFB, OH	1430 hrs AIAA-2019-1999 **Multi-Fidelity Modeling using Non-Deterministic Localized-Galerkin Approach** H. Bae, A. Beachy, Wright State University, Dayton, OH; D. Clark, J. Deaton, E. Forster, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs AIAA-2019-2000 **Emulation of Frequency and Mode Shape Variation of As-manufactured Airfoils with Eigenvalue Veering and Crossing** J. Brown, E. Carper, J. Beck, A. Kaszynski, Air Force Research Laboratory, Wright-Patterson AFB, OH	1530 hrs AIAA-2019-2001 **Non-Deterministic Reduced Order Modeling for Mistuned Bladed Rotor Emulation** I. Boyd, H. Bae, Wright State University, Fairborn, OH; E. Carper, J. Brown, Air Force Research Laboratory, Wright-Patterson AFB, OH	1600 hrs AIAA-2019-2002 **Bayesian Surrogate Modeling of Bladed Disk Sector Mode Shape and Geometrical Spatial Variations** J. Beck, Perceptive Engineering Analytics, LLC, Minneapolis, MN; J. Brown, Air Force Research Laboratory, Wright-Patterson AFB, OH; A. Kaszynski, Advanced Engineering Solutions, Dayton, OH	1630 hrs AIAA-2019-2003 **Non-Deterministic Emulator for Mistuned Bladed Rotor Responses with Multi-Fidelity Modeling Approach** H. Bae, I. Boyd, Wright State University, Dayton, OH; E. Carper, J. Brown, Air Force Research Laboratory, Wright-Patterson AFB, OH	

Thursday, 10 January 2019						
499-OPS-1	**Space Operations and Support**					**Cityview B**
Chaired by: S. BURLEIGH, Jet Propulsion Laboratory and C. SIMPSON						
1400 hrs AIAA-2019-2004 **Space Traffic Management with a NASA UAS Traffic Management (UTM) Inspired Architecture** D. Murakami, S. Nag, M. Lifson, P. Kopardekar, NASA Ames Research Center, Moffett Field, CA	1430 hrs Oral Presentation **Leveraging Business Optimization to maximize the success and ROI of an IIoT and RFID program implementation in Space Operations** J. Crean, C. Fruscina, Crean & Associates, Lakeway, TX	1500 hrs AIAA-2019-2005 **Robust Features Extraction for On-board Monocular-based Spacecraft Pose Acquisition** V. Capuano, California Institute of Technology, Pasadena, CA; S. Alimo, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA; A. Ho, S. Chung, California Institute of Technology, Pasadena, CA	1530 hrs AIAA-2019-2006 **Preliminary Experimental Investigations of an Electrothermal Hypervelocity Accelerator** F. van Donkelaar, J. Penna, University of Washington, Seattle, Seattle, WA			

Thursday, 10 January 2019						
500-PC-19	**Novel Methods for Combustion Modeling**					**Harbor I**
Chaired by: T. DROZDA, NASA Langley Research Center and S. BARWEY, University of Michigan						
1400 hrs AIAA-2019-2007 **A transported probability density function method to propagate chemistry uncertainty in reacting flow CFD** X. Zhao, S. Calello, University of Connecticut, Storrs, Storrs, CT; H. Kolla, H. Najm, Sandia National Laboratories, Livermore, CA	1430 hrs AIAA-2019-2008 **Neural Network Closure Models for Estimating Flame Variables in a Liquid-Propellant Rocket Engine** Z. Shadram, T. Nguyen, A. Sideris, W. Sirignano, University of California, Irvine, Irvine, CA	1500 hrs AIAA-2019-2009 **Reduced Description of Dynamical Systems by Approximate Inertial Manifolds** M. Akram, M. Hassanaly, V. Raman, University of Michigan, Ann Arbor, Ann Arbor, MI	1530 hrs AIAA-2019-2010 **Data-Driven Dimension Reduction in Turbulent Combustion: Utility and Limitations** A. Nunno, B. Perry, J. Macart, M. Mueller, Princeton University, Princeton, NJ	1600 hrs AIAA-2019-2011 **Numerical aspects for physically accurate Direct Numerical Simulations of turbulent jets** N. Sharan, J. Bellan, California Institute of Technology, Pasadena, CA	1630 hrs AIAA-2019-2012 **Investigations and Improvement of Robustness of Reduced-Order Models of Reacting Flow** C. Huang, K. Duraisamy, University of Michigan, Ann Arbor, Ann Arbor, MI; C. Merkle, Purdue University, West Lafayette, IN	1700 hrs AIAA-2019-2013 **The oscillation and the location of a triple flame under acoustic oscillations are modeled and major mode of triple flame motion is analyzed by using a Deep Auto-Encoder (DAE) which is kind of Neural Network (NN).** M. Saito, K. Motohashi, T. Iezumi, M. Tanabe, Nihon University, Funabashi, Japan

Thursday, 10 January 2019						
501-PC-20	**Rocket and Air-Breathing Propulsion II**					**Hillcrest A**
Chaired by: D. GLAZE, Sandia National Laboratories and D. MICHAELS, Technion-Israel Institute of Technology						
1400 hrs AIAA-2019-2014 **Design of Solid Propellant Grain for Predefined Performance Criteria** A. Hashish, M. Ahmed, H. Abdallah, M. Elsanabawy, Military Technical College, Cairo, Egypt	1430 hrs AIAA-2019-2015 **Enhanced Solid Fuel Regression in a Hybrid Rocket Employing Additively Manufactured Fuels Exhibiting Novel Grain Port Geometries** T. Connell, G. Young, K. Beckett, D. Gonzalez, Naval Surface Warfare Center, Indian Head, MD	1500 hrs AIAA-2019-2016 **Investigation of Confinement and Heat Release Effects on Fluid Dynamics in a Scramjet Using IDDES** C. Donggang, D. Michaels, Technion-Israel Institute of Technology, Haifa, Israel	1530 hrs AIAA-2019-2017 **Practical and Technical Considerations with regard to Laser Ignition of Methane Fueled Combustion Devices** T. Fuller, R. Gejji, T. Buschhagen, W. Anderson, Purdue University, West Lafayette, IN			

Thursday, 10 January 2019						
502-PGC-10	**Rotating Detonation Pressure Gain Combustion III**					**Promenade A**
Chaired by: J. KASAHARA, Nagoya University						
1400 hrs AIAA-2019-2018 **Progress in Efficient, High-Fidelity, Rotating Detonation Engine Simulations** D. Schwer, R. Johnson, A. Kercher, D. Kessler, A. Corrigan, Naval Research Laboratory, Washington, D.C.	1430 hrs AIAA-2019-2019 **Injector Alignment Study for Variable Mixing in Rotating Detonation Rocket Engines** B. Bigler, J. Bennewitz, ERC, Inc., Edwards AFB, CA; S. Schumaker, S. Danczyk, W. Hargus, Air Force Research Laboratory, Edwards AFB, CA	1500 hrs AIAA-2019-2020 **Investigation of Channel Pressure Effect on Rotating Detonation Engine** P. Chang, W. Leong, J. Li, C. Teo, B. Khoo, National University of Singapore, Singapore, Singapore	1530 hrs AIAA-2019-2021 **Influence of Reactant Injection Parameters on RDC Mode of Operation** R. Bluemner, M. Bohon, H. Nguyen, C. Paschereit, Technical University of Berlin, Berlin, Germany; E. Gutmark, University of Cincinnati, Cincinnati, OH	1600 hrs AIAA-2019-2022 **Infinite Line Pressure Probe and Flush Transducer Measurements in a Rotating Detonation Engine Channel** A. Naples, Innovative Scientific Solutions, Inc., Dayton, OH; A. Knisely, Air Force Research Laboratory, Wright-Patterson AFB, OH; J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH; F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH	1630 hrs AIAA-2019-2023 **Hydrocarbon Fuel Effects on Non-premixed Rotating Detonation Engine Performance** T. Sato, V. Raman, University of Michigan, Ann Arbor, Ann Arbor, MI	

Thursday, 10 January 2019						
503-SCS-8	**High-Strain Composite Materials and Structures II**					**Torrey Hills B**
Chaired by: O. STOHLMAN, NASA Langley Research Center and A. BRINKMEYER, Oxford Space Systems						
1400 hrs AIAA-2019-2024 **Design, Analysis and Testing of a Composite Beam Roll-Out Array (COBRA) for Small Satellites** D. Turse, L. Adams, K. Medina, Roccor, LLC, Longmont, CO; K. Steele, T. Stern, SolAero Technologies, San Diego, CA	1430 hrs AIAA-2019-2025 **Using Non-Linear Homogenization to Model Fiber Microbuckling in the Bending of Soft Composites** S. Brachthauser Balcells, F. Lopez Jimenez, University of Colorado, Boulder, Boulder, CO	1500 hrs AIAA-2019-2026 **Scalability of Triangular Rollable and Collapsible Booms** K. Cox, K. Medina, Roccor, LLC, Longmont, CO	1530 hrs AIAA-2019-2027 **Viscoelastic Behaviors of Thin-Ply High Strain Composites** T. Rose, K. Medina, W. Francis, Roccor, LLC, Longmont, CO	1600 hrs AIAA-2019-2028 **Ultra-Thin, Ultra-Lightweight, and Multifunctional Skin for Highly Deformable Structures** Y. Yao, J. Taylor, L. Cirullo, R. Leguarda, B. Sheeran, X. Ning, Pennsylvania State University, University Park, PA		

Thursday, 10 January 2019						
504-SD-20	**Experimental Aeroelasticity and Structural Dynamics**					**Harbor E**
Chaired by: T. BARTKOWICZ, Boeing Defense, Space & Security						
1400 hrs AIAA-2019-2029 **Development of a Wind Tunnel Model for Active Flutter Suppression Studies** S. Ricci, F. Fonte, A. De Gaspari, L. Riccobene, P. Mantegazza, F. Toffol, Technical University of Milan, Milan, Italy; et al.	1430 hrs AIAA-2019-2030 **Experimental investigation of fluid-structure interaction phenomena during aircraft ditching** A. Iafrati, S. Grizzi, F. Olivieri, National Research Council (CNR), Rome, Italy	1500 hrs AIAA-2019-2031 **Model for Aeroelastic Response to Gust Excitation** J. Quenzer, A. Zongolowicz, K. Hinson, B. Barzgaran, E. Livne, M. Mesbahi, University of Washington, Seattle, Seattle, WA; et al.	1530 hrs AIAA-2019-2032 **Real-Time Hybrid Simulation and Experiment for Aeroelastic Testing of Flexible Wings** W. Su, W. Song, V. Hill, University of Alabama, Tuscaloosa, Tuscaloosa, AL	1600 hrs AIAA-2019-2033 **Development of an Aeroelastic In-Flight Testing System for a Flexible Wing Unmanned Aerial Vehicle using Acceleration and Strain Sensors** D. Castillo Zuñiga, A. Giacobini Souza, L. Goes, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil	1630 hrs AIAA-2019-2034 **Nonlinear Damping and Stiffness Identification Using Dynamic Test Response Data** V. Sharma, Leidos, Eglin AFB, FL; D. Reasor, Air Force Research Laboratory, Eglin AFB, FL; C. Denegri, Air Force SEEK EAGLE Office, Eglin AFB, FL; K. Massey, Leidos, Eglin AFB, FL	

Thursday, 10 January 2019						
505-SD-21	**Special Session: Adaptive Aeroelastic Wing Shaping Control II**					**Ocean Beach**
Chaired by: N. NGUYEN, NASA-Ames Research Center and L. VIRGIN, Duke University						
1400 hrs AIAA-2019-2035 **Performance Enhancement of the Flexible Transonic Truss-Braced Wing Aircraft Using Variable Camber Continuous Flaps** R. Bartels, B. Stanford, J. Waite, NASA Langley Research Center, Hampton, VA	1430 hrs AIAA-2019-2036 **Effect of Viscous Unsteady Aerodynamics on Flutter Calculation** H. Taha, A. Rezaei, University of California, Irvine, Irvine, CA	1500 hrs AIAA-2019-2037 **RANS simulations of a pitching and plunging VCCTEF airfoil toward a transonic flutter model** U. Kaul, N. Nguyen, NASA Ames Research Center, Moffett Field, CA	1530 hrs AIAA-2019-2038 **Efficient Time-Domain Simulations in Nonlinear Aeroelasticity** A. Del Carre, R. Palacios, Imperial College London, London, United Kingdom	1600 hrs AIAA-2019-2039 **An Integrated Flexible Aircraft Model for Optimization of Lift Distributions** T. Kier, M. Leitner, Ö. Süelözgen, M. Pusch, German Aerospace Center (DLR), Oberpfaffenhofen, Germany	1630 hrs AIAA-2019-2040 **Lifting-Line Analysis of Wing Twist to Minimize Induced Drag During Pure Rolling Motion** D. Hunsaker, Z. Montgomery, Utah State University, Logan, UT; J. Joo, Air Force Research Laboratory, Wright-Patterson AFB, OH	1700 hrs AIAA-2019-2041 **A Methodology for Roll Control of Morphing Aircraft** Z. Montgomery, D. Hunsaker, Utah State University, Logan, UT; J. Joo, Air Force Research Laboratory, Wright-Patterson AFB, OH

Thursday, 10 January 2019						
506-SEN-4	**Sensors**					**Cove**
Chaired by: T. HOWARD, University of New Mexico and T. FREY, Lockheed Martin Aeronautics						
1400 hrs AIAA-2019-2042 **Non-Destructive Evaluation of Composite and Metallic Structures using Photo-Acoustic Method** S. Wang, T. Tran, L. Xiang, Y. Liu, University of Oklahoma, Norman, Norman, OK	1430 hrs AIAA-2019-2043 **Ground Based Radar Interpretation of Satellite Shapes and Viewable Geometry** D. Romano, K. Nastasi, K. Schroeder, J. Black, Virginia Polytechnic Institute and State University, Blacksburg, VA	1500 hrs AIAA-2019-2044 **A High-Temperature Optical Sapphire Pressure Sensor For Harsh Environments** H. Zhou, University of Florida, Gainesville, Gainesville, FL; D. Mills, IC2, Gainesville, FL; A. Vera, A. Garraud, University of Florida, Gainesville, Gainesville, FL; W. Oates, Florida State University, Tallahassee, FL; M. Sheplak, University of Florida, Gainesville, Gainesville, FL	1530 hrs AIAA-2019-2045 **Development of a Two-Dimensional Wall Shear Stress Sensor for Wind Tunnel Applications** B. Freidkes, University of Florida, Gainesville, Gainesville, FL; D. Mills, Interdisciplinary Consulting Corporation, Gainesville, FL; C. Keane, Sandia National Laboratories, Albuquerque, NM; L. Ukeiley, M. Sheplak, University of Florida, Gainesville, Gainesville, FL	1600 hrs AIAA-2019-2046 **Robust-Straightforward Acoustic Event Detection & Localization Algorithm for Robotics Applications** M. Ramadan, A. Bani Younes, San Diego State University, San Diego, CA	1630 hrs AIAA-2019-2047 **Balancing Antenna Performance vs. Radar Cross Section for a Passive Radar-Detecting Sensor on an Aircraft** C. Marcus, Saab Group, Linköping, Sweden	

Thursday, 10 January 2019						
507-STR-18	**Multifunctional Structures**					**Golden Hill A**
Chaired by: D. NORWOOD, Lockheed Martin Aeronautics						
1400 hrs AIAA-2019-2048 **Structural Development and Multiscale Design Optimization of Additively Manufactured UAV with Blended Wing Body Configuration Employing Lattice Materials** M. Dinovitzer, C. Miller, A. Hacker, G. Wong, Z. Annen, P. Rajakareyar, Carleton University, Ottawa, Canada; et al.	1430 hrs AIAA-2019-2049 **Hydrodynamic Ram Compliant and Self-Sealing Fuel Cell Structures** D. McCarthy, L. Chiu, C. Gatley, C. Andrews, J. Childress, The Boeing Company, Mesa, AZ; M. Robeson, Army Aviation Development Directorate, Ft. Eustis, VA	1500 hrs AIAA-2019-2050 **A Comparison of Cellular Lattices Structures with Curved and Straight Inclined Walls** M. DiPalma, F. Gandhi, Rensselaer Polytechnic Institute, Troy, NY	1530 hrs AIAA-2019-2051 **Estimation of Effective Elastic Properties of General Multifunctional Honeycomb Structures Using a Unit Cell Method** T. Krishnamurthy, E. Saether, NASA Langley Research Center, Hampton, VA			

Thursday, 10 January 2019						
508-STR-19	**NASA ACC Section for High Energy Dynamic Impact**					**Golden Hill B**
Chaired by: L. ELDRED, NASA-Langley Research Center and B. JUSTUSSON, The Boeing Company						
1400 hrs AIAA-2019-2052 **An Overview of the NASA Advanced Composites Consortium High Energy Dynamic Impact Phase II Technical Path** B. Justusson, The Boeing Company, St. Louis, MO; J. Pang, The Boeing Company, Seattle, WA; M. Molitor, The Boeing Company, St. Louis, MO; M. Rassaian, R. Rosman, The Boeing Company, Seattle, WA	1430 hrs AIAA-2019-2053 **A Multiscale Nonlocal Progressive Damage Model for Composite Materials** K. Kodagali, S. Sockalingam, University of South Carolina, Columbia, Columbia, SC	1500 hrs AIAA-2019-2054 **Verification and Validation of a Three-Dimensional Composite Impact Model With Tabulated Input** R. Goldberg, T. Ricks, NASA Glenn Research Center, Cleveland, OH; K. Carney, P. DuBois, George Mason University, Fairfax, VA; B. Khaled, L. Shyamsunder, Arizona State University, Tempe, AZ; et al.	1530 hrs AIAA-2019-2055 **Characterizing and use of MAT162 material model for homogenized laminates in impact analysis** G. Aksel, G. Gopinath, M. Ritchey, L. Foster, R. Naik, Pratt & Whitney, Middletown, CT; M. Pereira, NASA Glenn Research Center, Cleveland, OH	1600 hrs AIAA-2019-2056 **The Use of Depth of Penetration Testing to Develop Element Erosion Parameters in LS-DYNA Explicit Simulations** B. Justusson, The Boeing Company, St. Louis, MO; J. Pang, The Boeing Company, Seattle, WA; M. Molitor, The Boeing Company, St. Louis, MO; M. Rassaian, The Boeing Company, Seattle, WA; M. Pereira, NASA Glenn Research Center, Cleveland, OH	1630 hrs AIAA-2019-2057 **Determination of Ballistic Limit of Skin-Stringer Panels Using Nonlinear, Strain-Rate Dependent Peridynamics** O. Weckner, M. Rassaian, J. Pang, The Boeing Company, Everett, WA; S. Silling, Sandia National Laboratories, Albuquerque, NM; F. Cuenca, The Boeing Company, Everett, WA	1700 hrs AIAA-2019-2058 **Evaluation of Ls-Dyna MAT162 for Modeling Composite Fastener Joints for High Rates of Loading** L. Gomez, G. Olivares, A. Kona, A. Bhasin, A. Gomez, S. Keshavanarayana, Wichita State University, Wichita, KS; et al.

Thursday, 10 January 2019		
509-TP-11 **1400 - 1500 hrs**	**2018 American Institute of Aeronautics and Astronautics Thermophysics Award Lectureship**	**Harbor C**

"Aerothermochemistry Modeling: When is High Fidelity Needed?"
Iain D. Boyd
James E. Knott Professor, Department of Aerospace Engineering
University of Michigan, Ann Arbor

Thursday, 10 January 2019						
510-TP-12	**Transport Systems**					**Balboa A**
Chaired by: A. BRUNE, NASA Langley Research Center						
1400 hrs AIAA-2019-2059 **Temporal Interpolation Methods for Transient CHT** R. Moretti, M. Errera, ONERA, Châtillon, France; F. Feyel, Safran Group, Châteaufort, France	1430 hrs AIAA-2019-2060 **Evaluation of the Computational Benefits of De-Coupling Convection and Conduction Heat Transfer on a Single Impinging Jet** R. Raja Zahirudin, J. Palacios, D. McLaughlin, Pennsylvania State University, University Park, PA	1500 hrs AIAA-2019-2061 **Homogenization Error in Radiative Transfer Simulations of Particle Clouds** K. Hansson, I. Boyd, University of Michigan, Ann Arbor, Ann Arbor, MI	1530 hrs AIAA-2019-2062 **Surface Heat Flux Measurement in Transpiration-Cooled Porous Materials using Plenum Pressure Data** F. Hufgard, S. Loehle, J. von Wolfersdorf, S. Fasoulas, University of Stuttgart, Stuttgart, Germany; M. Ewenz Rocher, T. Hermann, University of Oxford, Oxford, United Kingdom; et al.	1600 hrs AIAA-2019-2063 **Gas-Phase Recombination in Nonequilibrium Hypersonic Reacting Flows** S. Gimelshein, ERC, Inc., Edwards AFB, CA	1630 hrs AIAA-2019-2064 **Proposal of Feedback Control Systems for Thermal Driven High Power Density Actuator** K. Sugita, K. Miyata, S. Hara, Nagoya University, Nagoya, Japan; M. Otsuki, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan; T. Ikeda, Chubu University, Kasugai, Japan	

Thursday, 10 January 2019						
511-TP-13/PDL-16	**Plasmadynamics and Thermophysics**					**Balboa B**
Chaired by: D. HASH, NASA - ARC						
1400 hrs AIAA-2019-2065 **Kinetic Studies of Excited Singlet Oxygen Atoms O(1D) Reactions with Fuels in Plasma Assisted Combustion** H. Zhong, C. Yan, C. Teng, T. Chen, A. Rousso, G. Wysocki, Princeton University, Princeton, NJ; et al.	1430 hrs AIAA-2019-2066 **Space and time analysis of the N_2 vibrational non-equilibrium in the N_2 and air nanosecond discharge afterglow** Y. Wu, C. Limbach, A. Tropina, R. Miles, Texas A&M University, College Station, TX	1500 hrs AIAA-2019-2067 **Energy Accommodation from NO Recombination in Air Plasmas** R. Herrmann-Stanzel, J. Meyers, D. Fletcher, University of Vermont, Burlington, Burlington, VT	1530 hrs AIAA-2019-2068 **Atomic radiation of a recombining nitrogen plasma** A. Tibère-Inglesse, S. McGuire, C. Laux, CentraleSupélec, Gif-sur-Yvette, France	1600 hrs AIAA-2019-2069 **Steady-State Experimental Evaluation of Pyrolysis Gas and Plasma Reactions** P. Jagun, R. Stanzel, D. Fletcher, J. Meyers, University of Vermont, Burlington, Burlington, VT	1630 hrs AIAA-2019-2070 **Thermodynamic and Transport Properties of HAN-Based Electric Solid Propellant Vapor Plasma** M. Glascock, Missouri University of Science and Technology, Rolla, MO; J. Rovey, University of Illinois, Urbana-Champaign, Urbana, IL	

Thursday, 10 January 2019						
512-UAS-9	**Detect and Avoid Technologies for UAS**					**Hillcrest D**
Chaired by: V. SCHULTZ, NASA Langley Research Center						
1400 hrs AIAA-2019-2071 **System Design of a FMCW Radar-Based Collision Detection Subsystem for an Airborne Detect-and-Avoid System On-Board of Small Unmanned Aircraft Systems** C. Ben, German Aerospace Center (DLR), Cologne, Germany	1430 hrs AIAA-2019-2072 **Skyshield: Detecting and Tracking Multiple Small Unmanned Aerial Vehicle in Real-Time** J. Yoon, M. Feng, H. Xu, University of Nevada, Reno, Reno, NV	1500 hrs AIAA-2019-2073 **Detect and Avoid Alerting Performance with Limited Surveillance Volume for Non-Cooperative Aircraft** M. Wu, S. Lee, A. Cone, NASA Ames Research Center, Moffett Field, CA	1530 hrs AIAA-2019-2074 **Development of a Peripheral-Central Vision System for Small UAS Tracking** C. Kang, H. Chaudhry, C. Woolsey, K. Kochersberger, Virginia Polytechnic Institute and State University, Blacksburg, VA	1600 hrs AIAA-2019-2075 **Collision Avoidance System for Fixed-Wing UAVs using Ping-2020 ADS-B Transreceivers** T. Sherman, T. Elemy, M. Retherford, T. Cady, S. Bhandari, California State Polytechnic University, Pomona, CA	1630 hrs AIAA-2019-2076 **A Passive Cloud Detection System for UAV: System Functions and Validation** F. Funk, P. Stuetz, University of the German Federal Armed Forces, Neubiberg, Germany	

Thursday, 10 January 2019						
513-UAS-10/IS-23/SOF-7	**Unmanned Systems Mission Management, Coordination, Planning, and Autonomy III**					**Harbor D**
Chaired by: R. STANSBURY, Embry-Riddle Aeronautical University						
1400 hrs AIAA-2019-2077 **Remote UAS ID for Rapid Assessment of Flight and Vehicle Information** A. Ishihara, J. Rios, P. Venkatesan, NASA Ames Research Center, Moffett Field, CA	1430 hrs AIAA-2019-2078 **Fully-Automatic Geofencing Module for Unmanned Air Systems In Two Dimensional Space** D. Seiferth, B. Grüter, M. Heller, F. Holzapfel, Technical University of Munich, Garching, Germany	1500 hrs AIAA-2019-2079 **A Probabilistic Risk Assessment Framework for the Path Planning of Safe Task-Aware UAS Operations** U. Kaya, A. Dogan, M. Huber, University of Texas, Arlington, Arlington, TX				

Thursday, 10 January 2019						
514-WE-9	**Wake Physics and Modeling**					**Cityview A**
Chaired by: M. CHURCHFIELD, National Renewable Energy Laboratory and P. JHA, Envision Energy USA Ltd						
1400 hrs AIAA-2019-2080 **Predicting Wind Turbine Wake Breakdown Using a Free Vortex Wake Code** D. Marten, C. Paschereit, Technical University of Berlin, Berlin, Germany; X. Huang, M. Meinke, W. Schroeder, RWTH Aachen University, Aachen, Germany; J. Mueller, Technical University of Berlin, Berlin, Germany; et al.	1430 hrs AIAA-2019-2081 **Effects of Blade Load Distributions on Wind Turbine Wake Evolution Using Blade-Resolved Computational Fluid Dynamics Simulations** A. Edmonds, A. Hassanzadeh, A. Kirby, D. Mavriplis, J. Naughton, University of Wyoming, Laramie, Laramie, WY	1500 hrs AIAA-2019-2082 **Wake Characterization of a Multipurpose Scaled Wind Turbine Model** E. Nanos, J. Robke, F. Heckmeier, Technical University of Munich, Munich, Germany; K. Jones, University of Texas, Dallas, Richardson, TX; M. Cerny, Technical University of Munich, Munich, Germany; G. Iungo, University of Texas, Dallas, Richardson, TX; et al.	1530 hrs AIAA-2019-2083 **Forced wake meandering for rapid recovery of velocity deficits in a wind turbine wake** K. Kimura, University of Tokyo, Tokyo, Japan; Y. Tanabe, Y. Matsuo, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan; M. Iida, University of Tokyo, Tokyo, Japan	1600 hrs AIAA-2019-2084 **Can you accelerate wind turbine wake decay with unsteady operation?** D. Houck, E. Cowen, Cornell University, Ithaca, NY	1630 hrs AIAA-2019-2085 **Validation of Wind Plant Modeling Approaches in Complex Terrain** E. Quon, P. Doubrawa, J. Annoni, N. Hamilton, M. Churchfield, National Renewable Energy Laboratory, Golden, CO	1700 hrs AIAA-2019-2086 **FAST.Farm Response to Varying Wind Inflow and Discretization** K. Shaler, J. Jonkman, National Renewable Energy Laboratory, Golden, CO

Thursday, 10 January 2019		
515-HUB-27 **1500 - 1530 hrs**	**EIS's Girls Take Flight Presentation**	**the Hub Hangar**

Thursday, 10 January 2019		
516-HUB-28 **1530 - 1600 hrs**	**EIS's Girls Take Flight Demonstration**	**the Hub Launch Pad**

Thursday, 10 January 2019		
517-HUB-29 **1530 - 1600 hrs**	**Rocket Contest**	**the Hub Open Area**

Thursday, 10 January 2019		
518-NW-12 1530 - 1600 hrs	Thursday Afternoon Coffee Break	Grand Hall

Thursday, 10 January 2019		
519-MDO-19/CASE-4 1600 - 1730 hrs	Art in Engineering	Harbor B

This Multidisciplinary Design Optimization Technical Committee (MDO TC) sponsored CASE panel discussion, with encouraged audience interaction, will explore the relationship between the arts and engineering. While casually recognized as being related, this session will unwrap the specifics on how art techniques can positively impact the design and engineering of complex systems. Applications and approaches will be discussed along with future needs and areas to explore.

Moderator: Christian Dommell, Boeing Phantom Works

Panelists:

Robert Moreland
OCE Project Management Enterprise Integration
NASA

Ken Museth
Head of Simulation R&D, Weta Digital
Computational Scientist, SpaceX
CEO, Voxel Tech Inc.

Alejandro Salado
Assistant Professor of Systems Engineering
Virginia Polytechnic Institute and State University

Thursday, 10 January 2019		
520-SAT-2 1600 - 1730 hrs	From Functional to Inspirational Aerospace Art: STEM to STEAM	Harbor C

The goal of this session is to demonstrate how aerospace art is used to visualize advanced concepts, communicate technological advances, build cohesive teams, document historic events, and how it can impact the STEAM classroom.

Moderator: Cam Martin

Mark Pestana
Artist/Research Pilot

Michelle Rouch
Artist/Engineer

Aldo Spadoni
Artist/Engineer

Kathleen Fredette
Aerospace STEAM Education Director

Thursday, 10 January 2019		
521-NW-13 1730 - 1930 hrs	Women at SciTech Social Hour and Keynote	Seaport F

Heather Bulk
Chief Executive Officer and Co-Founder
Special Aerospace Services and SAS Manufacturing

All attendees are welcome

Friday

Friday, 11 January 2019		
522-SB-5 0730 - 0800 hrs	Friday Speaker Briefing	Session Rooms

Friday, 11 January 2019		
523-PLNRY-5 0800 - 0900 hrs	Customized Learning, When and Where You Need It	Seaport A-E

Speakers:

Eric Paterson
Aerospace and Ocean Engineering Department Head and Rolls-Royce Commonwealth Professor of Marine Propulsion
Virginia Polytechnic Institute and State University

John Tangney
Director, Human and Bioengineered Systems Division
Office of Naval Research

Friday, 11 January 2019		
524-NW-14 0900 - 0930 hrs	Friday Morning Coffee Break	Session Room Foyers

Friday, 11 January 2019						
525-AA-9	**Community Noise/Sonic Boom**					**Balboa C**
Chaired by: E. NESBITT, Boeing Commercial Airplanes and D. NARK, NASA Langley Research Center						
0930 hrs AIAA-2019-2087 **Auralization of Amplitude Modulated Helicopter Flyover Noise** S. Krishnamurthy, S. Rizzi, NASA Langley Research Center, Hampton, VA	1000 hrs AIAA-2019-2088 **Flyover-Noise Reduction of Commercial Aircraft via Reduced Slat Deflections and Modified Flight Procedures** B. Storms, J. Ross, J. Jensen, NASA Ames Research Center, Moffett Field, CA	1030 hrs AIAA-2019-2089 **Modeling, Analysis and Discussion of Future Airport Noise Scenarios of a Two-Runway Airport** F. Will, M. Hornung, Technical University of Munich, Munich, Germany	1100 hrs AIAA-2019-2090 **Alternate Departure Procedures for Takeoff Noise Mitigation at Atlanta Hartsfield-Jackson International Airport** A. Behere, D. Lim, M. Kirby, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1130 hrs AIAA-2019-2091 **Procedure for the Calculation of the Perceived Loudness of Sonic Booms** C. Bolander, D. Hunsaker, Utah State University, Logan, UT; H. Shen, The Boeing Company, Hazelwood, MO; F. Carpenter, Texas A&M University, College Station, TX	1200 hrs AIAA-2019-2092 **Application, Simulation, & Testing of Sonic Boom Reduction Methods** N. Clement, G. Salcedo, K. Ahumada, J. Giancola, I. Mendez, K. Lai, California State Polytechnic University, Pomona, CA; et al.	

Friday, 11 January 2019						
526-ACD-12/UAS-12	**Unmanned Aircraft Design I**					**Harbor H**
Chaired by: P. RAJ, Virginia Tech and P. MARZOCCA						
0930 hrs AIAA-2019-2093 **A case study of medium sized metal-composite hybrid structure UAV – Design and Fabrication** A. Jaiswal, H. Murthy, Indian Institute of Technology Madras, Chennai, India	1000 hrs AIAA-2019-2094 **Performance analysis and actuation mechanism selection of Albatross-inspired wing shape for tilt-wing drones** G. Sanchez, L. Escamilla, M. Hassanalian, G. Throneberry, A. Abdelkefi, New Mexico State University, Las Cruces, NM	1030 hrs AIAA-2019-2095 **Design Methodology for Heavy-Lift Unmanned Aerial Vehicles with Coaxial Rotors** W. Ong, S. Srigrarom, H. Hesse, University of Glasgow, Singapore, Singapore	1100 hrs AIAA-2019-2096 **Design and Development a Bimodal Unmanned System** D. Guo, RMIT University, Melbourne, Australia; A. Bacciaglia, University of Bologna, Bologna, Italy; M. Simpson, Imperial College London, London, United Kingdom; C. Bil, P. Marzocca, RMIT University, Melbourne, Australia	1130 hrs AIAA-2019-2097 **Systematic Approach to Conceptual Design Selection for Hybrid UAVs using Structured Design Methods** A. Kamal, A. Ramirez-Serrano, University of Calgary, Calgary, Canada	1200 hrs AIAA-2019-2098 **Sizing and aerodynamic analysis of biplane flapping wing nano air vehicle: theory and experiments** M. Ghommem, American University of Sharjah, Sharjah, United Arab Emirates; G. Throneberry, M. Hassanalian, New Mexico State University, Las Cruces, NM; M. Al-Marzooqi, N. Al-Zaabi, B. Hozhabr, American University of Sharjah, Sharjah, United Arab Emirates; et al.	

Friday, 11 January 2019						
527-ACD-13	**Flight Simulation and Test**					**Ocean Beach**
Chaired by: J. MERRET, University of Illinois at Urbana-Champaign and D. BENCHERGUI, Bombardier Inc.						
0930 hrs AIAA-2019-2099 **Helicopter Flight Test Data Simulation Using CCSU Flight Simulator** F. Wei, K. Trochsler, D. Broderick, Central Connecticut State University, New Britain, CT	1000 hrs Oral Presentation **Mars Electric Reusable Flyer Transonic Dynamics Tunnel Test** S. Geuther, D. North, NASA Langley Research Center, Hampton, VA	1030 hrs AIAA-2019-2100 **Technology Demonstration of a 1-ton Single Use Disposable Glider** M. Sarigul-Klijn, Logistic Gliders, Inc., Dixon, CA; N. Sarigul-Klijn, University of California, Davis, Davis, CA; M. Gionfriddo, Logistic Gliders, Inc., Dixon, CA	1100 hrs AIAA-2019-2101 **Propulsion-Airframe Structural Integration for a Subscale D8 Demonstration Vehicle** J. Chambers, N. Titchener, L. Wirsing, D. Hoffman, A. Treager, Aurora Flight Sciences, Manassas, VA			

Friday, 11 January 2019						
528-AMT-21	**Surface Temperature Measurements**					**Skyline**
Chaired by: Y. CHEN, Georgia Institute of Technology and D. PLEMMONS, National Aerospace Solutions						
0930 hrs AIAA-2019-2102 **Aerosol Deposition of Dysprosium-Doped Yttrium-Aluminum-Garnet for Phosphor Thermography Applications** W. Flores-Brito, J. Mahaffey, A. Vackel, K. Gabet Hoffmeister, Sandia National Laboratories, Albuquerque, NM	1000 hrs AIAA-2019-2103 **kHz-Rate Temperature Imaging Using Time-Domain Thermographic Phosphorescence** Z. Ayers, J. Fisher, A. Brown, S. Son, T. Meyer, Purdue University, West Lafayette, IN	1030 hrs AIAA-2019-2104 **On the Use of Infrared Thermography for Boundary Layer Analysis** C. Purser, P. Marzocca, M. Marino, RMIT University, Melbourne, Australia; D. Pook, Department of Defence, Melbourne, Australia	1100 hrs AIAA-2019-2105 **Temperature Sensitive Paint Response to Fluctuating/Decreasing Heating Loads in AEDC Tunnel 9** J. Juliano, Arnold Engineering Development Complex, White Oak, MD; K. Yu, University of Maryland, College Park, College Park, MD; I. Kurits, Arnold Engineering Development Complex, White Oak, MD; J. Burr, University of Maryland, College Park, College Park, MD	1130 hrs AIAA-2019-2106 **Study of Sensitivity vs. Excitation Time of LED Excited Thermographic Phosphors** E. Westphal, Purdue University, West Lafayette, IN; W. Flores-Brito, B. Wilburn, K. Gabet Hoffmeister, Sandia National Laboratories, Albuquerque, NM		

Friday, 11 January 2019						
529-AMT-22/APA-48	**Aerodynamic Measurements II - In-Flight Testing**					**Harbor G**
Chaired by: K. LOWE, Virginia Tech and C. GOYNE, University of Virginia						
0930 hrs AIAA-2019-2107 **Flow Measurement Techniques for Rotor Wake Characterization on Free-Flying Helicopters in Ground Effect** A. Bauknecht, University of Maryland, College Park, College Park, MD; C. Schwarz, M. Raffel, German Aerospace Center (DLR), Göttingen, Germany; S. Mailänder, University of Stuttgart, Stuttgart, Germany	1000 hrs AIAA-2019-2108 **Distributed Anemometry via High-Definition Fiber Optic Sensing** O. Ohanian, A. Boulanger, Luna Innovations, Inc., Blacksburg, VA; K. Lowe, Virginia Polytechnic Institute and State University, Blacksburg, VA	1030 hrs AIAA-2019-2109 **Sensor Fusion Framework for Real-Time Aerodynamic Load Estimation** R. Goswami, A. Kelkar, Iowa State University, Ames, IA; J. Vogel, VSI Aerospace, Ames, IA; D. Chaussee, Self, Ames, IA	1100 hrs AIAA-2019-2110 **Quantification and Visualization of Acoustic Disturbance inside a Supersonic Forward-Facing Cavity: a Simplified Supersonic-Parachute Model** T. Mizukaki, A. Kono, Tokai University, Hiratsuka, Japan; K. Yamada, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan	1130 hrs AIAA-2019-2111 **Flap Surface Pressure Measurements with 3D printed Pressure Belts in FQUROH Flight Demonstration** M. Kohzai, Y. Yokokawa, T. Takaishi, Y. Ito, K. Yamamoto, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan; H. Omotani, Tokyo Fluid Research Company, Ltd., Tokyo, Japan; et al.	1200 hrs AIAA-2019-2112 **Development of a Differential Optical Wall Shear Stress Sensor for High-Temperature Applications** D. Mills, T. Chen, S. Horowitz, Interdisciplinary Consulting Corporation, Gainesville, FL; M. Sheplak, University of Florida, Gainesville, Gainesville, FL	

Friday, 11 January 2019						
530-APA-49	**Applied Computational Aerodynamics: Methods and Results V**					**Hillcrest D**
Chaired by: P. JOHNSON, Boeing Commercial Airplanes and K. SREENIVAS, University of Tennessee at Chattanooga and SimCenter						
0930 hrs AIAA-2019-2113 **Analysis of Aerodynamic Flows over Partially Undulating Airfoil Surfaces** J. Krofta, G. Spencer, M. Janiczek, R. Loiacono, R. LeBeau, Saint Louis University, St. Louis, MO	1000 hrs AIAA-2019-2114 **DSMC Computations of SARA Reentry Capsule Exposed to Weakly Ionized Gas Flow** R. Palharini, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil; J. Azevedo, Aeronautics and Space Institute (IAE), São José dos Campos, Brazil; C. White, University of Glasgow, Glasgow, United Kingdom	1030 hrs AIAA-2019-2115 **Flow and Stability Analysis of a Hypersonic Boundary Layer over an Axisymmetric Cone Cylinder Flare Configuration** S. Esquieu, French Alternative Energies and Atomic Energy Commission, Le Barp, France; E. Benitez, S. Schneider, Purdue University, West Lafayette, IN; J. Brazier, ONERA, Toulouse, France	1100 hrs AIAA-2019-2116 **Viscous-Inviscid Analysis of Transonic Swept Wings using 2.5D RANS and Parametric Shapes** A. Kontogiannis, M. Parenteau, E. Laurendeau, Polytechnique Montréal, Montréal, Canada	1130 hrs AIAA-2019-2117 **Development and Testing of a Lagrangian-Eulerian CFD Analysis for Moving Body and Interactional Aerodynamics Analysis** G. Whitehouse, A. Boschitsch, J. Keller, Continuum Dynamics, Inc., Ewing, NJ		

Friday, 11 January 2019						
531-APA-50	**Airfoil/Wing/Configuration Aerodynamics IV**					**La Jolla B**
Chaired by: B. HINSON, Textron Aviation and G. GATLIN, NASA Langley Research Center						
0930 hrs AIAA-2019-2118 **Effect of Sweep on Airfoil Section Properties** J. Reid, D. Hunsaker, Utah State University, Logan, UT	1000 hrs AIAA-2019-2119 **A New Non-Linear Lifting Line Method for 3D Analysis of Wing / Configuration Aerodynamic Characteristics with Application to UAVs** H. Karali, M. Yükselen, G. Inalhan, Istanbul Technical University, Istanbul, Turkey	1030 hrs AIAA-2019-2120 **Comparison of Induced and Parasitic Drag on Wings with Minimum Induced Drag** S. Abdel-Motaleb, J. Taylor, D. Hunsaker, C. Coopmans, Utah State University, Logan, UT	1100 hrs AIAA-2019-2121 **Feasibility Study on Highly Distributed Lift Configurations** A. Truszkowski, M. Mongin, A. Altman, University of Dayton, Dayton, OH	1130 hrs AIAA-2019-2122 **Aerodynamic Force Breakdown Based on Vortex Force Theory** L. Kang, Peking University, Beijing, China; L. Russo, R. Tognaccini, University of Naples "Federico II", Naples, Italy; J. Wu, W. Su, Peking University, Beijing, China	1200 hrs AIAA-2019-2123 **Investigation of the Effect of Taper Stacking Location on Drag Force for ONERA M6 Wing** M. Kaya, M. Elfarra, F. Kadioglu, Ankara Yildirim Beyazit University, Ankara, Turkey	

Friday, 11 January 2019

532-APA-51	Special Session: Space Launch System Aerosciences II					Cityview B
Chaired by: J. PINIER, NASA LaRC						
0930 hrs AIAA-2019-2124 **Ascent Aerodynamic Force and Moment Database Development for the Space Launch System** P. Shea, J. Pinier, NASA Langley Research Center, Hampton, VA; H. Houlden, A. Favaregh, M. Hemsch, ViGYAN, Inc., Hampton, VA; D. Dalle, NASA Ames Research Center, Moffett Field, CA; et al.	1000 hrs AIAA-2019-2125 **Wind Tunnel Flow Field Visualizations of the Space Launch System Vehicle Ascent** T. Garbeff, J. Baerny, J. Ross, NASA Ames Research Center, Moffett Field, CA	1030 hrs AIAA-2019-2126 **Effect of Sting Geometry on Axial Force Calculation for the Space Launch System** C. Eggert, P. Shea, N. Ratnayake, S. Krist, NASA Langley Research Center, Hampton, VA	1100 hrs AIAA-2019-2127 **Comparison of SLS Sectional Loads from Pressure-Sensitive Paint and CFD** J. Meeroff, H. Lee, Science and Technology Corporation, Moffett Field, CA; D. Dalle, S. Rogers, N. Roozeboom, NASA Ames Research Center, Moffett Field, CA; J. Baerny, Jacobs, Moffett Field, CA	1130 hrs AIAA-2019-2128 **Comparison of Space Launch System Aerodynamic Surface Pressure Measurements from Experimental Testing and CFD** S. McMillin, P. Shea, NASA Langley Research Center, Hampton, VA; D. Dalle, S. Rogers, N. Roozeboom, NASA Ames Research Center, Moffett Field, CA; J. Meeroff, Science and Technology Corporation, Moffett Field, CA; et al.	1200 hrs AIAA-2019-2129 **Unsteady Pressure-Sensitive Paint Application on NASA's Space Launch System** N. Roozeboom, NASA Ames Research Center, Moffett Field, CA; J. Powell, NASA Johnson Space Center, Houston, TX; J. Baerny, C. Ngo, D. Murakami, T. Garbeff, NASA Ames Research Center, Moffett Field, CA; et al.	

Friday, 11 January 2019

533-CMS-1	Communication Systems					Solana Beach B
Chaired by: D. RAIBLE, NASA Glenn Research Center						
0930 hrs AIAA-2019-2130 **Beaconless Optical Communication System Constraints** E. Aretskin-Hariton, A. Swank, J. Gray, NASA Glenn Research Center, Cleveland, OH	1000 hrs AIAA-2019-2131 **On the Analysis of On-board Sensing and Off-board Sensing through Wireless Communication for UAV Path Planning in Wind Fields** M. Pinheiro, M. Liu, Y. Wan, A. Dogan, University of Texas, Arlington, Arlington, TX	1030 hrs Oral Presentation **Towards High-Rate Networked Communications in Space Systems** A. Hylton, NASA Glenn Research Center, Cleveland, OH				

Friday, 11 January 2019

534-DS-7	Tiltrotor II					Promenade B
Chaired by: W. WELSH, Sikorsky Aircraft Corporation and A. DATTA, University of Maryland, College Park						
0930 hrs AIAA-2019-2132 **Transient CFD/CSD Tiltrotor Stability Analysis** E. Corle, M. Floros, Army Research Laboratory, Aberdeen Proving Ground, MD; S. Schmitz, Pennsylvania State University, University Park, PA	1000 hrs AIAA-2019-2133 **Development of a New Aeroelastic Tiltrotor Wind Tunnel Testbed** A. Kreshock, Army Research Laboratory, Hampton, VA; C. Acree, NASA Ames Research Center, Moffett Field, CA; H. Kang, Army Research Laboratory, Hampton, VA; H. Yeo, Army Aviation and Missile Research, Development and Engineering Command, Moffett Field, CA	1030 hrs AIAA-2019-2134 **Aeroelastic Stability Analysis of a Full-Scale Isolated Proprotor on the Tiltrotor Test Rig** S. Kottapalli, C. Russell, C. Acree, T. Norman, NASA Ames Research Center, Moffett Field, CA	1100 hrs AIAA-2019-2135 **Soft-Inplane Tiltrotor Aeromechanics Analysis using RCAS** H. Kang, R. Singh, Army Research Laboratory, Aberdeen Proving Ground, MD; J. Shen, University of Alabama, Tuscaloosa, Tuscaloosa, AL	1130 hrs AIAA-2019-2136 **Design of A New Tilt Rotor Test Facility at the University of Maryland** F. Tsai, A. Datta, University of Maryland, College Park, College Park, MD		

Friday, 11 January 2019

535-F360-9 0930 - 1130 hrs	Forum 360: Workforce Needs of the 21st Century	Seaport F

Moderator: Dan Dumbacher, Executive Director, AIAA

Panelists:

Tim Cahill
Vice President, Integrated Air & Missile Defense
Lockheed Martin Missiles & Fire Control

Stephen Morford
Vice President, Core Systems Engineering
Pratt & Whitney

Michael Moses
President
Virgin Galactic

Tom Pieronek
Vice President, Basic Research
Northrop Grumman Aerospace Systems

Tamaira Ross
Principal Manager, New Glenn System Definition and Design
Blue Origin

Friday, 11 January 2019						
536-FD-64	**Modeling of Wall-Bounded Flows**					**Gaslamp C**
Chaired by: D. YODER, NASA Glenn Research Center and M. WOLFF, Wright State University						
0930 hrs AIAA-2019-2137 **Direct numerical simulations of random rough surfaces in turbulent channel flow** R. Ma, K. Alame, K. Mahesh, University of Minnesota, Twin Cities, Minneapolis, MN	1000 hrs AIAA-2019-2138 **Computational Investigation of the Conformal Vortex Generator** T. Wilson, R. KC, N. Lucido, B. Elbing, A. Alexander, J. Jacob, Oklahoma State University, Stillwater, OK; et al.	1030 hrs AIAA-2019-2139 **Studying the Effects of Compressibility in Planar Couette Flow using Resolvent Analysis** S. Dawson, B. McKeon, California Institute of Technology, Pasadena, CA	1100 hrs AIAA-2019-2140 **Realizable Dynamic LES of High Reynolds Number Turbulent Wall Bounded Flows** G. Ahmadi, H. Kassem, University of Oldenburg, Oldenburg, Germany; R. Mokhtarpoor, University of Wyoming, Laramie, Laramie, WY; B. Stoevesandt, J. Peinke, University of Oldenburg, Oldenburg, Germany; S. Heinz, University of Wyoming, Laramie, Laramie, WY	1130 hrs AIAA-2019-2141 **Direct Numerical Simulations of Turbulent Channel Flows with Sinusoidal Walls** S. Ganju, J. Davis, S. Bailey, C. Brehm, University of Kentucky, Lexington, Lexington, KY		

Friday, 11 January 2019						
537-FD-65	**Combustion: Computations and Modeling**					**Old Town A**
Chaired by: S. THAKUR, Streamline Numerics, Inc. and J. SYKES						
0930 hrs AIAA-2019-2142 **Numerical Design of an Experiment to Investigate Rayleigh-Taylor Instabilities in Reacting Flows** J. Sykes, T. Gallagher, Innovative Scientific Solutions, Inc., Dayton, OH; B. Rankin, Air Force Research Laboratory, Wright-Patterson AFB, OH	1000 hrs AIAA-2019-2143 **Compressible Flamelet Model with Thickened Flame Closure in an All-Speed Combustion Solver** S. Thakur, J. Wright, Streamline Numerics, Inc., Gainesville, FL; M. Ihme, Stanford University, Stanford, CA	1030 hrs AIAA-2019-2144 **Large Eddy simulation of a spray jet flame using filtered tabulated chemistry** A. Chatelier, CentraleSupélec, Gif-sur-Yvette, France; V. Moureau, National Institute of Applied Sciences (INSA), Saint-Étienne-du-Rouvray, France; N. Bertier, ONERA, Châtillon, France; B. Fiorina, CentraleSupélec, Gif-sur-Yvette, France	1100 hrs AIAA-2019-2145 **Kinematic Relationships between Physical and Fourier Space in Premixed Turbulent Combustion for Application to Large-Eddy Simulation** P. Lucena Kreppel Paes, Pennsylvania State University, University Park, PA; J. Brasseur, University of Colorado, Boulder, Boulder, CO; Y. Xuan, Pennsylvania State University, University Park, PA	1130 hrs AIAA-2019-2146 **CFD Deign of Jet-Stirred Reactors** A. Davani, Z. Zhou, P. Ronney, University of Southern California, Los Angeles, CA		

Friday, 11 January 2019						
538-FD-66	**Stability and Transition of High-Speed Flows VI**					**Harbor B**
Chaired by: N. TICHENOR, Texas A&M University and V. SOUSA						
0930 hrs AIAA-2019-2147 **DNS of Interactions Between Low-Frequency Waves and Second Mode in Hypersonic Boundary Layer Transition** S. Matsuyama, Y. Ide, H. Tanno, K. Itoh, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan	1000 hrs AIAA-2019-2148 **Global Transient-Growth Analysis of Hypersonic Flow on the HIFiRE-5 Elliptic Cone Model** H. Quintanilha Junior, V. Theofilis, University of Liverpool, Liverpool, United Kingdom; A. Hanifi, Royal Institute of Technology (KTH), Stockholm, Sweden	1030 hrs AIAA-2019-2149 **Computations of Measured Pitot-Probe Spectra using Angled Freestream Disturbances and Comparisons to Experiments** R. Chaudhry, G. Candler, University of Minnesota, Twin Cities, Minneapolis, MN; K. Gray, S. Schneider, Purdue University, West Lafayette, IN	1100 hrs AIAA-2019-2150 **Input-Output Analysis of Entropy Layer Instability on a 35° Ogive Geometry** A. Barrett, D. Cook, J. Thome, J. Nichols, G. Candler, University of Minnesota, Twin Cities, Minneapolis, MN	1130 hrs AIAA-2019-2151 **Numerical Investigation of Hypersonic Turbulence Transition Control Via Complex Wall Impedance** C. Scalo, V. Sousa, R. Bose, Purdue University, West Lafayette, IN		

Friday, 11 January 2019						
539-FD-67	**Shock Waves**					**Gaslamp D**
Chaired by: K. SINHA, Indian Institute of Technology, Bombay and A. GROSS, New Mexico State University						
0930 hrs AIAA-2019-2152 **A Numerical Investigation of Shock Wave Propagation in Ducts with Grooves.** S. Mortazawy, Embry-Riddle Aeronautical University, Daytona Beach, FL; K. Kontis, University of Glasgow, Glasgow, United Kingdom; J. Ekaterinaris, Embry-Riddle Aeronautical University, Daytona Beach, FL	1000 hrs AIAA-2019-2153 **Overpressure Fluctuation behind Spherical Shock Wave Propagating in Grid-generated Turbulence** K. Inokuma, T. Watanabe, K. Nagata, Y. Sakai, Nagoya University, Nagoya, Japan	1030 hrs AIAA-2019-2154 **Time Delay Response of a Mach 2 Pseudo-Shock to Downstream Forcing** L. Edelman, M. Gamba, University of Michigan, Ann Arbor, Ann Arbor, MI	1100 hrs AIAA-2019-2155 **Analysis and Modeling of Thermodynamic Fluctuations Generated by Shock-Turbulence Interaction** K. Sinha, Y. Madras Sethuraman, Indian Institute of Technology Bombay, Mumbai, India	1130 hrs AIAA-2019-2156 **Schlieren visualization of transonic and supersonic flow over a sphere at Reynolds number between 10^3 and 10^5 through free-flight tests** T. Nagata, A. Noguchi, T. Nonomura, T. Ogawa, K. Ohtani, K. Asai, Tohoku University, Sendai, Japan		

Friday, 11 January 2019						
540-FD-68	**Low Reynolds Number Aerodynamics**					**Old Town B**
Chaired by: M. ANDINO, NASA-Langley Research Center and S. BHATTACHARYA, University of Central Florida						
0930 hrs AIAA-2019-2157 **A Study of the Aerodynamics of a Low Reynolds Number Airfoil Translating Across a Uniform-Shear Approach Flow** M. Albrecht, A. Naguib, M. Koochesfahani, Michigan State University, East Lansing, MI	1000 hrs AIAA-2019-2158 **Effect of Leading Edge Serrations on Dynamic Stall at Re_c=30,000** S. Selvaraj, A. Sharma, Iowa State University, Ames, IA	1030 hrs AIAA-2019-2159 **Flow Field on Wing Surface with Control Surface in Propeller Slipstream at Low Reynolds Number** T. Ikami, K. Kanou, K. Takahashi, K. Fujita, H. Nagai, Tohoku University, Sendai, Japan	1100 hrs AIAA-2019-2160 **Experimental Study on High Efficiency of Aerodynamic Performance of Rotor Blades for Mars Helicopter** K. Kanou, K. Fujita, H. Nagai, Tohoku University, Sendai, Japan	1130 hrs AIAA-2019-2161 **Vorticity-Transfer in a Leading-Edge-Vortex due to Controlled Spanwise-Bending** T. Scofield, University of Central Florida, Orlando, FL; K. Jia, M. Wei, Kansas State University, Manhattan, KS; S. Bhattacharya, University of Central Florida, Orlando, FL	1200 hrs AIAA-2019-2162 **Computer and laboratory studies on the aerodynamics of the NACA 65(1)-412 at Reynolds number 20 000** J. Tank, University of Southern California, Los Angeles, CA; B. Klose, G. Jacobs, San Diego State University, San Diego, CA; G. Spedding, University of Southern California, Los Angeles, CA	

Friday, 11 January 2019						
541-FD-69	**Special Session: Unsteady Aerodynamics - Wind Tunnel Design and Study**					**Harbor A**
Chaired by: K. GRANLUND, North Carolina State University and A. MEDINA						
0930 hrs AIAA-2019-2163 **Design and Qualification of an UnsteadyWind Tunnel with an Upstream Louver System** D. Sinner, L. Droste, D. Bateman, J. Farnsworth, University of Colorado, Boulder, Boulder, CO	1000 hrs AIAA-2019-2164 **Development of a Setup and Measurement Procedure for Unsteady Model Velocities in a Large Water Towing Tank** M. Jentzsch, H. Schmidt, R. Woszidlo, C. Nayeri, C. Paschereit, Technical University of Berlin, Berlin, Germany	1030 hrs AIAA-2019-2165 **Experimental investigation of accelerating non-slender delta-wing planforms at high angle of attack** H. Tu, Syracuse University, Syracuse, NY; M. Marzanek, Queen's University, Kingston, Canada; M. Green, Syracuse University, Syracuse, NY; D. Rival, Queen's University, Kingston, Canada	1100 hrs AIAA-2019-2166 **A combined experimental and computational study of a vertical gust generator in a wind tunnel** N. Poudel, M. Yu, University of Maryland, Baltimore County, Baltimore, MD; Z. Smith, University of Maryland, College Park, College Park, MD; J. Hrynuk, Army Research Laboratory, Aberdeen Proving Ground, MD			

Friday, 11 January 2019						
542-FD-70	**Novel CFD Methods IV**					**La Jolla A**
Chaired by: Y. LV, Mississippi State University and A. EDOH						
0930 hrs AIAA-2019-2167 **Improvements to the Active Flux Scheme** P. Roe, G. Dhir, F. He, University of Michigan, Ann Arbor, Ann Arbor, MI	1000 hrs AIAA-2019-2168 **Towards a Robust Discontinuous Galerkin Solver for LES of Multiphysics Flows and Combustion based on Loci-Programming** Y. Lv, E. Collins, S. Bhushan, E. Luke, Mississippi State University, Mississippi State, MS	1030 hrs AIAA-2019-2169 **Low-Mach-Number Simulation of Diffusion Flames with the Chemical-Diffusive Model** J. Chung, X. Zhang, C. Kaplan, E. Oran, University of Maryland, College Park, College Park, MD	1100 hrs AIAA-2019-2170 **Boundary Prescriptions for Spectrally-tunable Discrete Filters** A. Edoh, ERC, Inc., Edwards AFB, CA; V. Sankaran, Air Force Research Laboratory, Edwards AFB, CA	1130 hrs AIAA-2019-2171 **Coarsening and filtering for absorbing layers in a discontinuous Galerkin method** N. Wukie, P. Orkwis, University of Cincinnati, Cincinnati, OH	1200 hrs AIAA-2019-2172 **Nonreflecting boundary conditions for the Euler equations in a discontinuous Galerkin discretization** N. Wukie, P. Orkwis, University of Cincinnati, Cincinnati, OH; D. Lindblad, N. Andersson, Chalmers University of Technology, Göteborg, Sweden	

Friday, 11 January 2019						
543-FD-71	**CFD Error Estimation and Analysis**					**Gaslamp A**
Chaired by: B. CARNES, Sandia National Laboratories and D. CASALINO, EXA GmbH						
0930 hrs AIAA-2019-2173 **Discretization Error Estimation for Discontinuous Galerkin Methods using Error Transport Equations** H. Wang, W. Tyson, C. Roy, Virginia Polytechnic Institute and State University, Blacksburg, VA	1000 hrs AIAA-2019-2174 **A Novel Reconstruction Technique for Finite-Volume Truncation Error Estimation** W. Tyson, C. Roy, Virginia Polytechnic Institute and State University, Blacksburg, VA; C. Ollivier Gooch, University of British Columbia, Vancouver, Canada	1030 hrs AIAA-2019-2175 **Code verification and numerical error estimation for use in model validation of laminar, hypersonic double-cone flows** B. Carnes, V. Weirs, T. Smith, Sandia National Laboratories, Albuquerque, NM	1100 hrs AIAA-2019-2176 **Investigating the Computational Errors of Integral Schemes Through the Use of Numerical Experiments** F. Ferguson, D. DodooAmoo, J. Mendez, Y. Gao, North Carolina A&T State University, Greensboro, NC			

Friday, 11 January 2019						
544-FD-72	**Applied CFD III**					**Gaslamp B**
Chaired by: T. RENAUD, ONERA and W. VAN DER VELDEN, Exa GmbH						
0930 hrs AIAA-2019-2177 **Magneto-Active Slosh Control System Using Free Floating Membrane for Cylinderical Propellant Tanks** M. Vairamani, Embry-Riddle Aeronautical University, Daytona Beach, FL; K. Crosby, Carthage College, Pleasant Prairie, WI; P. LLanos, S. Gangadharan, Embry-Riddle Aeronautical University, Daytona Beach, FL; S. Nagendra, Pratt & Whitney, East Hartford, CT	1000 hrs AIAA-2019-2178 **Wind Tunnel Interference Effects on Japan Aerospace Exploration Agency's Standard Model** Y. Ito, M. Murayama, Y. Yokokawa, K. Yamamoto, Japan Aerospace Exploration Agency (JAXA), Mitaka, Japan; K. Tanaka, T. Hirai, Ryoyu Systems Company, Ltd., Nagoya, Japan	1030 hrs AIAA-2019-2179 **Validation of an immersed boundary method for compressible flows** T. Renaud, C. Benoit, S. Peron, I. Mary, N. Alferez, ONERA, Châtillon, France	1100 hrs AIAA-2019-2180 **Studies of the Effects of Drag Reduction Due to Plasma Actuation Applied to Aircraft Configurations** A. Cain, C. Nelson, Innovative Technology Applications Company, LLC, Chesterfield, MO	1130 hrs AIAA-2019-2181 **Analysis of source term modeling of vortex generator** R. Hirai, S. Kawai, Tohoku University, Sendai, Japan		

Friday, 11 January 2019						
545-GNC-39/IS-24	**Advances in Adaptive Control Systems III (Invited)**					**Harbor F**
Chaired by: T. YUCELEN, University of South Florida and J. MUSE, AFRL/RQQA						
0930 hrs AIAA-2019-2182 **Analysis of Limit-Cycle Oscillation in Control Systems with Piecewise Nonlinearities (Invited)** Y. Yoon, Georgia Institute of Technology, Atlanta, GA; E. Johnson, Pennsylvania State University, University Park, PA	1000 hrs AIAA-2019-2183 **Human-in-the-Loop Systems with Inner and Outer Feedback Control Loops: Adaptation, Stability Conditions, and Performance Constraints (Invited)** E. Arabi, T. Yucelen, University of South Florida, Tampa, FL; R. Sipahi, Northeastern University, Boston, MA; Y. Yildiz, Bilkent University, Ankara, Turkey	1030 hrs AIAA-2019-2184 **Adaptive Control System For Flapping Wing Aircraft: A Gain Study On Optimal Control Modification (Invited)** B. Chandrasekaran, J. Steck, Wichita State University, Wichita, KS	1100 hrs AIAA-2019-2185 **Single hidden layer neural network based model reference adaptive controller for estimation of periodic disturbances (Invited)** B. Gezer, ROKETSAN Missile Industries, Inc., Ankara, Turkey; A. Kutay, Middle East Technical University, Ankara, Turkey	1130 hrs AIAA-2019-2186 **Direct Uncertainty Minimization in Model Reference Adaptive Control: Experimental Results (Invited)** B. Gruenwald, T. Yucelen, University of South Florida, Tampa, FL; J. Muse, Air Force Research Laboratory, Wright-Patterson AFB, OH	1200 hrs AIAA-2019-2187 **Optimality in Event-triggered Adaptive Control of Uncertain Linear Dynamical Systems** V. Narayanan, Washington University in St. Louis, St. Louis, MO; S. Jagannathan, R. Moghadam, Missouri University of Science and Technology, Rolla, MO	

Friday, 11 January 2019						
546-GT-9	**Overview of NASA CRM and Check Standard Research Model Testing, Test Techniques, Test Management, and EFD/CFD Integration**					**Cityview A**
Chaired by: D. CHAN, NASA-Langley Research Center and R. KUMAR, Florida State University						
0930 hrs AIAA-2019-2188 **NASA Common Research Model: A History and Future Plans** M. Rivers, NASA Langley Research Center, Hampton, VA	1000 hrs AIAA-2019-2189 **Experimental Investigation of the NASA Common Research Model with a Natural Laminar Flow Wing in the NASA Langley National Transonic Facility** M. Rivers, M. Lynde, R. Campbell, S. Viken, D. Chan, A. Watkins, NASA Langley Research Center, Hampton, VA; et al.	1030 hrs AIAA-2019-2190 **Experimental Investigation of a 160% Scaled NASA Common Research Model at Low Speed Conditions** T. Uchiyama, M. Kohzai, H. Miki, T. Hirotani, N. Sudani, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan; H. Shutoku, IHI Corporation, Tomioka, Japan	1100 hrs AIAA-2019-2191 **Transition Detection at Cryogenic Temperatures Using a Carbon-Based Resistive Heating Layer Coupled with Temperature Sensitive Paint** N. Watkins, NASA Langley Research Center, Hampton, VA; K. Goodman, Analytical Mechanics Associates, Inc., Hampton, VA; S. Peak, National Institute of Aerospace, Hampton, VA	1130 hrs AIAA-2019-2192 **Cryogenic Angle Measurement at NASA Langley** K. Toro, P. Parker, NASA Langley Research Center, Hampton, VA	1200 hrs AIAA-2019-2193 **A Preliminary Investigation of the Check Standard Model in the NASA Ames Unitary Plan Wind Tunnel** M. Amaya, R. Flach, T. Garbeff, NASA Ames Research Center, Moffett Field, CA	

Friday, 11 January 2019						
547-HIS-5	**Aeronautical History**					**Bayview**
Chaired by: K. BURNS						
0930 hrs AIAA-2019-2194 **Breaking the Sound Barrier** J. Anderson, Smithsonian Institution, Washington, D.C.	1000 hrs AIAA-2019-2195 **Overview of the Calspan - Force Measurement Systems group** D. Booth, Calspan Corporation, San Diego, CA	1030 hrs AIAA-2019-2196 **The Aero Club of California: Initial Years (1908-1909)** G. Fogel, San Diego State University, San Diego, CA	1100 hrs AIAA-2019-2197 **Flight of a Phoenix: History of the San Diego Air & Space Museum** K. Pescador, San Diego Air & Space Museum, San Diego, CA	1130 hrs AIAA-2019-2198 **History of Airborne Communications Networking** K. Burns, Northrop Grumman Corporation, San Diego, CA	1200 hrs AIAA-2019-2199 **Roll-on Beyond-Line-of-Sight Enhancement (ROBE)** K. Burns, R. Gouldie, Northrop Grumman Corporation, San Diego, CA	

Friday, 11 January 2019						
548-ICC-2	**Information and Command and Control Systems**					**Mission Beach C**
Chaired by: J. MCEVER, The Johns Hopkins University Applied Physics Laboratory and A. RAZ and M. SOTAK, Kratos Defense						
0930 hrs AIAA-2019-2200 **Definition of Optimal Agent Behaviors Using Reinforcement Learning** J. Price, O. Pinon-Fischer, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1000 hrs AIAA-2019-2201 **A Framework for Analysis of Combat Maneuvers Input Strategy using Energy-Based Metrics** N. Humaira, E. Koyuncu, Istanbul Technical University, Istanbul, Turkey	1030 hrs AIAA-2019-2202 **Solving path planning problems in urban environments based on a priori sensors availabilities and execution error propagation** J. Delamer, Y. Watanabe, ONERA, Toulouse, France; C. P. Carvalho Chanel, Higher Institute of Aeronautics and Space, Toulouse, France	1100 hrs AIAA-2019-2203 **Blockchain Serverless Public/ Private Key Infrastructure for ADS-B Security, Authentication, and Privacy** R. Reisman, NASA Ames Research Center, Moffett Field, CA			

Friday, 11 January 2019						
549-IS-25	**Human-Automation Interaction**					**Solana Beach A**
Chaired by: J. BRADLEY, University of Nebraska and E. ATKINS, University of Michigan						
0930 hrs AIAA-2019-2204 **Evaluating Communication Modality for Improved Human/Autonomous System Teaming** E. Meszaros, L. Le Vie, M. Last, B. Barrows, M. Smith, B. Allen, NASA Langley Research Center, Hampton, VA	1000 hrs AIAA-2019-2205 **Mixed-Initiative Mission Planning of Multiple UCAVs from Aboard a Single Seat Fighter Aircraft** F. Heilemann, University of the German Federal Armed Forces, Neubiberg, Germany; F. Schmitt, HAT.tec, Munich, Germany; A. Schulte, University of the German Federal Armed Forces, Neubiberg, Germany	1030 hrs AIAA-2019-2206 **Exploring Aerospace Design in Virtual Reality with Dimension Reduction** S. Tadeja, P. Seshadri, P. Kristensson, University of Cambridge, Cambridge, United Kingdom	1100 hrs AIAA-2019-2207 **Towards Autonomous Piloting: Communicating with Air Traffic Control** M. Lowry, NASA Ames Research Center, Moffett Field, CA	1130 hrs AIAA-2019-2208 **Fully Bayesian Human-Machine Data Fusion for Robust Dynamic Target Surveillance and Characterization** J. Muesing, L. Burks, M. Iuzzolino, D. Szafir, N. Ahmed, University of Colorado, Boulder, Boulder, CO		

Friday, 11 January 2019						
550-MDO-20	**Metamodeling and Approximation Methods**					**Mission Beach A**
Chaired by: P. ACAR, Virginia Polytechnic Institute and State University and P. ROHL, General Atomics Aeronautical Systems, Inc.						
0930 hrs AIAA-2019-2209 **Kriging with Composite Kernel Learning for Surrogate Modeling in Computer Experiments** P. Palar, K. Shimoyama, Tohoku University, Sendai, Japan	1000 hrs AIAA-2019-2210 **Real-time Fault Detection and Prognostics for Aircraft Actuation Systems** P. Berri, M. Dalla Vedova, Technical University of Turin, Turin, Italy; L. Mainini, Massachusetts Institute of Technology, Cambridge, MA	1030 hrs AIAA-2019-2211 **Design Space Exploration for Vaporizing Liquid Jet in Air Crossflow using Machine Learning** H. Ganti, M. Kamin, P. Khare, University of Cincinnati, Cincinnati, OH	1100 hrs AIAA-2019-2212 **A Transductive Learning Approach for Identification of Microstructure-Process Linkages** P. Acar, Virginia Polytechnic Institute and State University, Blacksburg, VA	1130 hrs AIAA-2019-2213 **General Surrogate Adaptive Sampling using Interquartile Range for Design Space Exploration** Y. Zhang, N. Kim, R. Haftka, University of Florida, Gainesville, Gainesville, FL		

Friday, 11 January 2019						
551-MDO-21/NDA-11	**Optimization under Uncertainty**					**Mission Beach B**
Chaired by: M. RUMPFKEIL, University of Dayton and T. KRISHNAMURTHY, NASA-Langley Research Center						
0930 hrs AIAA-2019-2214 **An Efficient Bi-Level Surrogate Approach for Optimizing Shock Control Bumps under Uncertainty** C. Sabater, S. Goertz, German Aerospace Center (DLR), Braunschweig, Germany	1000 hrs AIAA-2019-2215 **Quadratic Multipoint Exponential Approximation for Optimization and Uncertainty Quantification** R. Canfield, Virginia Polytechnic Institute and State University, Blacksburg, VA; M. Eldred, Sandia National Laboratories, Albuquerque, NM	1030 hrs AIAA-2019-2216 **Experimental and Parametric Study on Uncertainty Quantification within Topology Optimization utilizing Non-Intrusive Polynomial Chaos Theory** A. Vishwanathan, D. Munk, G. Vio, University of Sydney, Sydney, Australia	1100 hrs AIAA-2019-2217 **Staged-Deployment Design for Resilient Expansion Planning of Large Scale Complex Systems** T. Cui, P. Wang, K. Ho, University of Illinois, Urbana-Champaign, Urbana, IL	1130 hrs AIAA-2019-2218 **Stochastic Shape Optimization via Design-Space Augmented Dimensionality Reduction and RANS Computations** A. Serani, M. Diez, National Research Council (CNR), Rome, Italy; J. Wackers, M. Visonneau, École Centrale de Nantes, Nantes, France; F. Stern, University of Iowa, Iowa City, Iowa City, IA	1200 hrs AIAA-2019-2219 **A fast convergence approximate RBDO method considering both random and evidence variables** C. Cid, A. Baldomir, S. Hernandez, University of A Coruña, A Coruña, Spain	

Friday, 11 January 2019						
552-MVCE-5	**Visualization and Computational Environments**					**Vista B**
Chaired by: E. DUQUE, Intelligent Light and A. LOFTHOUSE, US Air Force Academy						
0930 hrs AIAA-2019-2220 **Summary of 2017 SciTech Computational Environments Special Session Toward the CFD Vision 2030** A. Lofthouse, CREATE AV Team, Niceville, FL; E. Duque, Intelligent Light, Rutherford, NJ; R. Davis, University of California, Davis, Davis, CA	1000 hrs AIAA-2019-2221 **Spectre: A Computational Environment for Managing Total Uncertainty Quantification of CFD Studies** E. Duque, S. Lawrence, Intelligent Light, Rutherford, NJ	1030 hrs AIAA-2019-2222 **The Mosaic CGNS Dataflow Platform** M. Poinot, V. Brunet, P. Costini, G. Hannebique, M. Petrovan, Safran Group, Magny les Hameaux, France	1100 hrs AIAA-2019-2223 **Enhancing Web-Based CFD Post-Processing using Machine Learning and Augmented Reality** G. Pullan, T. Chuan, D. Wong, F. Jasik, University of Cambridge, Cambridge, United Kingdom	1130 hrs AIAA-2019-2224 **Development of a Reconstruction Method for Major Vortex Structure around Tandem Flapping Wing Object via Vortex Trajectory Method** N. Ban, W. Yamazaki, Nagaoka University of Technology, Niigata, Japan; V. Kurlin, University of Liverpool, Liverpool, United Kingdom		

Friday, 11 January 2019						
553-MVCE-6	**CAPS System**					**Vista C**
Chaired by: N. BHAGAT and J. DANNENHOFFER, Syracuse University						
0930 hrs AIAA-2019-2225 **Toward the Realization of a Highly Integrated, Multidisciplinary, Multifidelity Design Environment** D. Bryson, Air Force Research Laboratory, Wright-Patterson AFB, OH; R. Haimes, Massachusetts Institute of Technology, Cambridge, MA; J. Dannenhoffer, Syracuse University, Syracuse, NY	1000 hrs AIAA-2019-2226 **pyCAPS: A Python Interface to the Computational Aircraft Prototype Syntheses** R. Durscher, Air Force Research Laboratory, Wright-Patterson AFB, OH; D. Reedy, Asarian Technologies, LLC, Manassas, VA	1030 hrs AIAA-2019-2227 **Hybrid Shell Model for Aeroelastic Modeling** M. Drela, M. Galbraith, R. Haimes, S. Allmaras, D. Darmofal, Massachusetts Institute of Technology, Cambridge, MA	1100 hrs AIAA-2019-2228 **Shape Continuum Sensitivity Analysis using ASTROS and CAPS** R. Canfield, Virginia Polytechnic Institute and State University, Blacksburg, VA; R. Durscher, D. Bryson, R. Kolonay, Air Force Research Laboratory, Wright-Patterson AFB, OH	1130 hrs AIAA-2019-2229 **Rapid Generation of Parametric Aircraft Structural Models** V. Gandhi, J. Joe, H. Dalir, Purdue University, West Lafayette, IN; J. Dannenhoffer, Syracuse University, Indianapolis, IN	1200 hrs AIAA-2019-2230 **Parameterized, Multi-fidelity Aircraft Geometry and Analysis for MDAO Studies using CAPS** C. Meckstroth, University of Dayton, Dayton, OH	

Friday, 11 January 2019						
554-NDA-12	**Probabilistic Risk Assessment and System Safety**					**Torrey Hills A**
Chaired by: F. VIANA, University of Central Florida and R. GRAVES, Air Force Research Laboratory						
0930 hrs AIAA-2019-2231 **Probabilistic Risk Assessment Tool *AMETA* (Aircraft Maintenance Event Tree Analysis) for Aircraft Structural Integrity and Fatigue Maintenance** M. Shiao, T. Chen, Army Research Laboratory, Aberdeen Proving Ground, MD	1000 hrs AIAA-2019-2232 **A Fast Monte Carlo Method for Model-based Prognostics Based on Stochastic Calculus** M. Corbetta, C. Kulkarni, NASA Ames Research Center, Moffett Field, CA	1030 hrs AIAA-2019-2233 **From Raw Operational Flight Data to Incident Probabilities using Subset Simulation and a Complex Thrust Model** P. Koppitz, C. Wang, L. Höhndorf, J. Sembiring, X. Wang, F. Holzapfel, Technical University of Munich, Munich, Germany	1100 hrs AIAA-2019-2234 **Space debris reentry prediction and ground risk estimation using a probabilistic breakup model** F. Sanson, National Institute for Research in Computer Science and Control (INRIA), Talence, France; C. Bertorello, J. Bouilly, ArianeGroup, Les Mureaux, France; P. Congedo, National Institute for Research in Computer Science and Control (INRIA), Palaiseau, France	1130 hrs AIAA-2019-2235 **Stochastic re-entry trajectory analysis with uncertain initial conditions for safety assessment** A. Tokunaga, A. Sotoguchi, K. Shimoyama, Tohoku University, Sendai, Japan; K. Fujimoto, Japan Aerospace Exploration Agency (JAXA), Tsukuba, Japan	1200 hrs AIAA-2019-2236 **A Comparative Study on the Performance of Metaheuristics Applied to the Preventive Maintenance Planning Definition Problem** F. Moura, L. Rodrigues, T. Yoneyama, Aeronautics Institute of Technology (ITA), São José dos Campos, Brazil	

Friday, 11 January 2019						
555-PC-22	**Turbulent Flames IV**					**Hillcrest A**
Chaired by: B. SFORZO, Argonne National Laboratory and B. EMERSON						
0930 hrs AIAA-2019-2237 **Effects of Jet Velocity on Auto-Ignition of Turbulent Fuel Jets Issuing into High-Temperature Coflows** R. Saksena, J. Sutton, Ohio State University, Columbus, OH	1000 hrs AIAA-2019-2238 **Blow-off mechanism in a turbulent premixed bluff-body stabilized flame with pre-vaporized fuels** R. Pathania, A. Skiba, J. Sidey, E. Mastorakos, University of Cambridge, Cambridge, United Kingdom	1030 hrs AIAA-2019-2239 **Numerical investigation of lean blow-out of kerosene spray flames with detailed chemical models** J. Foale, A. Giusti, E. Mastorakos, University of Cambridge, Cambridge, United Kingdom	1100 hrs AIAA-2019-2240 **Stability limit of a bluff-body-stabilized lean premixed turbulent flame** H. Lee, B. Lee, Gwangju Institute of Science and Technology, Gwangju, South Korea	1130 hrs AIAA-2019-2241 **Prediction of Ignition Regimes in DME/Air Mixtures with Temperature and Concentration Fluctuations** M. Luong, F. Hernandez Perez, A. Sow, H. Im, Clean Combustion Research Center (CCRC), Jeddah, Saudi Arabia	1200 hrs AIAA-2019-2242 **Numerical simulation of forced ignition of Jet-fuel/air using large eddy simulation (LES) and a tabulation-based ignition** Y. Tang, M. Hassanaly, V. Raman, University of Michigan, Ann Arbor, Ann Arbor, MI; B. Sforzo, Argonne National Laboratory, Argonne, IL; J. Seitzman, Georgia Institute of Technology, Atlanta, GA	

Friday, 11 January 2019						
556-PC-23/AMT-23	**Combustion Diagnostics IV**					**Hillcrest B**
Chaired by: C. FUGGER, Spectral Energies, LLC and C. SLABAUGH, Purdue University						
0930 hrs AIAA-2019-2243 **The structure of spherical flames in turbulent two-phase flows as revealed by OH and fuel PLIF** P. de Oliveira, E. Mastorakos, University of Cambridge, Cambridge, United Kingdom	1000 hrs AIAA-2019-2244 **Effect of inter-nozzle spacing on lean blowoff performance of a linear multi-nozzle combustor** W. Kwong, University of Toronto, North York, Canada; A. Steinberg, Georgia Institute of Technology, Atlanta, GA	1030 hrs AIAA-2019-2245 **Characterization of transient blowout dynamics of a swirl stabilized flame using simultaneous OH and CH_2O PLIF** R. Manosh Kumar, I. Chterev, D. Stepien, M. Sirignano, B. Emerson, Georgia Institute of Technology, Atlanta, GA; T. Yi, Spectral Energies, LLC, Dayton, OH; et al.	1100 hrs AIAA-2019-2246 **Aircraft Ignition Kernel Characterization by X-ray Radiography** B. Sforzo, K. Matusik, A. Kastengren, C. Powell, Argonne National Laboratory, Argonne, IL; J. Seitzman, Georgia Institute of Technology, Atlanta, GA	1130 hrs AIAA-2019-2247 **A shock tube and laser absorption study of CO time-histories during bio ether oxidation** A. Laich, E. Ninnemann, O. Pryor, S. Neupane, S. Vasu, University of Central Florida, Orlando, FL	1200 hrs AIAA-2019-2248 **Ignition delay time measurements for distillate and synthetic jet fuels** Y. Wang, Y. Cao, D. Davidson, R. Hanson, Stanford University, Stanford, CA	

Friday, 11 January 2019						
557-PGC-12	**Detonative Pressure Gain Combustion IV**					**Harbor E**
Chaired by: G. PANIAGUA and K. AHMED, University of Central Florida						
0930 hrs AIAA-2019-2249 **Burst-mode 355 nm PLIF for Detonation Wave Front Visualization and 100–300 kHz Particle Image Velocimetry** K. Cho, Innovative Scientific Solutions, Inc., Dayton, OH; C. Fugger, Spectral Energies, LLC, Beavercreek, OH; R. Fievisohn, National Research Council, Wright-Patterson AFB, OH; B. Sell, J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH; S. Kearney, Spectral Energies, LLC, Beavercreek, OH; et al.	1000 hrs AIAA-2019-2250 **A Detailed Combustion Solver for Detonation Engines Simulations** L. Nista, B. Saracoglu, A. Ispir, von Kármán Institute for Fluid Dynamics, Rhode-Saint-Genèse, Belgium	1030 hrs AIAA-2019-2251 **Fuel Injection Dynamics and Detonation Wave Interaction in Rectangular Channel** S. Redhal, J. Burr, K. Yu, University of Maryland, College Park, College Park, MD	1100 hrs AIAA-2019-2252 **H_2O Absorption and OH Emission Spectroscopy in the Detonation Channel of a Rotating Detonation Engine** A. Feleo, J. France, L. White, M. Gamba, University of Michigan, Ann Arbor, Ann Arbor, MI	1130 hrs AIAA-2019-2253 **Numerical Investigation of Rotating Detonation Combustor (RDC): Performance analysis of non-premixed RDC in a 2-D domain** S. Subramanian, J. Meadows, Virginia Polytechnic Institute and State University, Blacksburg, VA		

Friday, 11 January 2019						
558-SCS-9	**Solar Sail Design and Analysis**					**Torrey Hills B**
Chaired by: G. GRESCHIK, TentGuild Engineering Co and G. DAVIS, Jet Propulsion Laboratory						
0930 hrs AIAA-2019-2254 **The Modeling of Packaging Folds in Thin Polymer Films** G. Secheli, A. Viquerat, G. Aglietti, University of Surrey, Guildford, United Kingdom	1000 hrs AIAA-2019-2255 **Study on in-plane and out-of-plane deformation considering elastic plasticity of membrane** A. Torisaka, Tokyo Metropolitan University, Hino, Japan; K. Ogawa, S. Miura, V. Parque, T. Miyashita, H. Yamakawa, Waseda University, Shinjuku, Japan	1030 hrs AIAA-2019-2256 **Advances in Low-Cost Manufacturing and Folding of Solar Sail Membranes** O. Stohlman, J. Fernandez, G. Dean, NASA Langley Research Center, Hampton, VA; N. Schneider, ASM, Hampton, VA; J. Kang, National Institute of Aerospace, Hampton, VA; R. Barfield, NASA Langley Research Center, Hampton, VA; et al.	1100 hrs AIAA-2019-2257 **Large-Area Deployable Reflectarray Antenna for CubeSats** M. Arya, J. Sauder, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA; S. Pellegrino, California Institute of Technology, Pasadena, CA; H. Richard, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA			

Friday, 11 January 2019						
559-SD-22	**Structural Dynamics and Vibrations II**					**Promenade A**
Chaired by: C. HEBERT, Sierra Nevada Corporation and S. WILSON, NASA-Johnson Space Center						
0930 hrs AIAA-2019-2258 **Efficient Response Approximation for Systems with Coulomb Friction** G. Altamirano, M. Tien, K. D'Souza, Ohio State University, Columbus, OH	1000 hrs AIAA-2019-2259 **A New Path Toward Mitigating Vibration Localization due to Mistuning in Cyclic Structures** A. Rodriguez, J. Kauffman, University of Central Florida, Orlando, FL	1030 hrs AIAA-2019-2260 **Dynamic analysis of flexible multibody structure using proper orthogonal decomposition** H. Kim, Seoul National University, Seoul, South Korea; E. Kim, Korea Institute of Machinery & Materials, Daejeon, South Korea; M. Cho, Seoul National University, Seoul, South Korea	1100 hrs AIAA-2019-2261 **Inward-Folded CFRP Tube Energy Absorber and Its Application to a Variant Cargo-Floor-Structure of Transport Airplanes** Z. Yu, Q. You, Y. Zhang, L. Liu, X. Zhang, Y. Yu, Shanghai Jiao Tong University, Shanghai, China			

Friday, 11 January 2019						
560-SEN-5	**Networks**					**Cove**
Chaired by: D. FAULK, Lockheed Martin Aeronautics and S. SWANSON, Lockheed Martin Aeronautics						
0930 hrs AIAA-2019-2262 **Dynamic Information Fusion with the Integration of Local Observers, Value of Information, and Active-Passive Consensus Filters** D. Tran, T. Yucelen, University of South Florida, Tampa, FL; S. Jagannathan, Missouri University of Science and Technology, Rolla, MO	1000 hrs AIAA-2019-2263 **Autonomous Wildfire Monitoring Using Airborne and Temperature Sensors in an Evidential Reasoning Framework** A. Soderlund, M. Kumar, C. Yang, Ohio State University, Columbus, OH	1030 hrs AIAA-2019-2264 **Slew-to-Cue Electro-Optical and Infrared Sensor Network for small UAS Detection, Tracking and Identification** S. Siewert, M. Andalibi, S. Bruder, Embry-Riddle Aeronautical University, Prescott, AZ; A. Dandupally, S. Gavvala, V. Iyer, University of Colorado, Boulder, Boulder, CO; et al.	1100 hrs AIAA-2019-2265 **Robust Anomaly Detection for Large Scale Multi-Type Sensor Systems** S. Merkes, A. Defreitas, E. Smith, W. Alexander, W. Devenport, S. Leman, Virginia Polytechnic Institute and State University, Blacksburg, VA	1130 hrs AIAA-2019-2266 **3D Cloud Modeling using Data Fusion and Machine Learning Techniques** M. Huguenin, G. Achour, D. Commun, O. Pinon-Fischer, D. Mavris, Georgia Institute of Technology, Atlanta, GA		

Friday, 11 January 2019						
561-STR-20	**Failure Analysis and Prediction III**					**Golden Hill A**
Chaired by: A. BERGAN, NASA Langley Research Center and B. MASON, NASA-Langley Research Center						
0930 hrs AIAA-2019-2267 **A Progressive Fatigue Model for Bolted Composite Components** J. Xiao, X. Cui, J. Lua, Global Engineering and Materials, Inc., Princeton, NJ	1000 hrs AIAA-2019-2268 **Modeling Empirical Size Relationships on Load-Displacement Behavior and Failure in Threaded Fasteners** P. Grimmer, J. Mersch, J. Smith, Sandia National Laboratories, Albuquerque, NM; Y. Veytskin, Savannah River National Laboratory, Aiken, SC; D. Susan, Sandia National Laboratories, Albuquerque, NM	1030 hrs AIAA-2019-2269 **Progressive Failure Prediction of an L-Shaped Composite Flange Subjected to Flexural Loading** J. Roach, W. Chen, D. Zhang, University of Connecticut, Storrs, Storrs, CT	1100 hrs AIAA-2019-2270 **Structural Analysis of the Advanced Space Manufacturing System's Space Utility Module** A. Gutti Shashidhar Gowda, F. Barez, P. Humphries, ASMS, Inc., San Jose, CA	1130 hrs AIAA-2019-2271 **Multiaxial Loading of Threaded Fasteners** E. Camarena, Purdue University, West Lafayette, IN; A. Quintana, New Mexico State University, Las Cruces, NM; V. Yim, University of California, Berkeley, Berkeley, CA; P. Grimmer, J. Mersch, J. Smith, Sandia National Laboratories, Albuquerque, NM; et al.		

Friday, 11 January 2019						
562-STR-21	**Composite Structural Design, Test and Analysis III**					**Golden Hill B**
Chaired by: B. WILLIS, Jacobs Technology and J. ZIPAY, NASA-Johnson Space Center						
0930 hrs AIAA-2019-2272 **Stress Predictions of Composite Beams with Interlaminar Continuity Using Multifield Variational Analysis** M. Dhadwal, J. Bae, S. Jung, Konkuk University, Seoul, South Korea	1000 hrs AIAA-2019-2273 **Open-Hole Compression and Digital Image Correlation based Method for Measuring Interlaminar Tensile Strength of Composites** G. Seon, Y. Nikishkov, B. Shonkwiler, A. Makeev, University of Texas, Arlington, Arlington, TX; J. Schaefer, B. Justusson, The Boeing Company, St. Louis, MO	1030 hrs AIAA-2019-2274 **Experimental Assessment of Bend-Twist Coupling Potentials of Composite Materials via Digital Image Correlation Method** O. Sener, O. Atalay, A. Kayran, Middle East Technical University, Ankara, Turkey	1100 hrs AIAA-2019-2275 **A Technical Approach for Assessing Progressive Damage and Failure Analysis Methods for Structural Performance** B. Justusson, J. Schaefer, S. Liguore, The Boeing Company, St. Louis, MO	1130 hrs AIAA-2019-2276 **Shape of a bistable composite tape-spring in folding** B. Wang, K. Seffen, S. Guest, University of Cambridge, Cambridge, United Kingdom	1200 hrs AIAA-2019-2277 **Functional Reconstitution of Reissner Mixed Variational Theorem for Effective Finite Element Implementations** L. Demasi, E. Santarpia, San Diego State University, San Diego, CA; R. Cavallaro, Charles III University of Madrid, Madrid, Spain	

Friday, 11 January 2019						
563-TP-14	**Non-Equilibrium Flows III**					**Balboa B**
Chaired by: R. BOND, University of Tennessee Space Institute and D. ZAKAR, NRL						
0930 hrs AIAA-2019-2278 **Validation Assessment of Hypersonic Double-Cone Flow Simulations using Uncertainty Quantification, Sensitivity Analysis, and Validation Metrics** S. Kieweg, Sandia National Laboratories, Albuquerque, NM; J. Ray, Sandia National Laboratories, Livermore, CA; V. Weirs, B. Carnes, D. Dinzl, B. Freno, Sandia National Laboratories, Albuquerque, NM; et al.	1000 hrs AIAA-2019-2279 **Estimation of inflow uncertainties in laminar hypersonic double-cone experiments** J. Ray, Sandia National Laboratories, Livermore, CA; S. Kieweg, D. Dinzl, B. Carnes, V. Weirs, B. Freno, Sandia National Laboratories, Albuquerque, NM; et al.	1030 hrs AIAA-2019-2280 **Classical Impulsive Models of Nonequilibrium Dissociation for CFD and DSMC** H. Luo, A. Alexeenko, S. Macheret, Purdue University, West Lafayette, IN	1100 hrs AIAA-2019-2281 **Effect of Thermochemistry Modeling on Hypersonic Flow Over a Double Cone** M. Holloway, K. Hanquist, I. Boyd, University of Michigan, Ann Arbor, Ann Arbor, MI	1130 hrs AIAA-2019-2282 **Computation of Orbiting Cross-Sections from *ab initio* Potential Energy Surfaces for Recombination of Atomic Oxygen** C. Kondur, S. Subramaniam, T. Pan, K. Stephani, University of Illinois, Urbana-Champaign, Urbana, IL	1200 hrs AIAA-2019-2283 **Non-equilibrium Nitrogen Re-entry Flow Computed with a Vibrational-Specific Kinetics Model** M. Druguet, Aix-Marseille University, Marseille, France; A. Bultel, V. Morel, National Institute of Applied Sciences (INSA), Saint-Étienne-du-Rouvray, France; J. Annaloro, French Space Agency (CNES), Toulouse, France	

Friday, 11 January 2019						
564-UAS-11	**Unmanned Aircraft Systems: Miscellaneous Topics**					**Harbor D**
Chaired by: M. LOGAN, NASA Langley Research Center						
0930 hrs AIAA-2019-2284 **Artificial Light Detection as a Method for Poacher Detection from an Unmanned Aerial Vehicle** A. Bernard, G. Sciuchetti, C. Lynch, A. Sherpa, University of Washington, Seattle, Seattle, WA; J. Reiter, Vulcan, Inc., Seattle, WA; C. Lum, University of Washington, Seattle, Seattle, WA	1000 hrs AIAA-2019-2285 **Airborne Delivery of Unmanned Aerial Vehicles via Joint Precision Airdrop Systems** K. Klinkmueller, A. Wieck, J. Holt, A. Valentine, J. Bluman, A. Kopeikin, U.S. Military Academy, West Point, NY; et al.	1030 hrs AIAA-2019-2286 **Unmanned Aircraft System Swarm for Radiological and Imagery Data Collection** A. Kopeikin, S. Heider, D. Larkin, C. Korpela, R. Morales, J. Bluman, U.S. Military Academy, West Point, NY	1100 hrs AIAA-2019-2287 **UAV Swarm Mapping Using a Fully Distributed Control Approach** T. Sherman, S. Boskovich, California State Polytechnic University, Pomona, CA			

Friday, 11 January 2019		
565-LUNCH-4 **1230 - 1330 hrs**	**Lunch on Own**	**Lunch On Own**

Friday, 11 January 2019						
566-ACD-14/UAS-13	**Unmanned Aircraft Design II**					**Harbor H**
Chaired by: M. LOGAN, NASA Langley Research Center and Z. MIAN, Alphabet/Google - Loon						
1330 hrs AIAA-2019-2288 **Conceptual Design and Analysis of a Fixed Wing Mini Unmanned Aerial Vehicle (UAV) for Humanitarian Assistance Operations** A. Sharif, National University of Sciences and Technology (NUST), Islamabad, Pakistan	1400 hrs AIAA-2019-2289 **Novel munition design for low-collateral damage weapons** J. Yarwood, M. Anderson, L. Fumagalli, P. Strunk, K. Senn, K. Teope, U.S. Air Force Academy, Colorado Springs, CO	1430 hrs AIAA-2019-2290 **Conceptual Design of a VTOL Box-Wing UAV with Rotatable Duct-Fans** T. Ma, X. Wang, Z. Wei, X. Zihan, D. Bie, Beihang University, Beijing, China	1500 hrs AIAA-2019-2291 **Aerodynamic Design of Long-Range VTOL UAV** P. Footohi, A. Bouskela, S. Shkarayev, University of Arizona, Tucson, Tucson, AZ			

Friday, 11 January 2019						
567-AMT-24/APA-52	**Aerodynamic Measurements III - Wind Tunnel Testing**					**Harbor G**
Chaired by: J. JEWELL, Air Force Research Laboratory and M. KUESTER, Virginia Tech						
1330 hrs AIAA-2019-2292 **Influence of Mountiing on the Accuracy of Piezoelectric Pressure Measurements for Hypersonic Boundary Layer Transition** D. Ort, J. Dosch, PCB Piezotronics, Inc., Depew, NY	1400 hrs AIAA-2019-2293 **Disturbance Speed Measurements in a Circular Jet via Double Focused Laser Differential Interferometry** J. Jewell, Air Force Research Laboratory, Wright-Patterson AFB, OH; A. Hameed, N. Parziale, Stevens Institute of Technology, Hoboken, NJ; S. Gogineni, Spectral Energies, LLC, Dayton, OH	1430 hrs AIAA-2019-2294 **Application of a Temperature-Dependent Load Prediction Method to a RUAG Six-Component Block-Type Balance** N. Ulbrich, Jacobs, Moffett Field, CA; C. Zimmermann, RUAG Group, Emmen, Switzerland	1500 hrs AIAA-2019-2295 **Simultaneous Velocity and Density Gradient Measurements using Two-Point Focused Laser Differential Interferometry** A. Ceruzzi, C. Cadou, University of Maryland, College Park, College Park, MD	1530 hrs AIAA-2019-2296 **Characterization of a Focused Laser Differential Interferometer** J. Lawson, M. Neet, I. Grossman, J. Austin, California Institute of Technology, Pasadena, CA	1600 hrs AIAA-2019-2297 **Aerodynamic Measurements of Wind Turbine Airfoils** J. Pereira, National Research Council Canada, Ottawa, Canada	

Friday, 11 January 2019						
568-APA-53	**Aerodynamic Design: Analysis, Methodologies, and Optimization Techniques V**					**Harbor I**
Chaired by: T. CHYCZEWSKI, Northrop Grumman Aerospace Systems and L. ZIENTARSKI, AFRL/RQVC						
1330 hrs AIAA-2019-2298 **Preliminary Results from an Experimental Assessment of a Natural Laminar Flow Design Method** M. Lynde, R. Campbell, M. Rivers, S. Viken, D. Chan, A. Watkins, NASA Langley Research Center, Hampton, VA; et al.	1400 hrs AIAA-2019-2299 **Aerodynamic Shape Optimization for the Design of Natural-Laminar-Flow Wings** M. Piotrowski, D. Zingg, University of Toronto, Toronto, Canada	1430 hrs AIAA-2019-2300 **On the Integrated Aerodynamic Design of a Propeller-Wing System** J. Cole, Bucknell University, Lewisburg, PA; T. Krebs, D. Barcelos, A. Yeung, G. Bramesfeld, Ryerson University, Toronto, Canada	1500 hrs AIAA-2019-2301 **Minimum Induced Drag Conditions for Winglets: the Best Winglet Design Concept** L. Demasi, San Diego State University, San Diego, CA; G. Monegato, Technical University of Turin, Turin, Italy; R. Cavallaro, Charles III University of Madrid, Madrid, Spain; R. Rybarczyk, San Diego State University, San Diego, CA	1530 hrs AIAA-2019-2302 **Propeller Blades Design for the Bidirectional Rotor Systems of Fault Tolerant Multirotors** Y. Sheng, University of Virginia, Charlottesville, Charlottesville, VA; H. Xu, Harbin Institute of Technology, Harbin, China		

Friday, 11 January 2019						
569-APA-54	**Applied Computational Aerodynamics: Methods and Results VI**					**Hillcrest D**
Chaired by: M. GHOREYSHI, United States Air Force Academy and N. TAYLOR, MBDA UK Limited						
1330 hrs AIAA-2019-2303 **Verification of Wind Gust Models in the flowPsi Flow Solver** T. Miller, M. Nuzum, University of Colorado, Colorado Springs, Colorado Springs, CO; A. Jirasek, M. Ghoreyshi, M. Satchell, U.S. Air Force Academy, Colorado Springs, CO	1400 hrs AIAA-2019-2304 **Trajectory Prediction Using Coupled CFD-RBD with Dynamic Meshing** N. Sathyanarayana, K. Hoffmann, Wichita State University, Wichita, KS	1430 hrs AIAA-2019-2305 **Numerical Simulation of the Cavitation Flow around a Hydrofoil Based on a Coupled CFD-PBM Model** Q. Liu, K. Xu, Harbin Institute of Technology, Harbin, China; H. Gao, R. Agarwal, Washington University in St. Louis, St. Louis, MO	1500 hrs AIAA-2019-2306 **Aerodynamic Simulations of a High-Lift configuration by Lattice Boltzmann Method with Block-Structured Cartesian Grid** T. Ishida, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan	1530 hrs AIAA-2019-2307 **Analysis of High Alpha Aerodynamic Characteristics of a Supersonic Aircraft** T. Khan, J. Masud, Z. Toor, B. Mufti, Air University, Islamabad, Pakistan		

Friday, 11 January 2019						
570-APA-55	**Special Session: Space Launch System Aerosciences III**					**La Jolla A**
Chaired by: J. PINIER, NASA LaRC						
1330 hrs AIAA-2019-2308 **Measurement and Analysis of Terminal Shock Oscillation on a Launch Vehicle Payload Fairing** D. Piatak, M. Sekula, R. Rausch, NASA Langley Research Center, Hampton, VA	1400 hrs AIAA-2019-2309 **Assessment of Buffet Forcing Function Development Process Using Unsteady Pressure Sensitive Paint** M. Sekula, D. Piatak, R. Rausch, NASA Langley Research Center, Hampton, VA; J. Ross, NASA Ames Research Center, Moffett Field, CA; M. Sellers, Aerospace Testing Alliance, Arnold AFB, TN	1430 hrs AIAA-2019-2310 **Space Launch System Aeroacoustic Wind Tunnel Test Results** T. Steva, V. Pollard, A. Herron, NASA Marshall Space Flight Center, Huntsville, AL	1500 hrs AIAA-2019-2311 **Space Launch System Booster Separation Supersonic Powered Testing with Surface and Off-body Measurements** C. Winski, P. Danehy, A. Watkins, P. Shea, NASA Langley Research Center, Hampton, VA; J. Meeroff, Science and Technology Corporation, Moffett Field, CA; K. Lowe, Virginia Polytechnic Institute and State University, Blacksburg, VA; et al.	1530 hrs AIAA-2019-2312 **Three-Velocity-Component Cross-Correlation Doppler Global Velocimetry for the Space Launch System Booster Separation Test in the NASA Langley Unitary Plan Wind Tunnel** K. Lowe, G. Byun, S. Shea, M. Boyda, Virginia Polytechnic Institute and State University, Blacksburg, VA; C. Winski, NASA Langley Research Center, Hampton, VA	1600 hrs AIAA-2019-2313 **Laser Light Sheet Flow Visualization of the Space Launch System Booster Separation Test** P. Danehy, B. Wisser, T. Fahringer, C. Winski, B. Falman, NASA Langley Research Center, Hampton, VA; S. Shea, Virginia Polytechnic Institute and State University, Blacksburg, VA; et al.	

Friday, 11 January 2019						
571-APA-56	**Unsteady Aerodynamics III**					**Hillcrest C**
Chaired by: K. KARA, Khalifa University of Science, Technology & Research (KUSTAR)						
1330 hrs AIAA-2019-2314 **Numerical Simulation of Incipient Rotating Stall Characteristics in a Mixed-Flow Pump** W. Li, Jiangsu University, Zhenjiang, China; R. Agarwal, Washington University in St. Louis, St. Louis, MO; L. Ji, E. Li, L. Zhou, Jiangsu University, Zhenjiang, China	1400 hrs AIAA-2019-2315 **Separated Wake Flow and Tail Loads of the Common Research Model in Low Speed Stall Conditions** A. Waldmann, T. Lutz, E. Kraemer, University of Stuttgart, Stuttgart, Germany	1430 hrs AIAA-2019-2316 **Effect of Body Nose Fairing on the Unsteady Flow Characteristics over Spiked Flat Faced Cylinder at Supersonic Speed** D. Sahoo, Technion–Israel Institute of Technology, Haifa, Israel; S. Das, Birla Institute of Technology, Ranchi, India; J. Cohen, Technion–Israel Institute of Technology, Haifa, Israel	1500 hrs AIAA-2019-2317 **Verification of Calculation Procedure for Unsteady Aerodynamic Forces on a Launch Vehicle** J. Panda, NASA Ames Research Center, Moffett Field, CA	1530 hrs AIAA-2019-2318 **Tracking Shock Movement on the Surface of an Oscillating, Straked Delta Wing** J. Pung, D. Crowe, Air Force Institute of Technology, Wright-Patterson AFB, OH	1600 hrs AIAA-2019-2319 **Using a stochastic approach to estimate the aerothermal performance of the Giant Magellan Telescope** K. Vogiatzis, K. Das, B. Sitarsky, D. Schwartz, R. Conan, G. Angeli, GMTO Corporation, Pasadena, CA	

Friday, 11 January 2019						
572-FD-73	**Stability and Transition of Shear Flows**					**Harbor B**
Chaired by: J. EPPINK, NASA Langley Research Center and F. AVALLONE, Delft University of Technology						
1330 hrs AIAA-2019-2320 **Numerical Investigation of Rayleigh-Be'nard-Poiseuille Instability of Plane Channel Flow** M. Hasan, A. Gross, New Mexico State University, Las Cruces, NM	1400 hrs AIAA-2019-2321 **Steady-States of Supersonic Flows Over Compression Ramps** L. Alves, R. Santos, Fluminense Federal University, Rio de Janeiro, Brazil; N. Cerulus, V. Theofilis, University of Liverpool , Liverpool, United Kingdom	1430 hrs AIAA-2019-2322 **Inclusion of Crossflow Effects in WA-? Transition Model** H. Nagapetyan, R. Agarwal, Washington University in St. Louis, St. Louis, MO	1500 hrs AIAA-2019-2323 **Application of the WA-? Transition Model for Flow past a Circular Arc** H. Nagapetyan, R. Agarwal, Washington University in St. Louis, St. Louis, MO			

Friday, 11 January 2019						
573-FD-74	**Dynamic Stall and Separation Control**					**Gaslamp D**
Chaired by: M. SMITH, Georgia Institute of Technology and A. GROSS, New Mexico State University						
1330 hrs AIAA-2019-2324 **On the Characteristics of Three-Dimensional Dynamic Tip Stall on a Swept Wing** A. Medina, M. Rockwood, D. Garmann, M. Visbal, Air Force Research Laboratory, Wright-Patterson AFB, OH; A. Ahmed, Auburn University, Auburn, AL	1400 hrs AIAA-2019-2325 **Blade Tip Vortex Characterization of a Rotor Under Cyclic Pitch Conditions Using BOS and PIV** J. Braukmann, C. Wolf, A. Goerttler, M. Raffel, German Aerospace Center (DLR), Göttingen, Germany	1430 hrs AIAA-2019-2326 **Characterization and Manipulation of Vorticity Transport On a Rolling Wing** W. Kevin, R. Berdon, J. Buchholz, University of Iowa, Iowa City, Iowa City, IA; K. Johnson, B. Thurow, Auburn University, Auburn, AL				

Friday, 11 January 2019						
574-FD-75	**CFD - Turbulence Modeling and Applications**					**Gaslamp C**
Chaired by: M. VYAS, NASA Glenn Research Center and S. MURMAN, NASA Ames Research Center						
1330 hrs AIAA-2019-2327 **Blunt Body Vortex Structure and CFD Turbulence Model Investigation** B. Payne, J. Marquart, B. Emshoff, Ohio Northern University, Ada, OH	1400 hrs AIAA-2019-2328 **Recent Advances in a Cartesian Solver for Industrial LES** R. Lohner, A. Figueroa, A. Degro, George Mason University, Fairfax, VA	1430 hrs AIAA-2019-2329 **Compatible wall functions and adaptive remeshing for the k-omega SST model** F. Lacombe, University of Waterloo, Waterloo, Canada; D. Pelletier, A. Garon, Polytechnique Montréal, Montréal, Canada	1500 hrs AIAA-2019-2330 **A New Form of Generalized Wall Functions** A. Jemcov, University of Notre Dame, Notre Dame, IN; J. Maruszewski, ANSYS, Inc., Evanston, IL; R. Kelly, University of Notre Dame, Notre Dame, IN; D. Choudhury, ANSYS, Inc., Lebanon, NH			

Friday, 11 January 2019						
575-FD-76	**CFD Solver Evaluation**					**Gaslamp B**
Chaired by: M. GALBRAITH, Massachusetts Institute of Technology						
1330 hrs AIAA-2019-2331 **Turbulence Model Implementation and Verification in the SENSEI CFD Code** C. Jackson, NASA Langley Research Center, Hampton, VA; W. Tyson, C. Roy, Virginia Polytechnic Institute and State University, Blacksburg, VA	1400 hrs AIAA-2019-2332 **Evaluation of Full Reynolds Stress Turbulence Models in FUN3D for Axisymmetric Jet Flow** J. Dudek, NASA Glenn Research Center, Cleveland, OH	1430 hrs AIAA-2019-2333 **Accuracy, Scalability, and Efficiency of Mixed-Element USM3D for Benchmark Three-Dimensional Flows** M. Pandya, NASA Langley Research Center, Hampton, VA; D. Jespersen, NASA Ames Research Center, Moffett Field, CA; B. Diskin, National Institute of Aerospace, Hampton, VA; J. Thomas, N. Frink, NASA Langley Research Center, Hampton, VA	1500 hrs AIAA-2019-2334 **Code Verification for RANS Solutions with Compact Support** D. Israel, Los Alamos National Laboratory, Los Alamos, NM			

Friday, 11 January 2019						
576-GNC-40/IS-26	**Advances in Adaptive Control Systems IV (Invited)**					**Harbor D**
Chaired by: J. MUSE, AFRL/RQQA and T. YUCELEN, University of South Florida						
1330 hrs AIAA-2019-2335 **A New Stochastic Control Paradigm Employing Large Deviations Theory (Invited)** M. Schmid, Clemson University, Greenville, SC; J. Crassidis, State University of New York, Buffalo, NY	1400 hrs AIAA-2019-2336 **Experimental Results of a Model Reference Adaptive Control Law on an Uncertain System with Unmodeled Dynamics (Invited)** K. Dogan, T. Yucelen, E. Yildirim, University of South Florida, Tampa, FL; J. Muse, Air Force Research Laboratory, Wright-Patterson AFB, OH	1430 hrs AIAA-2019-2337 **Nonlinear (Lyapunov) Stability of the Space Launch System Flight Control System with Adaptive Augmenting Control (Invited)** M. Balas, Embry-Riddle Aeronautical University, Daytona Beach, FL; T. VanZwieten, M. Hannan, NASA Marshall Space Flight Center, Huntsville, AL	1500 hrs AIAA-2019-2338 **Baiting For Defense Against Stealthy Attacks on Cyber-Physical Systems** D. Flamholz, A. Annaswamy, Massachusetts Institute of Technology, Cambridge, MA; E. Lavretsky, The Boeing Company, Huntington Beach, CA	1530 hrs AIAA-2019-2339 **Intelligent Nonlinear Adaptive Flight Control using Incremental Approximate Dynamic Programming** P. Dias, Y. Zhou, E. Van Kampen, Delft University of Technology, Delft, The Netherlands	1600 hrs AIAA-2019-2340 **Control of a FlexibleWing with Flaps using a Set Theoretic Active-Passive Framework (Invited)** A. Menon, A. Chakravarthy, Wichita State University, Wichita, KS; B. Gruenwald, T. Yucelen, University of South Florida, Tampa, FL	

Friday, 11 January 2019						
577-GNC-41	**Missile Guidance and Control**					**Gaslamp A**
Chaired by: M. MCFARLAND, Raytheon and S. THEODOULIS, French German Research Institute						
1330 hrs AIAA-2019-2341 **Aerospace Vehicle Steering with Uncontrolled Axial Acceleration** R. Morgan, Raytheon Company, Tucson, AZ	1400 hrs AIAA-2019-2342 **Spinning Projectile Navigation and Guidance Using Strapdown Seeker** T. Josey, K. Pamadi, Naval Surface Warfare Center, Dahlgren, VA; B. Newman, Old Dominion University, Norfolk, VA	1430 hrs AIAA-2019-2343 **Predictive Guidance Strategies for Active Aircraft Defense** H. Shi, J. Zhu, M. Kuang, X. Yuan, Tsinghua University, Beijing, China	1500 hrs AIAA-2019-2344 **Timing Determination Algorithm for Aircraft Evasive Maneuver against Unknown Missile Acceleration** S. Nakagawa, T. Yamasaki, H. Takano, I. Yamaguchi, National Defense Academy of Japan, Yokosuka, Japan	1530 hrs AIAA-2019-2345 **Design of an H_∞ Gain-Scheduled Guidance Scheme for a Guided Projectile** F. Sève, S. Theodoulis, French-German Research Institute of Saint-Louis (ISL), Saint-Louis, France	1600 hrs AIAA-2019-2346 **A Study on the Improvement of Modified Proportional Navigation Guidance** Y. Shiraishi, H. Takano, T. Yamasaki, I. Yamaguchi, National Defense Academy, Yokosuka, Japan	

Friday, 11 January 2019						
578-IS-27	**AI and HMI in Engineering Design (Invited)**					**Solana Beach A**
Chaired by: D. SELVA, Texas A&M University and N. AHMED, University of Colorado Boulder						
1330 hrs AIAA-2019-2347 **Mini-Map: Mixed-Initiative Mind-Mapping via Contextual Query Expansion (Invited)** T. Chen, S. Subramanian, V. Krishnamurthy, Texas A&M University, College Station, TX	1400 hrs AIAA-2019-2348 **Supporting Automation in Spacecraft Activity Planning with Simulation and Visualization (Invited)** B. Alper Ramaswamy, J. Agrawal, W. Chi, S. Kim Castet, S. Davidoff, S. Chien, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1430 hrs AIAA-2019-2349 **Coupling Digital Human Modeling with Early Design Stage Human Error Analysis to Assess Ergonomic Vulnerabilities (Invited)** L. Irshad, S. Ahmed, O. Demirel, I. Tumer, Oregon State University, Corvallis, OR	1500 hrs AIAA-2019-2350 **Circuit Synthesis Using Generative Adversarial Networks (GANs) (Invited)** T. Guo, D. Herber, J. Allison, University of Illinois, Urbana-Champaign, Urbana, IL	1530 hrs AIAA-2019-2351 **Aerodynamic Design Optimization and Shape Exploration using Generative Adversarial Networks (Invited)** W. Chen, K. Chiu, M. Fuge, University of Maryland, College Park, College Park, MD		

Friday, 11 January 2019						
579-MDO-22	**Shape and Topology Optimization II**					**Harbor C**
Chaired by: S. KAMBAMPATI, UCSD and J. DEATON, Adjoint Technologies						
1330 hrs AIAA-2019-2352 **Shape Optimization of a Stretchable Drooping Leading Edge** F. Fortin, National Research Council Canada, Ottawa, Canada	1400 hrs AIAA-2019-2353 **A Geometry Projection Method for the Design Exploration of Wing-box Structures** H. Smith, J. Norato, University of Connecticut, Storrs, Storrs, CT	1430 hrs AIAA-2019-2354 **Computational Modeling of Flutter Constraint for High-Fidelity Aerostructural Optimization** E. Jonsson, C. Mader, University of Michigan, Ann Arbor, Ann Arbor, MI; G. Kennedy, Georgia Institute of Technology, Atlanta, GA; J. Martins, University of Michigan, Ann Arbor, Ann Arbor, MI	1500 hrs AIAA-2019-2355 **Flexible Formulation of Spatial Integration Constraints in Aerodynamic Shape Optimization** B. Brelje, J. Anibal, A. Yildirim, C. Mader, J. Martins, University of Michigan, Ann Arbor, Ann Arbor, MI	1530 hrs AIAA-2019-2356 **A Mixed Integer Efficient Global Optimization Algorithm with Multiple Infill Strategy - Applied to a Wing Topology Optimization Problem** S. Roy, W. Crossley, Purdue University, West Lafayette, IN; B. Stanford, NASA Langley Research Center, Hampton, VA; K. Moore, DB Consulting Group, Inc., Cleveland, OH; J. Gray, NASA Glenn Research Center, Cleveland, OH		

Friday, 11 January 2019						
580-MVCE-7	**Geometry and Meshing Applications**					**Solana Beach B**
Chaired by: N. WYMAN, Pointwise, Inc. and J. MASTERS, National Aerospace Solutions						
1330 hrs AIAA-2019-2357 **Parametric 3D-Printable Flutter Model for Constrained Aeroelastic Scaling** A. Pankonien, R. Durscher, Air Force Research Laboratory, Wright-Patterson AFB, OH; N. Bhagat, University of Dayton, Dayton, OH	1400 hrs AIAA-2019-2358 **Aeroelastic Trade Study of a Conformal Control Surface for a Printable Wind Tunnel Model** A. Pankonien, R. Durscher, Air Force Research Laboratory, Wright-Patterson AFB, OH; N. Bhagat, University of Dayton, Dayton, OH	1430 hrs AIAA-2019-2359 **Improved Mixed Element Viscous Grid Generation at Ridges and Corners** P. Li, The Boeing Company, Seattle, WA; T. Michal, The Boeing Company, St. Louis, MO	1500 hrs AIAA-2019-2360 **Surface Mesh Deformation in CAD-based Shape Optimization** L. Sun, T. Robinson, C. Armstrong, Queen's University Belfast, Belfast, United Kingdom; S. Marques, University of Surrey, Guildford, United Kingdom; W. Yao, Queen's University Belfast, Belfast, United Kingdom	1530 hrs AIAA-2019-2361 **A reduced order model to create two-dimensional flow fields from uni-dimensional data** E. Bell, C. Mendez, S. Le Clainche, J. Vega, Technical University of Madrid, Madrid, Spain	1600 hrs AIAA-2019-2362 **Grid Metrics Modification Approach for Flow Simulation around 3D Geometries on Cartesian CFD method** K. Sugaya, T. Imamura, University of Tokyo, Tokyo, Japan	

Friday, 11 January 2019						
581-PC-24	**Laminar Flames and Combustion Chemistry II**					**Hillcrest A**
Chaired by: F. HERNANDEZ-PEREZ, KIng Abdullah University of Science and Technology and V. ACHARYA, Georgia Institute of Technology						
1330 hrs AIAA-2019-2363 **Laminar Flame Speed Measurements from Chemiluminescence of OH* and CH* in CH_4-, H_2-, and C_2H_2-Air Flames** M. Turner, P. Parajuli, T. Paschal, W. Kulatilaka, E. Petersen, Texas A&M University, College Station, TX	1400 hrs AIAA-2019-2364 **Effect of Dilution With NO on Spark Ignition of CH_4/air Mixtures** J. Bonebrake, Oregon State University, Corvallis, OR; T. Ombrello, Air Force Research Laboratory, Wright-Patterson AFB, OH; D. Blunck, Oregon State University, Corvallis, OR	1430 hrs AIAA-2019-2365 **Flame Propagation in Quasi-2D Channels: Stability, Rates and Scaling** S. Shen, J. Wongwiwat, P. Ronney, University of Southern California, Los Angeles, CA	1500 hrs AIAA-2019-2366 **Impact of thermal diffusion on lean near-limit H2-CH4-air flames** F. Hernandez Perez, H. Im, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia; Z. Zhou, Y. Shoshin, J. van Oijen, P. de Goey, Eindhoven University of Technology, Eindhoven, The Netherlands	1530 hrs AIAA-2019-2367 **Direct measurement of the JP-10+OH = Products reaction rate in shock tube experiments.** L. Zaczek, D. Davidson, R. Hanson, Stanford University, Stanford, CA		

Friday, 11 January 2019						
582-PC-25	**Advanced Combustion Concepts II**					**Harbor F**
Chaired by: V. KATTA, Innovative Scientific Solutions Incorporated and S. PRAKASH						
1330 hrs AIAA-2019-2368 **Properties Calculator and Optimization for Drop-in Alternative Jet Fuel Blends** G. Flora, University of Dayton Research Institute, Dayton, OH; S. Kosir, L. Behnke, R. Stachler, J. Heyne, University of Dayton, Dayton, OH; S. Zabarnick, University of Dayton Research Institute, Dayton, OH; et al.	1400 hrs AIAA-2019-2369 **Wake Fueling Correlation for Carbureted Fuel Injectors** D. Knaus, S. Phillips, D. Micka, Creare, LLC, Hanover, NH; E. Lubarksky, Georgia Institute of Technology, Atlanta, GA; V. Belovich, Air Force Research Laboratory, Wright-Patterson AFB, OH; J. Lovett, Pratt & Whitney, East Hartford, CT	1430 hrs AIAA-2019-2370 **Hydrocarbon Ignition on High Surface Area Pt-Electroplated Wires** Y. Shi, University of California, Los Angeles, Los Angeles, CA; J. Whalen, Platinum Group Coatings LLC, Pasadena, CA; P. Ronney, University of California, Los Angeles, Los Angeles, CA	1500 hrs AIAA-2019-2371 **Paraformaldehyde/epoxy-resin based composites as a fuel for hybrid rocket engines** D. Zdybal, Cranfield University, Cranfield, United Kingdom; A. Guzik, P. Drozdz, B. Wyciszkiewicz, T. Tatara, A. Zwolak, AGH University of Science and Technology, Cracow, Poland	1530 hrs AIAA-2019-2372 **Hydrocarbon-Fueled Electrical Power Generator with no Moving Parts** J. Wongwiwat, P. Bhuripanyo, P. Ronney, University of Southern California, Los Angeles, CA	1600 hrs AIAA-2019-2373 **Effects of Agent Blending on Fire-Suppression Characteristics** V. Katta, Innovative Scientific Solutions, Inc., Dayton, OH; F. Takahashi, Case Western Reserve University, Cleveland, OH; V. Babushok, National Institute of Standards and Technology, Gaithersburg, MD	

Friday, 11 January 2019						
583-SCS-11	**Special Session: Rosa Deployment Results**					**Torrey Hills A**
Chaired by: J. FOOTDALE, Ball Aerospace & Technologies Corporation and J. BLANDINO, Virginia Military Institute						
1330 hrs AIAA-2019-2374 **On-orbit Photogrammetry Analysis of the Roll-Out Solar Array (ROSA)** J. Banik, Air Force Research Laboratory, Kirtland AFB, NM; R. Kramer, NASA Langley Research Center, Hampton, VA; D. Liddle, NASA Johnson Space Center, Houston, TX; M. Shortis, RMIT University, Melbourne, Australia	1400 hrs AIAA-2019-2375 **Photogrammetry-Based Analysis of the On-orbit Structural Dynamics of the Roll-Out Solar Array** M. Chamberlain, NASA Langley Research Center, Hampton, VA; S. Kiefer, Deployable Space Systems, Santa Barbara, CA; J. Banik, Air Force Research Laboratory, Kirtland AFB, NM	1430 hrs AIAA-2019-2376 **Structural Analysis Methods for the Roll-Out Solar Array Flight Experiment** M. Chamberlain, NASA Langley Research Center, Hampton, VA; S. Kiefer, Deployable Space Systems, Santa Barbara, CA; J. Banik, Air Force Research Laboratory, Kirtland AFB, NM				

Friday, 11 January 2019						
584-SEN-6	**Testing**					**Cove**
Chaired by: I. CLARK, NASA Langley Research Center						
1330 hrs AIAA-2019-2377 **Real-time Kinematics GPS Based Telemetry System for Airborne Measurements of Ship Air Wake** K. Gamagedara, T. Lee, M. Snyder, George Washington University, Washington, D.C.	1400 hrs AIAA-2019-2378 **Results of Field testing for an Integrated GPS/INS Unit based on Low-cost Redundant MEMS Sensors** R. Fontanella, G. de Alteriis, R. Schiano Lo Moriello, D. Accardo, L. Angrisani, University of Naples "Federico II", Naples, Italy	1430 hrs AIAA-2019-2379 **Improving radar-based mini-UAS navigation in complex environments with outlier rejection** A. Scannapieco, Cranfield University, Shrivenham, United Kingdom; M. Graziano, G. Fasano, A. Renga, University of Naples "Federico II", Naples, Italy	1500 hrs AIAA-2019-2380 **Anomaly Detection in Wind Tunnel Experiments by Principal Component Analysis** A. Defreitas, W. Alexander, W. Devenport, S. Merkes, S. Leman, E. Smith, Virginia Polytechnic Institute and State University, Blacksburg, VA; et al.	1530 hrs AIAA-2019-2381 **Design of a SW Framework for an Autopilot with Automated Test Capabilities on an Experimental Mid-Sized UAS** E. De Lellis, F. Corraro, G. Di Capua, L. Garbarino, N. Genito, R. Rocchio, Italian Aerospace Research Center (CIRA), Capua, Italy	1600 hrs AIAA-2019-2382 **Acoustic Atmospheric Propagation Model Validation with the NRC Convair 580** A. Price, S. Ghinet, National Research Council Canada, Ottawa, Canada; G. Daigle, M. Stinson, MG Acoustics, Ottawa, Canada; A. Grewal, National Research Council Canada, Ottawa, Canada; C. Minwalla, Minwalla Technology Group, Ottawa, Canada; et al.	1630 hrs AIAA-2019-2383 **Visual Detectability of the Convair 580** C. Minwalla, MTG, Ltd., Nepean, Canada; A. Price, S. Ghinet, National Research Council Canada, Ottawa, Canada

Friday, 11 January 2019						
585-STR-22	**Buckling, Fatigue and Fracture of Structures**					**Golden Hill A**
Chaired by: D. PHILLIPS, NASA-Marshall Space Flight Center and M. SCHULTZ, NASA Langley Research Center						
1330 hrs AIAA-2019-2384 **Fatigue damage prognosis of aircraft wing structures using time-based subcycle formulation and hybrid learning** Y. Yu, K. Venkatesan, Y. Liu, Arizona State University, Tempe, AZ	1400 hrs AIAA-2019-2385 **An Approximate Approach on the Nonlinear Buckling of a Composite Lattice Plate considering Imperfection** Y. Kim, P. Kim, H. Kim, J. Park, Korea Aerospace University, Goyang, South Korea	1430 hrs AIAA-2019-2386 **Composite buckling analysis using discrete damage modeling** J. McQuien, E. Iarve, University of Texas, Arlington, Fort Worth, TX; D. Mollenhauer, Air Force Research Laboratory, Wright-Patterson AFB, OH; M. Braginsky, M. Stuebner, University of Dayton, Dayton, OH	1500 hrs AIAA-2019-2387 **Integrated Discrete Crack Network and Segmented Cohesive Method for Characterization of Interaction of Matrix Cracking and Interface Delamination** X. Ren, D. Pham, J. Lua, Global Engineering and Materials, Inc., Princeton, NJ	1530 hrs AIAA-2019-2388 **A Composite Damage Tolerance Simulation Technique to Augment the Building Block Approach** M. McElroy, NASA Johnson Space Center, Houston, TX; M. Zanganeh, Jacobs, Houston, TX; M. Galeano, J. Jacobs, NASA Johnson Space Center, Houston, TX		

Friday, 11 January 2019		
586-NW-15 **1530 - 1600 hrs**	**Friday Afternoon Coffee Break**	**Session Room Foyers**

AUTHOR AND SESSION CHAIR INDEX

A, J., 369-MST-10
Abart, J., 11-AMT-1
Abate, G., 145-APA-18
Abbas, A., 61-TES-2, 186-TES-3, 317-TES-4
Abbas, N., 448-WE-8
Abbas, Z., 13-APA-1
Abbasi, A., 17-APA-5/FD-2/PDL-2
Abbasi, Z., 216-GNC-14
Abdallah, H., 501-PC-20
Abdallah, S., 187-TF-3
Abdelgader, M., 492-MAT-13
AbdelGhany, E., 317-TES-4
Abdelhadi, A., 186-TES-3
Abdelkefi, A., 526-ACD-12/UAS-12
Abdellaoui, K., 190-WE-3
Abdel-Motaleb, S., 531-APA-50
Abdelmoula, A., 273-APA-29
Abdelrahman, W., 492-MAT-13
Abdel-Salam, T., 37-HSABP-1, 420-GRE-1
Abdelwahab, M., 446-UAS-7/ACD-16
Abdi, F., 408-AS-7
Abdol-Hamid, K., 273-APA-29, 475-FD-57
Abdulrahim, M., 22-EDU-1, 199-AFM-8, 268-AFM-9
Abe, H., 405-APA-39
Abe, K., 53-SCS-1
Abid, K., 108-MST-4
Abramson, M., 369-MST-10
Abras, J., 144-APA-17
Absi, G., 371-NDA-7
Acar, B., 118-SD-5
Acar, P., 231-MAT-6/NDA-5, 550-MDO-20
Accardo, D., 382-SEN-3, 584-SEN-6
Achambath, A., 318-TP-6
Acharya, A., 250-UAS-1
Acharya, S., 125-TP-2, 477-FD-59
Acharya, T., 151-FD-20
Acharya, V., 163-GTE-2, 581-PC-24
Achour, G., 560-SEN-5
Acikmese, B., 160-GNC-12, 219-GNC-17, 292-GNC-38
Ackerman, K., 269-AFM-10/GNC-21/FT-1
Acosta, G., 273-APA-29
Acree, C., 534-DS-7
Adair, D., 243-SD-10
Adam, A., 330-AA-6
Adamcik, B., 312-SCS-5
Adamovich, I., 51-PDL-3, 178-PDL-9, 238-PDL-10
Adams, D., 272-APA-28
Adams, J., 122-STR-4
Adams, L., 503-SCS-8
Adamson, L., 439-SD-17
Adcock, R., 41-ISC-MS
Adhikari, B., 184-STR-6
Adler, M., 28-FD-7, 474-FD-56
Adluru, H., 384-STR-14
Adsiz, M., 493-MDO-18
Afsar, M., 86-FD-11
Aftab, S., 204-APA-25
Agarwal, R., 26-FD-5, 89-FD-14, 271-APA-27, 272-APA-28, 336-APA-33, 405-APA-39, 475-FD-57, 569-APA-54, 571-APA-56, 572-FD-73
Aggarwal, P., 59-STR-2
Aggarwal, R., 157-GNC-9, 216-GNC-14
Aglietti, G., 558-SCS-9
Agogino, A., 364-IS-17
Agrawal, A., 236-PC-11, 375-PGC-8
Agrawal, J., 578-IS-27
Aguiar, A., 481-GNC-34
Aguilar, A., 182-SE-3
Ahmad, J., 336-APA-33
Ahmad, N., 25-FD-4
Ahmadi, G., 476-FD-58, 536-FD-64
Ahmed, A., 151-FD-20, 211-FD-28, 214-FD-31, 272-APA-28, 573-FD-74
Ahmed, K., 50-PC-2/PGC-1, 110-PC-4, 179-PGC-4, 204-APA-25, 240-PGC-5, 311-PGC-6, 397-AA-7, 402-AMT-15, 434-PC-17, 435-PC-18, 487-GTE-7, 557-PGC-12
Ahmed, M., 213-FD-30, 501-PC-20
Ahmed, N., 101-IS-5, 549-IS-25, 578-IS-27
Ahmed, S., 125-TP-2, 578-IS-27
Ahmed, U., 299-MAT-8
Ahn, J., 419-GNC-32, 447-UAS-8/IS-21/SOF-6
Ahn, S., 177-PDL-8, 238-PDL-10
Ahner, D., 166-IS-8/SOF-2
Ahsun, U., 13-APA-1
Ahuja, J., 399-ACD-10
Ahuja, K., 69-AA-2, 133-AA-3
Ahumada, K., 525-AA-9
Aigner, M., 49-PC-1, 110-PC-4, 175-PC-8, 421-GTE-6, 433-NDA-9
Akatsuka, J., 330-AA-6
Akbiyik, B., 494-MST-15/SOF-10
Akbulut, B., 221-GNC-19
Akcakoca, M., 494-MST-15/SOF-10
Akella, M., 357-GNC-30, 422-HSABP-7
Akin, B., 435-PC-18
Akinyemi, O., 175-PC-8
Akkinapalli, V., 482-GNC-35
Akram, F., 13-APA-1
Akram, M., 500-PC-19
Aksel, G., 508-STR-19
Aksoy, T., 118-SD-5
Alabi, K., 386-TP-8
Alame, K., 536-FD-64
Alberti, A., 310-PDL-13
Albisser, M., 333-AFM-12
Albrecht, M., 540-FD-68
Albring, T., 45-MDO-1
Aleman Chona, M., 143-APA-16
Alexander, A., 141-APA-14, 283-FD-35, 536-FD-64
Alexander, W., 485-GT-7, 560-SEN-5, 584-SEN-6
Alexandrov, N., 199-AFM-8
Alexeenko, A., 563-TP-14
Alferez, N., 544-FD-72
Al-Haddad, M., 61-TES-2, 317-TES-4
Alhawwary, M., 287-FD-39
Alhosseinihamedani, B., 155-FD-24
Ali, R., 382-SEN-3
Ali, S., 152-FD-21
Alimo, S., 499-OPS-1
Aliyazicioglu, Z., 250-UAS-1
Alizadeh, A., 39-IS-2
Alkadi, N., 251-UAS-2
Allaire, D., 231-MAT-6/NDA-5, 303-MDO-12
Allamraju, R., 251-UAS-2
Allan, W., 204-APA-25
Allen, B., 549-IS-25
Allen, C., 301-MDO-10/APA-31, 367-MDO-14, 368-MDO-15/APA-37, 426-MDO-16/SD-16
Allen, M., 54-SD-1
Allen, T., 107-MST-3/SOF-8
Allenstein, J., 22-EDU-1
Allik, B., 288-GNC-22
Allison, J., 578-IS-27
Allison, S., 401-AFM-14
Allmaras, S., 287-FD-39, 476-FD-58, 553-MVCE-6
Almansour, B., 112-PC-6
Al-Marzooqi, M., 526-ACD-12/UAS-12
Al Masoud, N., 207-EDU-3
Almodovar, C., 12-AMT-2
Alonso, J., 88-FD-13, 142-APA-15, 169-MDO-4/APA-20, 174-NDA-4, 197-ACD-6
Alper Ramaswamy, B., 578-IS-27
Alt, E., 269-AFM-10/GNC-21/FT-1
Altaf, A., 181-SD-7
Altamirano, G., 29-FD-8, 559-SD-22
Altman, A., 22-EDU-1, 24-FD-3, 531-APA-50
Altmikus, A., 190-WE-3
Altshuler, D., 205-AS-4
Alves, L., 572-FD-73
Alves, M., 84-DE-2, 108-MST-4
Alves, W., 135-ACD-4
Alvi, F., 28-FD-7, 284-FD-36
Al-Zaabi, N., 526-ACD-12/UAS-12
Amadori, K., 70-ACD-2
Amano, R., 61-TES-2, 186-TES-3, 317-TES-4, 443-TES-5
Amanodlese, X., 469-APA-47
Amaya, M., 546-GT-9
Ameri, A., 212-FD-29
Ames, D., 116-SCS-2/AS-2
Ameur, F., 349-FD-43
Amir, O., 367-MDO-14
Amitay, M., 29-FD-8, 348-FD-42
Amzajerdian, F., 160-GNC-12
An, C., 54-SD-1
An, X., 211-FD-28
Anand, M., 175-PC-8
Anay, R., 315-STR-11, 384-STR-14
Andalibi, M., 560-SEN-5
Anderson, J., 397-AA-7, 547-HIS-5
Anderson, K., 445-TP-10
Anderson, M., 21-DE-1, 319-UAS-3/ACD-15, 566-ACD-14/UAS-13
Anderson, R., 420-GRE-1
Anderson, W., 30-FD-9, 115-PGC-3/HSABP-3, 432-MVCE-2, 434-PC-17, 501-PC-20
Andersson, N., 26-FD-5, 169-MDO-4/APA-20, 459-AA-8, 542-FD-70
Andino, M., 473-FD-55, 540-FD-68
Andrews, C., 507-STR-18
Andrews, G., 142-APA-15
Andrianne, T., 405-APA-39
Andrienko, D., 188-TP-3
Andro-Avila, B., 428-MST-12/SOF-9
Anemaat, W., 70-ACD-2, 135-ACD-4, 266-AA-5/TF-5
Angeli, G., 571-APA-56
Angelini, N., 171-MDO-6/NDA-3/STR-5
Angermann, M., 410-DA-2
Angrisani, L., 584-SEN-6
Anibal, J., 579-MDO-22
Anicode, V., 246-STR-7
Anjaly, P., 100-IS-4
Ankem, V., 299-MAT-8
Annaloro, J., 188-TP-3, 563-TP-14
Annaswamy, A., 576-GNC-40/IS-26
Annen, Z., 507-STR-18
Annoni, J., 126-WE-2, 514-WE-9
Ansell, P., 16-APA-4/FD-1/PDL-1, 79-APA-9
Antcliff, K., 124-TF-2, 187-TF-3
Antonello, A., 481-GNC-34
Antoniou, A., 64-WE-1
Antony, T., 72-AFM-4
Anusonti-Inthra, P., 274-APA-30
Anwar, H., 488-GTE-8
Aoki, S., 32-GNC-2
Aoki, Y., 331-ACD-8
Aono, H., 266-AA-5/TF-5
Applebaum, M., 467-APA-45
Arabi, E., 220-GNC-18/IS-10, 482-GNC-35, 545-GNC-39/IS-24
Arad, E., 26-FD-5
Arai, H., 161-GNC-13
Arastu, F., 185-SUR-2
Araujo-Estrada, S., 484-GNC-37
Arberkli, F., 221-GNC-19
Arendt, M., 270-AMT-11
Arenella, A., 305-MST-9
Aretskin-Hariton, E., 303-MDO-12, 533-CMS-1
Arif, I., 487-GTE-7
Arizono, H., 56-SD-3
Arjoni, D., 172-MST-5
Arkhangelsky, Y., 172-MST-5
Armstrong, C., 431-MVCE-1, 580-MVCE-7
Arndt, C., 59-STR-2, 176-PC-9
Arnett, T., 364-IS-17
Arnhem, N., 271-APA-27
Arnold, F., 311-PGC-6
Arnold, S., 168-MAT-4, 230-MAT-5, 300-MAT-9/MDO-9/STR-9, 492-MAT-13
Arnold, U., 343-DS-4
Arora, N., 28-FD-7
Arora, P., 99-ICC-1/SEN-1
Arpatappeh, F., 441-STR-16
Arrieta, A., 205-AS-4, 470-AS-8
Arroyave, R., 231-MAT-6/NDA-5
Arteaga, R., 248-TF-4
Arteiro, A., 425-MAT-12
Arthur, N., 309-PDL-12
Arumbakkam, S., 84-DE-2
Arya, H., 250-UAS-1
Arya, M., 116-SCS-2/AS-2, 180-SCS-3, 558-SCS-9
Asada, H., 459-AA-8
Asada, K., 473-FD-55
Asadi Khanouki, M., 275-AS-5
Asai, K., 11-AMT-1, 24-FD-3, 87-FD-12, 348-FD-42, 539-FD-67
Asai, S., 478-FD-60
Asghar, A., 204-APA-25
Asher, I., 433-NDA-9
Ashley, A., 45-MDO-1
Ashpis, D., 177-PDL-8
Ashrafi, B., 470-AS-8
Aso, S., 273-APA-29, 306-PC-13, 335-APA-32
Aspden, A., 110-PC-4
Asphaug, E., 149-EXPL-1
Assi, L., 384-STR-14
Astarita, T., 75-AMT-5
Atalay, O., 562-STR-21
Atallah, A., 20-CPS-1
Ates, U., 483-GNC-36
Atescan, Y., 425-MAT-12
Athmanathan, V., 138-AMT-6/PC-7
Atici, B., 494-MST-15/SOF-10
Atinault, O., 398-ACD-9
Atkins, E., 217-GNC-15, 227-IS-11, 296-IS-14, 549-IS-25
Atkinson, C., 235-MST-8
Atli-Veltin, B., 44-MAT-1, 64-WE-1
Attari, V., 231-MAT-6/NDA-5
Atuk, B., 36-HIS-1
Aubry, R., 431-MVCE-1, 432-MVCE-2
Auspitzer, T., 343-DS-4
Austin, J., 189-TP-4, 385-TP-7, 407-APA-41/FD-47/SD-15/AMT-17, 567-AMT-24/APA-52
Autry, B., 134-ACD-3
Avallone, F., 7-AA-1, 321-WE-6, 477-FD-59, 572-FD-73
Avcioglu, S., 217-GNC-15
Avelar, A., 11-AMT-1
Avery, P., 243-SD-10
Avila, A., 425-MAT-12
Awate, V., 79-APA-9, 200-AMT-9/PC-10
Axelrod, A., 101-IS-5
Aydemir, B., 441-STR-16
Aydemir, H., 494-MST-15/SOF-10
Aydin, E., 141-APA-14
Aydin, G., 369-MST-10
Ayers, Z., 528-AMT-21
Ayoubi, M., 424-IS-20
Azevedo, J., 30-FD-9, 337-APA-34, 530-APA-49
Azgin, K., 221-GNC-19
B., S., 161-GNC-13
Baár, T., 461-AFM-16
Babinsky, H., 80-APA-10, 92-FD-17, 285-FD-37, 415-FD-50, 468-APA-46
Babu, A., 214-FD-31
Babushok, V., 582-PC-25
Babuska, V., 343-DS-4
Baccarella, D., 422-HSABP-7
Bacciaglia, A., 526-ACD-12/UAS-12
Bach, E., 115-PGC-3/HSABP-3
Bachelder, E., 305-MST-9
Bachelier, Y., 386-TP-8
Bachman, C., 311-PGC-6
Baculi, J., 167-IS-9, 365-IS-18
Badra, J., 464-AMT-19/APA-42
Badrya, C., 155-FD-24
Bae, H., 371-NDA-7, 433-NDA-9, 498-NDA-10
Bae, J., 562-STR-21

AUTHOR AND SESSION CHAIR INDEX

Baeder, J., 30-FD-9, 78-APA-8, 92-FD-17, 155-FD-24, 287-FD-39, 368-MDO-15/APA-37, 475-FD-57, 496-MVCE-3
Baek, K., 366-MAT-11
Baerny, J., 485-GT-7, 532-APA-51
Bagdatli, B., 119-SE-2
Bahceli, G., 44-MAT-1
Bai, H., 401-AFM-14
Bai, S., 101-IS-5
Bai, X., 289-GNC-23, 495-MST-16
Bai, Z., 351-FD-45
Baier, F., 195-AA-4, 330-AA-6
Baig, M., 80-APA-10, 283-FD-35
Bailey, M., 57-SE-1
Bailey, S., 289-GNC-23, 536-FD-64
Bajwa, A., 491-IS-22
Bak, C., 190-WE-3
Baker, D., 364-IS-17
Baker, N., 126-WE-2
Bakis, C., 206-DS-2
Bakkar, A., 156-FD-25
Bakos, R., 37-HSABP-1
Balabanov, V., 427-MDO-17/NDA-8/STR-15
Balakrishnan, S., 220-GNC-18/IS-10
Balakumar, P., 415-FD-50
Balan, A., 432-MVCE-2
Balaras, E., 154-FD-23
Balas, M., 228-IS-12/GNC-20, 356-GNC-29/IS-16, 482-GNC-35, 576-GNC-40/IS-26
Balasekar, S., 95-GNC-6
Balchanos, M., 344-EXPL-4, 388-UAS-6/IS-19/SOF-5
Baldauff, R., 445-TP-10
Balding, J., 294-GT-6
Baldomir, A., 551-MDO-21/NDA-11
Balesdent, M., 170-MDO-5, 493-MDO-18
Baliga, V., 205-AS-4
Ball, J., 185-SUR-2
Balta, M., 248-TF-4
Ban, N., 552-MVCE-5
Bane, S., 41-ISC-MS, 177-PDL-8, 178-PDL-9, 339-APA-36/PDL-14
Banik, J., 583-SCS-11
Bani Younes, A., 20-CPS-1, 506-SEN-4
Banks, D., 415-FD-50
Bansmer, S., 190-WE-3, 363-INPSI-1
Barad, K., 161-GNC-13
Barad, M., 477-FD-59
Barak, S., 35-GTE-1, 112-PC-6
Barakos, G., 78-APA-8, 273-APA-29
Baran, O., 435-PC-18
Barata, J., 153-FD-22, 445-TP-10, 489-HIS-4
Barazanchy, D., 58-STR-1, 105-MDO-3
Barbosa, G., 95-GNC-6
Barcelos, D., 568-APA-53
Bardenhagen, A., 64-WE-1
Bardet, P., 12-AMT-2, 463-AMT-18
Barez, F., 561-STR-20
Barfield, R., 558-SCS-9
Barits, S., 170-MDO-5
Barkley, S., 200-AMT-9/PC-10, 307-PC-14
Barlow, R., 176-PC-9
Barnes, C., 55-SD-2, 214-FD-31
Barnes, F., 112-PC-6
Barnes, J., 234-MST-7
Barnett, M., 31-GNC-1
Barone, M., 473-FD-55
Barrett, A., 538-FD-66
Barrett-Gonzalez, R., 135-ACD-4
Barrows, B., 549-IS-25
Barry, C., 76-APA-6
Bartasevicius, J., 461-AFM-16
Bartels, R., 242-SD-9, 505-SD-21
Bartkowicz, T., 504-SD-20
Barton, J., 332-AFM-11
Bartram, S., 25-FD-4
Bart-Smith, H., 417-FD-53
Barufaldi, G., 199-AFM-8
Barut, A., 246-STR-7
Baruzzi, G., 93-FD-18
Barwey, S., 500-PC-19
Barzgaran, B., 504-SD-20
Barzic, J., 273-APA-29
Basgall, B., 135-ACD-4
Basore, K., 27-FD-6, 497-MVCE-4
Baspinar, B., 495-MST-16
Bateman, A., 251-UAS-2
Bateman, D., 541-FD-69
Bates, P., 343-DS-4
Bates, T., 199-AFM-8
Bathel, B., 91-FD-16, 486-GT-8
Bauchau, O., 426-MDO-16/SD-16
Bauer, A., 319-UAS-3/ACD-15
Baugher, S., 144-APA-17
Bauknecht, A., 529-AMT-22/APA-48
Baur, J., 408-AS-7
Baurle, R., 37-HSABP-1, 306-PC-13
Bauwens, L., 50-PC-2/PGC-1
Baxevanis, T., 298-MAT-7
Bay, C., 253-WE-5
Bayard, D., 320-UAS-4, 353-GNC-26
Bayrak, A., 494-MST-15/SOF-10
Beachy, A., 498-NDA-10
Beben, P., 496-MVCE-3
Beberniss, T., 201-APA-21/FD-26/SD-8/AMT-10
Beccarisi, F., 381-SD-13
Bechane, Y., 178-PDL-9
Beck, J., 103-MAT-2, 498-NDA-10
Becker, B., 301-MDO-10/APA-31
Beckett, K., 501-PC-20
Becks, A., 181-SD-7, 407-APA-41/FD-47/SD-15/AMT-17
Bedick, C., 311-PGC-6
Bednarcyk, B., 58-STR-1, 59-STR-2, 168-MAT-4, 184-STR-6
Beeler, G., 415-FD-50
Begrajka, D., 315-STR-11
Behera, D., 246-STR-7
Behere, A., 525-AA-9
Behnke, L., 236-PC-11, 582-PC-25
Behrman, E., 228-IS-12/GNC-20
Bejan, A., 134-ACD-3
Bekker, D., 292-GNC-38
Beling, P., 220-GNC-18/IS-10, 387-UAS-5
Belisle, M., 90-FD-15, 347-FD-41
Belk, D., 275-AS-5
Bell, E., 580-MVCE-7
Bell, J., 386-TP-8
Bellan, J., 372-PC-15, 500-PC-19
Belleter, D., 47-MST-1
Belligoli, Z., 223-GT-4
Belovich, V., 582-PC-25
Ben, C., 512-UAS-9
Ben Ameur, F., 497-MVCE-4
Benard, E., 137-AFM-6
Benchergui, D., 527-ACD-13
Bencomo, A., 167-IS-9
Bendana, F., 148-EDU-2, 403-AMT-16
Benedict, J., 22-EDU-1
Benek, J., 415-FD-50
Bengtson, M., 83-ASE-2
Benhacine, L., 292-GNC-38
Benitez, E., 530-APA-49
Bennani, S., 157-GNC-9
Bennett, G., 107-MST-3/SOF-8
Bennewitz, J., 502-PGC-10
Benoit, C., 544-FD-72
Ben Salah, N., 93-FD-18
Bensassi, K., 189-TP-4
Benson, K., 84-DE-2
Bent, P., 7-AA-1
Benton, S., 81-APA-11
Beran, P., 45-MDO-1, 147-DS-1, 174-NDA-4, 367-MDO-14, 426-MDO-16/SD-16, 433-NDA-9, 498-NDA-10
Berdon, R., 573-FD-74
Berdowski, T., 448-WE-8
Berens, T., 423-INPSI-2
Beresh, S., 407-APA-41/FD-47/SD-15/AMT-17, 473-FD-55
Bergan, A., 59-STR-2, 384-STR-14, 561-STR-20
Berger, A., 24-FD-3
Berger, T., 333-AFM-12
Berger, Z., 87-FD-12
Bergeron, K., 76-APA-6, 274-APA-30
Bering, E., 83-ASE-2
Bernard, A., 564-UAS-11
Bernardini, M., 28-FD-7
Bernstein, D., 220-GNC-18/IS-10
Berri, P., 550-MDO-20
Berridge, D., 27-FD-6
Berry, S., 27-FD-6, 486-GT-8
Bershinsky, K., 21-DE-1
Bertier, N., 537-FD-65
Bertolin, R., 95-GNC-6
Bertorello, C., 554-NDA-12
Bertrand, J., 63-TP-1
Besnard, A., 87-FD-12
Betancur, Y., 241-SCS-4, 320-UAS-4
Bettinger, R., 123-SUR-1
Beveridge, R., 319-UAS-3/ACD-15
Bewley, T., 21-DE-1
Beyak, E., 480-FD-63
Beyar, M., 25-FD-4
Beyene, A., 224-GTE-3
Bhaganagar, K., 281-FD-33, 387-UAS-5, 474-FD-56
Bhagat, N., 431-MVCE-1, 553-MVCE-6, 580-MVCE-7
Bhagwandin, V., 145-APA-18, 203-APA-24, 281-FD-33
Bhagwat, P., 187-TF-3
Bhandari, S., 250-UAS-1, 268-AFM-9, 495-MST-16, 512-UAS-9
Bhardwaj, P., 482-GNC-35
Bhasin, A., 508-STR-19
Bhatia, G., 182-SE-3
Bhatia, M., 45-MDO-1, 301-MDO-10/APA-31
Bhat K, S., 55-SD-2
Bhatt, A., 289-GNC-23
Bhattacharjee, D., 137-AFM-6, 199-AFM-8, 387-UAS-5
Bhattacharya, A., 125-TP-2
Bhattacharya, S., 478-FD-60, 540-FD-68
Bhattacharyya, S., 95-GNC-6
Bhattrai, S., 465-APA-43/FD-54/SD-19/AMT-20
Bhuripanyo, P., 582-PC-25
Bhushan, S., 542-FD-70
Bi, W., 159-GNC-11
Biannic, J., 33-GNC-3
Bicer, Y., 39-IS-2
Bichon, B., 231-MAT-6/NDA-5
Bie, D., 566-ACD-14/UAS-13
Biedron, R., 426-MDO-16/SD-16
Biesbroek, R., 357-GNC-30
Bigler, B., 502-PGC-10
Bil, C., 460-ACD-11, 526-ACD-12/UAS-12
Biler, H., 155-FD-24
Bilinsky, H., 406-APA-40
Bilionis, I., 102-IS-6
Billman, D., 173-MST-6
bin Salmaan Hussain, D., 96-GNC-7
Bird, H., 346-FD-40
Bird, J., 99-ICC-1/SEN-1, 355-GNC-28
Bisagni, C., 246-STR-7, 383-STR-13
Bisek, N., 86-FD-11, 210-FD-27
Biswal, S., 355-GNC-28
Biswas, S., 424-IS-20
Biswell, B., 483-GNC-36
Bitter, N., 210-FD-27
Bittner, M., 250-UAS-1
Bityurin, V., 17-APA-5/FD-2/PDL-2
Blacha, M., 315-STR-11
Black, J., 243-SD-10, 506-SEN-4
Blackburn, M., 170-MDO-5
Blades, E., 140-APA-13/FD-19/SD-6/AMT-8, 146-APA-19/AS-3, 471-DS-6
Blaesser, N., 70-ACD-2, 460-ACD-11
Blair, J., 160-GNC-12
Blake, A., 292-GNC-38
Blandino, J., 378-SATS-1, 583-SCS-11
Blanton, J., 489-HIS-4
Blasch, E., 99-ICC-1/SEN-1
Bleecke, H., 469-APA-47
Blelloch, P., 118-SD-5
Bloch, J., 199-AFM-8
Bluemner, R., 240-PGC-5, 502-PGC-10
Bluman, J., 564-UAS-11
Blunck, D., 176-PC-9, 200-AMT-9/PC-10, 581-PC-24
Blyth, R., 338-APA-35
Bobren-Diaz, J., 163-GTE-2
Boccieri, S., 197-ACD-6
Bocharov, A., 17-APA-5/FD-2/PDL-2
Bode-Oke, A., 346-FD-40
Bodony, D., 281-FD-33, 465-APA-43/FD-54/SD-19/AMT-20
Boehrk, H., 385-TP-7
Bogey, C., 195-AA-4
Bohan, B., 35-GTE-1
Böhnke, J., 176-PC-9
Bohon, M., 115-PGC-3/HSABP-3, 240-PGC-5, 502-PGC-10
Boisard, R., 389-WE-7
Boixo, S., 228-IS-12/GNC-20
Bojko, B., 307-PC-14
Bokhart, A., 435-PC-18
Bolander, C., 525-AA-9
Bolds-Moorehead, P., 136-AFM-5
Boller, S., 240-PGC-5, 311-PGC-6
Bollino, K., 161-GNC-13, 221-GNC-19
Bolton, M., 235-MST-8
Bombardieri, R., 277-DS-3, 471-DS-6
Bond, R., 563-TP-14
Bonebrake, J., 176-PC-9, 581-PC-24
Bonnin, V., 137-AFM-6
Bons, J., 29-FD-8, 81-APA-11, 212-FD-29, 488-GTE-8
Bontoft, E., 170-MDO-5
Boorsma, K., 448-WE-8
Booth, D., 547-HIS-5
Borg, M., 480-FD-63
Borgoltz, A., 389-WE-7
Born, R., 101-IS-5
Bornhoft, B., 90-FD-15
Borstnar, G., 425-MAT-12
Borwankar, P., 171-MDO-6/NDA-3/STR-5
Boschetti, P., 198-AFM-7
Boschitsch, A., 530-APA-49
Bosco, A., 422-HSABP-7
Bose, R., 538-FD-66
Boskovich, S., 564-UAS-11
Boston, D., 205-AS-4
Botelho e Souza, A., 142-APA-15
Botero, E., 197-ACD-6
Botez, R., 108-MST-4
Bott, M., 244-SE-4
Boucher, M., 9-AFM-1
Bouilly, J., 554-NDA-12
Boulanger, A., 529-AMT-22/APA-48
Bourdelle, A., 33-GNC-3
Bouskela, A., 566-ACD-14/UAS-13
Boussuge, F., 431-MVCE-1
Boustani, J., 477-FD-59
Boutet, J., 469-APA-47
Bove, E., 495-MST-16
Bowcutt, K., 422-HSABP-7
Bowden, E., 268-AFM-9
Bowersox, R., 27-FD-6
Bown, N., 273-APA-29
Boxx, I., 110-PC-4, 434-PC-17
Boyd, A., 108-MST-4
Boyd, I., 63-TP-1, 188-TP-3, 232-MDO-7/APA-26, 498-NDA-10, 510-TP-12, 563-TP-14
Boyda, M., 570-APA-55
Bozeman, M., 430-MST-14
Bozkurt, Y., 103-MAT-2
Brachthauser Balcells, S., 503-SCS-8
Bradley, J., 424-IS-20, 446-UAS-7/ACD-16, 549-IS-25
Brady, K., 306-PC-13
Brady, P., 496-MVCE-3
Bragado Aldana, E., 73-AFM-15, 198-AFM-7
Braginsky, M., 585-STR-22
Bramesfeld, G., 568-APA-53
Brandis, A., 189-TP-4
Brandt, S., 77-APA-7

AUTHOR AND SESSION CHAIR INDEX

Bras, M., 275-AS-5
Brassard, K., 84-DE-2
Brasseur, J., 215-FD-32, 413-FD-48, 537-FD-65
Braukmann, J., 573-FD-74
Braun, C., 460-ACD-11
Braun, R., 10-AFM-2
Bravo, L., 413-FD-48
Brazier, J., 530-APA-49
Breen, N., 69-AA-2
Brehm, C., 477-FD-59, 536-FD-64
Breidenthal, R., 16-APA-4/FD-1/PDL-1
Breitenstein, W., 474-FD-56
Brelje, B., 579-MDO-22
Breuer, K., 143-APA-16
Brevault, L., 170-MDO-5, 493-MDO-18
Brewer, J., 185-SUR-2
Brezillon, J., 469-APA-47
Briceno, S., 120-SOF-1, 388-UAS-6/IS-19/SOF-5, 447-UAS-8/IS-21/SOF-6
Bridges, J., 69-AA-2, 133-AA-3
Briggs, H., 22-EDU-1
Brigley, M., 206-DS-2
Brink, A., 465-APA-43/FD-54/SD-19/AMT-20
Brink, K., 165-IS-7
Brinkmeyer, A., 503-SCS-8
Brion, V., 11-AMT-1
Briones, A., 236-PC-11
Brockers, R., 320-UAS-4, 353-GNC-26
Broderick, D., 147-DS-1, 527-ACD-13
Bromfield, M., 382-SEN-3
Bronz, M., 137-AFM-6, 141-APA-14, 155-FD-24, 335-APA-32
Brophy, C., 12-AMT-2, 375-PGC-8, 436-PGC-9
Brouwer, K., 277-DS-3
Brown, A., 528-AMT-21
Brown, C., 133-AA-3
Brown, J., 320-UAS-4, 498-NDA-10
Brown, K., 307-PC-14
Brown, T., 160-GNC-12
Browne, O., 477-FD-59
Bruce, P., 28-FD-7, 91-FD-16, 468-APA-46
Bruder, S., 560-SEN-5
Brune, A., 63-TP-1, 510-TP-12
Brunet, V., 552-MVCE-5
Brunnenmeyer, J., 186-TES-3
Bruse, M., 190-WE-3
Bryson, D., 498-NDA-10, 553-MVCE-6
Bryson, J., 400-AFM-13
Brzozowski, D., 478-FD-60
Buch, J., 20-CPS-1
Buchholz, J., 335-APA-32, 573-FD-74
Buck, G., 281-FD-33
Bucklow, H., 432-MVCE-2
Bucklow, J., 496-MVCE-3
Buckman, N., 217-GNC-15
Buckner, J., 420-GRE-1
Buddhavarapu, S., 42-ISC-TM, 148-EDU-2
Bukal, A., 106-MST-2
Bull, S., 283-FD-35
Bultel, A., 563-TP-14
Bülthoff, H., 305-MST-9, 495-MST-16
Burkholder, J., 251-UAS-2
Burks, L., 549-IS-25
Burleigh, S., 499-OPS-1
Burlion, L., 33-GNC-3
Burnazzi, M., 474-FD-56
Burnett, J., 319-UAS-3/ACD-15
Burns, C., 93-FD-18
Burns, K., 36-HIS-1, 547-HIS-5
Burr, J., 240-PGC-5, 528-AMT-21, 557-PGC-12
Burra, K., 443-TES-5
Burt, J., 133-AA-3, 249-TP-5
Burton, D., 156-FD-25, 351-FD-45
Burton, S., 46-MDO-2
Burtsev, A., 348-FD-42
Busan, R., 248-TF-4
Buschhagen, T., 501-PC-20
Bush, R., 86-FD-11
Bushe, K., 372-PC-15
Bussel, G., 321-WE-6
Butcher, E., 159-GNC-11, 288-GNC-22
Butijn, M., 305-MST-9
Butler, P., 182-SE-3
Butler, W., 8-ACD-1
Butte, C., 113-PDL-6
Button, M., 12-AMT-2
Buttsworth, D., 44-MAT-1, 465-APA-43/FD-54/SD-19/AMT-20
Buxton, O., 86-FD-11
Buyukkocak, A., 481-GNC-34
Byar, A., 118-SD-5
Byun, G., 570-APA-55
Cabezut, N., 248-TF-4
Cabri, A., 55-SD-2
Caccamo, M., 271-APA-27
Cadou, C., 175-PC-8, 236-PC-11, 567-AMT-24/APA-52
Cady, T., 512-UAS-9
Cafarelli, I., 398-ACD-9
Cahoy, K., 180-SCS-3
Cai, J., 272-APA-28
Cai, X., 363-INPSI-1
Cain, A., 82-APA-12/FD-10/PDL-5, 544-FD-72
Caldarelli, A., 149-EXPL-1
Calderon, D., 149-EXPL-1
Calello, S., 500-PC-19
Call, D., 122-STR-4
Calvert, M., 272-APA-28, 335-APA-32
Camacho, J., 186-TES-3, 443-TES-5
Camarena, E., 561-STR-20
Camberos, J., 134-ACD-3
Cambio, B., 13-APA-1
Campbell, R., 41-ISC-MS, 301-MDO-10/APA-31, 546-GT-9, 568-APA-53
Canale, A., 357-GNC-30
Candler, G., 27-FD-6, 188-TP-3, 347-FD-41, 360-HSABP-6, 477-FD-59, 538-FD-66
Candon, M., 181-SD-7, 439-SD-17
Canfield, R., 551-MDO-21/NDA-11, 553-MVCE-6
Canny, P., 369-MST-10
Canzian, L., 20-CPS-1
Cao, Y., 556-PC-23/AMT-23
Capiot, K., 410-DA-2
Caplan, P., 432-MVCE-2, 497-MVCE-4
Capobianco, V., 141-APA-14
Caprara, A., 381-SD-13
Capuano, V., 499-OPS-1
Caraeni, D., 156-FD-25
Carbone, M., 344-EXPL-4
Cardenas, E., 198-AFM-7
Cardone, G., 213-FD-30
Cardullo, F., 305-MST-9
Carlson, H., 211-FD-28
Carlson, J., 25-FD-4, 235-MST-8, 495-MST-16
Carnes, B., 543-FD-71, 563-TP-14
Carnes, J., 78-APA-8, 314-SEN-2
Carney, E., 251-UAS-2
Carney, K., 508-STR-19
Carpenter, D., 106-MST-2
Carpenter, F., 146-APA-19/AS-3, 525-AA-9
Carpenter, K., 208-EXPL-2
Carpenter, M., 107-MST-3/SOF-8
Carper, E., 498-NDA-10
Carrera, E., 440-SD-18, 441-STR-16, 442-STR-17
Carrera, M., 269-AFM-10/GNC-21/FT-1
Carrese, R., 117-SD-4, 181-SD-7, 439-SD-17
Carrica, P., 335-APA-32
Carrizales, M., 73-AFM-15, 400-AFM-13
Carrolo, G., 153-FD-22
Carrusca Gomes, P., 302-MDO-11/SD-11
Carson, H., 432-MVCE-2
Carson, J., 160-GNC-12, 219-GNC-17, 292-GNC-38
Carter, C., 90-FD-15, 114-PDL-7, 339-APA-36/PDL-14, 422-HSABP-7
Cary, A., 371-NDA-7
Casalino, D., 7-AA-1, 321-WE-6, 466-APA-44, 543-FD-71
Casasco, M., 357-GNC-30
Casbeer, D., 100-IS-4, 165-IS-7, 218-GNC-16, 288-GNC-22, 364-IS-17, 447-UAS-8/IS-21/SOF-6
Casey, P., 84-DE-2
Cash, C., 406-APA-40
Cashdollar, D., 494-MST-15/SOF-10
Casper, K., 210-FD-27, 407-APA-41/FD-47/SD-15/AMT-17
Cassady, S., 12-AMT-2
Cassano, A., 59-STR-2
Casselberry, R., 236-PC-11
Cassell, A., 332-AFM-11
Castano, L., 251-UAS-2
Castillo Zuñiga, D., 504-SD-20
Castner, R., 133-AA-3
Castrichini, A., 181-SD-7
Castro Maldonado, J., 91-FD-16
Caswell, A., 35-GTE-1, 176-PC-9, 270-AMT-11, 306-PC-13, 358-GTE-5, 463-AMT-18
Causa, F., 217-GNC-15
Cavallaro, R., 277-DS-3, 471-DS-6, 562-STR-21, 568-APA-53
Cavens, W., 470-AS-8
Cea, A., 54-SD-1
Cebeci, H., 44-MAT-1, 103-MAT-2
Cecrdle, J., 380-SD-12
Celebi, H., 375-PGC-8
Celmins, I., 400-AFM-13
Cenker, E., 138-AMT-6/PC-7
Cerasuolo, S., 213-FD-30
Cerny, M., 514-WE-9
Cerulus, N., 572-FD-73
Ceruzzi, A., 567-AMT-24/APA-52
Cesnik, C., 302-MDO-11/SD-11, 400-AFM-13, 439-SD-17, 469-APA-47
Cetin, A., 369-MST-10, 388-UAS-6/IS-19/SOF-5
Cetiner Yildirim, N., 141-APA-14, 155-FD-24
Ceze, M., 497-MVCE-4
Cha, J., 299-MAT-8
Chabot, J., 208-EXPL-2
Chacon, F., 52-PGC-2/HSABP-2, 115-PGC-3/HSABP-3
Chahat, N., 180-SCS-3
Chai, N., 270-AMT-11
Chakrabarty, A., 167-IS-9, 229-IS-13, 297-IS-15, 365-IS-18
Chakraborthy, A., 93-FD-18
Chakraborty, A., 165-IS-7
Chakraborty, I., 135-ACD-4, 331-ACD-8
Chakravarthy, A., 31-GNC-1, 96-GNC-7, 100-IS-4, 382-SEN-3, 418-GNC-31, 576-GNC-40/IS-26
Chamberlain, M., 241-SCS-4, 583-SCS-11
Chamberlain, R., 90-FD-15
Chambers, J., 50-PC-2/PGC-1, 527-ACD-13
Chamitoff, G., 430-MST-14
Chan, D., 467-APA-45, 546-GT-9, 568-APA-53
Chandra Karmokar, B., 429-MST-13
Chandramohan, R., 482-GNC-35
Chandrasekaran, B., 545-GNC-39/IS-24
Chandrasekhar, M., 440-SD-18
Chang, C., 28-FD-7, 414-FD-49
Chang, P., 502-PGC-10
Chao, H., 401-AFM-14, 484-GNC-37
Chapkin, W., 408-AS-7
Chapman, J., 303-MDO-12, 487-GTE-7
Chappell, C., 269-AFM-10/GNC-21/FT-1
Chappelle, C., 124-TF-2
Chaput, A., 70-ACD-2
Charkrit, S., 283-FD-35, 473-FD-55
Charles, A., 251-UAS-2
Charlson, T., 42-ISC-TM, 148-EDU-2
Chatelain, P., 102-IS-6
Chatelier, A., 537-FD-65
Chatterji, G., 429-MST-13
Chattopadhyay, A., 44-MAT-1, 104-MAT-3, 247-STR-8, 275-AS-5, 304-MDO-13/NDA-6/STR-10
Chaudhry, H., 512-UAS-9
Chaudhry, R., 188-TP-3, 538-FD-66
Chaudhuri, A., 109-NDA-2, 304-MDO-13/NDA-6/STR-10, 498-NDA-10
Chaussee, D., 529-AMT-22/APA-48
Chávez, P., 44-MAT-1
Chawner, J., 432-MVCE-2
Chazot, O., 152-FD-21, 486-GT-8
Cheema, P., 491-IS-22
Chehroudi, B., 372-PC-15
Chell, B., 170-MDO-5
Chellappan, S., 296-IS-14
Chelliah, H., 200-AMT-9/PC-10, 360-HSABP-6
Chen, F., 101-IS-5
Chen, G., 426-MDO-16/SD-16
Chen, H., 108-MST-4, 168-MAT-4, 214-FD-31, 357-GNC-30, 365-IS-18, 385-TP-7, 400-AFM-13, 491-IS-22
Chen, J., 28-FD-7, 90-FD-15, 213-FD-30, 418-GNC-31
Chen, M., 292-GNC-38, 476-FD-58
Chen, P., 242-SD-9, 439-SD-17, 469-APA-47
Chen, S., 63-TP-1
Chen, T., 50-PC-2/PGC-1, 113-PDL-6, 355-GNC-28, 482-GNC-35, 511-TP-13/PDL-16, 529-AMT-22/APA-48, 554-NDA-12, 578-IS-27
Chen, W., 299-MAT-8, 479-FD-62, 561-STR-20, 578-IS-27
Chen, X., 244-SE-4, 281-FD-33
Chen, Y., 138-AMT-6/PC-7, 402-AMT-15, 528-AMT-21
Cheng, D., 251-UAS-2
Cheng, L., 64-WE-1
Cheng, V., 50-PC-2/PGC-1
Cheng, Y., 291-GNC-25, 484-GNC-37
Chernyshev, S., 164-HSABP-4
Cherston, J., 208-EXPL-2
Chetan, M., 253-WE-5, 321-WE-6
Cheung, K., 197-ACD-6, 268-AFM-9, 470-AS-8
Cheung, R., 471-DS-6
Chhaya, B., 370-MST-11, 429-MST-13
Chi, J., 368-MDO-15/APA-37
Chi, W., 578-IS-27
Chiba, K., 170-MDO-5
Chien, S., 578-IS-27
Chiereghin, N., 283-FD-35
Chiesi, S., 182-SE-3
Chiew, Y., 318-TP-6
Childress, J., 507-STR-18
Chimento, C., 319-UAS-3/ACD-15
Chin, H., 39-IS-2
Chin, J., 187-TF-3
Ching, E., 213-FD-30
Chinkanjanarot, S., 316-STR-12/MAT-10
Chipade, V., 159-GNC-11
Chircop, K., 314-SEN-2
Chiu, K., 578-IS-27
Chiu, L., 507-STR-18
Chkrebtii, O., 231-MAT-6/NDA-5
Chng, T., 113-PDL-6, 178-PDL-9
Cho, H., 242-SD-9
Cho, K., 311-PGC-6, 557-PGC-12
Cho, M., 230-MAT-5, 242-SD-9, 298-MAT-7, 366-MAT-11, 425-MAT-12, 559-SD-22
Cho, N., 483-GNC-36
Cho, S., 268-AFM-9
Choi, C., 299-MAT-8
Choi, H., 101-IS-5, 165-IS-7, 217-GNC-15
Choi, J., 142-APA-15
Choi, S., 426-MDO-16/SD-16
Choi, U., 447-UAS-8/IS-21/SOF-6
Choi, Y., 120-SOF-1, 388-UAS-6/IS-19/SOF-5, 447-UAS-8/IS-21/SOF-6
Chopra, A., 470-AS-8
Chopra, I., 206-DS-2, 424-IS-20
Chotalia, R., 224-GTE-3
Chou, A., 415-FD-50
Choudhari, M., 210-FD-27
Choudhary, R., 443-TES-5
Choudhury, D., 574-FD-75
Choudhury, R., 44-MAT-1
Choutapalli, I., 273-APA-29
Chowdhary, G., 101-IS-5, 157-GNC-9
Chowdhury, J., 92-FD-17
Chrisochoides, N., 497-MVCE-4
Christopher, J., 87-FD-12, 475-FD-57
Christopherson, A., 367-MDO-14
Chterev, I., 556-PC-23/AMT-23
Chu, Q., 38-IS-1/GNC-4, 227-IS-11
Chuan, T., 552-MVCE-5

AUTHOR AND SESSION CHAIR INDEX

Chung, G., 482-GNC-35
Chung, H., 367-MDO-14
Chung, I., 230-MAT-5
Chung, J., 284-FD-36, 542-FD-70
Chung, S., 158-GNC-10, 446-UAS-7/ACD-16, 499-OPS-1
Chung, W., 106-MST-2
Churchfield, M., 514-WE-9
Chyczewski, T., 86-FD-11, 568-APA-53
Cid, C., 551-MDO-21/NDA-11
Cinefra, M., 459-AA-8
Ciniglio, U., 495-MST-16
Cipriano, A., 310-PDL-13
Cirak, F., 154-FD-23
Cirullo, L., 503-SCS-8
Cizmas, P., 146-APA-19/AS-3
Claflin, S., 179-PGC-4
Clark, D., 46-MDO-2, 371-NDA-7, 498-NDA-10
Clark, I., 407-APA-41/FD-47/SD-15/AMT-17, 584-SEN-6
Clark, M., 229-IS-13
Clark, P., 8-ACD-1
Clarke, M., 197-ACD-6
Claucherty, S., 11-AMT-1
Clay, R., 42-ISC-TM
Clay, S., 121-STR-3, 247-STR-8
Cleaver, D., 283-FD-35
Clem, G., 165-IS-7, 447-UAS-8/IS-21/SOF-6
Clemens, N., 28-FD-7, 201-APA-21/FD-26/SD-8/AMT-10, 422-HSABP-7
Clement, N., 525-AA-9
Clement, S., 464-AMT-19/APA-42
Clerkin, J., 244-SE-4
Cluts, J., 69-AA-2
Cobb, G., 84-DE-2
Coder, J., 14-APA-2, 78-APA-8, 79-APA-9, 338-APA-35
Coderoni, M., 154-FD-23
Codoni, J., 436-PGC-9
Coelho Inouye, E., 135-ACD-4
Coggon, S., 181-SD-7
Cohen, J., 571-APA-56
Cohen, K., 364-IS-17
Coimbra, C., 318-TP-6
Cole, J., 568-APA-53
Cole, R., 12-AMT-2
Coles, C., 80-APA-10
Collen, P., 486-GT-8
Colletti, C., 79-APA-9
Collier, C., 122-STR-4
Collin, F., 333-AFM-12
Collins, E., 542-FD-70
Collins, J., 182-SE-3
Collopy, P., 182-SE-3
Combs, C., 11-AMT-1, 91-FD-16
Comer, A., 111-PC-5
Commo, S., 467-APA-45
Commun, D., 560-SEN-5
Comstock, J., 173-MST-6
Conan, R., 571-APA-56
Concha, M., 377-SAT-1
Cone, A., 512-UAS-9
Congedo, P., 554-NDA-12
Connell, T., 501-PC-20
Conti, E., 381-SD-13
Conway, D., 320-UAS-4, 353-GNC-26
Conway, H., 441-STR-16
Cook, B., 364-IS-17
Cook, D., 27-FD-6, 538-FD-66
Cook, L., 92-FD-17
Cook, R., 54-SD-1
Cooke, D., 83-ASE-2
Cooper, J., 54-SD-1, 248-TF-4, 411-DS-5, 471-DS-6
Cooperman, A., 143-APA-16
Coopmans, C., 531-APA-50
Coplen, T., 319-UAS-3/ACD-15
Coppolino, R., 118-SD-5
Coppotelli, G., 381-SD-13
Corbetta, M., 554-NDA-12
Corcione, S., 70-ACD-2
Corke, T., 82-APA-12/FD-10/PDL-5, 114-PDL-7
Corkery, S., 92-FD-17, 285-FD-37
Corle, E., 78-APA-8, 534-DS-7
Corman, J., 105-MDO-3
Cormarkovic, V., 241-SCS-4
Cornelius, J., 272-APA-28, 417-FD-53
Cornett, J., 279-EXPL-3
Corporan, E., 236-PC-11
Corraro, F., 495-MST-16, 584-SEN-6
Corraro, G., 495-MST-16
Corrigan, A., 156-FD-25, 360-HSABP-6, 479-FD-62, 502-PGC-10
Coschignano, A., 468-APA-46
Costantini, M., 190-WE-3
Costenoble, A., 496-MVCE-3
Costini, P., 552-MVCE-5
Cothran, W., 432-MVCE-2
Cotting, M., 269-AFM-10/GNC-21/FT-1
Coull, J., 488-GTE-8
Coulter, N., 320-UAS-4
Covioli, J., 381-SD-13
Cowen, E., 514-WE-9
Cox, K., 503-SCS-8
Craig, A., 126-WE-2
Craig, W., 297-IS-15
Cramer, N., 56-SD-3, 266-AA-5/TF-5, 470-AS-8
Crampton, S., 247-STR-8
Crassidis, J., 97-GNC-8, 291-GNC-25, 484-GNC-37, 576-GNC-40/IS-26
Crawford, B., 77-APA-7
Crean, J., 45-MDO-1, 499-OPS-1
Cregger, E., 122-STR-4
Crisalli, D., 148-EDU-2
Criss, T., 292-GNC-38
Crofton, M., 309-PDL-12
Cromer, J., 420-GRE-1
Crosby, K., 544-FD-72
Crossley, W., 119-SE-2, 579-MDO-22
Crouse, G., 398-ACD-9
Crowe, D., 363-INPSI-1, 571-APA-56
Crowther, W., 15-APA-3, 77-APA-7
Cruden, B., 444-TP-9
Cruise, R., 99-ICC-1/SEN-1
Cruz, J., 332-AFM-11
Csank, J., 344-EXPL-4
Cuco, A., 303-MDO-12
Cuenca, F., 508-STR-19
Cui, K., 366-MAT-11
Cui, T., 551-MDO-21/NDA-11
Cui, X., 168-MAT-4, 383-STR-13, 441-STR-16, 561-STR-20
Culic, L., 215-FD-32
Culick, F., 489-HIS-4
Culler, E., 350-FD-44
Cummings, R., 152-FD-21, 210-FD-27
Cunningham, K., 14-APA-2, 106-MST-2, 173-MST-6, 198-AFM-7, 234-MST-7
Cuppoletti, D., 87-FD-12, 153-FD-22, 240-PGC-5
Currao, G., 465-APA-43/FD-54/SD-19/AMT-20
Curry, D., 337-APA-34
Cutler, A., 270-AMT-11
Cutright, S., 134-ACD-3
Cvijetic, G., 215-FD-32
Cybyk, B., 143-APA-16, 339-APA-36/PDL-14
Czerwiec, R., 274-APA-30
D'Agostino, D., 464-AMT-19/APA-42
D' Argenio, A., 381-SD-13
D'Intino, G., 305-MST-9, 495-MST-16
D'Souza, K., 118-SD-5, 559-SD-22
D'Souza, S., 10-AFM-2, 72-AFM-4, 332-AFM-11
Dabiri, A., 159-GNC-11
Dadi, V., 296-IS-14
Dahleni Kraemer, A., 120-SOF-1, 235-MST-8
Dai, J., 425-MAT-12
Dai, R., 158-GNC-10, 419-GNC-32
Dai, W., 320-UAS-4
Dai, Z., 295-GTE-4
Daigle, G., 584-SEN-6
Dale, G., 406-APA-40
Dalir, H., 553-MVCE-6
Dalla Vedova, M., 550-MDO-20
Dalle, D., 532-APA-51
Damaren, C., 354-GNC-27
Damiani, R., 190-WE-3, 253-WE-5
Damircheli, D., 233-MDO-8
Dammati, S., 413-FD-48
Damodaran, M., 380-SD-12
Danczyk, S., 403-AMT-16, 502-PGC-10
Dandois, J., 81-APA-11
Dandupally, A., 560-SEN-5
Danehy, P., 270-AMT-11, 334-AMT-13, 463-AMT-18, 570-APA-55
Daniel, K., 330-AA-6, 397-AA-7
Daniel, M., 50-PC-2/PGC-1
Daniels, T., 234-MST-7
Dannenhoffer, J., 431-MVCE-1, 553-MVCE-6
Danowsky, B., 461-AFM-16
Dansie, J., 274-APA-30
Dantsker, O., 271-APA-27, 313-SE-5, 404-APA-38
Darabiha, N., 178-PDL-9
Darakananda, D., 285-FD-37
Dard, G., 382-SEN-3
Darmofal, D., 287-FD-39, 404-APA-38, 476-FD-58, 497-MVCE-4, 553-MVCE-6
Da Ronch, A., 333-AFM-12, 426-MDO-16/SD-16
Darrah, D., 266-AA-5/TF-5
Dary, O., 239-PDL-11
Daryabeigi, K., 318-TP-6
Das, K., 289-GNC-23, 571-APA-56
Das, S., 571-APA-56
Dasgupta, D., 110-PC-4
da Silva, E., 84-DE-2
Datashvili, L., 438-SCS-7
Datta, A., 202-APA-23, 343-DS-4, 534-DS-7
Datta, S., 104-MAT-3
Daudin, C., 389-WE-7
Dauer, J., 494-MST-15/SOF-10
Dausen, D., 12-AMT-2
Davani, A., 537-FD-65
Davendralingam, N., 102-IS-6
Davidoff, S., 578-IS-27
Davidson, D., 112-PC-6, 138-AMT-6/PC-7, 189-TP-4, 443-TES-5, 556-PC-23/AMT-23, 581-PC-24
Davidson, L., 7-AA-1
Davidson, N., 292-GNC-38
Davidson, P., 122-STR-4, 247-STR-8, 383-STR-13
Davies, C., 46-MDO-2
Davies, M., 183-SOF-3
Davila, C., 442-STR-17
Davis, B., 42-ISC-TM, 98-HIS-2, 248-TF-4, 359-HIS-3, 379-SCS-6, 402-AMT-15, 438-SCS-7
Davis, G., 558-SCS-9
Davis, J., 536-FD-64
Davis, R., 552-MVCE-5
Davis, V., 83-ASE-2
Dawes, W., 431-MVCE-1, 488-GTE-8
Dawson, S., 536-FD-64
Day, M., 110-PC-4, 386-TP-8
Dayhoum, A., 389-WE-7
De, S., 171-MDO-6/NDA-3/STR-5, 493-MDO-18
de Alteriis, G., 584-SEN-6
Dean, G., 558-SCS-9
Deane, A., 42-ISC-TM
Deaton, J., 105-MDO-3, 367-MDO-14, 371-NDA-7, 498-NDA-10, 579-MDO-22
De Backer, W., 43-ISC-UG
De Breuker, R., 18-AS-1, 205-AS-4
Deck, S., 26-FD-5
Decker, R., 76-APA-6
Dedic, C., 270-AMT-11
Defreitas, A., 560-SEN-5, 584-SEN-6
De Gaspari, A., 504-SD-20
de Goey, P., 581-PC-24
de Graaf, B., 172-MST-5
Degro, A., 574-FD-75
Deierling, P., 44-MAT-1
Deiler, C., 136-AFM-5, 227-IS-11
Delamer, J., 548-ICC-2
Delaune, J., 353-GNC-26
DeLaurentis, D., 102-IS-6
Del Carre, A., 505-SD-21
De Lellis, E., 99-ICC-1/SEN-1, 495-MST-16, 584-SEN-6
Delisle, M., 136-AFM-5
Della Vecchia, P., 70-ACD-2
Delorme, Y., 29-FD-8
del Rosario, Z., 174-NDA-4
De Marco, A., 70-ACD-2
DeMars, K., 219-GNC-17
Demasi, L., 441-STR-16, 562-STR-21, 568-APA-53
DeMauro, E., 24-FD-3, 339-APA-36/PDL-14
Demblon, A., 104-MAT-3, 298-MAT-7
Demetriou, M., 378-SATS-1
DeMillard, E., 406-APA-40
Demir, M., 494-MST-15/SOF-10
Demirel, O., 578-IS-27
Demirezen, U., 494-MST-15/SOF-10
Demirkiran, I., 485-GT-7
Demko, A., 307-PC-14
de Mooij, M., 106-MST-2
Demoret, A., 14-APA-2, 43-ISC-UG
Denegri, C., 504-SD-20
Deng, X., 417-FD-53
Denham, J., 9-AFM-1
Deniz, M., 220-GNC-18/IS-10
Dennis, C., 112-PC-6
Dennis, M., 94-GNC-5
Dennis, R., 60-TES-1
Denny, A., 432-MVCE-2
de O. Moraes, A., 19-ASE-1
de Oliveira, P., 435-PC-18, 556-PC-23/AMT-23
Depaola, R., 363-INPSI-1
DePaola, R., 319-UAS-3/ACD-15
De Paolis, P., 381-SD-13
de Paula, A., 135-ACD-4
Depperschmidt, D., 375-PGC-8
Derkevorkian, A., 243-SD-10
Desai, Y., 240-PGC-5
DeSain, J., 307-PC-14
DeSalvo, M., 143-APA-16
Deshmukh, R., 37-HSABP-1, 165-IS-7, 181-SD-7
Deshpande, A., 474-FD-56
Deshpande, R., 181-SD-7
DesJardin, P., 12-AMT-2
Desyatnik, P., 172-MST-5
Dethy, M., 124-TF-2
Detratti, M., 289-GNC-23
Dettwiller, I., 233-MDO-8
Detweiler, C., 446-UAS-7/ACD-16
Devarajan, A., 339-APA-36/PDL-14
Devaud, C., 372-PC-15
Devenport, W., 389-WE-7, 485-GT-7, 560-SEN-5, 584-SEN-6
de Vicente, J., 211-FD-28
De Visscher, I., 410-DA-2
de Visser, C., 227-IS-11, 333-AFM-12, 370-MST-11
de Vries, E., 106-MST-2
de Vries, P., 40-IS-3
de Vries, R., 460-ACD-11
De Wekker, S., 401-AFM-14
DeWitt, M., 236-PC-11
Dey, S., 431-MVCE-1
Dhadwal, M., 562-STR-21
Dhir, G., 542-FD-70
Di, L., 37-HSABP-1
Dianetti, A., 97-GNC-8
Dias, J., 31-GNC-1, 381-SD-13
Dias, P., 576-GNC-40/IS-26
Díaz García, J., 185-SUR-2
Diaz Montiel, P., 246-STR-7
Dibble, R., 205-AS-4, 340-AS-6
Di Capua, G., 584-SEN-6
Dickens, J., 118-SD-5
Dickinson, B., 288-GNC-22
Dienstfrey, A., 231-MAT-6/NDA-5
Diepolder, J., 96-GNC-7
Dierke, J., 397-AA-7
Diez, M., 464-AMT-19/APA-42, 551-MDO-21/NDA-11
Di Giandomenico, F., 381-SD-13
Digirolamo, E., 8-ACD-1
DiGregorio, N., 349-FD-43

AUTHOR AND SESSION CHAIR INDEX

Dillard, M., 234-MST-7
Dillier, C., 307-PC-14
Dillinger, J., 38-IS-1/GNC-4, 461-AFM-16
Di Luca, M., 143-APA-16
Di Mare, L., 214-FD-31
Dimitriadis, G., 405-APA-39, 469-APA-47
Ding, C., 113-PDL-6
Dinkelmann, M., 96-GNC-7
Dinovitzer, M., 507-STR-18
Dinzl, D., 563-TP-14
Dionne, G., 99-ICC-1/SEN-1
DiPalma, M., 507-STR-18
Diskin, B., 426-MDO-16/SD-16, 575-FD-76
Disser, K., 82-APA-12/FD-10/PDL-5
Dittert, C., 385-TP-7
Dittmann, T., 110-PC-4
Dittrich, J., 494-MST-15/SOF-10
Di Vito, V., 341-DA-1
Diyaroglu, C., 246-STR-7
Djojodihardjo, H., 279-EXPL-3
Djordjevic, N., 240-PGC-5
Do, H., 422-HSABP-7
Dobre, S., 333-AFM-12
Docampo-Sanchez, J., 496-MVCE-3
DodooAmoo, D., 543-FD-71
Dogan, A., 199-AFM-8, 401-AFM-14, 513-UAS-10/IS-23/SOF-7, 533-CMS-1
Dogan, K., 32-GNC-2, 576-GNC-40/IS-26
Dogariu, A., 51-PDL-3, 270-AMT-11, 374-PDL-15/AMT-14
Dogariu, L., 270-AMT-11
Doherty, J., 471-DS-6
Doherty, L., 422-HSABP-7, 486-GT-8
Dolgov, E., 177-PDL-8
Döll, C., 398-ACD-9
Dolph, C., 250-UAS-1
Doman, D., 418-GNC-31, 482-GNC-35
Dominin, S., 448-WE-8
Don, M., 288-GNC-22
Donbar, J., 37-HSABP-1, 90-FD-15
Dong, H., 346-FD-40, 417-FD-53
Dong, X., 283-FD-35, 473-FD-55
Dongfeng, L., 426-MDO-16/SD-16
Donggang, C., 501-PC-20
Donovan, M., 151-FD-20
Dooley, G., 335-APA-32
Doom, J., 479-FD-62
Dorduncu, M., 246-STR-7
Dori, D., 119-SE-2
Dormohammadi, S., 247-STR-8
Doronina, O., 475-FD-57
Dosch, J., 567-AMT-24/APA-52
dos Santos, C., 147-DS-1
Doubrawa, P., 514-WE-9
Douglawi, A., 138-AMT-6/PC-7
Dowdy, R., 41-ISC-MS, 42-ISC-TM, 43-ISC-UG
Dowell, E., 471-DS-6
Dowgwillo, R., 143-APA-16, 468-APA-46
Doyle, D., 408-AS-7
Drake, M., 331-ACD-8
Draper, J., 223-GT-4
Drela, M., 287-FD-39, 331-ACD-8, 404-APA-38, 553-MVCE-6
Drennan, S., 435-PC-18
Dress, D., 119-SE-2
Drew, M., 38-IS-1/GNC-4, 56-SD-3
Droste, L., 541-FD-69
Drozda, T., 37-HSABP-1, 349-FD-43, 500-PC-19
Drozdz, P., 582-PC-25
Drude, A., 421-GTE-6
Druguet, M., 563-TP-14
Drummond, J., 37-HSABP-1
Druss, R., 52-PGC-2/HSABP-2
Duan, L., 89-FD-14, 91-FD-16, 210-FD-27, 349-FD-43
Duan, Z., 351-FD-45
DuBois, P., 508-STR-19
Duda, B., 466-APA-44
Dudek, J., 575-FD-76
Duenas, J., 21-DE-1
Duensing, J., 76-APA-6
Duerte, C., 33-GNC-3
Duke, D., 269-AFM-10/GNC-21/FT-1
Dulikravich, G., 146-APA-19/AS-3
Dull, W., 19-ASE-1
Dumitrache, C., 113-PDL-6, 374-PDL-15/AMT-14
Dunham, W., 32-GNC-2
Dunn, I., 179-PGC-4, 240-PGC-5
Dunn, S., 222-GT-3
Dunphy, S., 180-SCS-3
Duong, A., 82-APA-12/FD-10/PDL-5, 114-PDL-7
Duong, N., 404-APA-38
Duong, T., 231-MAT-6/NDA-5
Duque, E., 371-NDA-7, 464-AMT-19/APA-42, 552-MVCE-5
Duraisamy, G., 387-UAS-5
Duraisamy, K., 86-FD-11, 111-PC-5, 206-DS-2, 220-GNC-18/IS-10, 475-FD-57, 500-PC-19
Duraisamy, V., 148-EDU-2, 344-EXPL-4
Durak, U., 429-MST-13, 494-MST-15/SOF-10
Durante, D., 464-AMT-19/APA-42
Durgesh, V., 204-APA-25
Durkee, M., 446-UAS-7/ACD-16
Durscher, R., 553-MVCE-6, 580-MVCE-7
Dussart, G., 400-AFM-13, 408-AS-7, 470-AS-8
Dutta, A., 148-EDU-2
Dutta, S., 332-AFM-11
Dutton, J., 24-FD-3
Dwight, R., 223-GT-4
Dwivedi, A., 477-FD-59
Dwyer-Cianciolo, A., 10-AFM-2, 160-GNC-12
Dykes, K., 126-WE-2, 448-WE-8
Dzanic, T., 76-APA-6
Eager, Z., 431-MVCE-1
Easterling, D., 426-MDO-16/SD-16
Eberhart, M., 374-PDL-15/AMT-14, 385-TP-7, 485-GT-7
Edelman, J., 213-FD-30
Edelman, L., 539-FD-67
Edgington-Mitchell, D., 375-PGC-8
Edmonds, A., 414-FD-49, 514-WE-9
Edmonson, R., 269-AFM-10/GNC-21/FT-1
Edoh, A., 414-FD-49, 542-FD-70
Edwards, J., 29-FD-8, 86-FD-11, 90-FD-15, 236-PC-11, 360-HSABP-6
Efimov, A., 17-APA-5/FD-2/PDL-2
Efremov, A., 136-AFM-5
Efremov, E., 136-AFM-5
Eggert, C., 532-APA-51
Ehrhardt, D., 201-APA-21/FD-26/SD-8/AMT-10
Eichstaedt, J., 352-FD-46
Eiler, J., 182-SE-3
Eisa, S., 405-APA-39
Eisfeld, B., 86-FD-11
Eitelberg, G., 223-GT-4
Ekaterinaris, J., 417-FD-53, 539-FD-67
Ekblaw, A., 116-SCS-2/AS-2
Ekelschot, D., 497-MVCE-4
Ekici, K., 147-DS-1
Ekkad, S., 125-TP-2
Elango, P., 199-AFM-8
Elbandarawy, M., 317-TES-4
ElBatanouny, M., 315-STR-11
El-Bayoumi, G., 204-APA-25
Elbing, B., 141-APA-14, 283-FD-35, 536-FD-64
Eldred, L., 508-STR-19
Eldred, M., 174-NDA-4, 551-MDO-21/NDA-11
Eldredge, J., 285-FD-37
Elemy, T., 512-UAS-9
Elenchezhian, M., 102-IS-6
Elfarra, M., 531-APA-50
Elgammal, T., 186-TES-3
El-hadidi, B., 204-APA-25
Elham, A., 70-ACD-2
ElHarriri, G., 317-TES-4
El Helou, I., 358-GTE-5
Elizabeth, B., 61-TES-2
Elkins, C., 203-APA-24
Ellerbroek, J., 96-GNC-7
Elliott, C., 40-IS-3, 120-SOF-1
Elliott, G., 24-FD-3, 374-PDL-15/AMT-14
Elliott, O., 152-FD-21
Elliott, S., 51-PDL-3, 339-APA-36/PDL-14
Ellis, K., 173-MST-6
El-Messidi, A., 251-UAS-2
Elnady, T., 389-WE-7
Elsanabawy, M., 501-PC-20
El Sayed, M., 104-MAT-3, 105-MDO-3
Elsayed, O., 443-TES-5
El Sayed M., Y., 143-APA-16
Elvig, J., 197-ACD-6
Elzahaby, A., 389-WE-7
Emeneth, M., 398-ACD-9
Emerson, B., 163-GTE-2, 358-GTE-5, 555-PC-22, 556-PC-23/AMT-23
Emery, J., 246-STR-7
Emshoff, B., 574-FD-75
Enciu, J., 198-AFM-7
Enderle, B., 433-NDA-9
Engebretsen, C., 121-STR-3
Engebretson, K., 314-SEN-2
Engeda, A., 61-TES-2
Engel, E., 404-APA-38
Engelhardt, N., 447-UAS-8/IS-21/SOF-6
Engelhart, D., 19-ASE-1
Engelmann, J., 234-MST-7
Engelsen, F., 493-MDO-18
Engelstad, S., 121-STR-3
England, W., 233-MDO-8
Englot, B., 101-IS-5
Enjuto, P., 122-STR-4, 247-STR-8
Eppard, W., 467-APA-45
Eppink, J., 210-FD-27, 463-AMT-18, 572-FD-73
Eppler, J., 266-AA-5/TF-5
Erath, B., 201-APA-21/FD-26/SD-8/AMT-10
Erdmann, T., 176-PC-9, 236-PC-11
Erer, K., 483-GNC-36
Erickson, A., 117-SD-4, 181-SD-7
Ermanni, P., 205-AS-4, 302-MDO-11/SD-11
Ernst, Z., 148-EDU-2
Eroglu, B., 39-IS-2, 418-GNC-31
Errera, M., 386-TP-8, 510-TP-12
Errico, A., 341-DA-1
Erwin, D., 57-SE-1
Erwin, J., 14-APA-2, 79-APA-9, 338-APA-35
Escamilla, L., 526-ACD-12/UAS-12
Esquieu, S., 480-FD-63, 530-APA-49
Es-Sahli, O., 86-FD-11
Essenberg, G., 95-GNC-6
Estes, J., 160-GNC-12
Estevadeordal, J., 138-AMT-6/PC-7
Esteves, R., 492-MAT-13
Etele, J., 97-GNC-8
Etherington, T., 234-MST-7
Eun, W., 335-APA-32
Evain, H., 33-GNC-3
Evans, E., 234-MST-7
Evans, R., 431-MVCE-1
Ewenz Rocher, M., 385-TP-7, 510-TP-12
Ewert, R., 397-AA-7
Eyi, S., 232-MDO-7/APA-26
Eymann, T., 213-FD-30
Fagan, A., 133-AA-3, 464-AMT-19/APA-42
Fagley, C., 271-APA-27
Fahey, L., 84-DE-2
Fahey, T., 309-PDL-12
Fahimi, F., 137-AFM-6
Fahringer, T., 463-AMT-18, 570-APA-55
Fairey, R., 496-MVCE-3
Falck, R., 233-MDO-8
Falcone, J., 330-AA-6
Falkiewicz, N., 54-SD-1
Falman, B., 570-APA-55
Falugi, M., 185-SUR-2
Fan, J., 295-GTE-4
Fan, T., 368-MDO-15/APA-37
Fang, H., 180-SCS-3, 379-SCS-6
Fang, X., 229-IS-13
Fanous, B., 99-ICC-1/SEN-1
Fares, E., 336-APA-33, 466-APA-44
Farghaly, M., 317-TES-4
Farhat, C., 243-SD-10
Farmer, K., 148-EDU-2
Farnsworth, J., 14-APA-2, 350-FD-44, 541-FD-69
Farokhi, S., 252-WE-4, 295-GTE-4
Farrokh, B., 59-STR-2, 168-MAT-4
Fasano, G., 217-GNC-15, 314-SEN-2, 584-SEN-6
Fasel, U., 205-AS-4, 302-MDO-11/SD-11
Fasiello, S., 305-MST-9
Fasoulas, S., 44-MAT-1, 374-PDL-15/AMT-14, 485-GT-7, 510-TP-12
Faulk, D., 99-ICC-1/SEN-1, 560-SEN-5
Favale, M., 343-DS-4
Favaregh, A., 532-APA-51
Favini, B., 459-AA-8
Faza, G., 126-WE-2
Feary, M., 173-MST-6
Feero, M., 337-APA-34
Feher, M., 428-MST-12/SOF-9
Fei, X., 124-TF-2, 248-TF-4, 266-AA-5/TF-5
Feigh, K., 235-MST-8
Felder, W., 406-APA-40
Feleo, A., 557-PGC-12
Felver, J., 176-PC-9
Fenercioglu, I., 141-APA-14, 155-FD-24
Feng, D., 164-HSABP-4, 334-AMT-13
Feng, M., 512-UAS-9
Feng, Z., 121-STR-3
Fenrich, R., 174-NDA-4
Ferguson, D., 19-ASE-1, 83-ASE-2, 115-PGC-3/HSABP-3
Ferguson, F., 164-HSABP-4, 543-FD-71
Ferguson, J., 55-SD-2
Fernandez, J., 312-SCS-5, 438-SCS-7, 558-SCS-9
Feron, E., 296-IS-14
Ferrao, I., 153-FD-22
Ferrari, M., 479-FD-62
Ferrari, S., 220-GNC-18/IS-10
Ferraro, S., 379-SCS-6
Ferreira, A., 471-DS-6
Ferrell, W., 103-MAT-2
Ferris, A., 112-PC-6
Ferris, R., 466-APA-44
Fertig, R., 168-MAT-4
Feser, J., 443-TES-5
Festa, D., 102-IS-6
Feyel, F., 510-TP-12
Fezans, N., 73-AFM-15, 198-AFM-7, 227-IS-11
Fichera, S., 439-SD-17
Fichter, W., 199-AFM-8, 221-GNC-19, 290-GNC-24, 355-GNC-28
Fidkowski, K., 232-MDO-7/APA-26, 469-APA-47
Fields, T., 9-AFM-1, 137-AFM-6, 268-AFM-9
Fiévet, R., 375-PGC-8
Fievisohn, R., 311-PGC-6, 557-PGC-12
Fifarek, A., 296-IS-14
Figueroa, A., 574-FD-75
Figueroa, F., 364-IS-17, 491-IS-22
Figueroa, M., 145-APA-18
Filippone, E., 495-MST-16
Fillo, A., 176-PC-9
Findeis, D., 388-UAS-6/IS-19/SOF-5
Findlay, D., 336-APA-33
Finger, D., 460-ACD-11
Fingersh, L., 253-WE-5
Fiolitakis, A., 110-PC-4
Fiordilino, G., 441-STR-16
Fiorina, B., 178-PDL-9, 237-PC-12, 537-FD-65
Firsov, A., 17-APA-5/FD-2/PDL-2, 164-HSABP-4, 177-PDL-8, 339-APA-36/PDL-14
Firth, D., 312-SCS-5
Firth, J., 312-SCS-5
Fisher, A., 350-FD-44
Fisher, J., 463-AMT-18, 528-AMT-21
Fitzgibbon, T., 78-APA-8
Flach, R., 546-GT-9
Flade, S., 420-GRE-1

AUTHOR AND SESSION CHAIR INDEX

Flaig, M., 407-APA-41/FD-47/SD-15/AMT-17
Flamholz, D., 576-GNC-40/IS-26
Fleischmann, D., 73-AFM-15
Fleming, D., 123-SUR-1
Fleming, P., 126-WE-2
Flenner, A., 218-GNC-16
Fletcher, D., 511-TP-13/PDL-16
Fletcher, N., 151-FD-20
Flora, G., 236-PC-11, 582-PC-25
Flores, A., 445-TP-10
Flores, O., 155-FD-24
Flores, W., 397-AA-7, 435-PC-18
Flores-Brito, W., 528-AMT-21
Floros, M., 534-DS-7
Floryan, D., 346-FD-40
Foale, J., 555-PC-22
Fogel, G., 36-HIS-1, 98-HIS-2, 547-HIS-5
Follo, J., 344-EXPL-4
Fonanelli, A., 171-MDO-6/NDA-3/STR-5
Fontanella, R., 584-SEN-6
Fonte, F., 504-SD-20
Footdale, J., 180-SCS-3, 583-SCS-11
Footohi, P., 566-ACD-14/UAS-13
Forliti, D., 474-FD-56
Forster, E., 371-NDA-7, 433-NDA-9, 498-NDA-10
Forster, M., 15-APA-3
Fortin, F., 579-MDO-22
Foster, J., 233-MDO-8, 313-SE-5
Foster, L., 384-STR-14, 508-STR-19
Fotia, M., 240-PGC-5, 311-PGC-6, 436-PGC-9
Fouda, M., 204-APA-25
Fournier, S., 470-AS-8
Foust, R., 158-GNC-10
Fragnière, B., 218-GNC-16, 235-MST-8
France, J., 557-PGC-12
Francis, W., 438-SCS-7, 503-SCS-8
Franco, A., 190-WE-3, 445-TP-10
Franco, M., 93-FD-18, 286-FD-38
François, C., 398-ACD-9
Francois, D., 88-FD-13
Frank, G., 408-AS-7
Frankel, J., 385-TP-7
Frankel, S., 29-FD-8, 156-FD-25
Franks, N., 42-ISC-TM
Franzén, L., 70-ACD-2
Franzini, G., 357-GNC-30
Frederickson, K., 51-PDL-3, 178-PDL-9, 238-PDL-10
Freeberg, J., 42-ISC-TM
Freeman, E., 233-MDO-8
Freeman, J., 14-APA-2, 142-APA-15, 460-ACD-11, 468-APA-46
Freeman, R., 273-APA-29
Freidkes, B., 506-SEN-4
French, M., 57-SE-1, 244-SE-4, 342-DGE-3
Freno, B., 563-TP-14
Fresconi, F., 400-AFM-13
Freund, J., 310-PDL-13
Frew, E., 101-IS-5, 297-IS-15, 314-SEN-2
Frey, T., 99-ICC-1/SEN-1, 409-CASE-2, 506-SEN-4
Friedmann, P., 206-DS-2, 277-DS-3, 427-MDO-17/NDA-8/STR-15
Frink, N., 14-APA-2, 198-AFM-7, 234-MST-7, 575-FD-76
Friss, A., 51-PDL-3
Friswell, M., 181-SD-7
Froembling, Z., 319-UAS-3/ACD-15
Frohnapfel, D., 348-FD-42
Frontin, C., 476-FD-58
Frost, S., 228-IS-12/GNC-20, 356-GNC-29/IS-16
Fruscina, C., 499-OPS-1
Frye, A., 495-MST-16
Frye, E., 318-TP-6
Fu, K., 417-FD-53
Fu, W., 305-MST-9
Fu, X., 8-ACD-1
Fuchs, C., 190-WE-3
Fuchs, Z., 218-GNC-16
Fuehne, M., 42-ISC-TM
Fuerst, D., 343-DS-4
Fugate, J., 56-SD-3
Fuge, M., 578-IS-27
Fugger, C., 35-GTE-1, 176-PC-9, 403-AMT-16, 556-PC-23/AMT-23, 557-PGC-12
Fujikawa, T., 10-AFM-2, 170-MDO-5
Fujimoto, K., 554-NDA-12
Fujita, K., 10-AFM-2, 477-FD-59, 540-FD-68
Fujiwara, H., 443-TES-5
Fujiwara, Y., 385-TP-7
Fukuda, S., 314-SEN-2, 463-AMT-18
Fukui, M., 164-HSABP-4
Fukunaga, M., 379-SCS-6
Fukushima, Y., 215-FD-32, 414-FD-49, 468-APA-46
Fuller, T., 501-PC-20
Fulton, J., 438-SCS-7
Fumagalli, L., 566-ACD-14/UAS-13
Funaki, I., 309-PDL-12
Funk, F., 512-UAS-9
Fureby, C., 26-FD-5, 111-PC-5
Furtado, C., 425-MAT-12
Gabet Hoffmeister, K., 138-AMT-6/PC-7, 528-AMT-21
Gad, K., 446-UAS-7/ACD-16
Gahlawat, A., 365-IS-18
Gaitonde, D., 28-FD-7, 181-SD-7, 213-FD-30, 284-FD-36, 407-APA-41/FD-47/SD-15/AMT-17, 474-FD-56, 476-FD-58, 477-FD-59, 480-FD-63
Galbraith, D., 415-FD-50
Galbraith, M., 93-FD-18, 287-FD-39, 432-MVCE-2, 497-MVCE-4, 553-MVCE-6, 575-FD-76
Galea, C., 51-PDL-3
Galeana, D., 224-GTE-3
Galeano, M., 585-STR-22
Gallagher, T., 88-FD-13, 111-PC-5, 414-FD-49, 537-FD-65
Gallant, A., 374-PDL-15/AMT-14
Galler, J., 285-FD-37
Gamagedara, K., 584-SEN-6
Gamba, G., 20-CPS-1
Gamba, M., 52-PGC-2/HSABP-2, 115-PGC-3/HSABP-3, 311-PGC-6, 480-FD-63, 539-FD-67, 557-PGC-12
Gambitta, M., 301-MDO-10/APA-31
Gamezo, V., 50-PC-2/PGC-1
Gammon, M., 432-MVCE-2
Gandhi, F., 29-FD-8, 205-AS-4, 507-STR-18
Gandhi, M., 495-MST-16
Gandhi, V., 553-MVCE-6
Gangadharan, S., 148-EDU-2, 544-FD-72
Ganguli, R., 55-SD-2, 207-EDU-3, 224-GTE-3, 440-SD-18
Ganju, S., 536-FD-64
Ganti, H., 550-MDO-20
Gao, C., 82-APA-12/FD-10/PDL-5
Gao, H., 272-APA-28, 478-FD-60, 569-APA-54
Gao, T., 495-MST-16
Gao, X., 310-PDL-13, 363-INPSI-1, 476-FD-58
Gao, Y., 109-NDA-2, 231-MAT-6/NDA-5, 543-FD-71
Gao, Z., 371-NDA-7
Garai, A., 497-MVCE-4
Garbarino, L., 584-SEN-6
Garbeff, T., 485-GT-7, 532-APA-51, 546-GT-9
Garbo, A., 124-TF-2
Garcia, E., 100-IS-4, 204-APA-25, 288-GNC-22, 364-IS-17, 399-ACD-10
Garcia, J., 10-AFM-2, 160-GNC-12
Garcia Carrillo, L., 251-UAS-2, 447-UAS-8/IS-21/SOF-6
Garcia de Miguel, A., 440-SD-18, 441-STR-16
Garcia Matas, L., 181-SD-7
Garcia-Villalba, M., 155-FD-24
Gardi, A., 484-GNC-37
Garg, K., 159-GNC-11
Garg, M., 185-SUR-2
Garmann, D., 154-FD-23, 284-FD-36, 496-MVCE-3, 573-FD-74
Garnett, R., 218-GNC-16
Garon, A., 574-FD-75
Garon, E., 233-MDO-8
Garraud, A., 506-SEN-4
Garry, K., 273-APA-29
Gasco, F., 168-MAT-4
Gates, N., 303-MDO-12
Gatley, C., 507-STR-18
Gatlin, G., 335-APA-32, 531-APA-50
Gatsonis, N., 378-SATS-1
Gatti, A., 445-TP-10
Gauci, J., 314-SEN-2
Gauger, N., 7-AA-1, 45-MDO-1
Gauntt, S., 41-ISC-MS
Gavrilovic, N., 137-AFM-6
Gavvala, S., 560-SEN-5
Gbaguidi, A., 366-MAT-11
Gdoutos, E., 438-SCS-7
Ge, C., 82-APA-12/FD-10/PDL-5
Ge, W., 175-PC-8
Ge, X., 386-TP-8
Gea, L., 25-FD-4, 363-INPSI-1, 423-INPSI-2
Gebara, C., 208-EXPL-2
Gebhard, J., 119-SE-2
Gebre-egziabher, D., 95-GNC-6
Geder, J., 405-APA-39
Gehlert, P., 92-FD-17
Geikie, M., 110-PC-4
Geipel, C., 200-AMT-9/PC-10, 360-HSABP-6
Geiselhart, K., 46-MDO-2
Geister, R., 20-CPS-1
Gejji, R., 375-PGC-8, 434-PC-17, 501-PC-20
Geluardi, S., 305-MST-9, 495-MST-16
Geng, J., 217-GNC-15
Genito, N., 584-SEN-6
George, J., 334-AMT-13
George, R., 86-FD-11
George, T., 103-MAT-2
George, W., 496-MVCE-3
Georgiadis, N., 86-FD-11, 87-FD-12
Geraci, G., 126-WE-2, 174-NDA-4
Geraci, M., 446-UAS-7/ACD-16
Gerakis, A., 334-AMT-13
Gerlinger, P., 110-PC-4
German, B., 124-TF-2
Gerzina, K., 80-APA-10
Geshnizjani, R., 221-GNC-19
Gethers, M., 244-SE-4
Getz, D., 272-APA-28
Geuther, S., 527-ACD-13
Gever, B., 494-MST-15/SOF-10
Gezer, B., 545-GNC-39/IS-24
Ghaffari, F., 467-APA-45
Gharbi, A., 105-MDO-3
Gharib, M., 446-UAS-7/ACD-16
Ghassemieh, S., 332-AFM-11
Ghazi, G., 108-MST-4
Ghazzawi, S., 492-MAT-13
Ghiassi, K., 492-MAT-13
Ghinet, S., 584-SEN-6
Ghodsi, R., 207-EDU-3
Ghommem, M., 526-ACD-12/UAS-12
Ghoreyshi, M., 142-APA-15, 274-APA-30, 569-APA-54
Ghose, D., 100-IS-4
Ghosh, S., 86-FD-11, 433-NDA-9, 473-FD-55, 479-FD-62
Giacobello, M., 338-APA-35
Giacobini Souza, A., 504-SD-20
Giamou, M., 9-AFM-1
Giancola, J., 525-AA-9
Giannakoupoulou, D., 364-IS-17
Giannelis, N., 337-APA-34
Giblette, T., 146-APA-19/AS-3
Gibson, A., 187-TF-3
Giering, M., 427-MDO-17/NDA-8/STR-15
Gilleron, J., 120-SOF-1, 382-SEN-3
Gillespie, D., 125-TP-2
Gillespie, J., 348-FD-42
Gillespie, R., 446-UAS-7/ACD-16
Gilson, M., 333-AFM-12
Gimelshein, S., 510-TP-12
Ginn, S., 269-AFM-10/GNC-21/FT-1
Gionfriddo, M., 527-ACD-13
Girard, A., 32-GNC-2, 221-GNC-19
Giri, D., 221-GNC-19
Giridhar, R., 252-WE-4
Giusti, A., 555-PC-22
Gladek, Y., 19-ASE-1
Gladin, J., 399-ACD-10
Glasby, R., 14-APA-2, 79-APA-9, 338-APA-35
Glascock, M., 511-TP-13/PDL-16
Glaser, C., 398-ACD-9
Glasheen, K., 101-IS-5, 297-IS-15
Glauser, M., 87-FD-12, 133-AA-3
Glaze, D., 501-PC-20
Glezer, A., 143-APA-16, 212-FD-29, 478-FD-60
Gluck, J., 39-IS-2, 102-IS-6
Gnadt, A., 124-TF-2
Go, T., 344-EXPL-4
Godfroy-Cooper, M., 305-MST-9
Goecks, V., 39-IS-2
Goel, A., 220-GNC-18/IS-10
Goenaga, F., 488-GTE-8
Goerttler, A., 573-FD-74
Goertz, S., 551-MDO-21/NDA-11
Goes, L., 504-SD-20
Gogineni, S., 133-AA-3, 422-HSABP-7, 567-AMT-24/APA-52
Gohardani, A., 22-EDU-1, 377-SAT-1, 378-SATS-1, 520-SAT-2
Goldberg, B., 113-PDL-6, 334-AMT-13, 374-PDL-15/AMT-14
Goldberg, R., 44-MAT-1, 508-STR-19
Goldenstein, C., 12-AMT-2, 403-AMT-16
Golinveaux, F., 492-MAT-13
Gollan, R., 189-TP-4
Goller, T., 201-APA-21/FD-26/SD-8/AMT-10
Gollnick, V., 197-ACD-6
Golubev, V., 141-APA-14, 214-FD-31
Gomes de Paula, N., 143-APA-16
Gomez, A., 508-STR-19
Gomez, D., 92-FD-17
Gomez, L., 508-STR-19
Gomez, M., 402-AMT-15
Gong, A., 268-AFM-9
Gonzalez, D., 24-FD-3, 93-FD-18, 501-PC-20
Gonzalez-Martino, I., 466-APA-44
González Ramirez, P., 198-AFM-7
Gonzalez-Rocha, J., 401-AFM-14
Gonzalo, A., 155-FD-24
Goodman, K., 486-GT-8, 546-GT-9
Goodman, S., 24-FD-3
Goodwin, G., 311-PGC-6, 360-HSABP-6
Gopalarathnam, A., 29-FD-8, 214-FD-31
Gopinath, G., 508-STR-19
Gord, J., 138-AMT-6/PC-7, 176-PC-9, 270-AMT-11, 402-AMT-15, 403-AMT-16, 463-AMT-18
Gordeyev, S., 17-APA-5/FD-2/PDL-2, 114-PDL-7
Gordon, W., 36-HIS-1, 98-HIS-2, 489-HIS-4
Gore, J., 49-PC-1, 435-PC-18
Gorodetsky, A., 174-NDA-4
Gorrell, S., 274-APA-30
Goss, L., 35-GTE-1
Goswami, R., 529-AMT-22/APA-48
Goto, K., 373-PC-16/PGC-7
Gottiparthi, K., 49-PC-1
Göttlicher, C., 333-AFM-12
Gould, C., 12-AMT-2
Gouldie, R., 547-HIS-5
Goulding, P., 486-GT-8
Gouldstone, C., 441-STR-16
Goyal, V., 121-STR-3, 383-STR-13, 492-MAT-13
Goyne, C., 37-HSABP-1, 200-AMT-9/PC-10, 360-HSABP-6, 529-AMT-22/APA-48
Grabe, C., 88-FD-13
Grabis, M., 336-APA-33
Graf, P., 448-WE-8
Gragston, M., 114-PDL-7, 200-AMT-9/PC-10, 334-AMT-13
Graham, R., 410-DA-2
Gramola, M., 28-FD-7, 468-APA-46
Granlund, K., 92-FD-17, 143-APA-16, 541-FD-69
Grannan, N., 487-GTE-7
Gransden, D., 33-GNC-3, 481-GNC-34
Grant, M., 72-AFM-4, 161-GNC-13

AUTHOR AND SESSION CHAIR INDEX

Grant, P., 9-AFM-1, 106-MST-2, 108-MST-4, 268-AFM-9
Grassi, M., 217-GNC-15
Grauer, J., 9-AFM-1, 333-AFM-12
Gravenhorst, E., 485-GT-7
Graves, D., 316-STR-12/MAT-10
Graves, R., 554-NDA-12
Gray, J., 46-MDO-2, 94-GNC-5, 179-PGC-4, 187-TF-3, 232-MDO-7/APA-26, 233-MDO-8, 303-MDO-12, 533-CMS-1, 579-MDO-22
Gray, K., 538-FD-66
Graziano, M., 584-SEN-6
Green, B., 136-AFM-5, 274-APA-30
Green, J., 332-AFM-11
Green, M., 346-FD-40, 541-FD-69
Green, N., 19-ASE-1
Greendyke, R., 152-FD-21
Greene, F., 27-FD-6
Greenough, R., 356-GNC-29/IS-16
Greenwood, R., 152-FD-21
Gregg, C., 197-ACD-6
Gregory, I., 166-IS-8/SOF-2
Gregory, J., 29-FD-8, 81-APA-11, 92-FD-17, 93-FD-18, 212-FD-29, 353-GNC-26
Greiser, S., 218-GNC-16, 235-MST-8
Grenfell, P., 180-SCS-3
Greschik, G., 116-SCS-2/AS-2, 558-SCS-9
Grewal, A., 117-SD-4, 584-SEN-6
Griffee, J., 180-SCS-3
Griffin, G., 407-APA-41/FD-47/SD-15/AMT-17
Griffin, P., 78-APA-8
Griffin, S., 340-AS-6
Griffith, D., 64-WE-1, 253-WE-5, 321-WE-6, 380-SD-12
Grimm, F., 397-AA-7, 421-GTE-6, 433-NDA-9
Grimmer, P., 246-STR-7, 561-STR-20
Grip, H., 320-UAS-4, 353-GNC-26
Grizzi, S., 504-SD-20
Grogan, K., 49-PC-1
Grogan, P., 182-SE-3, 244-SE-4
Groh, R., 58-STR-1, 441-STR-16
Grooms, I., 475-FD-57
Gross, A., 404-APA-38, 417-FD-53, 539-FD-67, 572-FD-73, 573-FD-74
Gross, J., 357-GNC-30
Gross, M., 307-PC-14
Groß, P., 199-AFM-8, 355-GNC-28
Gross, T., 445-TP-10
Grossir, G., 152-FD-21, 486-GT-8
Grossman, I., 567-AMT-24/APA-52
Grossman, K., 307-PC-14
Grout, R., 386-TP-8
Grover, M., 188-TP-3
Gruber, A., 237-PC-12
Gruenwald, B., 95-GNC-6, 356-GNC-29/IS-16, 545-GNC-39/IS-24, 576-GNC-40/IS-26
Grushin, A., 39-IS-2, 102-IS-6
Grüter, B., 96-GNC-7, 250-UAS-1, 513-UAS-10/IS-23/SOF-7
Grygier, M., 149-EXPL-1
Grymin, D., 165-IS-7
Gu, M., 270-AMT-11
Gudmundsson, S., 141-APA-14
Guenov, M., 134-ACD-3, 244-SE-4
Guerin, A., 244-SE-4
Guerin, Y., 493-MDO-18
Guerrero, D., 269-AFM-10/GNC-21/FT-1
Guerster, M., 182-SE-3
Guest, S., 562-STR-21
Guha, T., 203-APA-24
Guijarro Reyes, G., 251-UAS-2
Guildenbecher, D., 75-AMT-5, 138-AMT-6/PC-7, 185-SUR-2, 402-AMT-15
Guimarães, T., 439-SD-17
Guimarães Neto, A., 95-GNC-6
Guin, W., 59-STR-2, 122-STR-4
Guinness, J., 491-IS-22
Gumusboga, I., 32-GNC-2
Gunasekaran, S., 24-FD-3, 272-APA-28, 337-APA-34, 404-APA-38
Gundevia, R., 423-INPSI-2
Gunduz, I., 103-MAT-2
Gunes, U., 216-GNC-14
Guo, D., 526-ACD-12/UAS-12
Guo, T., 578-IS-27
Gupta, A., 42-ISC-TM, 443-TES-5, 461-AFM-16
Gupta, M., 55-SD-2, 243-SD-10
Gupta, P., 177-PDL-8
Gurdal, Z., 171-MDO-6/NDA-3/STR-5, 316-STR-12/MAT-10
Gursul, I., 283-FD-35
Guseva, E., 474-FD-56
Gustafson, P., 184-STR-6
Gutmark, E., 176-PC-9, 195-AA-4, 330-AA-6, 502-PGC-10
Gutti Shashidhar Gowda, A., 561-STR-20
Guzik, A., 582-PC-25
Guzik, S., 476-FD-58
Gwaltney, C., 319-UAS-3/ACD-15
Ha, H., 50-PC-2/PGC-1
Ha, T., 303-MDO-12
Haas, T., 355-GNC-28
Haase, T., 315-STR-11
Habashi, W., 93-FD-18, 156-FD-25
Hacker, A., 507-STR-18
Hackney, B., 410-DA-2
Hadaegh, F., 158-GNC-10
Haddad Khodaparast, H., 181-SD-7
Hadef, R., 176-PC-9
Hadid, A., 156-FD-25
Haering, S., 26-FD-5
Hafez, A., 387-UAS-5
Haftka, R., 550-MDO-20
Hagen, J., 149-EXPL-1
Haimes, R., 496-MVCE-3, 497-MVCE-4, 553-MVCE-6
Hajek, M., 184-STR-6
Hajj, M., 81-APA-11
Halbritter, J., 122-STR-4
Haldar, A., 205-AS-4
Haldar, S., 492-MAT-13
Haley, C., 210-FD-27, 282-FD-34
Haley, R., 148-EDU-2
Hall, A., 104-MAT-3
Hall, C., 124-TF-2
Hall, D., 331-ACD-8
Hall, E., 75-AMT-5
Hall, I., 225-HSABP-5
Hall, L., 467-APA-45
Hall, N., 13-APA-1, 271-APA-27
Hallowell, H., 221-GNC-19, 419-GNC-32
Halls, B., 75-AMT-5, 138-AMT-6/PC-7, 200-AMT-9/PC-10
Hamada, N., 170-MDO-5
Hamaoui, M., 288-GNC-22
Hambidge, C., 422-HSABP-7
Hameed, A., 567-AMT-24/APA-52
Hamel, J., 291-GNC-25
Hamilton, N., 514-WE-9
Hamilton, T., 124-TF-2
Hamlington, P., 75-AMT-5, 87-FD-12, 126-WE-2, 200-AMT-9/PC-10, 413-FD-48, 475-FD-57
Hamm, C., 313-SE-5
Hammack, S., 422-HSABP-7
Hammond, W., 313-SE-5
Han, D., 310-PDL-13
Han, J., 118-SD-5
Han, P., 346-FD-40
Han, X., 475-FD-57
Han, Z., 88-FD-13, 368-MDO-15/APA-37, 476-FD-58
Hanel, M., 96-GNC-7
Hanifi, A., 232-MDO-7/APA-26, 538-FD-66
Hann, R., 319-UAS-3/ACD-15
Hannah, E., 312-SCS-5
Hannan, M., 576-GNC-40/IS-26
Hannebique, G., 552-MVCE-5
Hannon, J., 25-FD-4
Hanquist, K., 232-MDO-7/APA-26, 563-TP-14
Hanraths, N., 240-PGC-5
Hansen, J., 98-HIS-2
Hansman, R., 124-TF-2
Hanson, R., 12-AMT-2, 112-PC-6, 138-AMT-6/PC-7, 189-TP-4, 403-AMT-16, 443-TES-5, 556-PC-23/AMT-23, 581-PC-24
Hansson, K., 510-TP-12
Hao, J., 282-FD-34
Haque, A., 103-MAT-2
Hara, S., 510-TP-12
Harada, A., 341-DA-1
Harada, K., 368-MDO-15/APA-37
Harada, M., 354-GNC-27
Harada, T., 80-APA-10
Haran, K., 185-SUR-2
Hardalupas, Y., 163-GTE-2
Hardy, G., 38-IS-1/GNC-4, 234-MST-7
Hargus, W., 502-PGC-10
Hari, M., 53-SCS-1
Hari, N., 80-APA-10, 485-GT-7
Hariharan, N., 78-APA-8, 144-APA-17, 202-APA-23, 274-APA-30, 338-APA-35
Harik, R., 122-STR-4, 316-STR-12/MAT-10
Harman, A., 384-STR-14
Harms, T., 190-WE-3
Harris, E., 87-FD-12
Harris, J., 40-IS-3
Harris, R., 431-MVCE-1
Harrivel, A., 173-MST-6, 382-SEN-3
Harrold, J., 200-AMT-9/PC-10
Harroun, A., 52-PGC-2/HSABP-2
Harter, B., 29-FD-8
Hartfield, R., 107-MST-3/SOF-8
Hartl, D., 146-APA-19/AS-3, 408-AS-7
Hartl, J., 119-SE-2
Hartman, C., 364-IS-17
Hartman, D., 320-UAS-4
Hartmann, S., 429-MST-13
Hartsfield, C., 84-DE-2, 115-PGC-3/HSABP-3
Hartwell, B., 387-UAS-5
Hartwig, J., 398-ACD-9
Harvazinski, M., 111-PC-5, 434-PC-17
Harvey, C., 205-AS-4
Harvey, J., 445-TP-10
Harwood, C., 36-HIS-1
Hasan, M., 572-FD-73
Hasanyan, A., 383-STR-13
Hasanzade, M., 388-UAS-6/IS-19/SOF-5
Hasegawa, D., 177-PDL-8
Hasegawa, M., 406-APA-40
Hasegawa, T., 275-AS-5
Hash, D., 511-TP-13/PDL-16
Hashemi, K., 38-IS-1/GNC-4, 56-SD-3, 356-GNC-29/IS-16
Hashish, A., 501-PC-20
Hassan, A., 216-GNC-14
Hassan, E., 360-HSABP-6
Hassan, M., 95-GNC-6
Hassanalian, M., 526-ACD-12/UAS-12
Hassanaly, M., 237-PC-12, 500-PC-19, 555-PC-22
Hassanzadeh, A., 190-WE-3, 514-WE-9
Hatamoto, A., 177-PDL-8
Hayashi, A., 179-PGC-4, 375-PGC-8
Hayashi, K., 373-PC-16/PGC-7
Haycock, B., 106-MST-2
Hayes, D., 400-AFM-13
Haynes, J., 224-GTE-3
Hayostek, S., 348-FD-42
Haywood, J., 86-FD-11
He, F., 542-FD-70
He, P., 301-MDO-10/APA-31
He, S., 169-MDO-4/APA-20
He, T., 56-SD-3
He, W., 348-FD-42
He, X., 211-FD-28
Heathcote, D., 143-APA-16
Hebbal, A., 170-MDO-5, 493-MDO-18
Heberling, B., 69-AA-2
Hebert, C., 559-SD-22
Heckmeier, F., 514-WE-9
Hedengren, J., 303-MDO-12
Hedlund, B., 339-APA-36/PDL-14
Heemstra, B., 269-AFM-10/GNC-21/FT-1
Heider, S., 564-UAS-11
Heilemann, F., 549-IS-25
Heimann, P., 184-STR-6
Heinich, C., 173-MST-6
Heintz, C., 289-GNC-23
Heinz, S., 88-FD-13, 389-WE-7, 414-FD-49, 476-FD-58, 536-FD-64
Heister, S., 52-PGC-2/HSABP-2, 115-PGC-3/HSABP-3, 375-PGC-8
Helenbrook, B., 201-APA-21/FD-26/SD-8/AMT-10
Helland, S., 294-GT-6
Heller, M., 513-UAS-10/IS-23/SOF-7
Helm, C., 281-FD-33
Helmuth, J., 219-GNC-17
Hemati, M., 211-FD-28, 283-FD-35
Hemmatian, M., 275-AS-5
Hemsch, M., 532-APA-51
Henderson, T., 229-IS-13, 297-IS-15, 378-SATS-1
Hendrick, P., 405-APA-39
Hendricks, E., 303-MDO-12
Heng, B., 59-STR-2
Hening, S., 167-IS-9
Henke, M., 421-GTE-6
Henne, U., 11-AMT-1, 190-WE-3
Herber, D., 578-IS-27
Herbst, M., 421-GTE-6
Herekoglu, O., 388-UAS-6/IS-19/SOF-5
Hermann, T., 125-TP-2, 385-TP-7, 422-HSABP-7, 444-TP-9, 486-GT-8, 510-TP-12
Hermanutz, A., 461-AFM-16
Hermetz, J., 398-ACD-9
Hernadez, L., 198-AFM-7
Hernandez, S., 551-MDO-21/NDA-11
Hernandez Perez, F., 555-PC-22, 581-PC-24
Hernandez-Perez, F., 581-PC-24
Herold Wright, C., 485-GT-7
Herrington, S., 9-AFM-1, 268-AFM-9
Herrmann-Stanzel, R., 511-TP-13/PDL-16
Herron, A., 570-APA-55
Hess, J., 123-SUR-1, 223-GT-4
Hess, R., 268-AFM-9
Hesse, H., 251-UAS-2, 526-ACD-12/UAS-12
Hewson, R., 408-AS-7
Heyborne, J., 402-AMT-15
Heyne, J., 236-PC-11, 358-GTE-5, 421-GTE-6, 582-PC-25
Hiba, A., 32-GNC-2
Hicken, J., 45-MDO-1
Hicks, N., 420-GRE-1
Hidaka, A., 107-MST-3/SOF-8
Hidaka, M., 314-SEN-2
Higgins, R., 273-APA-29
Higo, Y., 385-TP-7
Hill, J., 243-SD-10
Hill, M., 173-MST-6
Hill, V., 504-SD-20
Hiller, B., 234-MST-7
Hilton, H., 171-MDO-6/NDA-3/STR-5
Himmler, A., 428-MST-12/SOF-9
Hince, S., 248-TF-4
Hind, M., 464-AMT-19/APA-42
Hines, N., 21-DE-1, 84-DE-2
Hinkle, S., 24-FD-3
Hinson, B., 13-APA-1, 531-APA-50
Hinson, K., 504-SD-20
Hirai, R., 544-FD-72
Hirai, T., 544-FD-72
Hirotani, T., 546-GT-9
Hirsch, D., 25-FD-4
Hizli, H., 122-STR-4
Ho, A., 499-OPS-1
Ho, K., 551-MDO-21/NDA-11
Hoagg, J., 216-GNC-14, 289-GNC-23
Hoban, A., 370-MST-11
Hobbs, K., 166-IS-8/SOF-2, 296-IS-14
Hochstrasser, M., 119-SE-2
Hoddinott, D., 84-DE-2
Hodges, D., 55-SD-2, 243-SD-10
Hodson, J., 367-MDO-14
Hoffenson, S., 170-MDO-5
Hoffman, D., 527-ACD-13
Hoffman, R., 410-DA-2
Hoffmann, K., 569-APA-54

AUTHOR AND SESSION CHAIR INDEX

Hoffmann, R., 19-ASE-1
Hogge, J., 42-ISC-TM
Hohloch, M., 421-GTE-6
Hohmann, B., 241-SCS-4
Höhndorf, L., 235-MST-8, 554-NDA-12
Hoke, J., 240-PGC-5, 311-PGC-6, 436-PGC-9, 487-GTE-7, 502-PGC-10, 557-PGC-12
Holland, J., 475-FD-57
Holloway, M., 563-TP-14
Holman, T., 445-TP-10
Holmes, J., 77-APA-7
Holsinger, S., 100-IS-4
Holst, G., 11-AMT-1
Holst, K., 338-APA-35
Holt, J., 564-UAS-11
Holycross, C., 103-MAT-2
Holzapfel, F., 96-GNC-7, 119-SE-2, 120-SOF-1, 229-IS-13, 235-MST-8, 250-UAS-1, 333-AFM-12, 410-DA-2, 433-NDA-9, 482-GNC-35, 483-GNC-36, 491-IS-22, 513-UAS-10/IS-23/SOF-7, 554-NDA-12
Honarmandi, P., 231-MAT-6/NDA-5
Hong, S., 295-GTE-4
Hood, L., 107-MST-3/SOF-8
Hoogreef, M., 331-ACD-8, 460-ACD-11
Hoover, C., 471-DS-6
Hoover, R., 492-MAT-13
Hope, D., 406-APA-40
Hopf, J., 486-GT-8
Hopwood, J., 147-DS-1
Horn, J., 198-AFM-7
Horne, T., 95-GNC-6
Hörner, I., 485-GT-7
Hornung, M., 525-AA-9
Horowitz, S., 529-AMT-22/APA-48
Horri, N., 382-SEN-3
Horst, P., 470-AS-8
Horvath, B., 134-ACD-3
Hosangadi, A., 318-TP-6
Hoskoti, L., 117-SD-4
Hossain, M., 212-FD-29
Hosseini, S., 143-APA-16, 333-AFM-12
Hota, S., 289-GNC-23
Hoter, Z., 133-AA-3
Hou, W., 285-FD-37
Houck, D., 514-WE-9
Houlden, H., 532-APA-51
Houpt, A., 51-PDL-3, 339-APA-36/PDL-14
Houser, A., 235-MST-8
Housman, J., 76-APA-6
Hovakimyan, N., 229-IS-13, 269-AFM-10/GNC-21/FT-1, 320-UAS-4, 365-IS-18
How, J., 157-GNC-9, 217-GNC-15
Howard, M., 444-TP-9
Howard, T., 506-SEN-4
Howison, J., 76-APA-6
Hozhabr, B., 526-ACD-12/UAS-12
Hristov, G., 16-APA-4/FD-1/PDL-1
Hromisin, S., 330-AA-6
Hrynuk, J., 541-FD-69
Hsu, P., 138-AMT-6/PC-7, 176-PC-9, 334-AMT-13, 402-AMT-15
Hu, H., 16-APA-4/FD-1/PDL-1, 153-FD-22
Hu, S., 348-FD-42, 354-GNC-27
Hu, T., 118-SD-5
Hu, Y., 8-ACD-1
Hu, Z., 109-NDA-2, 315-STR-11
Huan, X., 174-NDA-4
Huang, A., 404-APA-38
Huang, C., 111-PC-5, 153-FD-22, 382-SEN-3, 500-PC-19
Huang, D., 277-DS-3, 426-MDO-16/SD-16
Huang, G., 225-HSABP-5, 295-GTE-4, 423-INPSI-2
Huang, H., 338-APA-35
Huang, J., 210-FD-27
Huang, M., 187-TF-3
Huang, X., 514-WE-9
Huang, Y., 302-MDO-11/SD-11, 355-GNC-28
Hubbard, E., 223-GT-4
Hubbard, J., 31-GNC-1, 381-SD-13
Huber, M., 513-UAS-10/IS-23/SOF-7
Hudgins, M., 486-GT-8
Hudson, K., 223-GT-4
Hudson, L., 58-STR-1
Huete, C., 50-PC-2/PGC-1
Huff, R., 240-PGC-5, 311-PGC-6
Hufgard, F., 125-TP-2, 385-TP-7, 510-TP-12
Hufstedler, E., 102-IS-6
Hughes, S., 253-WE-5
Hugon, F., 95-GNC-6
Huguenin, M., 368-MDO-15/APA-37, 560-SEN-5
Hull, B., 123-SUR-1
Humaira, N., 39-IS-2, 548-ICC-2
Humble, J., 52-PGC-2/HSABP-2
Humphreys, W., 250-UAS-1, 485-GT-7
Humphries, P., 561-STR-20
Hunsaker, D., 13-APA-1, 146-APA-19/AS-3, 505-SD-21, 525-AA-9, 531-APA-50
Hunt, M., 431-MVCE-1
Hunt, T., 430-MST-14
Hur, C., 448-WE-8
Hur, D., 367-MDO-14
Hurst, T., 107-MST-3/SOF-8
Husemann, M., 398-ACD-9
Husen, N., 406-APA-40
Hussain, F., 82-APA-12/FD-10/PDL-5
Hussaini, M., 386-TP-8
Hutchin, C., 77-APA-7
Hwang, D., 118-SD-5
Hwang, I., 165-IS-7
Hwang, J., 105-MDO-3, 144-APA-17, 303-MDO-12
Hwang, T., 230-MAT-5, 425-MAT-12
Hyde, A., 168-MAT-4
Hylton, A., 533-CMS-1
Iaccarino, G., 174-NDA-4
Iafrati, A., 504-SD-20
Iarve, E., 384-STR-14, 585-STR-22
Ibrahem, A., 170-MDO-5
Idan, M., 157-GNC-9, 353-GNC-26, 354-GNC-27
Ide, Y., 468-APA-46, 538-FD-66
Iezumi, T., 500-PC-19
Iftar, A., 32-GNC-2
Ifti, H., 125-TP-2, 385-TP-7
Igwe, G., 404-APA-38
Ihme, M., 213-FD-30, 237-PC-12, 537-FD-65
Iida, M., 514-WE-9
Iijima, H., 405-APA-39
Iijima, Y., 405-APA-39
Ikami, T., 540-FD-68
Ikeda, T., 510-TP-12
Ikenaga, T., 170-MDO-5
Ilich, Z., 486-GT-8
Ilie, M., 331-ACD-8, 420-GRE-1
Im, H., 434-PC-17, 555-PC-22, 581-PC-24
Imamura, T., 580-MVCE-7
Imediegwu, C., 408-AS-7
Inalhan, G., 354-GNC-27, 369-MST-10, 494-MST-15/SOF-10, 531-APA-50
Indraneel, T., 187-TF-3
Ingham, D., 252-WE-4
Ingraham, D., 82-APA-12/FD-10/PDL-5, 303-MDO-12, 352-FD-46
Inman, D., 205-AS-4
Innocenti, M., 353-GNC-26, 357-GNC-30
Inokuma, K., 539-FD-67
Inoyama, D., 53-SCS-1
Insaurralde, C., 494-MST-15/SOF-10
Intaratep, N., 389-WE-7
Ippolito, C., 167-IS-9, 229-IS-13, 365-IS-18
Iqbal, J., 118-SD-5
Irshad, L., 578-IS-27
Isaacs, S., 124-TF-2
Ishida, M., 53-SCS-1
Ishida, T., 314-SEN-2, 468-APA-46, 569-APA-54
Ishida, Y., 444-TP-9
Ishihara, A., 513-UAS-10/IS-23/SOF-7
Ishii, K., 375-PGC-8
Ishikawa, H., 80-APA-10
Ishimura, K., 53-SCS-1, 243-SD-10
Ishioka, S., 94-GNC-5
Isola, D., 93-FD-18
Ispir, A., 373-PC-16/PGC-7, 557-PGC-12
Israel, D., 575-FD-76
Iten, J., 103-MAT-2
Ito, Y., 336-APA-33, 466-APA-44, 529-AMT-22/APA-48, 544-FD-72
Itoh, H., 374-PDL-15/AMT-14
Itoh, K., 538-FD-66
Iungo, G., 514-WE-9
Iuzzolino, M., 549-IS-25
Ivison, W., 422-HSABP-7
Iwafuji, H., 10-AFM-2
Iyer, V., 560-SEN-5
Iyyer, N., 104-MAT-3
Izadpanahi, E., 58-STR-1, 134-ACD-3
Izui, K., 367-MDO-14
Jackson, C., 352-FD-46, 575-FD-76
Jackson, S., 125-TP-2
Jackson, T., 307-PC-14
Jackson, W., 442-STR-17
Jacob, J., 141-APA-14, 251-UAS-2, 283-FD-35, 536-FD-64
Jacobs, G., 61-TES-2, 186-TES-3, 540-FD-68
Jacobs, J., 585-STR-22
Jacobs, L., 47-MST-1
Jacobs, P., 189-TP-4
Jacuzzi, E., 143-APA-16
Jaeger, M., 243-SD-10
Jafarnejadsani, H., 229-IS-13
Jafer, S., 370-MST-11, 429-MST-13
Jagannath, R., 41-ISC-MS, 51-PDL-3, 178-PDL-9, 339-APA-36/PDL-14
Jagannathan, S., 545-GNC-39/IS-24, 560-SEN-5
Jagun, P., 511-TP-13/PDL-16
Jahan, S., 492-MAT-13
Jahangir, I., 105-MDO-3
Jahn, I., 465-APA-43/FD-54/SD-19/AMT-20
Jaiman, R., 477-FD-59
Jain, R., 78-APA-8
Jaiswal, A., 526-ACD-12/UAS-12
Jakeman, J., 174-NDA-4
Jakirlic, S., 82-APA-12/FD-10/PDL-5
Jakubinek, M., 470-AS-8
James, G., 149-EXPL-1
James, M., 228-IS-12/GNC-20
Jana, S., 224-GTE-3
Jandaurek, K., 223-GT-4
Janiczek, M., 530-APA-49
Jankovsky, A., 62-TF-1
Jans, E., 51-PDL-3
Jansen, E., 121-STR-3, 205-AS-4
Jansen, P., 8-ACD-1, 142-APA-15, 204-APA-25
Jara de Carvalho, L., 447-UAS-8/IS-21/SOF-6
Jaramillo, J., 296-IS-14
Jardin, T., 335-APA-32
Jarman, L., 24-FD-3
Jasa, J., 46-MDO-2
Jasak, H., 215-FD-32
Jasik, F., 552-MVCE-5
Jaszczak, D., 316-STR-12/MAT-10
Javed, A., 487-GTE-7
Jaworski, J., 214-FD-31, 285-FD-37
Jayakody, N., 275-AS-5
Jayakumar, V., 187-TF-3
Jayaraman, B., 202-APA-23, 251-UAS-2, 401-AFM-14
Jbara, A., 119-SE-2
Jedynska, A., 64-WE-1
Jefferies, R., 24-FD-3
Jeffries, J., 12-AMT-2
Jegede, O., 10-AFM-2
Jegley, D., 247-STR-8
Jemcov, A., 476-FD-58, 574-FD-75
Jenett, B., 197-ACD-6, 470-AS-8
Jenkins, L., 25-FD-4
Jenkins, S., 292-GNC-38
Jenkins, T., 334-AMT-13
Jensen, J., 76-APA-6, 525-AA-9
Jentzsch, M., 15-APA-3, 541-FD-69
Jeon, D., 25-FD-4
Jeon, H., 342-DGE-3
Jeon, I., 483-GNC-36
Jeon, S., 312-SCS-5
Jeong, S., 447-UAS-8/IS-21/SOF-6
Jespersen, D., 575-FD-76
Jewell, J., 152-FD-21, 210-FD-27, 567-AMT-24/APA-52
Jha, P., 514-WE-9
Jha, R., 275-AS-5
Ji, L., 571-APA-56
Jia, K., 478-FD-60, 540-FD-68
Jiang, H., 94-GNC-5
Jiang, L., 121-STR-3, 175-PC-8
Jiang, M., 141-APA-14
Jiang, N., 75-AMT-5, 138-AMT-6/PC-7, 176-PC-9, 334-AMT-13
Jiang, T., 470-AS-8
Jiang, Y., 354-GNC-27
Jiang, Z., 479-FD-62
Jiao, L., 287-FD-39
Jiao, Y., 168-MAT-4
Jimenez-Garcia, A., 78-APA-8, 273-APA-29
Jimeno, S., 134-ACD-3
Jin, L., 447-UAS-8/IS-21/SOF-6
Jirasek, A., 142-APA-15, 274-APA-30, 569-APA-54
Jo, B., 419-GNC-32
Jo, S., 189-TP-4
Joe, J., 553-MVCE-6
Joel, N., 51-PDL-3, 178-PDL-9
Johari, H., 204-APA-25
John, J., 279-EXPL-3, 309-PDL-12
Johnson, B., 160-GNC-12, 332-AFM-11
Johnson, C., 39-IS-2
Johnson, D., 118-SD-5
Johnson, E., 97-GNC-8, 290-GNC-24, 355-GNC-28, 495-MST-16, 545-GNC-39/IS-24
Johnson, K., 321-WE-6, 573-FD-74
Johnson, M., 236-PC-11
Johnson, P., 368-MDO-15/APA-37, 530-APA-49
Johnson, R., 360-HSABP-6, 502-PGC-10
Johnson, S., 138-AMT-6/PC-7
Johnson, V., 384-STR-14
Johnston, C., 249-TP-5
Johnston, D., 295-GTE-4
Johnston, W., 83-ASE-2
Johst, M., 223-GT-4
Jolly, B., 198-AFM-7, 400-AFM-13
Jones, A., 24-FD-3, 92-FD-17, 155-FD-24, 285-FD-37, 350-FD-44
Jones, C., 344-EXPL-4
Jones, E., 201-APA-21/FD-26/SD-8/AMT-10, 465-APA-43/FD-54/SD-19/AMT-20
Jones, J., 107-MST-3/SOF-8
Jones, K., 514-WE-9
Jones, M., 31-GNC-1, 47-MST-1
Jones, S., 91-FD-16, 486-GT-8
Jones, T., 241-SCS-4
Jonkman, J., 64-WE-1, 190-WE-3, 514-WE-9
Jonsson, E., 169-MDO-4/APA-20, 579-MDO-22
Jonsson, T., 101-IS-5
Jony, B., 275-AS-5
Joo, J., 505-SD-21
Jordan, A., 58-STR-1
Jorgens, C., 223-GT-4
Joseph, K., 61-TES-2
Joseph, N., 117-SD-4, 439-SD-17
Josey, T., 577-GNC-41
Joshi, A., 72-AFM-4, 250-UAS-1
Joshi, M., 471-DS-6
Josyula, E., 188-TP-3
Jouannet, C., 70-ACD-2
Jourdain, C., 52-PGC-2/HSABP-2
Jourdaine, N., 373-PC-16/PGC-7
Jourdan de Araujo Jorge Filho, E., 30-FD-9
Journell, C., 375-PGC-8
Jrad, M., 170-MDO-5, 181-SD-7, 427-MDO-17/NDA-8/STR-15
Ju, L., 215-FD-32
Ju, Y., 50-PC-2/PGC-1, 434-PC-17
Judd, E., 344-EXPL-4
Jude, D., 30-FD-9, 78-APA-8, 368-MDO-15/APA-37
Julian, K., 296-IS-14

AUTHOR AND SESSION CHAIR INDEX

Juliano, J., 528-AMT-21
Juliano, T., 27-FD-6, 152-FD-21, 480-FD-63
Jumper, E., 114-PDL-7, 284-FD-36
Junell, J., 40-IS-3
Jung, S., 31-GNC-1, 562-STR-21
Jung, Y., 78-APA-8, 92-FD-17, 496-MVCE-3
Justin, C., 124-TF-2, 342-DGE-3
Justusson, B., 118-SD-5, 508-STR-19, 562-STR-21
Kadioglu, F., 531-APA-50
Kaemming, T., 436-PGC-9
Kaiser, A., 366-MAT-11
Kajino, M., 339-APA-36/PDL-14
Kalfon-Cohen, E., 425-MAT-12
Kalita, H., 208-EXPL-2
Kallo, J., 420-GRE-1
Kamal, A., 526-ACD-12/UAS-12
Kambampati, S., 427-MDO-17/NDA-8/STR-15, 579-MDO-22
Kamel, M., 114-PDL-7
Kamin, M., 550-MDO-20
Kaminski, M., 253-WE-5
Kanamori, M., 80-APA-10, 107-MST-3/SOF-8, 473-FD-55
Kanani, Y., 125-TP-2
Kanazaki, M., 10-AFM-2, 170-MDO-5, 469-APA-47
Kancherla, R., 163-GTE-2
Kandler, E., 336-APA-33
Kanellopoulos, A., 356-GNC-29/IS-16
Kaneshige, J., 38-IS-1/GNC-4, 234-MST-7
Kang, C., 81-APA-11, 137-AFM-6, 204-APA-25, 266-AA-5/TF-5, 512-UAS-9
Kang, H., 343-DS-4, 534-DS-7
Kang, J., 558-SCS-9
Kang, L., 531-APA-50
Kanipe, C., 22-EDU-1
Kanlapuli Rajasekaran, R., 314-SEN-2
Kanner, S., 448-WE-8
Kanou, K., 540-FD-68
Kao, J., 46-MDO-2
Kapania, R., 53-SCS-1, 70-ACD-2, 80-APA-10, 171-MDO-6/NDA-3/STR-5, 181-SD-7, 427-MDO-17/NDA-8/STR-15, 461-AFM-16
Kaplan, C., 284-FD-36, 311-PGC-6, 542-FD-70
Kapoor, R., 484-GNC-37
Kara, K., 571-APA-56
Karagoz, E., 119-SE-2
Karagoz, F., 119-SE-2
Karagozian, A., 87-FD-12
Karakoc, O., 104-MAT-3, 298-MAT-7
Karali, H., 531-APA-50
Karaman, I., 104-MAT-3
Karasinski, J., 305-MST-9
Kariya, K., 314-SEN-2
Karlgaard, C., 10-AFM-2, 160-GNC-12, 332-AFM-11
Karlis, E., 163-GTE-2
Karmakar, A., 125-TP-2
Karman, S., 432-MVCE-2, 497-MVCE-4
Karnam, A., 195-AA-4, 330-AA-6
Karpel, M., 119-SE-2, 302-MDO-11/SD-11, 471-DS-6
Karpenko, M., 483-GNC-36
Karsai, G., 491-IS-22
Karuppiah, A., 383-STR-13
Kasahara, H., 203-APA-24
Kasahara, J., 373-PC-16/PGC-7, 502-PGC-10
Kaschner, J., 120-SOF-1
Kase, C., 481-GNC-34
Kashitani, M., 201-APA-21/FD-26/SD-8/AMT-10, 404-APA-38
Kasnakoglu, C., 216-GNC-14
Kassem, H., 476-FD-58, 536-FD-64
Kastengren, A., 90-FD-15, 556-PC-23/AMT-23
Kaszynski, A., 498-NDA-10
Kataoka, S., 379-SCS-6
Katoh, H., 492-MAT-13
Katona, B., 353-GNC-26
Katragadda, S., 42-ISC-TM
Katta, V., 373-PC-16/PGC-7, 582-PC-25
Katz, J., 207-EDU-3, 359-HIS-3
Kauffman, J., 18-AS-1, 116-SCS-2/AS-2, 275-AS-5, 340-AS-6, 408-AS-7, 496-MVCE-3, 559-SD-22
Kaufman, E., 481-GNC-34
Kaul, U., 56-SD-3, 505-SD-21
Kaviratna, L., 482-GNC-35
Kawabata, H., 444-TP-9
Kawai, S., 215-FD-32, 351-FD-45, 414-FD-49, 468-APA-46, 473-FD-55, 544-FD-72
Kawano, T., 53-SCS-1
Kawarabayashi, D., 379-SCS-6
Kawasaki, A., 309-PDL-12, 373-PC-16/PGC-7
Kawauchi, K., 80-APA-10
Kawazoe, H., 339-APA-36/PDL-14
Kaya, M., 531-APA-50
Kaya, U., 513-UAS-10/IS-23/SOF-7
Kaya, Y., 246-STR-7
Kaynak, U., 216-GNC-14
Kaynan, O., 103-MAT-2
Kayran, A., 562-STR-21
Kazansky, P., 17-APA-5/FD-2/PDL-2
Kazarina, M., 214-FD-31
Kazman, R., 183-SOF-3
KC, R., 141-APA-14, 283-FD-35, 487-GTE-7, 536-FD-64
Ke, X., 82-APA-12/FD-10/PDL-5
Keane, C., 506-SEN-4
Kearney, S., 201-APA-21/FD-26/SD-8/AMT-10, 557-PGC-12
Keating, D., 430-MST-14
Kecskemety, K., 22-EDU-1
Kedarisetty, S., 290-GNC-24
Kedward, L., 301-MDO-10/APA-31
Kedziora, G., 246-STR-7
Keeter, S., 464-AMT-19/APA-42
Kegerise, M., 25-FD-4
Keidel, D., 205-AS-4, 302-MDO-11/SD-11
Keijzer, T., 38-IS-1/GNC-4
Keil, R., 157-GNC-9
Kelkar, A., 529-AMT-22/APA-48
Keller, J., 530-APA-49
Kelley, C., 252-WE-4, 253-WE-5, 340-AS-6, 408-AS-7
Kelly, D., 121-STR-3
Kelly, J., 9-AFM-1
Kelly, R., 476-FD-58, 574-FD-75
Kemnetz, M., 17-APA-5/FD-2/PDL-2, 114-PDL-7
Kemp, M., 491-IS-22
Kemper, J., 269-AFM-10/GNC-21/FT-1
Kendall, R., 338-APA-35
Kennedy, G., 426-MDO-16/SD-16, 427-MDO-17/NDA-8/STR-15, 579-MDO-22
Kennedy, K., 173-MST-6
Kennedy, R., 281-FD-33
Kercher, A., 156-FD-25, 360-HSABP-6, 502-PGC-10
Kerkar, P., 479-FD-62
Keshavanarayana, S., 508-STR-19
Kessler, D., 156-FD-25, 502-PGC-10
Kevin, W., 573-FD-74
Key, N., 224-GTE-3
Khaled, B., 508-STR-19
Khalil, A., 198-AFM-7
Khalil, E., 317-TES-4
Khan, A., 134-ACD-3
Khan, O., 203-APA-24, 368-MDO-15/APA-37
Khan, T., 84-DE-2, 203-APA-24, 368-MDO-15/APA-37, 569-APA-54
Khanapuri, E., 424-IS-20
Khandelwal, B., 61-TES-2
Khare, P., 550-MDO-20
Khawar, O., 283-FD-35
Khoo, B., 380-SD-12, 502-PGC-10
Khorrami, M., 250-UAS-1
Khoshlahjeh, M., 340-AS-6
Khrustalev, D., 445-TP-10
Khurana, M., 135-ACD-4, 433-NDA-9
Kianbakht, S., 321-WE-6
Kiani, M., 248-TF-4, 355-GNC-28
Kianvashrad, N., 213-FD-30
Kidane, A., 384-STR-14
Kidd, M., 491-IS-22
Kiefer, S., 583-SCS-11
Kielb, R., 471-DS-6
Kier, T., 38-IS-1/GNC-4, 461-AFM-16, 505-SD-21
Kier, Z., 492-MAT-13
Kieweg, S., 563-TP-14
Kikuchi, R., 410-DA-2
Kilcher, L., 448-WE-8
Kim, B., 230-MAT-5
Kim, C., 299-MAT-8, 351-FD-45
Kim, D., 118-SD-5, 366-MAT-11, 484-GNC-37
Kim, E., 242-SD-9, 559-SD-22
Kim, G., 112-PC-6
Kim, H., 145-APA-18, 177-PDL-8, 230-MAT-5, 238-PDL-10, 242-SD-9, 243-SD-10, 246-STR-7, 298-MAT-7, 300-MAT-9/MDO-9/STR-9, 367-MDO-14, 425-MAT-12, 427-MDO-17/NDA-8/STR-15, 559-SD-22, 585-STR-22
Kim, J., 49-PC-1, 101-IS-5, 145-APA-18, 189-TP-4, 230-MAT-5, 373-PC-16/PGC-7, 388-UAS-6/IS-19/SOF-5, 483-GNC-36
Kim, K., 177-PDL-8, 238-PDL-10, 446-UAS-7/ACD-16
Kim, N., 550-MDO-20
Kim, P., 585-STR-22
Kim, S., 31-GNC-1, 289-GNC-23
Kim, T., 321-WE-6
Kim, Y., 31-GNC-1, 32-GNC-2, 230-MAT-5, 239-PDL-11, 299-MAT-8, 483-GNC-36, 585-STR-22
Kim Castet, S., 578-IS-27
Kimmel, R., 210-FD-27
Kimn, J., 479-FD-62
Kimura, K., 514-WE-9
Kimura, R., 436-PGC-9
Kindylides, S., 344-EXPL-4, 378-SATS-1
King, J., 346-FD-40
King, M., 9-AFM-1
King, R., 27-FD-6, 126-WE-2, 311-PGC-6, 415-FD-50, 436-PGC-9, 448-WE-8
Kingston, D., 364-IS-17
Kinney, D., 10-AFM-2
Kinney, T., 181-SD-7
Kinstle, M., 359-HIS-3
Kinzel, M., 272-APA-28, 417-FD-53
Kirby, A., 414-FD-49, 514-WE-9
Kirby, M., 95-GNC-6, 525-AA-9
Kirchner, B., 24-FD-3
Kiris, C., 76-APA-6, 477-FD-59
Kirk, D., 344-EXPL-4
Kirk, J., 95-GNC-6
Kirk, P., 92-FD-17
Kirsch, M., 139-AMT-7
Kistner, I., 374-PDL-15/AMT-14
Kitamura, K., 80-APA-10
Kitazono, K., 349-FD-43
Kivelevitch, E., 99-ICC-1/SEN-1
Klein, C., 11-AMT-1, 74-AMT-4, 190-WE-3
Kleinfelter, A., 485-GT-7
Klimmek, T., 461-AFM-16
Klingshirn, C., 236-PC-11
Klinkmueller, K., 564-UAS-11
Klose, B., 186-TES-3, 540-FD-68
Klovstad, J., 344-EXPL-4
Klug, L., 141-APA-14
Klyde, D., 71-AFM-3, 94-GNC-5, 136-AFM-5, 172-MST-5, 199-AFM-8
Knapke, C., 295-GTE-4
Knapp, M., 333-AFM-12
Knarzer, E., 202-APA-23
Knaus, D., 402-AMT-15, 582-PC-25
Knight, D., 213-FD-30
Knisely, A., 502-PGC-10
Knisely, C., 282-FD-34
Knobbe-Eschen, H., 190-WE-3
Knop, I., 190-WE-3
Knopp, T., 88-FD-13, 141-APA-14, 474-FD-56
Knott, G., 312-SCS-5
Knowlen, C., 115-PGC-3/HSABP-3, 423-INPSI-2, 486-GT-8
Knox, K., 63-TP-1
Knutson, A., 27-FD-6
Ko, C., 382-SEN-3
Kobayashi, K., 469-APA-47
Koch, A., 19-ASE-1
Koch, J., 115-PGC-3/HSABP-3
Kochenderfer, M., 296-IS-14, 364-IS-17
Kochersberger, K., 99-ICC-1/SEN-1, 512-UAS-9
Kocian, T., 480-FD-63
Kodagali, K., 508-STR-19
Koeberle, S., 461-AFM-16
Koessler, J., 73-AFM-15
Koga, S., 405-APA-39
Kohlman, L., 124-TF-2, 398-ACD-9
Kohzai, M., 529-AMT-22/APA-48, 546-GT-9
Kojima, T., 373-PC-16/PGC-7
Kok, L., 104-MAT-3, 105-MDO-3
Kolb, A., 466-APA-44
Kolbakir, C., 16-APA-4/FD-1/PDL-1
Kolemen, E., 113-PDL-6
Kolla, H., 500-PC-19
Kolmanovsky, I., 32-GNC-2, 221-GNC-19, 400-AFM-13
Kolonay, R., 433-NDA-9, 553-MVCE-6
Komar, D., 344-EXPL-4
Komives, J., 152-FD-21
Komuro, T., 385-TP-7
Kona, A., 508-STR-19
Kondur, C., 189-TP-4, 563-TP-14
Konduri, T., 44-MAT-1
Kong, W., 50-PC-2/PGC-1
Konig, B., 336-APA-33
Konishi, Y., 24-FD-3
Kono, A., 529-AMT-22/APA-48
Kontis, K., 539-FD-67
Kontogiannis, A., 530-APA-49
Koo, J., 103-MAT-2, 435-PC-18
Koochesfahani, M., 155-FD-24, 337-APA-34, 540-FD-68
Koodly Ravishankara, A., 190-WE-3
Kopardekar, P., 499-OPS-1
Kopeikin, A., 564-UAS-11
Kopp, R., 425-MAT-12
Koppitz, P., 235-MST-8, 554-NDA-12
Kopriva, D., 186-TES-3
Kopsaftopoulos, F., 381-SD-13
Kor, C., 344-EXPL-4
Korn, B., 410-DA-2
Kornienko, A., 221-GNC-19
Korpela, C., 564-UAS-11
Korzun, A., 332-AFM-11
Koschel, S., 439-SD-17
Kosir, S., 236-PC-11, 582-PC-25
Kosmatka, J., 242-SD-9, 440-SD-18
Kostak, H., 27-FD-6
Kostopoulos, V., 289-GNC-23, 344-EXPL-4, 378-SATS-1
Kosztowny, C., 442-STR-17
Kotapati, R., 466-APA-44
Kothari, M., 100-IS-4, 161-GNC-13, 296-IS-14
Kotikalpudi, A., 461-AFM-16
Kotsonis, M., 282-FD-34
Kottapalli, S., 534-DS-7
Kotwicz Herniczek, M., 124-TF-2
Kouchi, T., 463-AMT-18
Kousaka, D., 379-SCS-6
Kowalchuk, S., 369-MST-10
Koyuncu, E., 39-IS-2, 428-MST-12/SOF-9, 429-MST-13, 495-MST-16, 548-ICC-2
Kozak, Y., 413-FD-48
Kozel, F., 124-TF-2
Kraemer, E., 571-APA-56
Kraft, E., 342-DGE-3
Kramer, L., 234-MST-7
Kramer, R., 583-SCS-11
Krebill, A., 335-APA-32
Krebs, T., 568-APA-53
Kreeger, R., 204-APA-25
Kreshock, A., 534-DS-7
Krieg, A., 316-STR-12/MAT-10
Krimmer, A., 64-WE-1
Krish, A., 189-TP-4
Krishnakumar, K., 167-IS-9, 229-IS-13, 297-IS-15, 365-IS-18
Krishna Moorthy, A., 378-SATS-1

AUTHOR AND SESSION CHAIR INDEX

Krishnamurthy, S., 525-AA-9
Krishnamurthy, T., 507-STR-18, 551-MDO-21/NDA-11
Krishnamurthy, V., 578-IS-27
Krishnaswamy, S., 97-GNC-8
Krist, S., 467-APA-45, 532-APA-51
Kristensson, P., 549-IS-25
Kristinsson, B., 182-SE-3
Krofta, J., 530-APA-49
Kronhaus, I., 177-PDL-8
Kroo, I., 8-ACD-1
Krueger, W., 461-AFM-16
Krummrein, T., 421-GTE-6
Kruse, L., 424-IS-20
Kuang, M., 577-GNC-41
Kubota, K., 309-PDL-12
Kucukoglu, A., 388-UAS-6/IS-19/SOF-5
Kudryavtsev, A., 431-MVCE-1
Kuester, M., 89-FD-14, 377-SAT-1, 520-SAT-2, 567-AMT-24/APA-52
Kügler, M., 120-SOF-1, 410-DA-2
Kulakhmetov, R., 372-PC-15
Kulatilaka, W., 138-AMT-6/PC-7, 306-PC-13, 581-PC-24
Kulkarni, C., 491-IS-22, 554-NDA-12
Kumar, A., 279-EXPL-3
Kumar, G., 435-PC-18
Kumar, M., 97-GNC-8, 109-NDA-2, 157-GNC-9, 187-TF-3, 216-GNC-14, 269-AFM-10/GNC-21/FT-1, 560-SEN-5
Kumar, R., 89-FD-14, 91-FD-16, 115-PGC-3/HSABP-3, 152-FD-21, 201-APA-21/FD-26/SD-8/AMT-10, 203-APA-24, 546-GT-9
Kumar, S., 94-GNC-5, 224-GTE-3, 225-HSABP-5, 299-MAT-8
Kumashiro, K., 75-AMT-5
Kumazawa, H., 492-MAT-13
Kuni, H., 250-UAS-1
Kuntz, D., 188-TP-3
Kurits, I., 528-AMT-21
Kurlin, V., 552-MVCE-5
Kurosaka, M., 115-PGC-3/HSABP-3
Kurt, H., 418-GNC-31
Kuruvila, G., 46-MDO-2
Kusama, K., 11-AMT-1
Kusunose, K., 404-APA-38
Kutay, A., 217-GNC-15, 493-MDO-18, 545-GNC-39/IS-24
Kutne, P., 421-GTE-6
Kuya, Y., 215-FD-32, 351-FD-45, 414-FD-49
Kwok, K., 116-SCS-2/AS-2, 438-SCS-7
Kwon, O., 144-APA-17, 189-TP-4
Kwong, W., 556-PC-23/AMT-23
L. Dreizin, E., 153-FD-22
L'Afflitto, A., 218-GNC-16
L'Esperance, A., 464-AMT-19/APA-42
Laban, M., 142-APA-15
Laberge Lebel, L., 44-MAT-1
LaBry, Z., 49-PC-1
Lacaze, G., 174-NDA-4
Lacombe, F., 574-FD-75
Lacoste, D., 179-PGC-4
Ladeinde, F., 37-HSABP-1, 164-HSABP-4, 179-PGC-4, 386-TP-8
Lafferty, J., 270-AMT-11
Lagor, F., 92-FD-17, 285-FD-37
Lagoudas, D., 104-MAT-3, 298-MAT-7
Lai, D., 271-APA-27
Lai, K., 525-AA-9
Laich, A., 556-PC-23/AMT-23
Lakshminarayan, V., 30-FD-9, 202-APA-23, 274-APA-30
Lam, J., 320-UAS-4
Lam, R., 109-NDA-2, 304-MDO-13/NDA-6/STR-10
Lambert, T., 405-APA-39
Lammel, O., 49-PC-1
Lampenfield, J., 37-HSABP-1
Lampton, A., 94-GNC-5, 165-IS-7, 353-GNC-26
Lancaster, J., 269-AFM-10/GNC-21/FT-1
Landa, T., 88-FD-13, 141-APA-14
Landrum, D., 22-EDU-1, 137-AFM-6
Langelaan, J., 217-GNC-15, 272-APA-28, 355-GNC-28
Langelier, M., 291-GNC-25
Langer, K., 121-STR-3
Langston, S., 44-MAT-1
Lani, A., 286-FD-38, 349-FD-43, 497-MVCE-4
Lanlan, X., 208-EXPL-2
Lapointe, C., 87-FD-12
Lappas, V., 289-GNC-23, 344-EXPL-4, 357-GNC-30, 378-SATS-1
Larchevêque, L., 349-FD-43
Larkin, D., 564-UAS-11
La Rocca, G., 301-MDO-10/APA-31
LaRocca, M., 180-SCS-3
Larsson, J., 28-FD-7, 154-FD-23
Lasky, I., 434-PC-17
Last, M., 173-MST-6, 549-IS-25
Laten, J., 16-APA-4/FD-1/PDL-1
Latham, N., 239-PDL-11
Lau, M., 40-IS-3
Laurence, S., 281-FD-33, 346-FD-40, 463-AMT-18, 465-APA-43/FD-54/SD-19/AMT-20
Laurendeau, E., 81-APA-11, 448-WE-8, 530-APA-49
Laureti, M., 459-AA-8
Lauriola, D., 402-AMT-15
Laux, C., 113-PDL-6, 178-PDL-9, 189-TP-4, 374-PDL-15/AMT-14, 444-TP-9, 511-TP-13/PDL-16
Laux, S., 428-MST-12/SOF-9
Lavin, T., 198-AFM-7
Lavretsky, E., 269-AFM-10/GNC-21/FT-1, 576-GNC-40/IS-26
Law, Y., 477-FD-59
Lawrence, S., 371-NDA-7, 464-AMT-19/APA-42, 552-MVCE-5
Lawrence Raj, P., 417-FD-53
Lawson, J., 567-AMT-24/APA-52
Lazzara, D., 146-APA-19/AS-3
Leader, R., 489-HIS-4
Leal, P., 146-APA-19/AS-3
LeBeau, R., 16-APA-4/FD-1/PDL-1, 148-EDU-2, 207-EDU-3, 530-APA-49
Lebow, L., 75-AMT-5
Le Clainche, S., 380-SD-12, 580-MVCE-7
Leclerc, C., 379-SCS-6, 438-SCS-7
Le Clercq, P., 175-PC-8
Lee, A., 312-SCS-5
Lee, B., 78-APA-8, 555-PC-22
Lee, D., 13-APA-1, 122-STR-4, 365-IS-18, 403-AMT-16
Lee, H., 25-FD-4, 31-GNC-1, 244-SE-4, 304-MDO-13/NDA-6/STR-10, 353-GNC-26, 532-APA-51, 555-PC-22
Lee, J., 31-GNC-1, 118-SD-5, 121-STR-3, 242-SD-9, 298-MAT-7, 336-APA-33, 435-PC-18
Lee, K., 221-GNC-19, 303-MDO-12
Lee, R., 364-IS-17
Lee, S., 61-TES-2, 223-GT-4, 230-MAT-5, 242-SD-9, 369-MST-10, 512-UAS-9
Lee, T., 291-GNC-25, 422-HSABP-7, 481-GNC-34, 584-SEN-6
Lee, W., 366-MAT-11, 488-GTE-8
Lee, Y., 118-SD-5, 336-APA-33
Leege, B., 423-INPSI-2
Lefebvre, J., 24-FD-3
Leguarda, R., 503-SCS-8
Lehman, H., 39-IS-2, 43-ISC-UG
Leib, S., 133-AA-3
Leibowitz, M., 385-TP-7
Leifsson, L., 147-DS-1, 301-MDO-10/APA-31
Leighton, T., 207-EDU-3
Leinemann, M., 152-FD-21, 480-FD-63
Leiser, D., 44-MAT-1
Leite, H., 11-AMT-1
Leitner, M., 505-SD-21
Leiweke, R., 113-PDL-6
Leman, S., 560-SEN-5, 584-SEN-6
Lemcherfi, A., 375-PGC-8
Leng, Y., 335-APA-32
Lennie, M., 448-WE-8
Leong, B., 181-SD-7
Leong, W., 502-PGC-10
Leonhardt, B., 9-AFM-1
Leonov, S., 17-APA-5/FD-2/PDL-2, 51-PDL-3, 177-PDL-8, 339-APA-36/PDL-14
Léost, Y., 315-STR-11
Lepikhin, N., 178-PDL-9
Le Provost, M., 211-FD-28
Le Quang, D., 152-FD-21
Lerch, B., 492-MAT-13
LeSieur, A., 185-SUR-2
Lesieutre, G., 340-AS-6, 379-SCS-6
Leung, J., 9-AFM-1, 108-MST-4
Leve, F., 221-GNC-19
Levert-Beaulieu, A., 204-APA-25
Le Vie, L., 549-IS-25
Levin, D., 153-FD-22, 444-TP-9
Levin, Z., 420-GRE-1
Levinski, O., 181-SD-7, 439-SD-17
Levy, D., 399-ACD-10
Lewalle, J., 133-AA-3
Lewis, E., 369-MST-10
Ley, N., 298-MAT-7
Li, C., 298-MAT-7, 307-PC-14, 346-FD-40
Li, E., 124-TF-2, 571-APA-56
Li, F., 89-FD-14, 210-FD-27
Li, G., 304-MDO-13/NDA-6/STR-10, 477-FD-59
Li, H., 17-APA-5/FD-2/PDL-2, 147-DS-1, 470-AS-8, 484-GNC-37
Li, J., 502-PGC-10
Li, K., 357-GNC-30
Li, L., 119-SE-2, 286-FD-38, 295-GTE-4, 423-INPSI-2
Li, M., 304-MDO-13/NDA-6/STR-10, 418-GNC-31
Li, P., 580-MVCE-7
Li, Q., 287-FD-39
Li, R., 366-MAT-11
Li, S., 111-PC-5, 215-FD-32, 302-MDO-11/SD-11
Li, T., 370-MST-11
Li, W., 46-MDO-2, 386-TP-8, 571-APA-56
Li, X., 64-WE-1
Li, Y., 348-FD-42, 426-MDO-16/SD-16, 466-APA-44
Liang, Y., 384-STR-14
Libertowski, N., 488-GTE-8
Lichota, P., 333-AFM-12
Liddle, D., 583-SCS-11
Lieber, D., 200-AMT-9/PC-10, 360-HSABP-6
Lienard, C., 389-WE-7
Lietz, C., 240-PGC-5
Lieu, M., 331-ACD-8
Lieuwen, T., 110-PC-4, 163-GTE-2, 358-GTE-5
Lifson, M., 499-OPS-1
Lightsey, E., 314-SEN-2
Liguore, S., 181-SD-7, 562-STR-21
Lim, D., 371-NDA-7, 375-PGC-8, 525-AA-9
Lim, J., 78-APA-8
Lima Filho, V., 19-ASE-1
Limbach, C., 51-PDL-3, 511-TP-13/PDL-16
Lin, J., 299-MAT-8
Lin, K., 90-FD-15
Lin, S., 315-STR-11, 382-SEN-3
Lin, W., 357-GNC-30, 400-AFM-13
Lin, Z., 37-HSABP-1
Lind, A., 92-FD-17
Lindblad, D., 169-MDO-4/APA-20, 459-AA-8, 542-FD-70
Lindsay, K., 235-MST-8
Ling, K., 125-TP-2
Ling, Y., 433-NDA-9
Lingenfelter, A., 123-SUR-1, 185-SUR-2, 223-GT-4
Lingstädt, T., 421-GTE-6
Linker, M., 42-ISC-TM
Lino Da Silva, M., 444-TP-9
Lipford, W., 486-GT-8
Litteken, D., 241-SCS-4
Little, J., 82-APA-12/FD-10/PDL-5, 91-FD-16, 212-FD-29
Littmann, D., 47-MST-1
Liu, B., 95-GNC-6
Liu, C., 220-GNC-18/IS-10, 283-FD-35, 310-PDL-13, 473-FD-55
Liu, D., 123-SUR-1, 185-SUR-2
Liu, F., 82-APA-12/FD-10/PDL-5, 330-AA-6, 423-INPSI-2
Liu, G., 346-FD-40
Liu, H., 290-GNC-24, 348-FD-42, 357-GNC-30, 400-AFM-13
Liu, J., 195-AA-4, 330-AA-6, 491-IS-22
Liu, K., 88-FD-13, 351-FD-45
Liu, L., 168-MAT-4, 559-SD-22
Liu, M., 170-MDO-5, 533-CMS-1
Liu, P., 59-STR-2, 405-APA-39
Liu, Q., 422-HSABP-7, 569-APA-54
Liu, W., 8-ACD-1, 135-ACD-4, 266-AA-5/TF-5
Liu, X., 54-SD-1, 94-GNC-5, 156-FD-25, 168-MAT-4, 283-FD-35, 351-FD-45, 418-GNC-31
Liu, Y., 16-APA-4/FD-1/PDL-1, 70-ACD-2, 108-MST-4, 109-NDA-2, 153-FD-22, 165-IS-7, 168-MAT-4, 230-MAT-5, 231-MAT-6/NDA-5, 341-DA-1, 506-SEN-4, 585-STR-22
Liu, Z., 8-ACD-1
Livescu, D., 496-MVCE-3
Livne, E., 504-SD-20
Livshitz, A., 354-GNC-27
Llama, E., 10-AFM-2
LLanos, P., 148-EDU-2, 544-FD-72
Lobo, M., 122-STR-4, 247-STR-8
Lockard, D., 250-UAS-1
LoCurto, A., 403-AMT-16
Loehle, S., 44-MAT-1, 114-PDL-7, 125-TP-2, 374-PDL-15/AMT-14, 385-TP-7, 485-GT-7, 510-TP-12
Loehr, J., 221-GNC-19
Lofthouse, A., 552-MVCE-5
Logan, M., 251-UAS-2, 564-UAS-11, 566-ACD-14/UAS-13
Lohner, R., 574-FD-75
Loiacono, R., 530-APA-49
Lokos, W., 58-STR-1
Lombaerts, T., 38-IS-1/GNC-4, 234-MST-7
London Guedes, P., 135-ACD-4
Lone, M., 73-AFM-15, 198-AFM-7, 400-AFM-13, 408-AS-7, 462-AFM-17, 470-AS-8
Long, K., 365-IS-18
Long, N., 137-AFM-6
Longhurst, J., 250-UAS-1
Looye, G., 38-IS-1/GNC-4
Lopes, L., 303-MDO-12
Lopez, B., 249-TP-5, 444-TP-9
Lopez, J., 403-AMT-16
Lopez, M., 333-AFM-12
Lopez, O., 144-APA-17
Lopez Jimenez, F., 438-SCS-7, 503-SCS-8
Lopp, G., 340-AS-6, 408-AS-7
Lord, W., 363-INPSI-1
Lorente, S., 134-ACD-3
Loseille, A., 497-MVCE-4
Loth, E., 88-FD-13, 321-WE-6
Lou, F., 224-GTE-3
Lou, J., 286-FD-38
Love, M., 442-STR-17
Love, N., 317-TES-4
Lovejoy, A., 58-STR-1, 184-STR-6
Lovett, J., 582-PC-25
Lowe, K., 330-AA-6, 348-FD-42, 397-AA-7, 463-AMT-18, 529-AMT-22/APA-48, 570-APA-55
Lowry, M., 491-IS-22, 549-IS-25
Lozier, M., 43-ISC-UG
Lu, P., 419-GNC-32
Lu, T., 49-PC-1, 305-MST-9, 413-FD-48
Lua, J., 59-STR-2, 168-MAT-4, 383-STR-13, 441-STR-16, 561-STR-20, 585-STR-22
Lubarksky, E., 582-PC-25
Lübker, J., 38-IS-1/GNC-4
Lucena Kreppel Paes, P., 215-FD-32, 413-FD-48, 537-FD-65

AUTHOR AND SESSION CHAIR INDEX

Lucht, R., 49-PC-1, 51-PDL-3, 178-PDL-9, 270-AMT-11, 435-PC-18
Lucido, N., 141-APA-14, 283-FD-35, 536-FD-64
Lueckhof, J., 398-ACD-9
Lugo, R., 160-GNC-12
Lui, H., 352-FD-46
Luke, E., 90-FD-15, 542-FD-70
Lum, C., 207-EDU-3, 250-UAS-1, 564-UAS-11
Luna, K., 347-FD-41
Luo, C., 387-UAS-5
Luo, H., 286-FD-38, 563-TP-14
Luo, S., 82-APA-12/FD-10/PDL-5
Luong, M., 555-PC-22
Lupp, C., 302-MDO-11/SD-11
Luspay, T., 461-AFM-16
Lussier, M., 446-UAS-7/ACD-16
Lutz, T., 571-APA-56
Lv, Y., 413-FD-48, 542-FD-70
Lyding, J., 185-SUR-2
Lynch, C., 564-UAS-11
Lynch, K., 465-APA-43/FD-54/SD-19/AMT-20, 486-GT-8
Lynch, S., 295-GTE-4
Lynde, M., 301-MDO-10/APA-31, 546-GT-9, 568-APA-53
Lyrintzis, A., 69-AA-2, 154-FD-23
Ma, J., 138-AMT-6/PC-7
Ma, L., 153-FD-22, 235-MST-8, 252-WE-4
Ma, R., 536-FD-64
Ma, T., 108-MST-4, 566-ACD-14/UAS-13
Ma, X., 59-STR-2
Maadani, M., 288-GNC-22
Mabe, J., 146-APA-19/AS-3
Mabson, G., 247-STR-8, 441-STR-16
Mabuchi, H., 228-IS-12/GNC-20
Macart, J., 500-PC-19
Macchiarella, N., 369-MST-10, 494-MST-15/SOF-10
Machala, D., 333-AFM-12
Macheret, S., 238-PDL-10, 563-TP-14
Madavan, N., 62-TF-1
Madden, M., 120-SOF-1
Madenci, E., 246-STR-7
Mader, C., 46-MDO-2, 169-MDO-4/APA-20, 301-MDO-10/APA-31, 579-MDO-22
Madni, A., 57-SE-1
Madnia, C., 349-FD-43
Madras Sethuraman, Y., 539-FD-67
Madsen, H., 190-WE-3
Maeda, S., 402-AMT-15
Magee, T., 146-APA-19/AS-3
Magill, M., 94-GNC-5
Magin, T., 373-PC-16/PGC-7
Magleby, S., 116-SCS-2/AS-2
Magnusson, E., 70-ACD-2
Mahadevan, N., 491-IS-22
Mahadevan, S., 109-NDA-2, 371-NDA-7
Mahaffey, J., 528-AMT-21
Mahamud, R., 178-PDL-9
Mahesh, K., 212-FD-29, 536-FD-64
Mahmood, O., 145-APA-18
Mahmoudi, R., 367-MDO-14
Mahmoudian, N., 481-GNC-34
Maiaru, M., 104-MAT-3, 299-MAT-8
Maier, W., 197-ACD-6
Mailänder, S., 529-AMT-22/APA-48
Maines, B., 15-APA-3
Mainini, L., 169-MDO-4/APA-20, 550-MDO-20
Maiti, D., 243-SD-10
Maity, A., 94-GNC-5, 289-GNC-23
Majchrowicz, A., 36-HIS-1
Majed, A., 118-SD-5
Majji, M., 292-GNC-38, 484-GNC-37
Majunath, P., 397-AA-7
Makeev, A., 562-STR-21
Makhija, D., 367-MDO-14
Maki, K., 301-MDO-10/APA-31
Makida, M., 443-TES-5
Makihara, K., 55-SD-2
Makino, Y., 80-APA-10, 473-FD-55
Makkapati, V., 100-IS-4
Maldonado, D., 76-APA-6
Malekpour, M., 20-CPS-1
Malik, M., 25-FD-4, 89-FD-14
Malik, S., 497-MVCE-4
Mall, K., 72-AFM-4
Malla, R., 381-SD-13
Mallik, W., 380-SD-12
Mallinak, R., 210-FD-27
Malyuta, D., 219-GNC-17
Malz, S., 104-MAT-3
Mamanakis, M., 291-GNC-25
Mancini, S., 466-APA-44
Mancuso, R., 313-SE-5, 404-APA-38
Mandal, D., 206-DS-2
Mandell, M., 83-ASE-2
Manecy, A., 32-GNC-2
Mangano, M., 169-MDO-4/APA-20
Mangortey, E., 382-SEN-3
Manias, D., 434-PC-17
Manickam, S., 288-GNC-22
Manish, R., 484-GNC-37
Mann, T., 122-STR-4, 180-SCS-3
Mannucci, T., 40-IS-3
Manosh Kumar, R., 556-PC-23/AMT-23
Mantegazza, P., 504-SD-20
Manyam, S., 100-IS-4, 218-GNC-16
Maqsood, A., 405-APA-39
Marayikkottu Vijayan, A., 153-FD-22
Marcellan, A., 421-GTE-6
Marchese, A., 12-AMT-2
Marcon, J., 432-MVCE-2
Marcos, A., 157-GNC-9
Marcus, C., 506-SEN-4
Mardanpour, P., 58-STR-1, 134-ACD-3
Mares, E., 442-STR-17
Mariani, S., 381-SD-13
Mariappan, A., 279-EXPL-3
Marinis, R., 185-SUR-2
Marino, M., 350-FD-44, 381-SD-13, 528-AMT-21
Mario, C., 292-GNC-38
Mariotto, P., 113-PDL-6, 189-TP-4
Mark, A., 288-GNC-22
Marks, C., 151-FD-20
Marley, C., 37-HSABP-1, 360-HSABP-6
Marples, B., 16-APA-4/FD-1/PDL-1
Marquart, J., 574-FD-75
Marques, A., 109-NDA-2, 304-MDO-13/NDA-6/STR-10
Marques, F., 147-DS-1, 471-DS-6, 489-HIS-4
Marques, S., 232-MDO-7/APA-26, 580-MVCE-7
Marren, D., 222-GT-3
Marshall, P., 53-SCS-1
Marten, D., 389-WE-7, 448-WE-8, 514-WE-9
Marten, S., 107-MST-3/SOF-8
Martin, A., 310-PDL-13, 318-TP-6
Martin, C., 98-HIS-2
Martin, J., 335-APA-32
Martin, M., 151-FD-20, 386-TP-8
Martin, N., 152-FD-21
Martin, P., 281-FD-33, 464-AMT-19/APA-42
Martin, R., 165-IS-7, 491-IS-22
Martin, S., 163-GTE-2
Martinelli, L., 76-APA-6
Martinez-Cava, A., 211-FD-28
Martinez-Ibarra, A., 273-APA-29
Martins, B., 440-SD-18
Martins, J., 46-MDO-2, 169-MDO-4/APA-20, 232-MDO-7/APA-26, 301-MDO-10/APA-31, 427-MDO-17/NDA-8/STR-15, 579-MDO-22
Martos, B., 9-AFM-1, 136-AFM-5, 333-AFM-12
Maruszewski, J., 574-FD-75
Mary, I., 544-FD-72
Marzanek, M., 541-FD-69
Marzocca, P., 117-SD-4, 181-SD-7, 381-SD-13, 439-SD-17, 526-ACD-12/UAS-12, 528-AMT-21
Marzouk, Y., 174-NDA-4
Masarati, P., 343-DS-4
Mason, B., 59-STR-2, 171-MDO-6/NDA-3/STR-5, 561-STR-20
Mason, F., 91-FD-16
Mason, M., 27-FD-6
Massa, C., 182-SE-3
Massa, L., 89-FD-14, 239-PDL-11
Massey, K., 504-SD-20
Massey, S., 46-MDO-2, 107-MST-3/SOF-8
Masters, J., 432-MVCE-2, 580-MVCE-7
Mastorakos, E., 197-ACD-6, 358-GTE-5, 435-PC-18, 555-PC-22, 556-PC-23/AMT-23
Masud, J., 13-APA-1, 145-APA-18, 203-APA-24, 368-MDO-15/APA-37, 487-GTE-7, 488-GTE-8, 569-APA-54
Masuda, K., 94-GNC-5, 482-GNC-35
Matalon, M., 49-PC-1
Matayoshi, N., 410-DA-2
Matheswaran, V., 321-WE-6
Matheus, A., 172-MST-5
Mathews, G., 403-AMT-16
Mathis, A., 465-APA-43/FD-54/SD-19/AMT-20
Matlik, J., 316-STR-12/MAT-10, 342-DGE-3
Matlis, E., 480-FD-63
Matlock, T., 309-PDL-12
Matsuno, Y., 410-DA-2, 418-GNC-31
Matsuo, A., 203-APA-24
Matsuo, Y., 514-WE-9
Matsuoka, K., 373-PC-16/PGC-7
Matsushiam, T., 208-EXPL-2
Matsushita, M., 241-SCS-4
Matsuyama, S., 538-FD-66
Matthias, P., 309-PDL-12
Matthies, L., 353-GNC-26
Matuk, J., 231-MAT-6/NDA-5
Matusik, K., 556-PC-23/AMT-23
Matyas, D., 239-PDL-11
Maul, W., 491-IS-22
Maupin, G., 148-EDU-2
Mavriplis, D., 30-FD-9, 79-APA-9, 169-MDO-4/APA-20, 215-FD-32, 414-FD-49, 514-WE-9
Mavris, D., 39-IS-2, 40-IS-3, 46-MDO-2, 95-GNC-6, 105-MDO-3, 119-SE-2, 120-SOF-1, 124-TF-2, 342-DGE-3, 344-EXPL-4, 368-MDO-15/APA-37, 371-NDA-7, 382-SEN-3, 388-UAS-6/IS-19/SOF-5, 399-ACD-10, 447-UAS-8/IS-21/SOF-6, 525-AA-9, 548-ICC-2, 560-SEN-5
Maxwell, J., 83-ASE-2
May, G., 93-FD-18
May, M., 315-STR-11
Maya, P., 309-PDL-12
Mayalu, A., 99-ICC-1/SEN-1
Mayo, D., 330-AA-6
Mazumder, M., 141-APA-14
McCabe, J., 219-GNC-17
McCandless, W., 313-SE-5
McCarthy, D., 507-STR-18
McClain, M., 103-MAT-2
McClelland, H., 401-AFM-14
McCloud, P., 431-MVCE-1
McClure, N., 197-ACD-6
McClure, P., 406-APA-40
McCollough, J., 83-ASE-2
McCormick, D., 295-GTE-4
McCrink, M., 29-FD-8, 353-GNC-26
McDaniel, D., 202-APA-23
McDaniel, R., 332-AFM-11
McDonald, R., 460-ACD-11
McDougal, M., 59-STR-2
McElroy, M., 585-STR-22
McEver, J., 57-SE-1, 409-CASE-2, 451-CASE-3, 548-ICC-2
McFadden, G., 231-MAT-6/NDA-5
McFarland, M., 33-GNC-3, 419-GNC-32, 577-GNC-41
McGann, B., 422-HSABP-7
McGilvray, M., 125-TP-2, 385-TP-7, 422-HSABP-7, 444-TP-9, 486-GT-8
McGowan, D., 116-SCS-2/AS-2
McGrath, B., 145-APA-18, 203-APA-24
McGuire, S., 444-TP-9, 511-TP-13/PDL-16
McHenry, N., 430-MST-14
McKeen, P., 182-SE-3
McKeon, B., 29-FD-8, 536-FD-64
McKiernan, G., 27-FD-6, 480-FD-63
McKinnis, A., 387-UAS-5
McLaughlin, D., 195-AA-4, 330-AA-6, 510-TP-12
McLaughlin, T., 15-APA-3, 77-APA-7, 145-APA-18
McLean, C., 55-SD-2
McManus, K., 35-GTE-1
McMillin, S., 14-APA-2, 198-AFM-7, 532-APA-51
McNally, P., 250-UAS-1
McNamara, J., 140-APA-13/FD-19/SD-6/AMT-8, 181-SD-7, 277-DS-3, 407-APA-41/FD-47/SD-15/AMT-17, 477-FD-59
McPherson, B., 116-SCS-2/AS-2
McQuellin, L., 465-APA-43/FD-54/SD-19/AMT-20
McQuien, J., 384-STR-14, 585-STR-22
McQuigg, T., 53-SCS-1
McSwain, R., 250-UAS-1
Md Raihan, R., 102-IS-6
Meadows, J., 557-PGC-12
Meah, N., 431-MVCE-1
Mears, L., 28-FD-7
Meckstroth, C., 553-MVCE-6
Meddaikar, Y., 461-AFM-16
Medeiros, R., 469-APA-47
Medina, A., 24-FD-3, 212-FD-29, 214-FD-31, 541-FD-69, 573-FD-74
Medina, K., 503-SCS-8
Meehan, M., 87-FD-12
Meeroff, J., 532-APA-51, 570-APA-55
Meheut, M., 142-APA-15
Mehiel, E., 119-SE-2, 495-MST-16
Meholic, G., 52-PGC-2/HSABP-2
Mehta, N., 292-GNC-38, 444-TP-9
Meier, W., 49-PC-1, 176-PC-9
Meindl, A., 374-PDL-15/AMT-14
Meinke, M., 514-WE-9
Melab, N., 493-MDO-18
Melnyk, R., 446-UAS-7/ACD-16
Memon, M., 241-SCS-4
Mendez, C., 380-SD-12, 580-MVCE-7
Mendez, I., 525-AA-9
Mendez, J., 164-HSABP-4, 543-FD-71
Mendoza, J., 266-AA-5/TF-5
Meneveau, C., 211-FD-28
Meng, X., 17-APA-5/FD-2/PDL-2
Meng, Y., 381-SD-13
Menge, P., 15-APA-3
Mengshoel, O., 165-IS-7, 364-IS-17
Menhorn, F., 174-NDA-4
Menon, A., 31-GNC-1, 576-GNC-40/IS-26
Merabet, R., 448-WE-8
Meriam, S., 148-EDU-2
Merienne, M., 11-AMT-1
Meritt, R., 464-AMT-19/APA-42
Merkes, S., 560-SEN-5, 584-SEN-6
Merkl, A., 198-AFM-7
Merkle, C., 500-PC-19
Mern, J., 296-IS-14
Merret, J., 527-ACD-13
Merrett, C., 122-STR-4, 315-STR-11
Mersch, J., 561-STR-20
Mesalles Ripoll, P., 469-APA-47
Mesbahi, M., 219-GNC-17, 504-SD-20
Mesh, M., 407-APA-41/FD-47/SD-15/AMT-17
Mesmer, B., 57-SE-1, 137-AFM-6, 182-SE-3, 244-SE-4, 519-MDO-19/CASE-4
Mestreau, E., 431-MVCE-1
Meszaros, E., 549-IS-25
Meyer, M., 301-MDO-10/APA-31
Meyer, S., 148-EDU-2
Meyer, T., 138-AMT-6/PC-7, 270-AMT-11, 402-AMT-15, 463-AMT-18, 528-AMT-21
Meyers, J., 355-GNC-28, 511-TP-13/PDL-16
Mezic, I., 29-FD-8
Mian, Z., 388-UAS-6/IS-19/SOF-5, 566-ACD-14/UAS-13
Michael, J., 200-AMT-9/PC-10, 307-PC-14, 374-PDL-15/AMT-14, 403-AMT-16
Michaels, D., 501-PC-20
Michal, T., 497-MVCE-4, 580-MVCE-7
Michelle, O., 397-AA-7, 435-PC-18

AUTHOR AND SESSION CHAIR INDEX

Micka, D., 402-AMT-15, 582-PC-25
Mickels, C., 485-GT-7
Midya, S., 82-APA-12/FD-10/PDL-5
Mifsud, T., 123-SUR-1
Miglani, J., 461-AFM-16
Mignolet, M., 109-NDA-2, 242-SD-9, 380-SD-12, 439-SD-17, 469-APA-47
Miki, H., 546-GT-9
Mikoshiba, K., 115-PGC-3/HSABP-3
Miles, R., 51-PDL-3, 114-PDL-7, 178-PDL-9, 270-AMT-11, 334-AMT-13, 374-PDL-15/AMT-14, 511-TP-13/PDL-16
Miletovic, I., 47-MST-1
Milgram, J., 271-APA-27
Milholen, W., 248-TF-4
Miller, B., 423-INPSI-2
Miller, C., 288-GNC-22, 507-STR-18
Miller, D., 15-APA-3, 39-IS-2, 77-APA-7, 102-IS-6
Miller, E., 58-STR-1
Miller, F., 186-TES-3, 443-TES-5
Miller, J., 76-APA-6, 199-AFM-8
Miller, L., 33-GNC-3, 321-WE-6
Miller, M., 313-SE-5
Miller, N., 473-FD-55
Miller, R., 375-PGC-8
Miller, S., 59-STR-2, 184-STR-6
Miller, T., 51-PDL-3, 106-MST-2, 187-TF-3, 492-MAT-13, 569-APA-54
Miller, W., 8-ACD-1
Millette, J., 404-APA-38
Mills, D., 506-SEN-4, 529-AMT-22/APA-48
Milosavljevic, I., 135-ACD-4
Milward, T., 382-SEN-3
Min, J., 384-STR-14
Minamoto, Y., 434-PC-17
Minera, S., 121-STR-3, 441-STR-16, 442-STR-17
Minesi, N., 113-PDL-6
Minesugi, K., 53-SCS-1
Minorikawa, G., 460-ACD-11
Minton, T., 318-TP-6
Minwalla, C., 584-SEN-6
Mir, I., 405-APA-39
Mirhoseini, M., 286-FD-38
Miró Miró, F., 152-FD-21
Mirza, A., 96-GNC-7
Mishra, A., 368-MDO-15/APA-37
Mishra, S., 45-MDO-1
Misra, A., 117-SD-4
Misra, G., 495-MST-16
Mitchel, C., 366-MAT-11
Mitchell, D., 136-AFM-5
Mitra, B., 289-GNC-23
Mittal, R., 211-FD-28
Miura, S., 558-SCS-9
Miyai, S., 463-AMT-18
Miyashita, T., 243-SD-10, 558-SCS-9
Miyata, K., 510-TP-12
Miyazaki, Y., 379-SCS-6
Miyazato, Y., 402-AMT-15
Mizoguchi, M., 374-PDL-15/AMT-14
Mizukaki, T., 529-AMT-22/APA-48
Mizuno, T., 314-SEN-2
Mkhoyan, T., 172-MST-5
Mo, H., 289-GNC-23
Moallemi, M., 370-MST-11
Mobrem, M., 241-SCS-4
Mochida, S., 460-ACD-11
Modarres, R., 206-DS-2
Moeller, T., 310-PDL-13
Moffitt, B., 363-INPSI-1
Moghadam, M., 39-IS-2
Moghadam, R., 545-GNC-39/IS-24
Mohaghegh, M., 442-STR-17
Mohamed, A., 214-FD-31, 350-FD-44
Mohan, R., 199-AFM-8
Mohr, J., 12-AMT-2, 186-TES-3
Mokhtarpoor, R., 88-FD-13, 389-WE-7, 536-FD-64
Moleski, T., 250-UAS-1
Molina, E., 88-FD-13
Molina-Cristobal, A., 134-ACD-3, 244-SE-4
Molinari, G., 205-AS-4, 302-MDO-11/SD-11
Molinaro, N., 464-AMT-19/APA-42
Molitor, M., 118-SD-5, 508-STR-19
Mollenhauer, D., 585-STR-22
Moncayo, H., 102-IS-6, 241-SCS-4, 320-UAS-4
Mondal, B., 42-ISC-TM
Mondal, K., 355-GNC-28
Monegato, G., 568-APA-53
Mongin, M., 531-APA-50
Monheim, S., 428-MST-12/SOF-9
Monner, H., 470-AS-8
Montalvo, C., 279-EXPL-3
Montero Villar, G., 169-MDO-4/APA-20, 459-AA-8
Monterroza, F., 292-GNC-38
Montgomery, K., 420-GRE-1
Montgomery, Z., 505-SD-21
Mooij, E., 33-GNC-3, 161-GNC-13, 357-GNC-30, 419-GNC-32, 481-GNC-34
Moon, J., 298-MAT-7
Moon, S., 101-IS-5
Moore, J., 134-ACD-3
Moore, K., 303-MDO-12, 316-STR-12/MAT-10, 579-MDO-22
Moorman, A., 430-MST-14
Moorthamers, B., 13-APA-1
Moosmann, K., 487-GTE-7
Morad, S., 208-EXPL-2
Morales, A., 434-PC-17
Morales, K., 96-GNC-7
Morales, M., 199-AFM-8
Morales, R., 564-UAS-11
Morales Tirado, E., 232-MDO-7/APA-26
Moralev, I., 17-APA-5/FD-2/PDL-2
Morawietz, S., 382-SEN-3
Morel, V., 563-TP-14
Moreno, C., 320-UAS-4
Moreno, S., 33-GNC-3
Moreno-Ramos, R., 380-SD-12
Moretti, R., 386-TP-8, 510-TP-12
Morgan, N., 156-FD-25, 351-FD-45
Morgan, R., 577-GNC-41
Morgansen, K., 353-GNC-26
Mori, K., 216-GNC-14, 415-FD-50
Mori, O., 241-SCS-4
Mori, R., 341-DA-1
Moriche, M., 155-FD-24
Morikawa, M., 208-EXPL-2
Morimoto, T., 492-MAT-13
Morita, M., 445-TP-10
Morooka, Y., 341-DA-1
Morris, A., 377-SAT-1
Morris, P., 195-AA-4, 330-AA-6
Mortari, D., 430-MST-14
Mortazawy, S., 539-FD-67
Morton, S., 202-APA-23
Mor-Yossef, Y., 287-FD-39
Moschetta, J., 137-AFM-6, 335-APA-32
Moseley, R., 314-SEN-2
Moser, R., 26-FD-5
Moszczynski, G., 9-AFM-1, 108-MST-4
Motohashi, K., 500-PC-19
Mottershead, J., 439-SD-17
Motz, M., 16-APA-4/FD-1/PDL-1
Moura, F., 554-NDA-12
Moureau, V., 178-PDL-9, 537-FD-65
Mourelatos, Z., 109-NDA-2
Mourning, C., 234-MST-7
Moushegian, A., 155-FD-24
Moustafa, M., 96-GNC-7
Moxey, D., 352-FD-46, 432-MVCE-2
Moya, N., 221-GNC-19
Moyes, A., 347-FD-41, 480-FD-63
Mrema, H., 360-HSABP-6
Muehlberg, M., 46-MDO-2, 120-SOF-1
Mueller, J., 514-WE-9
Mueller, M., 176-PC-9, 237-PC-12, 500-PC-19
Muesing, J., 549-IS-25
Muffatti, A., 309-PDL-12
Mufti, B., 203-APA-24, 569-APA-54
Muir, M., 408-AS-7
Mukhopadhaya, J., 169-MDO-4/APA-20
Mukhopadhyay, V., 134-ACD-3
Mulani, S., 109-NDA-2, 275-AS-5, 304-MDO-13/NDA-6/STR-10
Mulder, M., 47-MST-1, 96-GNC-7, 172-MST-5, 305-MST-9, 410-DA-2
Mulder, T., 96-GNC-7
Mull, K., 8-ACD-1
Mullen, C., 347-FD-41
Mulleners, K., 81-APA-11, 405-APA-39
Müller, D., 494-MST-15/SOF-10
Mumaw, R., 173-MST-6
Mumm, N., 410-DA-2, 491-IS-22
Munafò, A., 310-PDL-13
Munakata, T., 164-HSABP-4
Munekata, M., 11-AMT-1
Munguia, B., 169-MDO-4/APA-20
Munipalli, R., 240-PGC-5
Munk, D., 551-MDO-21/NDA-11
Munk, M., 160-GNC-12
Munoz, F., 152-FD-21, 210-FD-27
Muñoz, F., 480-FD-63
Munson, M., 87-FD-12, 283-FD-35
Munz, K., 272-APA-28
Mura, G., 244-SE-4
Murakami, D., 499-OPS-1, 532-APA-51
Murakami, S., 372-PC-15
Muraoka, K., 331-ACD-8
Murayama, M., 336-APA-33, 466-APA-44, 544-FD-72
Murman, S., 476-FD-58, 497-MVCE-4, 574-FD-75
Murphey, T., 438-SCS-7
Murphy, A., 118-SD-5
Murphy, J., 120-SOF-1, 183-SOF-3, 245-SOF-4, 428-MST-12/SOF-9, 451-CASE-3
Murphy, P., 14-APA-2, 173-MST-6, 198-AFM-7, 234-MST-7
Murphy, R., 408-AS-7
Murray, A., 337-APA-34, 407-APA-41/FD-47/SD-15/AMT-17
Murray, V., 318-TP-6
Murri, D., 199-AFM-8
Murthy, H., 526-ACD-12/UAS-12
Murthy, R., 380-SD-12
Murugesan Pazhani, K., 477-FD-59
Muscarello, V., 343-DS-4
Muscatello, M., 344-EXPL-4
Muse, J., 220-GNC-18/IS-10, 356-GNC-29/IS-16, 545-GNC-39/IS-24, 576-GNC-40/IS-26
Musgrave, P., 340-AS-6
Musta, M., 201-APA-21/FD-26/SD-8/AMT-10
Mustafa, M., 463-AMT-18
Mute, D., 95-GNC-6
Myong, R., 417-FD-53
Nadeau, J., 279-EXPL-3, 430-MST-14
Nag, S., 499-OPS-1
Nagai, H., 10-AFM-2, 477-FD-59, 540-FD-68
Nagai, S., 32-GNC-2, 107-MST-3/SOF-8
Nagaike, H., 24-FD-3
Nagapetyan, H., 572-FD-73
Nagata, K., 539-FD-67
Nagata, T., 539-FD-67
Nagata, Y., 463-AMT-18
Nagendra, S., 544-FD-72
Nagi, I., 165-IS-7
Naglak, J., 481-GNC-34
Naguib, A., 155-FD-24, 337-APA-34, 540-FD-68
Naik, K., 149-EXPL-1
Naik, R., 492-MAT-13, 508-STR-19
Naim, M., 283-FD-35
Nair, A., 148-EDU-2
Nair, P., 72-AFM-4
Najafi, A., 383-STR-13
Najm, H., 174-NDA-4, 500-PC-19
Nakagawa, S., 577-GNC-41
Nakai, K., 177-PDL-8
Nakajima, T., 11-AMT-1
Nakakita, K., 11-AMT-1
Nakamura, K., 180-SCS-3
Nakamura, N., 180-SCS-3
Nakamura, T., 97-GNC-8
Nakano, A., 238-PDL-10
Nakao, S., 402-AMT-15
Nakles, M., 309-PDL-12
Nakod, P., 111-PC-5
Namilae, S., 366-MAT-11
Nanda, J., 39-IS-2, 102-IS-6
Nankai, K., 348-FD-42
Nanos, E., 514-WE-9
Naoumov, V., 207-EDU-3
Naples, A., 502-PGC-10
Naraghi, M., 298-MAT-7
Narayanam, G., 112-PC-6
Narayanan, V., 545-GNC-39/IS-24
Narayanaswamy, V., 28-FD-7, 465-APA-43/FD-54/SD-19/AMT-20
Narciso, R., 21-DE-1
Narducci, R., 144-APA-17
Nark, D., 525-AA-9
Narsipur, S., 29-FD-8
Naruta, A., 40-IS-3
Naseri, A., 41-ISC-MS
Nasser, J., 299-MAT-8
Nastasi, K., 506-SEN-4
Natarajan, S., 99-ICC-1/SEN-1
Naughton, J., 190-WE-3, 406-APA-40, 464-AMT-19/APA-42, 514-WE-9
Navarro-Tapia, D., 157-GNC-9
Naved, I., 125-TP-2, 444-TP-9, 486-GT-8
Nayagam, V., 175-PC-8
Nayani, S., 14-APA-2
Nayeri, C., 212-FD-29, 389-WE-7, 541-FD-69
Nazari, M., 158-GNC-10, 288-GNC-22
Nedunchezian, K., 266-AA-5/TF-5
Neely, A., 422-HSABP-7, 465-APA-43/FD-54/SD-19/AMT-20
Neet, M., 407-APA-41/FD-47/SD-15/AMT-17, 567-AMT-24/APA-52
Nelson, C., 82-APA-12/FD-10/PDL-5, 544-FD-72
Nemnem, A., 389-WE-7, 446-UAS-7/ACD-16
Neogi, N., 40-IS-3, 166-IS-8/SOF-2, 296-IS-14
Nepal, D., 246-STR-7
Nesbitt, E., 525-AA-9
Nesmith, A., 123-SUR-1
Nethary, D., 199-AFM-8
Neuhart, D., 25-FD-4
Neuhaus, J., 235-MST-8
Neupane, S., 35-GTE-1, 112-PC-6, 556-PC-23/AMT-23
Neven, H., 228-IS-12/GNC-20
Neves, F., 489-HIS-4
Neville, A., 211-FD-28
Neville, R., 58-STR-1
Newcomb, J., 388-UAS-6/IS-19/SOF-5
Newman, B., 577-GNC-41
Newnam, K., 339-APA-36/PDL-14
New-Tolley, M., 114-PDL-7
Newton, L., 43-ISC-UG
Nezampasandarbabi, F., 21-DE-1
Ng, W., 330-AA-6, 397-AA-7, 463-AMT-18
Ngo, A., 487-GTE-7
Ngo, C., 532-APA-51
Ngo, M., 246-STR-7
Nguyen, H., 502-PGC-10
Nguyen, K., 491-IS-22
Nguyen, M., 122-STR-4, 247-STR-8
Nguyen, N., 38-IS-1/GNC-4, 56-SD-3, 266-AA-5/TF-5, 356-GNC-29/IS-16, 505-SD-21
Nguyen, T., 171-MDO-6/NDA-3/STR-5, 500-PC-19
Ni, X., 299-MAT-8, 425-MAT-12
Nichols, J., 27-FD-6, 347-FD-41, 538-FD-66
Nichols, R., 338-APA-35
Nicholson, G., 89-FD-14, 210-FD-27
Nickerson, M., 466-APA-44
Nicola, R., 172-MST-5
Nicolosi, F., 70-ACD-2
Niedbalski, N., 125-TP-2
Nielsen, E., 426-MDO-16/SD-16
Nielsen, T., 360-HSABP-6
Niestroy, M., 77-APA-7, 227-IS-11

AUTHOR AND SESSION CHAIR INDEX

Nieto, J., 217-GNC-15
Niezgoda, B., 398-ACD-9
Niezgoda, S., 231-MAT-6/NDA-5
Nikaido, B., 160-GNC-12, 332-AFM-11
Nikishkov, Y., 562-STR-21
Nikodem, F., 494-MST-15/SOF-10
Nikolaev, A., 164-HSABP-4
Nikoueeyan, P., 464-AMT-19/APA-42
Nilsen, C., 148-EDU-2
Nilson, T., 199-AFM-8
Ning, A., 126-WE-2, 170-MDO-5, 303-MDO-12, 388-UAS-6/IS-19/SOF-5
Ning, X., 503-SCS-8
Ninnemann, E., 35-GTE-1, 112-PC-6, 556-PC-23/AMT-23
Nino, G., 16-APA-4/FD-1/PDL-1
Nishi, K., 180-SCS-3
Nishida, H., 177-PDL-8, 238-PDL-10
Nishikawa, H., 37-HSABP-1, 286-FD-38, 287-FD-39
Nishiwaki, S., 367-MDO-14
Nista, L., 373-PC-16/PGC-7, 557-PGC-12
Nitzsche, F., 147-DS-1
Niu, M., 228-IS-12/GNC-20
Noetscher, G., 274-APA-30
Noevere, A., 122-STR-4
Noguchi, A., 539-FD-67
Nolan, D., 431-MVCE-1
Nolte, F., 470-AS-8
Nomura, M., 10-AFM-2
Nonaka, S., 80-APA-10
Nonomura, T., 11-AMT-1, 24-FD-3, 87-FD-12, 348-FD-42, 539-FD-67
Noraas, R., 427-MDO-17/NDA-8/STR-15
Norato, J., 579-MDO-22
Nordeen, C., 436-PGC-9
Nordstrom, J., 30-FD-9
Noriega, A., 333-AFM-12
Norman, T., 534-DS-7
Norrison, D., 26-FD-5
North, D., 527-ACD-13
Norwood, D., 507-STR-18
Nosir, S., 104-MAT-3
Notter, S., 199-AFM-8, 355-GNC-28
Nuber, B., 135-ACD-4
Nucci, M., 146-APA-19/AS-3
Nudds, R., 405-APA-39
Numa, N., 51-PDL-3, 178-PDL-9
Numata, D., 11-AMT-1
Nunno, A., 500-PC-19
Nuzum, M., 569-APA-54
O'Brien, T., 164-HSABP-4
O'Brien, W., 348-FD-42
O'Connor, J., 110-PC-4, 307-PC-14
O'Donnell, M., 442-STR-17
O'Farrell, C., 10-AFM-2, 407-APA-41/FD-47/SD-15/AMT-17
O'Hara, R., 103-MAT-2
O'Keefe, J., 97-GNC-8
O'Rourke, C., 408-AS-7, 470-AS-8
Oates, W., 506-SEN-4
Obal, M., 377-SAT-1
Obara, T., 375-PGC-8
Obenchain, M., 55-SD-2
Oberleithner, K., 375-PGC-8
Ocaña Losada, S., 149-EXPL-1
Ochoa, C., 227-IS-11
Ochs, S., 363-INPSI-1
Odaguil, F., 479-FD-62
Odegard, G., 299-MAT-8, 300-MAT-9/MDO-9/STR-9
Oefelein, J., 154-FD-23, 174-NDA-4, 176-PC-9, 372-PC-15
Öfele, R., 485-GT-7
Ogami, Y., 459-AA-8
Ogawa, H., 309-PDL-12
Ogawa, K., 558-SCS-9
Ogawa, T., 539-FD-67
Ogunsina, K., 102-IS-6
Oguz, S., 494-MST-15/SOF-10
Oh, H., 101-IS-5
Ohanian, O., 529-AMT-22/APA-48
Ohmichi, Y., 469-APA-47
Ohnishi, N., 238-PDL-10, 309-PDL-12, 349-FD-43
Ohtani, K., 539-FD-67
Ohya, Y., 321-WE-6
Oka, K., 341-DA-1
Okai, K., 186-TES-3, 443-TES-5
Okamoto, A., 385-TP-7
Okamoto, K., 445-TP-10
Okochi, M., 11-AMT-1
Okolo, W., 332-AFM-11
Okubo, A., 354-GNC-27
Okuizumi, N., 241-SCS-4
Okuma, M., 241-SCS-4
Ol, M., 214-FD-31, 272-APA-28
Oland, E., 355-GNC-28
Olichevis Halila, G., 232-MDO-7/APA-26
Olivares, G., 508-STR-19
Olivari, M., 305-MST-9, 495-MST-16
Oliveira, W., 108-MST-4
Oliver, T., 26-FD-5
Olivieri, F., 504-SD-20
Olivry, J., 145-APA-18
Ollivier Gooch, C., 336-APA-33, 497-MVCE-4, 543-FD-71
Olson, B., 76-APA-6
Olson, E., 134-ACD-3
Olusegun, O., 427-MDO-17/NDA-8/STR-15
Omaly, P., 188-TP-3
Ombrello, T., 52-PGC-2/HSABP-2, 113-PDL-6, 114-PDL-7, 240-PGC-5, 339-APA-36/PDL-14, 360-HSABP-6, 422-HSABP-7, 435-PC-18, 581-PC-24
Omotani, H., 529-AMT-22/APA-48
Omprakas, A., 115-PGC-3/HSABP-3
Ondra, V., 205-AS-4, 340-AS-6
Ondrus, V., 190-WE-3
ONeill, L., 50-PC-2/PGC-1
Ong, W., 526-ACD-12/UAS-12
Opacich, K., 358-GTE-5
Opgenoord, M., 109-NDA-2
Oppenheimer, M., 159-GNC-11, 217-GNC-15, 288-GNC-22, 418-GNC-31, 482-GNC-35
Oran, E., 284-FD-36, 311-PGC-6, 542-FD-70
Ordoukhanian, E., 57-SE-1
Orel, I., 178-PDL-9
Organski, L., 485-GT-7
Orisamolu, I., 62-TF-1
Orkwis, P., 475-FD-57, 542-FD-70
Orosco, J., 318-TP-6
Oroz, J., 197-ACD-6
Orr, M., 134-ACD-3
Orsino, S., 111-PC-5
Ort, D., 567-AMT-24/APA-52
Orth, M., 434-PC-17
Ortiz-Melendez, H., 79-APA-9
Osborne, R., 113-PDL-6
Oshima, N., 372-PC-15
Oshio, Y., 238-PDL-10, 309-PDL-12
Ossmann, D., 38-IS-1/GNC-4, 461-AFM-16
Ostergaard, E., 171-MDO-6/NDA-3/STR-5
Ostermann, F., 212-FD-29
Osteroos, R., 15-APA-3
Otomo, S., 346-FD-40
Otsuka, K., 55-SD-2
Otsuki, M., 510-TP-12
Otto, C., 212-FD-29
Owens, L., 415-FD-50
Owiti, B., 444-TP-9
Oyama, A., 13-APA-1, 473-FD-55
Oza, N., 39-IS-2
Ozawa, K., 375-PGC-8
Ozawa, S., 180-SCS-3
Ozawa, Y., 87-FD-12
Özçakmak, Ö., 190-WE-3
Ozdemir, H., 190-WE-3
Ozdemir, V., 116-SCS-2/AS-2
Ozden Yenigun, E., 103-MAT-2
Özgen, G., 118-SD-5
Ozgur, I., 388-UAS-6/IS-19/SOF-5
Ozoroski, T., 134-ACD-3
Ozturk, A., 369-MST-10
Ozyoruk, Y., 435-PC-18
P. Carvalho Chanel, C., 548-ICC-2
Pablo Quevedo, F., 248-TF-4
Pace, F., 164-HSABP-4
Pachter, M., 125-TP-2
Padilla, R., 204-APA-25
Padmanabhan, S., 91-FD-16
Padthe, A., 206-DS-2
Padway, E., 169-MDO-4/APA-20
Pagani, A., 440-SD-18, 441-STR-16
Page, B., 481-GNC-34
Pais, S., 208-EXPL-2
Pak, C., 440-SD-18
Palacios, J., 272-APA-28, 510-TP-12
Palacios, R., 54-SD-1, 242-SD-9, 302-MDO-11/SD-11, 505-SD-21
Palar, P., 126-WE-2, 550-MDO-20
Palardy-Sim, M., 470-AS-8
Palazotto, A., 121-STR-3, 125-TP-2, 184-STR-6, 185-SUR-2, 316-STR-12/MAT-10
Paley, D., 92-FD-17, 297-IS-15
Palharini, R., 530-APA-49
Palma, G., 244-SE-4
Palmer, A., 404-APA-38
Pamadi, K., 577-GNC-41
Pan, T., 189-TP-4, 563-TP-14
Pan, W., 95-GNC-6
Panagiotopoulos, D., 109-NDA-2
Panagou, D., 159-GNC-11
Panda, J., 571-APA-56
Pandya, M., 575-FD-76
Pandya, S., 143-APA-16
Panesi, M., 188-TP-3, 249-TP-5, 310-PDL-13, 444-TP-9
Pang, J., 508-STR-19
Paniagua, G., 211-FD-28, 422-HSABP-7, 464-AMT-19/APA-42, 557-PGC-12
Pankonien, A., 367-MDO-14, 580-MVCE-7
Pankow, M., 312-SCS-5
Pannocchia, G., 353-GNC-26
Pant, T., 306-PC-13, 372-PC-15
Panta, A., 350-FD-44
Pantano, C., 154-FD-23, 310-PDL-13
Pao, L., 448-WE-8
Paolillo, G., 75-AMT-5
Papadimitriou, D., 109-NDA-2
Papamoschou, D., 330-AA-6
Papila, M., 441-STR-16
Papon, E., 103-MAT-2
Paquin, L., 463-AMT-18
Paradis, C., 183-SOF-3
Paradiso, J., 116-SCS-2/AS-2, 208-EXPL-2
Parajuli, P., 138-AMT-6/PC-7, 581-PC-24
Paredes, P., 210-FD-27, 282-FD-34
Parent, B., 215-FD-32
Parenteau, M., 530-APA-49
Paris, S., 486-GT-8
Parish, J., 107-MST-3/SOF-8
Park, J., 242-SD-9, 585-STR-22
Park, M., 101-IS-5, 432-MVCE-2, 497-MVCE-4
Park, S., 101-IS-5, 112-PC-6, 335-APA-32
Park, Y., 101-IS-5, 165-IS-7
Parker, P., 162-GT-2, 467-APA-45, 546-GT-9
Parque, V., 243-SD-10, 558-SCS-9
Paryz, R., 293-GT-5
Parziale, N., 463-AMT-18, 567-AMT-24/APA-52
Paschal, T., 138-AMT-6/PC-7, 581-PC-24
Paschereit, C., 115-PGC-3/HSABP-3, 212-FD-29, 240-PGC-5, 311-PGC-6, 375-PGC-8, 389-WE-7, 448-WE-8, 502-PGC-10, 514-WE-9, 541-FD-69
Pascioni, K., 266-AA-5/TF-5
Pasiliao, C., 407-APA-41/FD-47/SD-15/AMT-17
Pass, J., 377-SAT-1
Pastrana, F., 279-EXPL-3, 430-MST-14
Patana-anake, T., 250-UAS-1
Patel, A., 239-PDL-11
Patel, K., 370-MST-11
Patel, R., 250-UAS-1
Patel, V., 119-SE-2
Pathania, R., 555-PC-22
Patley, A., 289-GNC-23
Patnaik, K., 354-GNC-27
Patni, M., 441-STR-16, 442-STR-17
Patrikar, J., 100-IS-4
Patrone, P., 231-MAT-6/NDA-5
Patterson, A., 365-IS-18
Patterson, M., 124-TF-2, 248-TF-4, 266-AA-5/TF-5, 309-PDL-12
Patterson, R., 427-MDO-17/NDA-8/STR-15
Patureau De Mirand, A., 170-MDO-5
Paul, R., 9-AFM-1
Paulino, J., 95-GNC-6
Paulson, E., 436-PGC-9
Paulson, J., 467-APA-45
Paunicka, J., 183-SOF-3
Pauser, C., 96-GNC-7
Pavuluri, S., 149-EXPL-1
Pawlowski, B., 284-FD-36
Paxson, D., 179-PGC-4, 240-PGC-5
Paxton, B., 35-GTE-1, 176-PC-9, 403-AMT-16
Payan, A., 39-IS-2, 120-SOF-1, 447-UAS-8/IS-21/SOF-6
Payne, B., 574-FD-75
Payot, A., 301-MDO-10/APA-31, 367-MDO-14, 368-MDO-15/APA-37
Paz Mendez, J., 185-SUR-2
Pazner, W., 93-FD-18, 286-FD-38
Peak, S., 546-GT-9
Pearce, G., 121-STR-3
Pechlivanoglou, G., 448-WE-8
Pederson, D., 239-PDL-11
Pedivellano, A., 379-SCS-6
Pehrson, N., 116-SCS-2/AS-2
Pei, J., 33-GNC-3, 248-TF-4
Peiffer, E., 358-GTE-5
Peinke, J., 476-FD-58, 536-FD-64
Peiro, J., 352-FD-46, 432-MVCE-2
Pelamatti, J., 493-MDO-18
Pellegrino, S., 53-SCS-1, 312-SCS-5, 379-SCS-6, 438-SCS-7, 558-SCS-9
Pelletier, D., 574-FD-75
Peltier, S., 281-FD-33
Peluso, S., 110-PC-4
Pelzmann, T., 44-MAT-1
Pena, F., 58-STR-1
Pena, G., 122-STR-4
Peng, C., 475-FD-57
Peng, S., 7-AA-1
Peng, W., 12-AMT-2
Peng, Y., 443-TES-5
Penna, J., 499-OPS-1
Penna, S., 108-MST-4
Penty Geraets, R., 125-TP-2, 486-GT-8
Pereira, J., 567-AMT-24/APA-52
Pereira, M., 508-STR-19
Pérez, A., 144-APA-17
Perez, I., 296-IS-14
Perez, R., 8-ACD-1, 142-APA-15, 201-APA-21/FD-26/SD-8/AMT-10, 204-APA-25, 267-ACD-7, 338-APA-35
Peristy, L., 142-APA-15
Peron, S., 544-FD-72
Perrin, M., 189-TP-4
Perry, B., 500-PC-19
Persson, L., 290-GNC-24
Persson, P., 93-FD-18, 286-FD-38, 426-MDO-16/SD-16
Pescador, K., 547-HIS-5
Peters, T., 357-GNC-30
Petersen, C., 221-GNC-19
Petersen, E., 138-AMT-6/PC-7, 307-PC-14, 581-PC-24
Petersen, I., 228-IS-12/GNC-20
Peterson, C., 478-FD-60
Peterson, D., 110-PC-4, 360-HSABP-6
Peterson, K., 44-MAT-1
Peterson, L., 241-SCS-4, 243-SD-10
Peterson, M., 180-SCS-3
Peterson, S., 201-APA-21/FD-26/SD-8/AMT-10
Petit, P., 218-GNC-16
Petrolo, M., 442-STR-17
Petrone, G., 459-AA-8
Petrovan, M., 552-MVCE-5

AUTHOR AND SESSION CHAIR INDEX

Pettingill, N., 266-AA-5/TF-5
Pfingsten, K., 406-APA-40
Pflibsen, T., 423-INPSI-2
Pham, D., 383-STR-13, 585-STR-22
Phan, N., 104-MAT-3, 246-STR-7
Phillips, D., 122-STR-4, 585-STR-22
Phillips, E., 15-APA-3
Phillips, S., 55-SD-2, 582-PC-25
Piatak, D., 570-APA-55
Picelli, R., 427-MDO-17/NDA-8/STR-15
Pickering, B., 173-MST-6
Pieters, M., 172-MST-5
Pilon, A., 459-AA-8
Pimienta-Penalver, A., 97-GNC-8
Pinaud, G., 63-TP-1
Pineda, D., 148-EDU-2
Pineda, E., 44-MAT-1, 104-MAT-3, 168-MAT-4, 184-STR-6, 316-STR-12/MAT-10
Piness, J., 44-MAT-1, 425-MAT-12
Pinheiro, M., 533-CMS-1
Pinier, J., 467-APA-45, 532-APA-51, 570-APA-55
Pinkowski, N., 443-TES-5
Pinon-Fischer, O., 382-SEN-3, 548-ICC-2, 560-SEN-5
Pinto, J., 297-IS-15
Piotrowski, M., 568-APA-53
Pipenberg, B., 149-EXPL-1
Pirnia, A., 201-APA-21/FD-26/SD-8/AMT-10
Pirrera, A., 58-STR-1, 121-STR-3, 441-STR-16, 442-STR-17
Pisani, W., 316-STR-12/MAT-10
Pitt, J., 496-MVCE-3
Pittet, C., 33-GNC-3
Pitz, R., 112-PC-6, 113-PDL-6, 138-AMT-6/PC-7
Plante, F., 81-APA-11
Plemmons, D., 528-AMT-21
Plewacki, N., 488-GTE-8
Podboy, G., 69-AA-2
Poggel, S., 420-GRE-1
Poggie, J., 142-APA-15, 225-HSABP-5, 474-FD-56
Pohl, J., 350-FD-44
Pohly, J., 137-AFM-6
Pohya, A., 399-ACD-10
Poinot, M., 552-MVCE-5
Pokhrel, M., 399-ACD-10
Polak, S., 310-PDL-13
Polanka, M., 35-GTE-1, 52-PGC-2/HSABP-2, 240-PGC-5, 311-PGC-6, 488-GTE-8
Polizzi, A., 103-MAT-2
Pollack, T., 38-IS-1/GNC-4
Pollard, C., 432-MVCE-2
Pollard, V., 570-APA-55
Pollini, L., 305-MST-9, 353-GNC-26, 495-MST-16
Poloni, C., 301-MDO-10/APA-31
Polsky, S., 136-AFM-5
Poludnenko, A., 50-PC-2/PGC-1, 154-FD-23, 413-FD-48
Polzin, K., 310-PDL-13
Pontillo, A., 400-AFM-13
Pook, D., 528-AMT-21
Pool, D., 47-MST-1, 106-MST-2, 172-MST-5, 305-MST-9, 370-MST-11
Poole, D., 426-MDO-16/SD-16
Poovathingal, S., 318-TP-6
Popov, N., 113-PDL-6, 178-PDL-9
Popović, M., 217-GNC-15
Popovici, A., 108-MST-4
Poroseva, S., 144-APA-17
Portelli, L., 244-SE-4
Posada, D., 320-UAS-4
Post, M., 337-APA-34
Poteet, C., 44-MAT-1
Potsdam, M., 202-APA-23
Poudel, N., 541-FD-69
Pourhashem, H., 225-HSABP-5
Pourkashanian, M., 252-WE-4
Pournadali Khamseh, A., 339-APA-36/PDL-14
Pourpoint, T., 372-PC-15, 434-PC-17
Pouya, P., 57-SE-1
Povolny, S., 230-MAT-5
Powell, C., 556-PC-23/AMT-23
Powell, J., 532-APA-51
Powell, O., 225-HSABP-5
Powell, R., 160-GNC-12
Powell, S., 58-STR-1
Pozzobon, O., 20-CPS-1
Prabhakar, N., 229-IS-13, 378-SATS-1, 482-GNC-35
Pradhan, P., 355-GNC-28
Prakash, K., 206-DS-2
Prakash, N., 230-MAT-5
Prakash, S., 375-PGC-8, 582-PC-25
Prasad, C., 195-AA-4
Prashanth, M., 295-GTE-4
Prazenica, R., 229-IS-13, 297-IS-15, 378-SATS-1, 482-GNC-35
Preden, A., 120-SOF-1
Pressel, P., 359-HIS-3
Price, A., 584-SEN-6
Price, J., 548-ICC-2
Price, R., 124-TF-2
Prince, S., 273-APA-29
Priolo, F., 72-AFM-4
Prior, M., 338-APA-35
Pritchett, A., 166-IS-8/SOF-2
Probst, S., 88-FD-13, 141-APA-14
Prokopius, K., 187-TF-3
Prosser, D., 338-APA-35
Provost, E., 104-MAT-3, 105-MDO-3
Pruessner, M., 405-APA-39
Pryor, O., 35-GTE-1, 556-PC-23/AMT-23
Przulj, V., 88-FD-13
Puetz, A., 33-GNC-3
Pugia, S., 42-ISC-TM
Puig - Navarro, J., 269-AFM-10/GNC-21/FT-1, 364-IS-17
Pullan, G., 552-MVCE-5
Pullen, M., 113-PDL-6
Pulliam, T., 25-FD-4
Pung, J., 571-APA-56
Pupo, C., 105-MDO-3
Purinton, D., 467-APA-45
Purser, C., 528-AMT-21
Pusch, M., 38-IS-1/GNC-4, 461-AFM-16, 505-SD-21
Putnam, Z., 160-GNC-12
Puttannaiah, K., 355-GNC-28
Qandil, M., 61-TES-2, 186-TES-3, 317-TES-4
Qian, C., 104-MAT-3
Qian, L., 208-EXPL-2, 290-GNC-24
Qin, C., 88-FD-13
Qing, J., 8-ACD-1
Qu, Q., 405-APA-39
Quackenbush, T., 144-APA-17
Quadri, U., 88-FD-13
Quagliarella, D., 232-MDO-7/APA-26
Quaranta, G., 343-DS-4
Quento, C., 36-HIS-1
Quenzer, J., 504-SD-20
Quick, J., 126-WE-2, 448-WE-8
Quindlen, J., 157-GNC-9
Quinlan, J., 21-DE-1, 248-TF-4
Quinn, A., 397-AA-7
Quinn, D., 417-FD-53, 465-APA-43/FD-54/SD-19/AMT-20
Quintana, A., 561-STR-20
Quintana, E., 75-AMT-5
Quintanilha Junior, H., 538-FD-66
Quon, E., 514-WE-9
Rabey, P., 91-FD-16
Rabinovitch, J., 189-TP-4, 243-SD-10, 407-APA-41/FD-47/SD-15/AMT-17
Rade, D., 439-SD-17
Radespiel, R., 88-FD-13, 141-APA-14, 142-APA-15, 143-APA-16, 152-FD-21, 210-FD-27, 474-FD-56, 480-FD-63
Radue, M., 299-MAT-8
Raffel, M., 529-AMT-22/APA-48, 573-FD-74
Rafi, M., 96-GNC-7
Ragaglini, S., 381-SD-13
Raghav, V., 272-APA-28
Raghavan, S., 117-SD-4
Ragni, D., 7-AA-1, 321-WE-6, 397-AA-7
Rahili, S., 446-UAS-7/ACD-16
Rahman, K., 114-PDL-7, 138-AMT-6/PC-7
Rahman, M., 331-ACD-8, 420-GRE-1
Rai, A., 247-STR-8, 304-MDO-13/NDA-6/STR-10
Raible, D., 533-CMS-1
Raimondo, A., 383-STR-13
Rais-Rohani, M., 304-MDO-13/NDA-6/STR-10
Raj, P., 526-ACD-12/UAS-12
Raja, A., 370-MST-11
Raja, L., 178-PDL-9, 239-PDL-11
Rajagopal, A., 206-DS-2
Rajakareyar, P., 507-STR-18
Rajan, A., 485-GT-7
Rajaram, K., 96-GNC-7
Rajasekaran, R., 101-IS-5
Raja Zahirudin, R., 510-TP-12
Rajendran, L., 177-PDL-8, 339-APA-36/PDL-14
Rajmohan, N., 141-APA-14, 368-MDO-15/APA-37
Raju, I., 171-MDO-6/NDA-3/STR-5, 246-STR-7
Raju, M., 93-FD-18
Raju Kulkarni, A., 301-MDO-10/APA-31
Ramachandran, N., 55-SD-2, 149-EXPL-1
Ramadan, M., 506-SEN-4
Ramakrishnan, J., 33-GNC-3, 357-GNC-30
Ramamurti, R., 195-AA-4, 405-APA-39
Raman, V., 237-PC-12, 375-PGC-8, 500-PC-19, 502-PGC-10, 555-PC-22
Ramanathan, H., 29-FD-8
Ramasamy, M., 464-AMT-19/APA-42
Ramaswamy, D., 415-FD-50
Ramesh, K., 92-FD-17, 346-FD-40
Ramezanian, D., 215-FD-32
Ramirez-Serrano, A., 526-ACD-12/UAS-12
Ramjatan, S., 318-TP-6
Ramos, B., 350-FD-44
Ranatunga, V., 247-STR-8
Rane, J., 29-FD-8
Rane, R., 442-STR-17
Rangarajan, A., 93-FD-18
Ranjan, R., 367-MDO-14, 480-FD-63
Ranjan Kumar, S., 289-GNC-23
Rankin, B., 35-GTE-1, 111-PC-5, 176-PC-9, 236-PC-11, 403-AMT-16, 537-FD-65
Ransom, J., 492-MAT-13
Rao, A., 94-GNC-5, 157-GNC-9
Rao, P., 153-FD-22
Rapp, S., 355-GNC-28
Rasmussen, S., 100-IS-4, 364-IS-17
Rassaian, M., 118-SD-5, 508-STR-19
Rastgoftar, H., 217-GNC-15
Rastkar, S., 58-STR-1, 134-ACD-3
Rathinam, S., 100-IS-4
Rathsack, T., 35-GTE-1
Ratnayake, N., 142-APA-15, 467-APA-45, 532-APA-51
Ratnoo, A., 100-IS-4, 290-GNC-24, 354-GNC-27, 483-GNC-36
Rauch, B., 175-PC-8, 433-NDA-9
Rauleder, J., 141-APA-14, 272-APA-28, 273-APA-29
Rausch, R., 570-APA-55
Rauseo, M., 471-DS-6
Raveh, D., 117-SD-4, 380-SD-12
Ravindra, K., 22-EDU-1, 207-EDU-3
Ray, J., 563-TP-14
Rayabharam, A., 444-TP-9
Raz, A., 99-ICC-1/SEN-1, 548-ICC-2
Razzanelli, M., 353-GNC-26
Reasor, D., 407-APA-41/FD-47/SD-15/AMT-17, 504-SD-20
Reczek, D., 148-EDU-2
Reddinger, J., 319-UAS-3/ACD-15
Reddy, S., 146-APA-19/AS-3
Redhal, S., 557-PGC-12
Reed, H., 347-FD-41, 416-FD-51, 480-FD-63
Reeder, B., 246-STR-7
Reeder, M., 14-APA-2
Reedy, D., 553-MVCE-6
Refai, M., 369-MST-10
Regan, C., 95-GNC-6, 199-AFM-8, 461-AFM-16
Regan, M., 212-FD-29
Rego, L., 7-AA-1
Rehm, N., 424-IS-20
Reich, G., 46-MDO-2, 367-MDO-14, 470-AS-8
Reid, J., 531-APA-50
Reifsnider, K., 102-IS-6
Reilley, K., 119-SE-2
Reilly, P., 343-DS-4
Rein, K., 12-AMT-2, 240-PGC-5, 403-AMT-16
Reiner, F., 149-EXPL-1
Reinert, J., 477-FD-59
Reinke, A., 410-DA-2
Reisman, R., 548-ICC-2
Reiter, J., 564-UAS-11
Ren, H., 382-SEN-3
Ren, X., 585-STR-22
Ren, Y., 143-APA-16, 165-IS-7
Renard, N., 26-FD-5
Renaud, G., 470-AS-8
Renaud, T., 544-FD-72
Rendall, T., 301-MDO-10/APA-31, 367-MDO-14, 368-MDO-15/APA-37, 426-MDO-16/SD-16
Renga, A., 584-SEN-6
Rennie, M., 114-PDL-7, 284-FD-36, 285-FD-37
Renzelman, J., 268-AFM-9
Repasky, R., 485-GT-7
Repolho Cagliari, L., 45-MDO-1
Restrepo, C., 292-GNC-38
Retherford, M., 512-UAS-9
Retter, J., 374-PDL-15/AMT-14
Rettig, F., 120-SOF-1
Reu, P., 185-SUR-2
Reuter, S., 374-PDL-15/AMT-14
Reveles, N., 471-DS-6
Reyes, J., 402-AMT-15, 434-PC-17
Reynerson, C., 305-MST-9
Reynolds, C., 8-ACD-1
Reynolds, T., 219-GNC-17
Reza Ahrabi, B., 30-FD-9
Rezaei, A., 81-APA-11, 469-APA-47, 505-SD-21
Rezaei, V., 159-GNC-11
Rezay Haghdoost, M., 375-PGC-8
Rezgui, D., 471-DS-6
Rhein, J., 119-SE-2, 120-SOF-1
Rhew, R., 34-GT-1
Rhoads, R., 22-EDU-1
Rhode, M., 162-GT-2
Rhodes, B., 307-PC-14
Rhyne, C., 487-GTE-7
Riaz, A., 134-ACD-3, 244-SE-4
Ribeiro, D., 153-FD-22
Ribeiro, J., 86-FD-11
Ricci, S., 504-SD-20
Riccobene, L., 504-SD-20
Richard, H., 558-SCS-9
Richard, K., 370-MST-11
Richards, C., 487-GTE-7
Richards, J., 275-AS-5
Richards, N., 251-UAS-2
Richards, P., 117-SD-4, 181-SD-7
Richardson, D., 16-APA-4/FD-1/PDL-1, 138-AMT-6/PC-7, 334-AMT-13
Richardson, M., 431-MVCE-1
Richardson, T., 137-AFM-6, 198-AFM-7
Ricks, T., 168-MAT-4, 492-MAT-13, 508-STR-19
Ridderhof, J., 157-GNC-9
Riddick, J., 104-MAT-3
Rider, S., 25-FD-4
Rieken, E., 27-FD-6
Rieker, G., 403-AMT-16
Riemenschneider, J., 470-AS-8
Righi, M., 88-FD-13
Rigo, A., 343-DS-4
Riley, I., 420-GRE-1
Riley, L., 480-FD-63
Rines, M., 344-EXPL-4
Ringenbach, S., 145-APA-18

AUTHOR AND SESSION CHAIR INDEX

Ringuette, M., 92-FD-17
Rinker, J., 448-WE-8
Rinoie, K., 478-FD-60
Rios, J., 513-UAS-10/IS-23/SOF-7
Rique Garaizar, O., 299-MAT-8
Rising, C., 110-PC-4
Ritchey, M., 508-STR-19
Ritter, H., 63-TP-1
Rival, D., 285-FD-37, 541-FD-69
Rivas-Padilla, J., 205-AS-4
Rivera Lopez, K., 102-IS-6, 320-UAS-4
Rivero, A., 58-STR-1
Rivers, M., 546-GT-9, 568-APA-53
Riviera, K., 492-MAT-13
Riviere, N., 314-SEN-2
Rizzetta, D., 283-FD-35
Rizzi, S., 266-AA-5/TF-5, 525-AA-9
Rizzo, P., 282-FD-34
Roach, J., 561-STR-20
Robbe, A., 10-AFM-2
Robbins, B., 407-APA-41/FD-47/SD-15/AMT-17
Robbins, J., 446-UAS-7/ACD-16, 494-MST-15/SOF-10
Robert, É., 44-MAT-1
Robertson, A., 64-WE-1
Robertson, E., 407-APA-41/FD-47/SD-15/AMT-17
Robeson, M., 507-STR-18
Robinson, J., 46-MDO-2
Robinson, S., 160-GNC-12, 305-MST-9
Robinson, T., 232-MDO-7/APA-26, 431-MVCE-1, 580-MVCE-7
Robke, J., 514-WE-9
Rocchio, R., 584-SEN-6
Rock, N., 358-GTE-5
Rockwell, R., 37-HSABP-1, 200-AMT-9/PC-10
Rockwood, M., 214-FD-31, 573-FD-74
Rodamilans, G., 172-MST-5
Rodarte Ricciardi, T., 7-AA-1, 86-FD-11
Rodebaugh, G., 203-APA-24
Rodriggs, M., 120-SOF-1
Rodrigues, L., 554-NDA-12
Rodrigues, N., 435-PC-18
Rodrigues de Oliveira, W., 84-DE-2, 172-MST-5
Rodriguez, A., 355-GNC-28, 559-SD-22
Rodriguez, V., 52-PGC-2/HSABP-2
Roe, P., 542-FD-70
Roeder, J., 83-ASE-2
Roelke, E., 10-AFM-2
Roelofs, M., 197-ACD-6
Roessler, C., 461-AFM-16
Roffman, K., 379-SCS-6
Rogers, M., 25-FD-4
Rogers, S., 532-APA-51
Rogerson, J., 163-GTE-2
Roget, B., 202-APA-23
Rohl, P., 550-MDO-20
Roizner, F., 302-MDO-11/SD-11
Rolfes, R., 121-STR-3, 205-AS-4
Romani, G., 466-APA-44
Romano, D., 506-SEN-4
Rome, J., 492-MAT-13
Romera Rodríguez, L., 185-SUR-2
Romero, V., 371-NDA-7
Romero Martinez, S., 417-FD-53
Ronis, A., 177-PDL-8
Ronney, P., 112-PC-6, 307-PC-14, 537-FD-65, 581-PC-24, 582-PC-25
Roose, T., 99-ICC-1/SEN-1
Rooseleer, F., 410-DA-2
Roozeboom, N., 74-AMT-4, 139-AMT-7, 532-APA-51
Rosado Hau, N., 252-WE-4
Rosales, J., 404-APA-38
Rosales Fajardo, J., 420-GRE-1
Rosato, D., 179-PGC-4, 311-PGC-6
Rose, C., 442-STR-17
Rose, J., 387-UAS-5
Rose, T., 438-SCS-7, 503-SCS-8
Rosemeier, M., 64-WE-1
Rosman, R., 508-STR-19
Ross, G., 337-APA-34
Ross, J., 139-AMT-7, 525-AA-9, 532-APA-51, 570-APA-55
Ross, M., 118-SD-5, 277-DS-3
Rossmann, T., 402-AMT-15
Rothhaar, P., 248-TF-4, 266-AA-5/TF-5
Rotta, H., 250-UAS-1
Rotter, Z., 207-EDU-3
Roucken, J., 343-DS-4
Rouser, K., 487-GTE-7
Rousso, A., 50-PC-2/PGC-1, 113-PDL-6, 511-TP-13/PDL-16
Roux, C., 157-GNC-9
Rovey, J., 511-TP-13/PDL-16
Rowley, C., 211-FD-28
Roy, A., 366-MAT-11
Roy, C., 352-FD-46, 464-AMT-19/APA-42, 543-FD-71, 575-FD-76
Roy, S., 91-FD-16, 138-AMT-6/PC-7, 176-PC-9, 270-AMT-11, 275-AS-5, 334-AMT-13, 366-MAT-11, 402-AMT-15, 403-AMT-16, 470-AS-8, 579-MDO-22
Roybal, M., 122-STR-4
Royer, F., 438-SCS-7
Rubin, M., 428-MST-12/SOF-9
Ruf, C., 382-SEN-3
Ruf, J., 52-PGC-2/HSABP-2
Ruggiu, A., 30-FD-9
Rukhaiyar, A., 279-EXPL-3, 430-MST-14
Rumpfkeil, M., 236-PC-11, 498-NDA-10, 551-MDO-21/NDA-11
Rumsey, C., 25-FD-4, 86-FD-11
Runyon, B., 103-MAT-2
Ruoff, S., 175-PC-8
Rupp, C., 471-DS-6
Ruscher, C., 133-AA-3
Ruskin, B., 147-DS-1
Rusovici, R., 471-DS-6
Russell, C., 433-NDA-9, 534-DS-7
Russo, L., 531-APA-50
Rybarczyk, R., 568-APA-53
Sabater, C., 551-MDO-21/NDA-11
Sabatini, M., 244-SE-4
Sabatini, R., 484-GNC-37
Sabatino, D., 402-AMT-15
Sabnis, K., 415-FD-50
Saboo, S., 482-GNC-35
Sachs, G., 31-GNC-1, 137-AFM-6
Sadasivuni, S., 163-GTE-2
Sadeghirad, A., 59-STR-2
Saether, E., 507-STR-18
Safta, C., 174-NDA-4
Sagrillo, C., 492-MAT-13
Saha, D., 221-GNC-19
Sahai, A., 249-TP-5
Sahin, C., 39-IS-2, 418-GNC-31
Sahni, O., 29-FD-8, 92-FD-17
Sahoo, D., 571-APA-56
Said, O., 204-APA-25
Saiga, S., 306-PC-13
Saikia, B., 91-FD-16
Saito, M., 500-PC-19
Sakai, R., 466-APA-44
Sakai, S., 161-GNC-13
Sakai, T., 444-TP-9
Sakai, Y., 539-FD-67
Sakamoto, H., 241-SCS-4
Sakaue, H., 11-AMT-1, 74-AMT-4, 406-APA-40
Saksena, R., 555-PC-22
Salazar, D., 12-AMT-2
Salcedo, G., 525-AA-9
Saldiran, E., 369-MST-10, 388-UAS-6/IS-19/SOF-5
Saleh, Y., 422-HSABP-7
Salles, L., 19-ASE-1
Saltzman, A., 463-AMT-18
Salvo, R., 99-ICC-1/SEN-1
Samimy, M., 330-AA-6
Sampaio, R., 31-GNC-1
Sampath Kumar, R., 203-APA-24
Sampigethaya, K., 20-CPS-1
Sanal Kumar, V., 279-EXPL-3
Sanayei, A., 464-AMT-19/APA-42
Sanchez, A., 50-PC-2/PGC-1, 112-PC-6
Sanchez, G., 526-ACD-12/UAS-12
Sanchez Martinez, M., 469-APA-47
Sanders, F., 268-AFM-9
Sanderson, C., 239-PDL-11
Sanghvi, M., 231-MAT-6/NDA-5
Sankar, L., 78-APA-8
Sankaran, R., 175-PC-8, 434-PC-17
Sankaran, V., 111-PC-5, 240-PGC-5, 307-PC-14, 414-FD-49, 436-PGC-9, 542-FD-70
Sanson, F., 554-NDA-12
Santarpia, E., 562-STR-21
Santer, M., 180-SCS-3, 408-AS-7, 468-APA-46
Santiago-Espada, Y., 377-SAT-1
Santos, J., 317-TES-4
Santos, R., 572-FD-73
Saracoglu, B., 164-HSABP-4, 373-PC-16/PGC-7, 436-PGC-9, 557-PGC-12
Saravani, M., 317-TES-4
Sardeshmukh, S., 49-PC-1, 52-PGC-2/HSABP-2, 111-PC-5, 115-PGC-3/HSABP-3
Sargent, P., 135-ACD-4
Sarhaddi, D., 469-APA-47
Sarhan, A., 387-UAS-5
Sarigul-Klijn, M., 527-ACD-13
Sarigul-Klijn, N., 10-AFM-2, 53-SCS-1, 527-ACD-13
Saritas, M., 155-FD-24
Sarkar, K., 55-SD-2, 243-SD-10
Sarojini, D., 105-MDO-3
Sarsilmaz, S., 356-GNC-29/IS-16
Sartor, F., 142-APA-15
Sartorius, S., 196-ACD-5
Sasamori, M., 405-APA-39
Sassoon, A., 340-AS-6
Satchell, M., 142-APA-15, 569-APA-54
Sathyanarayana, N., 569-APA-54
Satija, A., 49-PC-1, 51-PDL-3, 178-PDL-9, 270-AMT-11
Sato, H., 11-AMT-1
Sato, S., 164-HSABP-4, 238-PDL-10, 363-INPSI-1
Sato, T., 373-PC-16/PGC-7, 502-PGC-10
Sato, Y., 367-MDO-14
Satou, Y., 241-SCS-4
Satyanarayana, A., 59-STR-2
Sauder, J., 180-SCS-3, 438-SCS-7, 558-SCS-9
Saurav, A., 94-GNC-5
Savely, R., 296-IS-14
Saverin, J., 389-WE-7
Saviers, K., 367-MDO-14
Sawada, H., 24-FD-3
Scalo, C., 177-PDL-8, 538-FD-66
Scannapieco, A., 584-SEN-6
Schaefer, J., 371-NDA-7, 562-STR-21
Schafer, S., 368-MDO-15/APA-37
Schau, K., 111-PC-5
Schaub, H., 83-ASE-2, 357-GNC-30, 438-SCS-7
Schauer, F., 52-PGC-2/HSABP-2, 240-PGC-5, 311-PGC-6, 436-PGC-9, 487-GTE-7, 502-PGC-10
Schein, S., 87-FD-12
Schenk, M., 58-STR-1
Schepers, G., 448-WE-8
Scherbarth, M., 438-SCS-7
Scherling, A., 107-MST-3/SOF-8
Schetz, J., 70-ACD-2, 80-APA-10, 427-MDO-17/NDA-8/STR-15
Schiano Lo Moriello, R., 584-SEN-6
Schiller, N., 266-AA-5/TF-5
Schiltgen, B., 460-ACD-11
Schirmer, G., 382-SEN-3
Schirmer, J., 420-GRE-1
Schirmer, S., 494-MST-15/SOF-10
Schlenker, A., 203-APA-24
Schmehl, R., 355-GNC-28
Schmid, M., 576-GNC-40/IS-26
Schmidt, B., 75-AMT-5, 200-AMT-9/PC-10
Schmidt, D., 59-STR-2, 461-AFM-16
Schmidt, H., 541-FD-69
Schmiechen, K., 119-SE-2
Schmisseur, J., 41-ISC-MS, 91-FD-16
Schmitiz, I., 387-UAS-5
Schmitt, F., 549-IS-25
Schmitt, M., 388-UAS-6/IS-19/SOF-5
Schmitz, S., 272-APA-28, 417-FD-53, 534-DS-7
Schmollgruber, P., 398-ACD-9, 460-ACD-11
Schneegans, A., 398-ACD-9
Schneider, N., 558-SCS-9
Schneider, S., 27-FD-6, 152-FD-21, 213-FD-30, 480-FD-63, 530-APA-49, 538-FD-66
Schneider, W., 55-SD-2
Schnell, R., 142-APA-15
Schnulo, S., 187-TF-3
Schoeffler, D., 309-PDL-12
Schoenitz, M., 153-FD-22
Scholz, P., 474-FD-56
Scholz, U., 410-DA-2
Schoneman, J., 277-DS-3, 471-DS-6
Schorn, N., 176-PC-9
Schouten, T., 331-ACD-8
Schreck, S., 190-WE-3
Schreyer, A., 415-FD-50
Schroder-Turner, K., 121-STR-3
Schroeder, J., 108-MST-4
Schroeder, K., 506-SEN-4
Schroeder, W., 514-WE-9
Schropp, C., 119-SE-2
Schueltke, F., 197-ACD-6
Schuet, S., 38-IS-1/GNC-4, 173-MST-6, 234-MST-7
Schulte, A., 549-IS-25
Schultz, M., 139-AMT-7, 585-STR-22
Schultz, V., 512-UAS-9
Schulz, A., 374-PDL-15/AMT-14
Schulze, P., 71-AFM-3, 199-AFM-8
Schumaker, S., 240-PGC-5, 403-AMT-16, 502-PGC-10
Schumann, J., 491-IS-22
Schutt, R., 211-FD-28
Schwager, M., 101-IS-5
Schwartz, D., 571-APA-56
Schwartz, H., 368-MDO-15/APA-37
Schwartz, K., 371-NDA-7
Schwartz, M., 41-ISC-MS
Schwartzentruber, T., 249-TP-5, 318-TP-6
Schwarz, C., 529-AMT-22/APA-48
Schwarz, W., 445-TP-10
Schwarzkopf, G., 149-EXPL-1
Schwer, D., 179-PGC-4, 436-PGC-9, 502-PGC-10
Schwithal, A., 410-DA-2
Sciuchetti, G., 564-UAS-11
Scofield, T., 540-FD-68
Scott, R., 135-ACD-4, 433-NDA-9
Scott, S., 382-SEN-3
Scott-Emuakpor, O., 103-MAT-2
Scotti, A., 147-DS-1
Scotti, S., 184-STR-6
Seal, S., 307-PC-14
Seamone, A., 438-SCS-7
Secheli, G., 558-SCS-9
Sedaghati, R., 275-AS-5
Sedalor, T., 123-SUR-1
Sedky, G., 285-FD-37
Sedlacek, D., 143-APA-16
Seffen, K., 562-STR-21
Segal, K., 59-STR-2
Segovia, S., 298-MAT-7
Seidel, G., 230-MAT-5, 298-MAT-7
Seidel, J., 15-APA-3, 46-MDO-2, 77-APA-7, 133-AA-3, 415-FD-50, 477-FD-59
Seidler, R., 107-MST-3/SOF-8
Seifert, R., 408-AS-7
Seiferth, D., 250-UAS-1, 513-UAS-10/IS-23/SOF-7
Seigler, T., 216-GNC-14
Seiler, P., 461-AFM-16
Seitzman, J., 358-GTE-5, 555-PC-22, 556-

AUTHOR AND SESSION CHAIR INDEX

PC-23/AMT-23
Seki, S., 273-APA-29
Sekula, M., 570-APA-55
Sel, A., 216-GNC-14
Sell, B., 557-PGC-12
Sellappan, P., 284-FD-36
Sellers, M., 570-APA-55
Selva, D., 102-IS-6, 578-IS-27
Selvaraj, S., 419-GNC-32, 540-FD-68
Selvarathinam, A., 247-STR-8, 384-STR-14
Semaan, R., 143-APA-16, 350-FD-44
Sembiring, J., 235-MST-8, 554-NDA-12
Semper, M., 152-FD-21, 210-FD-27
Senba, A., 275-AS-5
Sendner, F., 461-AFM-16
Sener, O., 562-STR-21
Senn, K., 566-ACD-14/UAS-13
Seo, D., 158-GNC-10, 430-MST-14
Seo, J., 171-MDO-6/NDA-3/STR-5
Seo, Y., 32-GNC-2
Seon, G., 562-STR-21
Sepulveda, E., 196-ACD-5
Sepulveda, J., 50-PC-2/PGC-1
Serafin, P., 279-EXPL-3, 430-MST-14
Serani, A., 464-AMT-19/APA-42, 551-MDO-21/NDA-11
Serpieri, J., 282-FD-34
Sescu, A., 86-FD-11, 215-FD-32
Seshadri, B., 384-STR-14
Seshadri, P., 549-IS-25
Seshan, S., 42-ISC-TM, 148-EDU-2
Seto, W., 407-APA-41/FD-47/SD-15/AMT-17
Setzwein, F., 397-AA-7
Sève, F., 577-GNC-41
Severin, M., 49-PC-1
Sevil, H., 401-AFM-14
Sevilla, F., 96-GNC-7
Seywald, H., 158-GNC-10
Seywald, K., 158-GNC-10
Sforza, P., 196-ACD-5
Sforzo, B., 555-PC-22, 556-PC-23/AMT-23
Sgorcea, R., 108-MST-4
Shadmehri, F., 470-AS-8
Shadram, Z., 500-PC-19
Shafer, D., 9-AFM-1, 136-AFM-5
Shah, G., 14-APA-2, 106-MST-2, 173-MST-6, 198-AFM-7, 234-MST-7
Shah, P., 49-PC-1
Shah, S., 368-MDO-15/APA-37, 487-GTE-7
Shah, U., 53-SCS-1
Shah, Y., 215-FD-32
Shahriar, A., 201-APA-21/FD-26/SD-8/AMT-10
Shaler, K., 64-WE-1, 514-WE-9
Shamai, M., 29-FD-8
Shan, T., 101-IS-5
Shankar, P., 141-APA-14, 419-GNC-32
Shankar, U., 94-GNC-5
Shannon, C., 370-MST-11
Shao, J., 443-TES-5
Shapiro, E., 88-FD-13
Sharan, N., 500-PC-19
Sharif, A., 566-ACD-14/UAS-13
Sharkey, P., 111-PC-5
Sharma, A., 114-PDL-7, 178-PDL-9, 206-DS-2, 438-SCS-7, 540-FD-68
Sharma, M., 471-DS-6
Sharma, P., 227-IS-11
Sharma, R., 100-IS-4, 165-IS-7, 364-IS-17, 370-MST-11, 424-IS-20
Sharma, S., 244-SE-4, 344-EXPL-4
Sharma, V., 504-SD-20
Sharma Priyadarshini, M., 188-TP-3
Sharpe, P., 271-APA-27
Shashurin, A., 114-PDL-7, 239-PDL-11, 309-PDL-12
Shastry, A., 296-IS-14
Shcherbanev, S., 113-PDL-6
Shea, P., 467-APA-45, 532-APA-51, 570-APA-55
Shea, S., 570-APA-55
Sheehy, J., 279-EXPL-3
Sheeran, B., 503-SCS-8
Shehata, H., 81-APA-11
Sheldon, J., 343-DS-4
Shelton, T., 84-DE-2
Shen, H., 146-APA-19/AS-3, 525-AA-9
Shen, J., 471-DS-6, 534-DS-7
Shen, S., 581-PC-24
Sheng, C., 144-APA-17
Sheng, Y., 220-GNC-18/IS-10, 387-UAS-5, 568-APA-53
Sheplak, M., 464-AMT-19/APA-42, 506-SEN-4, 529-AMT-22/APA-48
Sherer, S., 479-FD-62, 496-MVCE-3
Sherif, S., 125-TP-2
Sherman, T., 512-UAS-9, 564-UAS-11
Sherpa, A., 564-UAS-11
Sherwood, J., 76-APA-6
Shi, D., 433-NDA-9
Shi, H., 577-GNC-41
Shi, J., 423-INPSI-2
Shi, M., 180-SCS-3, 399-ACD-10
Shi, X., 446-UAS-7/ACD-16
Shi, Y., 582-PC-25
Shiao, M., 554-NDA-12
Shih, T., 60-TES-1, 186-TES-3, 278-EDU-4
Shimada, T., 306-PC-13
Shimamura, K., 385-TP-7
Shimizu, S., 243-SD-10
Shimodaira, K., 443-TES-5
Shimoyama, K., 126-WE-2, 550-MDO-20, 554-NDA-12
Shin, D., 435-PC-18
Shin, H., 366-MAT-11
Shin, J., 177-PDL-8, 238-PDL-10, 482-GNC-35
Shin, S., 242-SD-9, 335-APA-32, 380-SD-12
Shinde, V., 181-SD-7, 407-APA-41/FD-47/SD-15/AMT-17, 477-FD-59
Shinji, K., 24-FD-3
Shiqing, Y., 17-APA-5/FD-2/PDL-2
Shirahama, A., 306-PC-13
Shiraishi, Y., 577-GNC-41
Shish, K., 38-IS-1/GNC-4, 234-MST-7
Shitara, S., 379-SCS-6
Shiyani, D., 187-TF-3
Shkarayev, S., 566-ACD-14/UAS-13
Shmilovich, A., 212-FD-29
Shneider, M., 51-PDL-3, 114-PDL-7, 178-PDL-9, 334-AMT-13
Shoele, K., 201-APA-21/FD-26/SD-8/AMT-10
Shoji, K., 53-SCS-1
Shoji, T., 87-FD-12
Shonkwiler, B., 562-STR-21
Shorbagy, M., 204-APA-25
Shortis, M., 583-SCS-11
Shoshin, Y., 581-PC-24
Shougaev, S., 353-GNC-26
Shuai, S., 89-FD-14, 475-FD-57
Shumway, N., 346-FD-40
Shun, H., 289-GNC-23
Shutoku, H., 546-GT-9
Shweyk, K., 73-AFM-15, 136-AFM-5
Shyamsunder, L., 508-STR-19
Sicard, J., 190-WE-3
Sickbert, C., 43-ISC-UG
Siddanagouda, K., 224-GTE-3
Siddiquee, M., 40-IS-3
Sideris, A., 500-PC-19
Sidey, J., 358-GTE-5, 555-PC-22
Siegel, N., 203-APA-24
Siegwart, R., 97-GNC-8, 217-GNC-15
Sievers, M., 57-SE-1
Siewert, S., 560-SEN-5
Siggeirsson, E., 26-FD-5
Sigthorsson, D., 418-GNC-31, 482-GNC-35
Silling, S., 246-STR-7, 508-STR-19
Sills, J., 118-SD-5, 439-SD-17
Silton, S., 89-FD-14, 153-FD-22
Silva, A., 153-FD-22, 445-TP-10, 489-HIS-4
Silva, D., 61-TES-2
Silva, H., 439-SD-17
Silva, R., 11-AMT-1, 88-FD-13
Silva, W., 14-APA-2, 242-SD-9
Silver, M., 116-SCS-2/AS-2
Silvestre, F., 95-GNC-6
Silwal, L., 272-APA-28
Simao Ferreira, C., 272-APA-28, 448-WE-8
Simeni Simeni, M., 178-PDL-9, 238-PDL-10
Simerly, S., 485-GT-7
Simmons, M., 279-EXPL-3
Simpson, C., 499-OPS-1
Simpson, M., 526-ACD-12/UAS-12
Singh, A., 104-MAT-3, 198-AFM-7
Singh, B., 177-PDL-8, 184-STR-6, 243-SD-10
Singh, D., 336-APA-33
Singh, G., 320-UAS-4
Singh, J., 425-MAT-12
Singh, K., 171-MDO-6/NDA-3/STR-5, 302-MDO-11/SD-11
Singh, M., 464-AMT-19/APA-42
Singh, P., 125-TP-2, 443-TES-5
Singh, R., 78-APA-8, 534-DS-7
Singh, S., 221-GNC-19, 481-GNC-34
Singh, V., 156-FD-25
Sinha, H., 296-IS-14
Sinha, K., 91-FD-16, 539-FD-67
Sinha, N., 387-UAS-5
Sinkez, P., 43-ISC-UG
Sinner, D., 541-FD-69
Sipahi, R., 545-GNC-39/IS-24
Sippel, T., 200-AMT-9/PC-10, 307-PC-14, 403-AMT-16
Siqueira, S., 170-MDO-5
Sirignano, M., 556-PC-23/AMT-23
Sirignano, W., 500-PC-19
Sirohi, J., 201-APA-21/FD-26/SD-8/AMT-10, 206-DS-2
Sitaraman, J., 30-FD-9, 202-APA-23, 274-APA-30
Sitarsky, B., 571-APA-56
Sitte, M., 435-PC-18
Skarakis, J., 109-NDA-2
Skeen, S., 138-AMT-6/PC-7
Skiba, A., 358-GTE-5, 555-PC-22
Skinner, P., 170-MDO-5
Skinner, T., 104-MAT-3
Skuhersky, M., 344-EXPL-4
Slabaugh, C., 375-PGC-8, 556-PC-23/AMT-23
Slater, J., 241-SCS-4, 363-INPSI-1
Sleight, D., 59-STR-2
Slipchenko, M., 114-PDL-7, 138-AMT-6/PC-7, 270-AMT-11, 402-AMT-15, 463-AMT-18
Smarslok, B., 304-MDO-13/NDA-6/STR-10
Smart, J., 197-ACD-6
Smelyanskiy, V., 228-IS-12/GNC-20
Smets, S., 370-MST-11
Smidt, S., 355-GNC-28
Smit, L., 207-EDU-3
Smith, B., 86-FD-11, 332-AFM-11, 406-APA-40, 474-FD-56
Smith, C., 114-PDL-7, 200-AMT-9/PC-10, 334-AMT-13
Smith, D., 15-APA-3, 77-APA-7
Smith, E., 206-DS-2, 343-DS-4, 560-SEN-5, 584-SEN-6
Smith, H., 196-ACD-5, 579-MDO-22
Smith, J., 197-ACD-6, 561-STR-20
Smith, L., 92-FD-17, 295-GTE-4
Smith, M., 24-FD-3, 143-APA-16, 155-FD-24, 270-AMT-11, 389-WE-7, 549-IS-25, 573-FD-74
Smith, R., 156-FD-25
Smith, S., 116-SCS-2/AS-2, 387-UAS-5, 439-SD-17, 447-UAS-8/IS-21/SOF-6
Smith, T., 37-HSABP-1, 199-AFM-8, 225-HSABP-5, 543-FD-71
Smith, Z., 541-FD-69
Smits, A., 346-FD-40
Smyser, M., 270-AMT-11, 402-AMT-15, 463-AMT-18
Smyth, A., 214-FD-31
Snellen, M., 397-AA-7
Snider, S., 483-GNC-36
Snyder, M., 55-SD-2, 584-SEN-6
Sobiesiak, L., 291-GNC-25
Sockalingam, S., 508-STR-19
Sodano, H., 299-MAT-8
Soderlund, A., 187-TF-3, 560-SEN-5
Soderquist, N., 485-GT-7
Sohail, Z., 488-GTE-8
Sojka, P., 435-PC-18
Soler, J., 63-TP-1
Soliman, H., 53-SCS-1, 383-STR-13
Solmaz, E., 178-PDL-9
Soloiu, V., 331-ACD-8
Solomou, A., 298-MAT-7
Soltangharaei, V., 315-STR-11
Soltz, B., 121-STR-3
Somanath, N., 427-MDO-17/NDA-8/STR-15
Somnic, J., 179-PGC-4
Son, S., 103-MAT-2, 402-AMT-15, 528-AMT-21
Sondergaard, R., 151-FD-20
Song, K., 442-STR-17
Song, P., 109-NDA-2, 242-SD-9
Song, W., 88-FD-13, 368-MDO-15/APA-37, 435-PC-18, 476-FD-58, 504-SD-20
Song, Y., 100-IS-4
Soni, A., 187-TF-3
Sonneveldt, B., 10-AFM-2
Sonneville, V., 426-MDO-16/SD-16
Sontag, J., 17-APA-5/FD-2/PDL-2, 114-PDL-7
Sorini, C., 44-MAT-1
Sosa, J., 179-PGC-4, 311-PGC-6
Soskin, N., 119-SE-2
Sostaric, R., 160-GNC-12
Sotak, M., 99-ICC-1/SEN-1, 548-ICC-2
Soteriou, M., 49-PC-1
Sotoguchi, A., 554-NDA-12
Sotoudeh, Z., 118-SD-5, 181-SD-7
Soubrié, T., 386-TP-8
Sousa, V., 538-FD-66
Sousasantos, J., 19-ASE-1
Sow, A., 555-PC-22
Spak, K., 440-SD-18
Speakman, N., 107-MST-3/SOF-8
Spear, S., 103-MAT-2
Spearrin, R., 12-AMT-2, 148-EDU-2, 403-AMT-16
Spedding, G., 540-FD-68
Spencer, G., 530-APA-49
Spencer, M., 425-MAT-12
Speth, R., 7-AA-1
Speyer, J., 157-GNC-9
Spiller, K., 197-ACD-6
Spotts, N., 363-INPSI-1
Spottswood, S., 201-APA-21/FD-26/SD-8/AMT-10
Sprague, M., 126-WE-2
Squire, M., 139-AMT-7
Sreenivas, K., 530-APA-49
Sridhar, M., 137-AFM-6
Srigrarom, S., 251-UAS-2, 526-ACD-12/UAS-12
Srivastava, S., 230-MAT-5, 380-SD-12
Stachler, R., 236-PC-11, 582-PC-25
Stack, C., 474-FD-56
Stahl, P., 461-AFM-16
Stancu, G., 113-PDL-6, 374-PDL-15/AMT-14
Standridge, Z., 99-ICC-1/SEN-1
Stanfill, P., 120-SOF-1
Stanford, B., 56-SD-3, 233-MDO-8, 242-SD-9, 367-MDO-14, 505-SD-21, 579-MDO-22
Stanley, A., 126-WE-2
Stansbury, R., 388-UAS-6/IS-19/SOF-5, 446-UAS-7/ACD-16, 513-UAS-10/IS-23/SOF-7
Stanzel, R., 511-TP-13/PDL-16
Stapleton, S., 59-STR-2
Starikovskaia, S., 113-PDL-6, 178-PDL-9
Staroselsky, I., 466-APA-44
Staruk, W., 202-APA-23
Stasse, Q., 285-FD-37
Stathopoulos, P., 115-PGC-3/HSABP-3
Stauffer, H., 270-AMT-11, 403-AMT-16
Stebbins, S., 88-FD-13
Steck, J., 96-GNC-7, 228-IS-12/GNC-20, 382-SEN-3, 545-GNC-39/IS-24

AUTHOR AND SESSION CHAIR INDEX

Steele, K., 503-SCS-8
Stefanovic, M., 159-GNC-11
Stefanski, D., 14-APA-2, 79-APA-9, 338-APA-35
Steffens, M., 40-IS-3
Steffes, S., 292-GNC-38
Stegmeier, N., 479-FD-62
Steijl, R., 249-TP-5, 352-FD-46
Stein, I., 366-MAT-11
Steinberg, A., 75-AMT-5, 176-PC-9, 556-PC-23/AMT-23
Steiner, M., 297-IS-15
Steinke, K., 299-MAT-8
Stemberg, J., 190-WE-3
Stepanyan, S., 113-PDL-6
Stepanyan, V., 38-IS-1/GNC-4, 167-IS-9, 229-IS-13, 234-MST-7, 297-IS-15
Stephan, T., 420-GRE-1
Stephani, K., 63-TP-1, 189-TP-4, 249-TP-5, 563-TP-14
Stephen, E., 145-APA-18
Stephens, C., 173-MST-6
Stepien, D., 556-PC-23/AMT-23
Stern, F., 551-MDO-21/NDA-11
Stern, T., 503-SCS-8
Steva, T., 570-APA-55
Stevens, B., 118-SD-5
Stevens, C., 311-PGC-6
Stewart, E., 118-SD-5, 302-MDO-11/SD-11
Stich, R., 96-GNC-7
Stinson, M., 584-SEN-6
Stockett, P., 41-ISC-MS, 51-PDL-3
Stockmann, L., 428-MST-12/SOF-9
Stockton, C., 148-EDU-2
Stoellinger, M., 88-FD-13, 389-WE-7, 414-FD-49
Stoev, S., 47-MST-1
Stoevesandt, B., 476-FD-58, 536-FD-64
Stohlman, O., 503-SCS-8, 558-SCS-9
Stöhr, M., 163-GTE-2, 397-AA-7
Stoll, E., 357-GNC-30
Stone, N., 331-ACD-8
Storms, B., 266-AA-5/TF-5, 525-AA-9
Stouffer, S., 358-GTE-5
Stoumbos, T., 53-SCS-1
Stout, J., 375-PGC-8
Strand, C., 12-AMT-2, 403-AMT-16
Straub, J., 378-SATS-1
Streett, C., 139-AMT-7
Streicher, J., 189-TP-4
Stremel, P., 336-APA-33
Strike, J., 464-AMT-19/APA-42
Stripf, T., 494-MST-15/SOF-10
Strohmeier, P., 208-EXPL-2
Strohrmann, K., 184-STR-6
Stroosma, O., 47-MST-1, 106-MST-2, 172-MST-5
Strunk, P., 566-ACD-14/UAS-13
Stuebner, M., 585-STR-22
Stuermer, A., 76-APA-6, 142-APA-15
Stuetz, P., 382-SEN-3, 388-UAS-6/IS-19/SOF-5, 512-UAS-9
Stumpf, E., 197-ACD-6, 398-ACD-9
Su, W., 56-SD-3, 302-MDO-11/SD-11, 504-SD-20, 531-APA-50
Subbarao, K., 137-AFM-6, 199-AFM-8, 387-UAS-5
Subbareddy, P., 465-APA-43/FD-54/SD-19/AMT-20
Sublett, J., 148-EDU-2
Subramaniam, S., 189-TP-4, 249-TP-5, 563-TP-14
Subramaniam, V., 178-PDL-9
Subramanian, A., 371-NDA-7
Subramanian, S., 557-PGC-12, 578-IS-27
Sucheendran, M., 117-SD-4
Suchyta, C., 188-TP-3
Sudac, T., 207-EDU-3
Sudalaimuthu, V., 283-FD-35
Sudani, N., 546-GT-9
Sudol, A., 46-MDO-2
Süelözgen, Ö., 505-SD-21
Sugaya, K., 580-MVCE-7
Sugioka, Y., 11-AMT-1
Sugita, K., 510-TP-12
Suk, J., 289-GNC-23
Sukumaran, A., 279-EXPL-3
Suleman, A., 275-AS-5
Sullivan, B., 281-FD-33, 465-APA-43/FD-54/SD-19/AMT-20
Sullivan, K., 203-APA-24
Sultan, C., 401-AFM-14
Sumer, B., 435-PC-18
Sumimoto, T., 170-MDO-5
Summers, T., 251-UAS-2
Sun, C., 419-GNC-32
Sun, D., 229-IS-13, 320-UAS-4
Sun, J., 357-GNC-30
Sun, K., 95-GNC-6
Sun, L., 232-MDO-7/APA-26, 580-MVCE-7
Sun, Q., 54-SD-1
Sun, S., 227-IS-11
Sun, W., 50-PC-2/PGC-1, 110-PC-4, 372-PC-15
Sun, X., 423-INPSI-2
Sunada, Y., 478-FD-60
Sundararaghavan, V., 230-MAT-5, 231-MAT-6/NDA-5
Sundararajan, V., 182-SE-3
Suo, J., 358-GTE-5
Suresh, S., 290-GNC-24
Surzhikov, S., 188-TP-3
Susa, A., 112-PC-6
Susan, D., 561-STR-20
Sutherland, R., 221-GNC-19
Sutton, C., 343-DS-4
Sutton, F., 235-MST-8
Sutton, J., 75-AMT-5, 200-AMT-9/PC-10, 334-AMT-13, 555-PC-22
Suzuki, Y., 32-GNC-2
Svoboda, C., 197-ACD-6
Swaminathan Gopalan, K., 63-TP-1
Swank, A., 533-CMS-1
Swanson, S., 560-SEN-5
Swar, S., 288-GNC-22
Swarm, G., 135-ACD-4
Sweet, A., 491-IS-22
Swei, S., 56-SD-3, 470-AS-8
Sykes, J., 537-FD-65
Szafir, D., 549-IS-25
Szefi, J., 343-DS-4
Szmuk, M., 219-GNC-17
Szulczyk, J., 333-AFM-12
Sørensen, J., 190-WE-3
Sørensen, N., 190-WE-3
Tadeja, S., 549-IS-25
Taghavi, R., 252-WE-4, 295-GTE-4
Taghizadeh, S., 125-TP-2
Taguchi, M., 201-APA-21/FD-26/SD-8/AMT-10, 404-APA-38
Taha, H., 81-APA-11, 216-GNC-14, 355-GNC-28, 405-APA-39, 469-APA-47, 505-SD-21
Taha, M., 438-SCS-7
Taira, K., 348-FD-42, 350-FD-44
Takahashi, F., 582-PC-25
Takahashi, H., 405-APA-39, 473-FD-55
Takahashi, K., 477-FD-59, 540-FD-68
Takahashi, M., 164-HSABP-4, 216-GNC-14, 238-PDL-10, 309-PDL-12, 314-SEN-2, 349-FD-43
Takahashi, T., 135-ACD-4, 136-AFM-5, 197-ACD-6, 267-ACD-7, 331-ACD-8, 489-HIS-4
Takaishi, T., 466-APA-44, 529-AMT-22/APA-48
Takano, H., 577-GNC-41
Takeichi, N., 341-DA-1
Takita, Y., 404-APA-38
Talamadupula, K., 230-MAT-5, 298-MAT-7
Talbi, E., 493-MDO-18
Tallant, G., 40-IS-3
Talley, D., 434-PC-17
Talyzin, V., 164-HSABP-4
Tamaki, Y., 215-FD-32, 414-FD-49
Tamura, S., 13-APA-1
Tan, S., 28-FD-7
Tan, Y., 212-FD-29
Tan, Z., 75-AMT-5
Tanabe, H., 374-PDL-15/AMT-14
Tanabe, M., 500-PC-19
Tanabe, Y., 514-WE-9
Tanaka, K., 544-FD-72
Tandon, A., 42-ISC-TM
Tang, J., 321-WE-6
Tang, M., 38-IS-1/GNC-4
Tang, P., 400-AFM-13
Tang, X., 375-PGC-8
Tang, Y., 178-PDL-9, 238-PDL-10, 555-PC-22
Tangirala, V., 436-PGC-9
Tani, Y., 273-APA-29, 306-PC-13, 335-APA-32
Tank, J., 540-FD-68
Tanner, C., 407-APA-41/FD-47/SD-15/AMT-17
Tanno, H., 10-AFM-2, 349-FD-43, 538-FD-66
Tao, G., 220-GNC-18/IS-10, 387-UAS-5
Tao, X., 75-AMT-5, 473-FD-55
Taoudi, A., 387-UAS-5
Taoudi, L., 45-MDO-1
Tarazaga, P., 340-AS-6
Tarazi, S., 95-GNC-6
Tatara, T., 582-PC-25
Tatman, L., 123-SUR-1
Taubert, L., 15-APA-3
Tauchi, S., 309-PDL-12
Taylor, A., 163-GTE-2, 367-MDO-14
Taylor, J., 503-SCS-8, 531-APA-50
Taylor, K., 207-EDU-3
Taylor, N., 319-UAS-3/ACD-15, 569-APA-54
Taylor, P., 54-SD-1, 149-EXPL-1, 380-SD-12
Taylor, R., 184-STR-6, 442-STR-17
Taylor, S., 95-GNC-6
Teixeira de Mendonça, M., 232-MDO-7/APA-26
Tekin, R., 483-GNC-36
Tekinalp, O., 221-GNC-19, 481-GNC-34
Teng, C., 511-TP-13/PDL-16
Teng, T., 268-AFM-9
Tenney, A., 87-FD-12, 133-AA-3
Teo, C., 502-PGC-10
Teope, K., 319-UAS-3/ACD-15, 566-ACD-14/UAS-13
Teramoto, S., 445-TP-10
Terashima, H., 372-PC-15
TerMaath, S., 59-STR-2, 103-MAT-2, 316-STR-12/MAT-10
Terracciano, A., 112-PC-6
Terrapon, V., 469-APA-47
Tessema, A., 384-STR-14
Tetef, T., 24-FD-3
Teubl, D., 461-AFM-16
Tewes, P., 212-FD-29
Thacker, B., 109-NDA-2
Thaker, P., 473-FD-55
Thakur, B., 243-SD-10
Thakur, S., 153-FD-22, 537-FD-65
Thames, C., 245-SOF-4
Thangavelautham, J., 149-EXPL-1, 208-EXPL-2
Thapa, M., 275-AS-5, 304-MDO-13/NDA-6/STR-10
Theile, M., 271-APA-27
Thelen, A., 147-DS-1
Theodorou, E., 495-MST-16
Theodoulis, S., 577-GNC-41
Theofilis, V., 348-FD-42, 538-FD-66, 572-FD-73
Theuma, K., 314-SEN-2
Thiel, E., 180-SCS-3
Thigpen, N., 370-MST-11
Thioulouse, L., 108-MST-4
Thirunavukkarasu, P., 479-FD-62
Thomas, F., 82-APA-12/FD-10/PDL-5, 114-PDL-7
Thomas, J., 126-WE-2, 307-PC-14, 575-FD-76
Thomas, N., 236-PC-11
Thomaz da Silva, E., 108-MST-4
Thome, J., 27-FD-6, 538-FD-66
Thompson, P., 94-GNC-5
Thompson, R., 310-PDL-13
Thornber, B., 407-APA-41/FD-47/SD-15/AMT-17
Thornburg, H., 496-MVCE-3
Threadgill, J., 91-FD-16
Throneberry, G., 526-ACD-12/UAS-12
Thurmond, K., 179-PGC-4, 240-PGC-5
Thurow, B., 75-AMT-5, 573-FD-74
Tiaglik, M., 136-AFM-5
Tian, P., 401-AFM-14
Tibère-Inglesse, A., 189-TP-4, 444-TP-9, 511-TP-13/PDL-16
Tichenor, N., 113-PDL-6, 146-APA-19/AS-3, 473-FD-55, 538-FD-66
Tien, M., 118-SD-5, 559-SD-22
Tierney, B., 474-FD-56
Tierney, C., 431-MVCE-1
Tihomirov, D., 117-SD-4
Tiller, P., 431-MVCE-1
Tillman, G., 363-INPSI-1
Tillman, R., 359-HIS-3
Tilmann, C., 469-APA-47
Timme, S., 14-APA-2, 336-APA-33
Tingas, A., 434-PC-17
Tinker, D., 113-PDL-6
Tinklenberg, A., 474-FD-56
Tischler, M., 268-AFM-9, 333-AFM-12
Titchener, N., 331-ACD-8, 527-ACD-13
Titurus, B., 205-AS-4, 340-AS-6
Tiwari, M., 297-IS-15, 378-SATS-1
Tobias, J., 375-PGC-8
Todorova, B., 249-TP-5, 352-FD-46
Toffol, F., 504-SD-20
Tognaccini, R., 232-MDO-7/APA-26, 531-APA-50
Toki, T., 445-TP-10
Tokugawa, N., 468-APA-46
Tokunaga, A., 554-NDA-12
Tomasi, J., 316-STR-12/MAT-10
Tomko, B., 344-EXPL-4
Tompa, R., 296-IS-14
Tong, X., 114-PDL-7
Toor, Z., 13-APA-1, 145-APA-18, 203-APA-24, 368-MDO-15/APA-37, 487-GTE-7, 488-GTE-8, 569-APA-54
Topcu, U., 157-GNC-9
Topolski, C., 279-EXPL-3
Toratani, D., 94-GNC-5
Torens, C., 166-IS-8/SOF-2, 428-MST-12/SOF-9, 429-MST-13, 494-MST-15/SOF-10
Torisaka, A., 558-SCS-9
Toro, K., 467-APA-45, 546-GT-9
Toropov, V., 427-MDO-17/NDA-8/STR-15
Torres, A., 12-AMT-2
Torres, E., 249-TP-5
Totani, K., 351-FD-45
Towery, C., 75-AMT-5, 200-AMT-9/PC-10, 413-FD-48, 475-FD-57
Trabasso, L., 84-DE-2, 108-MST-4, 172-MST-5
Tran, D., 296-IS-14, 415-FD-50, 560-SEN-5
Tran, P., 63-TP-1
Tran, S., 202-APA-23, 274-APA-30
Tran, T., 506-SEN-4
Trapaidze, T., 370-MST-11
Treager, A., 527-ACD-13
Treve, V., 410-DA-2
Trichilo, J., 281-FD-33
Trifari, V., 70-ACD-2
Trochsler, K., 527-ACD-13
Troldborg, N., 190-WE-3
Tropina, A., 113-PDL-6, 178-PDL-9, 511-TP-13/PDL-16
Trovarelli, F., 161-GNC-13
Trudel, E., 104-MAT-3, 105-MDO-3
Truong, X., 283-FD-35
Truszkowski, A., 531-APA-50
Tsai, F., 534-DS-7
Tsai, J., 382-SEN-3
Tsai, W., 386-TP-8
Tsiotras, P., 157-GNC-9, 481-GNC-34
Tsolakis, C., 497-MVCE-4
Tsourdos, A., 289-GNC-23, 344-EXPL-4, 357-GNC-30, 378-SATS-1
Tsuboi, N., 373-PC-16/PGC-7, 375-PGC-8
Tsushima, N., 56-SD-3
Tu, H., 541-FD-69
Tuckey, T., 202-APA-23
Tufts, M., 210-FD-27, 404-APA-38, 480-FD-63

AUTHOR AND SESSION CHAIR INDEX

Tumer, I., 578-IS-27
Tumin, A., 347-FD-41, 415-FD-50
Türk, D., 312-SCS-5, 438-SCS-7
Turner, M., 138-AMT-6/PC-7, 581-PC-24
Turse, D., 438-SCS-7, 503-SCS-8
Twiss, D., 79-APA-9
Twito, N., 157-GNC-9
Tyagi, A., 39-IS-2, 102-IS-6, 110-PC-4
Tyagi, K., 187-TF-3
Tynis, J., 10-AFM-2, 160-GNC-12, 332-AFM-11
Tyson, W., 352-FD-46, 543-FD-71, 575-FD-76
Tzannetos, D., 165-IS-7
Uchiyama, K., 94-GNC-5, 482-GNC-35
Uchiyama, T., 546-GT-9
Uddi, M., 375-PGC-8
Uechi, K., 477-FD-59
Ueda, S., 170-MDO-5
Uehara, D., 201-APA-21/FD-26/SD-8/AMT-10, 206-DS-2
Ueno, A., 80-APA-10
Ugrinovskii, V., 228-IS-12/GNC-20
Uijt De Haag, M., 234-MST-7, 341-DA-1, 410-DA-2
Ujiie, R., 170-MDO-5
Ukeiley, L., 506-SEN-4
Ulbig, P., 494-MST-15/SOF-10
Ulbrich, N., 464-AMT-19/APA-42, 567-AMT-24/APA-52
Ulrich, S., 481-GNC-34
Ulybyshev, Y., 161-GNC-13
Underwood, L., 491-IS-22
Unnikrishnan, S., 213-FD-30
Unnikrishnan, U., 372-PC-15
Unrau, M., 274-APA-30
Upadhyay, P., 271-APA-27
Upadhyay, S., 481-GNC-34
Urban, P., 369-MST-10
Üre, N., 39-IS-2, 418-GNC-31
Uzun, S., 494-MST-15/SOF-10
Vachtsevanos, G., 388-UAS-6/IS-19/SOF-5
Vackel, A., 528-AMT-21
Vadlamudi, V., 102-IS-6
Vahora, M., 16-APA-4/FD-1/PDL-1
Vairamani, M., 544-FD-72
Valasek, J., 39-IS-2, 40-IS-3, 43-ISC-UG, 221-GNC-19, 268-AFM-9, 291-GNC-25
Valdez, I., 203-APA-24
Valentine, A., 564-UAS-11
Valero, E., 211-FD-28
Valle, G., 241-SCS-4
Valleru, V., 252-WE-4
Valsecchi, P., 317-TES-4
Valverde, A., 481-GNC-34
Vamvoudakis, K., 356-GNC-29/IS-16
Van Baelen, D., 96-GNC-7
Van Buren, T., 346-FD-40
Vance, L., 149-EXPL-1
Van Dam, C., 143-APA-16
VanDamme, C., 54-SD-1
Vanden, K., 80-APA-10
van den Aarssen, M., 333-AFM-12
van den Broek, S., 121-STR-3
Vandenhoeck, R., 286-FD-38, 349-FD-43
VanDercreek, C., 397-AA-7
Van der Linden, F., 38-IS-1/GNC-4
van der Linden, L., 64-WE-1
van der Velden, W., 156-FD-25, 346-FD-40, 466-APA-44, 544-FD-72
van der Weide, E., 142-APA-15
van Dommelen, D., 135-ACD-4
van Donkelaar, F., 41-ISC-MS, 499-OPS-1
van Doornik, J., 106-MST-2
van Duivenbode, E., 47-MST-1
Vane, Z., 174-NDA-4
Vanek, B., 461-AFM-16
van Hoof, J., 47-MST-1
Vani, B., 19-ASE-1
Van Kampen, E., 32-GNC-2, 38-IS-1/GNC-4, 40-IS-3, 218-GNC-16, 576-GNC-40/IS-26
van Oene, E., 47-MST-1
van Oijen, J., 581-PC-24
van Paassen, M., 47-MST-1, 96-GNC-7, 172-MST-5, 305-MST-9
Vanstone, L., 28-FD-7, 422-HSABP-7
van Tooren, M., 315-STR-11
Van Tooren, M., 58-STR-1, 105-MDO-3
van Zanten, F., 105-MDO-3
VanZwieten, T., 576-GNC-40/IS-26
Vargas, J., 444-TP-9
Varshney, M., 80-APA-10, 283-FD-35
Vascik, P., 124-TF-2
Vasconcellos, R., 489-HIS-4
Vasile, J., 91-FD-16, 145-APA-18, 349-FD-43
Vasilyev, O., 386-TP-8
Vasista, S., 470-AS-8
Vasu, S., 35-GTE-1, 112-PC-6, 163-GTE-2, 179-PGC-4, 240-PGC-5, 373-PC-16/PGC-7, 403-AMT-16, 556-PC-23/AMT-23
Vayner, B., 19-ASE-1
Vaz, E., 120-SOF-1
Vazquez, C., 275-AS-5
Vega, J., 380-SD-12, 580-MVCE-7
Velandia, J., 363-INPSI-1
Veldhuis, L., 271-APA-27, 301-MDO-10/APA-31, 460-ACD-11
Veley, E., 151-FD-20
Venkatachari, B., 28-FD-7, 414-FD-49
Venkataraman, S., 171-MDO-6/NDA-3/STR-5, 246-STR-7
Venkatesan, K., 247-STR-8, 585-STR-22
Venkatesan, P., 513-UAS-10/IS-23/SOF-7
Venkatesan-Crome, C., 302-MDO-11/SD-11
Venturi, S., 188-TP-3
Vera, A., 506-SEN-4
Verberg, R., 211-FD-28
Verberne, J., 102-IS-6, 320-UAS-4
Vergara, P., 297-IS-15
Vergez, M., 142-APA-15
Verling, S., 97-GNC-8
Verma, I., 111-PC-5
Verma, S., 243-SD-10
Vetrano, F., 400-AFM-13
Veytskin, Y., 561-STR-20
Viana, F., 304-MDO-13/NDA-6/STR-10, 554-NDA-12
Viavattene, G., 419-GNC-32
Victorazzo, D., 134-ACD-3
Vidal, P., 52-PGC-2/HSABP-2
Videmsek, A., 341-DA-1, 410-DA-2
Vieira De Carvalho, N., 384-STR-14
Vijayachandran, A., 122-STR-4, 247-STR-8
Vijayakumari, D., 289-GNC-23
Viken, S., 273-APA-29, 546-GT-9, 568-APA-53
Villani, E., 84-DE-2, 108-MST-4, 120-SOF-1, 235-MST-8
Vio, G., 337-APA-34, 407-APA-41/FD-47/SD-15/AMT-17, 491-IS-22, 551-MDO-21/NDA-11
Viola, I., 346-FD-40
Viquerat, A., 312-SCS-5, 558-SCS-9
Virgilio Pereira, M., 400-AFM-13
Virgin, L., 505-SD-21
Viros Martin, A., 102-IS-6
Visbal, M., 81-APA-11, 214-FD-31, 283-FD-35, 284-FD-36, 573-FD-74
Vishnyakov, A., 318-TP-6
Vishwanathan, A., 551-MDO-21/NDA-11
Visonneau, M., 551-MDO-21/NDA-11
Visser, T., 333-AFM-12
Viswanath, K., 405-APA-39
V K, V., 279-EXPL-3
Vlachos, P., 177-PDL-8
Vlachou, K., 370-MST-11
Vo, K., 492-MAT-13
Vocke, R., 135-ACD-4
Voegele, A., 336-APA-33, 469-APA-47
Vogel, J., 529-AMT-22/APA-48
Vogiatzis, K., 188-TP-3, 432-MVCE-2, 571-APA-56
Volpiani, P., 28-FD-7
Völzke, F., 311-PGC-6
Von Moll, A., 100-IS-4, 218-GNC-16, 288-GNC-22
Vono, C., 182-SE-3, 359-HIS-3
von Wolfersdorf, J., 510-TP-12
Voronin, S., 102-IS-6
Vos, R., 197-ACD-6, 271-APA-27, 331-ACD-8, 398-ACD-9, 460-ACD-11
Vosteen, A., 64-WE-1
Vukasinovic, B., 478-FD-60
Vyas, M., 476-FD-58, 574-FD-75
Waas, A., 122-STR-4, 247-STR-8, 300-MAT-9/MDO-9/STR-9, 315-STR-11, 383-STR-13
Wabel, T., 176-PC-9
Wachs, J., 116-SCS-2/AS-2
Wackers, J., 551-MDO-21/NDA-11
Wagner, A., 28-FD-7, 99-ICC-1/SEN-1
Wagner, J., 200-AMT-9/PC-10, 465-APA-43/FD-54/SD-19/AMT-20, 486-GT-8
Wagner, M., 236-PC-11
Wagner, P., 383-STR-13
Wagnild, R., 210-FD-27
Wahlberg, B., 290-GNC-24
Wainwright, D., 417-FD-53
Waite, J., 242-SD-9, 505-SD-21
Waldmann, A., 571-APA-56
Walgren, P., 408-AS-7
Walker, M., 491-IS-22
Walker, T., 122-STR-4
Waller, D., 103-MAT-2
Walsh, P., 403-AMT-16
Walsten, A., 239-PDL-11
Walter, S., 428-MST-12/SOF-9
Walters, I., 375-PGC-8
Walters, R., 304-MDO-13/NDA-6/STR-10
Walters, S., 476-FD-58
Wan, C., 158-GNC-10
Wan, N., 229-IS-13, 320-UAS-4
Wan, Y., 39-IS-2, 102-IS-6, 251-UAS-2, 533-CMS-1
Wan, Z., 8-ACD-1, 105-MDO-3, 340-AS-6, 381-SD-13
Wang, A., 19-ASE-1
Wang, B., 100-IS-4, 251-UAS-2, 382-SEN-3, 562-STR-21
Wang, C., 235-MST-8, 554-NDA-12
Wang, H., 306-PC-13, 372-PC-15, 484-GNC-37, 543-FD-71
Wang, J., 101-IS-5, 288-GNC-22, 346-FD-40, 417-FD-53, 482-GNC-35, 491-IS-22
Wang, K., 114-PDL-7
Wang, L., 50-PC-2/PGC-1, 351-FD-45, 426-MDO-16/SD-16, 433-NDA-9
Wang, M., 114-PDL-7
Wang, P., 304-MDO-13/NDA-6/STR-10, 417-FD-53, 551-MDO-21/NDA-11
Wang, Q., 45-MDO-1, 469-APA-47
Wang, S., 189-TP-4, 403-AMT-16, 506-SEN-4
Wang, X., 8-ACD-1, 32-GNC-2, 108-MST-4, 109-NDA-2, 121-STR-3, 213-FD-30, 235-MST-8, 239-PDL-11, 242-SD-9, 439-SD-17, 469-APA-47, 554-NDA-12, 566-ACD-14/UAS-13
Wang, Y., 8-ACD-1, 13-APA-1, 82-APA-12/FD-10/PDL-5, 88-FD-13, 109-NDA-2, 476-FD-58, 556-PC-23/AMT-23
Wang, Z., 30-FD-9, 72-AFM-4, 105-MDO-3, 161-GNC-13, 242-SD-9, 287-FD-39, 304-MDO-13/NDA-6/STR-10, 351-FD-45, 423-INPSI-2, 469-APA-47
Wanthal, S., 103-MAT-2, 122-STR-4, 442-STR-17
Warbecq, N., 405-APA-39
Ward, K., 219-GNC-17
Wardi, Y., 356-GNC-29/IS-16
Wardle, B., 298-MAT-7, 299-MAT-8, 366-MAT-11
Ward Rashidi, M., 408-AS-7
Warren, M., 124-TF-2
Warsop, C., 15-APA-3, 77-APA-7
Wartmann, J., 218-GNC-16, 235-MST-8
Warwick, S., 275-AS-5
Washington, M., 115-PGC-3/HSABP-3
Watanabe, T., 164-HSABP-4, 373-PC-16/PGC-7, 539-FD-67
Watanabe, Y., 32-GNC-2, 339-APA-36/PDL-14, 548-ICC-2
Watkins, A., 546-GT-9, 568-APA-53, 570-APA-55
Watkins, N., 486-GT-8, 546-GT-9
Watkins, S., 137-AFM-6, 214-FD-31, 350-FD-44
Watson, L., 427-MDO-17/NDA-8/STR-15
Weathers, T., 318-TP-6
Weaver, P., 58-STR-1, 121-STR-3, 441-STR-16, 442-STR-17
Weber, S., 462-AFM-17
Weckner, O., 233-MDO-8, 508-STR-19
Weed, K., 445-TP-10
Weger, K., 244-SE-4
Wegmann, M., 315-STR-11
Wehbe, R., 316-STR-12/MAT-10, 384-STR-14
Wei, F., 147-DS-1, 527-ACD-13
Wei, H., 230-MAT-5
Wei, M., 478-FD-60, 540-FD-68
Wei, P., 410-DA-2
Wei, Z., 108-MST-4, 566-ACD-14/UAS-13
Weintraub, I., 165-IS-7
Weirs, V., 543-FD-71, 563-TP-14
Weisberger, J., 12-AMT-2
Weiss, A., 112-PC-6
Weiss, J., 151-FD-20, 212-FD-29
Weiss, P., 26-FD-5
Weitz, L., 108-MST-4
Welch, L., 426-MDO-16/SD-16
Wells, D., 399-ACD-10
Welsh, W., 206-DS-2, 534-DS-7
Wen, C., 282-FD-34
Wen, G., 417-FD-53
Wen, T., 475-FD-57
Wendt, F., 190-WE-3
Weng, H., 318-TP-6
Wenk, J., 477-FD-59
Wenren, Y., 272-APA-28
Wentink, M., 172-MST-5
Wercinski, P., 332-AFM-11
Werner, M., 10-AFM-2
Werner, S., 397-AA-7
Wernet, M., 69-AA-2
Wernz, S., 91-FD-16
West, T., 63-TP-1, 433-NDA-9
Weston, D., 479-FD-62
Westphal, E., 528-AMT-21
Weyer, T., 447-UAS-8/IS-21/SOF-6
Weymouth, G., 285-FD-37
Whalen, E., 212-FD-29
Whalen, J., 582-PC-25
Whalen, T., 281-FD-33
Wheaton, B., 27-FD-6, 347-FD-41
Wheaton, M., 57-SE-1, 244-SE-4
Wheeler, R., 104-MAT-3, 298-MAT-7
Whidborne, J., 400-AFM-13
Whitacre, W., 159-GNC-11, 217-GNC-15, 288-GNC-22
Whitcher, L., 495-MST-16
White, C., 182-SE-3, 530-APA-49
White, E., 24-FD-3, 282-FD-34
White, J., 37-HSABP-1
White, L., 63-TP-1, 557-PGC-12
White, M., 239-PDL-11, 331-ACD-8
White, T., 46-MDO-2
Whitehouse, G., 144-APA-17, 530-APA-49
Whiteside, S., 266-AA-5/TF-5
Whiting, N., 464-AMT-19/APA-42
Whitlow, S., 234-MST-7
Wicke, K., 399-ACD-10
Wicks, S., 299-MAT-8
Widhalm, M., 107-MST-3/SOF-8
Wieck, A., 564-UAS-11
Wieczorek, T., 296-IS-14
Wieland, F., 370-MST-11
Wignall, T., 467-APA-45
Wijesinghe, C., 61-TES-2
Wilbers, D., 44-MAT-1
Wilburn, B., 528-AMT-21
Wild, J., 107-MST-3/SOF-8
Wilde, M., 344-EXPL-4
Wilhelm, J., 101-IS-5, 165-IS-7, 250-UAS-1,

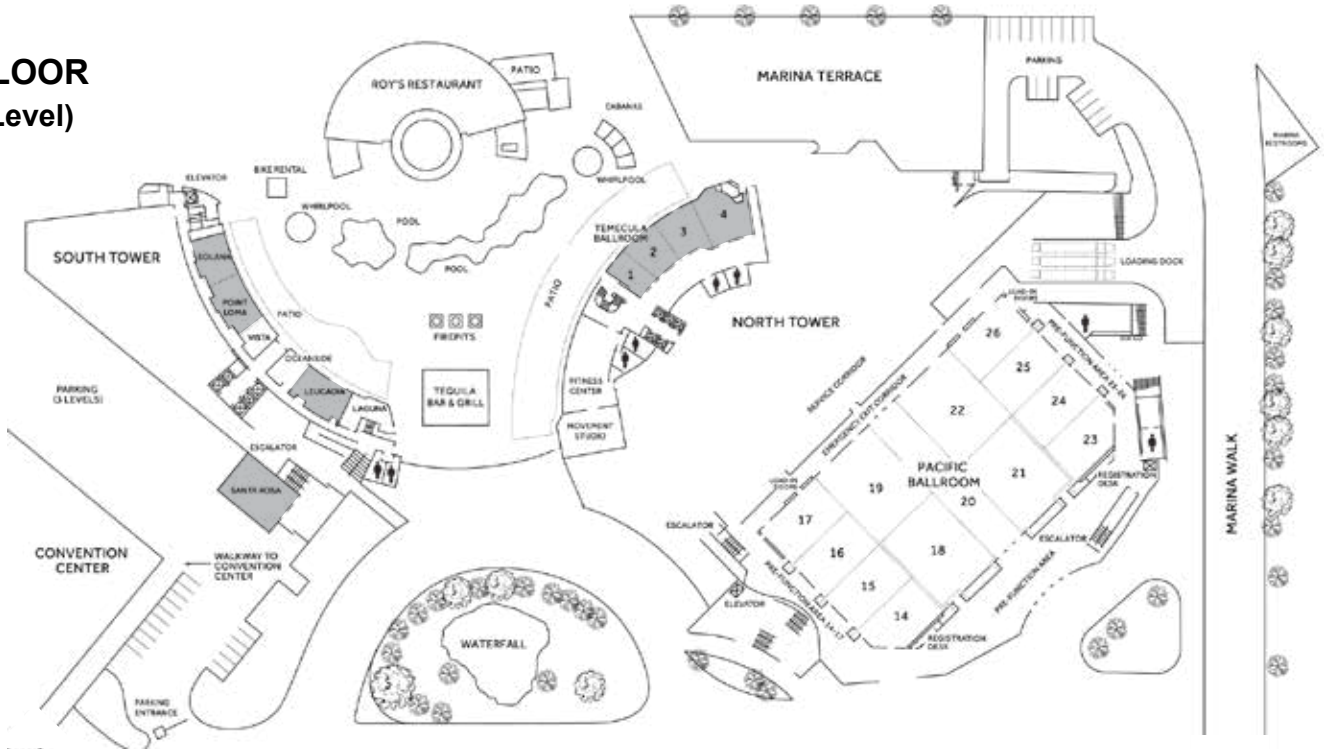
AUTHOR AND SESSION CHAIR INDEX

364-IS-17, 447-UAS-8/IS-21/SOF-6
Will, F., 525-AA-9
Willcox, K., 109-NDA-2, 304-MDO-13/NDA-6/STR-10
Willert, C., 25-FD-4
Williams, D., 15-APA-3, 77-APA-7, 211-FD-28, 285-FD-37
Williams, F., 50-PC-2/PGC-1, 112-PC-6, 175-PC-8
Williams, J., 160-GNC-12
Willich, C., 420-GRE-1
Willis, B., 440-SD-18, 562-STR-21
Willis, D., 76-APA-6
Wilson, D., 115-PGC-3/HSABP-3
Wilson, J., 464-AMT-19/APA-42
Wilson, S., 559-SD-22
Wilson, T., 141-APA-14, 283-FD-35, 470-AS-8, 471-DS-6, 536-FD-64
Wilt, D., 420-GRE-1
Windsor, S., 484-GNC-37
Winkler, J., 7-AA-1
Winski, C., 107-MST-3/SOF-8, 570-APA-55
Winters, C., 200-AMT-9/PC-10
Wirsing, L., 527-ACD-13
Wisniewski, C., 43-ISC-UG, 271-APA-27
Wisser, B., 570-APA-55
Wissink, A., 202-APA-23, 274-APA-30
Witte, I., 292-GNC-38
Wittig, T., 16-APA-4/FD-1/PDL-1
Wixner, A., 292-GNC-38
Woffinden, D., 160-GNC-12
Wojnar, C., 492-MAT-13
Wolf, C., 573-FD-74
Wolf, M., 424-IS-20
Wolf, T., 27-FD-6
Wolf, W., 7-AA-1, 86-FD-11, 350-FD-44, 352-FD-46
Wolff, M., 151-FD-20, 295-GTE-4, 536-FD-64
Wolff, S., 436-PGC-9
Wong, D., 552-MVCE-5
Wong, G., 507-STR-18
Wongwiwat, J., 581-PC-24, 582-PC-25
Woodgate, M., 78-APA-8
Woodruff, S., 414-FD-49
Woods, B., 58-STR-1, 205-AS-4, 340-AS-6, 470-AS-8
Woolsey, C., 81-APA-11, 199-AFM-8, 401-AFM-14, 512-UAS-9
Woszidlo, R., 212-FD-29, 541-FD-69
Wright, J., 153-FD-22, 537-FD-65
Wright, M., 34-GT-1, 293-GT-5
Wright, R., 12-AMT-2, 436-PGC-9
Wu, B., 49-PC-1
Wu, C., 312-SCS-5
Wu, G., 369-MST-10
Wu, H., 75-AMT-5, 401-AFM-14, 473-FD-55
Wu, J., 210-FD-27, 531-APA-50
Wu, L., 415-FD-50
Wu, M., 512-UAS-9
Wu, S., 113-PDL-6
Wu, T., 180-SCS-3
Wu, W., 211-FD-28
Wu, Y., 51-PDL-3, 334-AMT-13, 511-TP-13/PDL-16
Wu, Z., 302-MDO-11/SD-11, 470-AS-8
Wuestenhagen, M., 461-AFM-16
Wuetcher, A., 213-FD-30
Wukie, N., 459-AA-8, 542-FD-70
Wyciszkiewicz, B., 582-PC-25
Wygnanski, I., 15-APA-3
Wylie, S., 486-GT-8
Wyman, N., 432-MVCE-2, 580-MVCE-7
Wysocki, G., 511-TP-13/PDL-16
Xia, C., 225-HSABP-5
Xiang, L., 506-SEN-4
Xiao, J., 59-STR-2, 441-STR-16, 561-STR-20
Xie, C., 54-SD-1, 381-SD-13, 415-FD-50
Xie, J., 251-UAS-2, 447-UAS-8/IS-21/SOF-6
Xiong, J., 56-SD-3, 330-AA-6
Xu, C., 49-PC-1, 318-TP-6, 413-FD-48
Xu, H., 251-UAS-2, 512-UAS-9, 568-APA-53
Xu, J., 206-DS-2
Xu, K., 239-PDL-11, 309-PDL-12, 468-APA-46, 569-APA-54
Xu, L., 298-MAT-7, 405-APA-39
Xu, W., 348-FD-42
Xu, Y., 288-GNC-22
Xuan, Y., 215-FD-32, 413-FD-48, 537-FD-65
Xue, K., 287-FD-39
Xue, M., 82-APA-12/FD-10/PDL-5, 167-IS-9
Yadav, R., 111-PC-5
Yagle, P., 406-APA-40
Yakimenko, O., 9-AFM-1, 268-AFM-9
Yalin, A., 51-PDL-3, 113-PDL-6
Yamada, G., 339-APA-36/PDL-14
Yamada, K., 385-TP-7, 529-AMT-22/APA-48
Yamada, T., 367-MDO-14, 404-APA-38
Yamaguchi, I., 577-GNC-41
Yamaguchi, K., 445-TP-10
Yamakawa, H., 558-SCS-9
Yamamoto, K., 466-APA-44, 529-AMT-22/APA-48, 544-FD-72
Yamamoto, N., 228-IS-12/GNC-20, 366-MAT-11, 425-MAT-12
Yamamoto, S., 341-DA-1
Yamasaki, T., 220-GNC-18/IS-10, 577-GNC-41
Yamato, H., 478-FD-60
Yamazaki, W., 552-MVCE-5
Yan, C., 511-TP-13/PDL-16
Yan, D., 340-AS-6
Yan, S., 272-APA-28
Yanase, S., 463-AMT-18
Yanes, N., 189-TP-4
Yang, B., 180-SCS-3
Yang, C., 8-ACD-1, 54-SD-1, 105-MDO-3, 109-NDA-2, 187-TF-3, 340-AS-6, 560-SEN-5
Yang, H., 431-MVCE-1
Yang, J., 357-GNC-30
Yang, M., 266-AA-5/TF-5
Yang, R., 418-GNC-31
Yang, S., 45-MDO-1, 113-PDL-6, 242-SD-9, 431-MVCE-1
Yang, V., 372-PC-15
Yang, Y., 295-GTE-4, 398-ACD-9
Yang, Z., 79-APA-9
Yano, M., 75-AMT-5
Yao, C., 25-FD-4
Yao, H., 7-AA-1, 108-MST-4, 165-IS-7, 211-FD-28
Yao, Q., 178-PDL-9
Yao, S., 253-WE-5, 321-WE-6
Yao, W., 232-MDO-7/APA-26, 580-MVCE-7
Yao, Y., 503-SCS-8
Yao, Z., 180-SCS-3
Yapa Hamillage, M., 438-SCS-7
Yapor Genao, F., 184-STR-6
Yar, A., 488-GTE-8
Yarantsev, D., 164-HSABP-4
Yarwood, J., 566-ACD-14/UAS-13
Yashin, Y., 172-MST-5
Yasuda, A., 335-APA-32
Yates, H., 480-FD-63
Yatsukhno, D., 188-TP-3
Yaylali, D., 159-GNC-11
Yechout, T., 13-APA-1
Yee, P., 385-TP-7
Yellapantula, S., 386-TP-8
Yenchesky, L., 180-SCS-3
Yeniceri, R., 369-MST-10, 370-MST-11, 428-MST-12/SOF-9
Yeo, D., 22-EDU-1, 297-IS-15, 424-IS-20
Yeo, H., 534-DS-7
Yeo, S., 309-PDL-12
Yeung, A., 568-APA-53
Yi, T., 176-PC-9, 556-PC-23/AMT-23
Yi, X., 185-SUR-2
Yildirim, A., 579-MDO-22
Yildirim, E., 356-GNC-29/IS-16, 576-GNC-40/IS-26
Yildiz, A., 103-MAT-2
Yildiz, Y., 545-GNC-39/IS-24
Yim, V., 561-STR-20
Yin, D., 165-IS-7
Yin, M., 227-IS-11
Yoder, D., 87-FD-12, 475-FD-57, 476-FD-58, 536-FD-64
Yokokawa, Y., 336-APA-33, 466-APA-44, 529-AMT-22/APA-48, 544-FD-72
Yokoo, R., 373-PC-16/PGC-7
Yokoyama, N., 418-GNC-31
Yokozeki, T., 56-SD-3
Yonemoto, K., 170-MDO-5
Yoneyama, T., 554-NDA-12
Yoo, H., 335-APA-32
Yoo, S., 76-APA-6
Yoon, H., 365-IS-18
Yoon, J., 512-UAS-9
Yoon, S., 388-UAS-6/IS-19/SOF-5
Yoon, Y., 545-GNC-39/IS-24
Yorita, D., 11-AMT-1
You, H., 351-FD-45
You, Q., 559-SD-22
You, S., 158-GNC-10
Young, A., 214-FD-31
Young, G., 501-PC-20
Young, J., 309-PDL-12
Young, M., 298-MAT-7, 338-APA-35
Young, R., 166-IS-8/SOF-2
Young, S., 173-MST-6, 234-MST-7
Yount, B., 332-AFM-11
Yousafzai, A., 165-IS-7
Yu, H., 154-FD-23, 358-GTE-5
Yu, K., 240-PGC-5, 528-AMT-21, 557-PGC-12
Yu, M., 144-APA-17, 351-FD-45, 541-FD-69
Yu, S., 271-APA-27
Yu, T., 340-AS-6
Yu, W., 19-ASE-1, 168-MAT-4, 299-MAT-8
Yu, Y., 108-MST-4, 559-SD-22, 585-STR-22
Yu, Z., 559-SD-22
Yuan, S., 180-SCS-3
Yuan, X., 577-GNC-41
Yuan, Z., 479-FD-62
Yucel, A., 39-IS-2, 102-IS-6
Yücel, F., 311-PGC-6
Yucelen, T., 32-GNC-2, 165-IS-7, 220-GNC-18/IS-10, 288-GNC-22, 289-GNC-23, 296-IS-14, 356-GNC-29/IS-16, 545-GNC-39/IS-24, 560-SEN-5, 576-GNC-40/IS-26
Yucesan, Y., 304-MDO-13/NDA-6/STR-10
Yue, T., 225-HSABP-5
Yuhara, T., 473-FD-55
Yuksek, B., 369-MST-10, 494-MST-15/SOF-10
Yükselen, M., 531-APA-50
Yusuf, S., 400-AFM-13
Zaal, P., 47-MST-1, 106-MST-2, 172-MST-5, 234-MST-7
Zabarnick, S., 236-PC-11, 582-PC-25
Zaccara, M., 213-FD-30
Zackery, M., 146-APA-19/AS-3
Zaczek, L., 581-PC-24
Zahn, A., 59-STR-2
Zahr, M., 93-FD-18, 286-FD-38, 426-MDO-16/SD-16
Zaichik, L., 172-MST-5
Zakar, D., 563-TP-14
Zakaria, M., 81-APA-11, 389-WE-7, 446-UAS-7/ACD-16
Zalkind, D., 448-WE-8
Zaman, K., 133-AA-3, 271-APA-27
Zamboni, J., 398-ACD-9
Zammit, C., 218-GNC-16
Zammit-Mangion, D., 314-SEN-2
Zander, F., 44-MAT-1
Zanganeh, M., 585-STR-22
Zawodny, N., 266-AA-5/TF-5
Zaychik, K., 106-MST-2
Zdanawicz, A., 12-AMT-2
Zdybal, D., 582-PC-25
Zeng, P., 121-STR-3
Zengin, U., 494-MST-15/SOF-10
Zha, G., 13-APA-1, 143-APA-16, 398-ACD-9, 468-APA-46
Zhan, X., 95-GNC-6
Zhang, A., 159-GNC-11
Zhang, C., 348-FD-42
Zhang, D., 299-MAT-8, 561-STR-20
Zhang, F., 482-GNC-35
Zhang, H., 211-FD-28, 365-IS-18
Zhang, J., 281-FD-33, 343-DS-4, 468-APA-46, 482-GNC-35
Zhang, K., 348-FD-42
Zhang, R., 466-APA-44
Zhang, S., 287-FD-39
Zhang, T., 50-PC-2/PGC-1
Zhang, W., 64-WE-1, 93-FD-18, 478-FD-60, 484-GNC-37
Zhang, X., 26-FD-5, 95-GNC-6, 284-FD-36, 340-AS-6, 542-FD-70, 559-SD-22
Zhang, Y., 227-IS-11, 239-PDL-11, 302-MDO-11/SD-11, 320-UAS-4, 371-NDA-7, 433-NDA-9, 463-AMT-18, 482-GNC-35, 550-MDO-20, 559-SD-22
Zhang, Z., 45-MDO-1, 114-PDL-7, 153-FD-22, 200-AMT-9/PC-10, 295-GTE-4, 334-AMT-13, 439-SD-17
Zhao, D., 397-AA-7
Zhao, J., 206-DS-2
Zhao, L., 287-FD-39
Zhao, P., 341-DA-1
Zhao, Q., 144-APA-17
Zhao, W., 181-SD-7, 461-AFM-16, 479-FD-62
Zhao, X., 49-PC-1, 413-FD-48, 500-PC-19
Zheng, B., 82-APA-12/FD-10/PDL-5
Zheng, L., 358-GTE-5
Zheng, Y., 405-APA-39, 429-MST-13
Zheng, Z., 355-GNC-28
Zhong, H., 511-TP-13/PDL-16
Zhong, X., 210-FD-27, 282-FD-34, 351-FD-45
Zhou, B., 7-AA-1, 45-MDO-1, 88-FD-13
Zhou, C., 78-APA-8
Zhou, D., 159-GNC-11
Zhou, H., 506-SEN-4
Zhou, L., 107-MST-3/SOF-8, 423-INPSI-2, 571-APA-56
Zhou, X., 302-MDO-11/SD-11, 431-MVCE-1
Zhou, Y., 180-SCS-3, 386-TP-8, 423-INPSI-2, 576-GNC-40/IS-26
Zhou, Z., 112-PC-6, 439-SD-17, 537-FD-65, 581-PC-24
Zhu, B., 207-EDU-3
Zhu, G., 56-SD-3, 410-DA-2
Zhu, J., 577-GNC-41
Zhu, K., 200-AMT-9/PC-10, 307-PC-14, 403-AMT-16
Zhu, M., 355-GNC-28, 482-GNC-35
Zhu, P., 358-GTE-5
Zhu, R., 346-FD-40, 417-FD-53
Zhu, S., 105-MDO-3
Zhu, W., 29-FD-8, 81-APA-11
Zhu, X., 402-AMT-15
Zhu, Y., 250-UAS-1
Zhu, Z., 368-MDO-15/APA-37, 496-MVCE-3
Zhupanska, O., 44-MAT-1
Ziegler, T., 221-GNC-19
Ziehl, P., 315-STR-11, 384-STR-14
Zientarski, L., 404-APA-38, 568-APA-53
Zigunov, F., 284-FD-36
Zihan, X., 566-ACD-14/UAS-13
Zimmerman, J., 16-APA-4/FD-1/PDL-1
Zimmermann, C., 567-AMT-24/APA-52
Zingg, D., 232-MDO-7/APA-26, 568-APA-53
Zipay, J., 149-EXPL-1, 562-STR-21
Zitoun, R., 52-PGC-2/HSABP-2
Zollitsch, A., 491-IS-22
Zongolowicz, A., 504-SD-20
Zubrin, R., 149-EXPL-1, 279-EXPL-3
Zuehlke, D., 229-IS-13
Zuhal, L., 126-WE-2
Zuo, J., 484-GNC-37
Zürn, M., 355-GNC-28
Zwick, M., 382-SEN-3
Zwolak, A., 582-PC-25

VENUE MAP

MARRIOTT MARQUIS SAN DIEGO MARINA

FIRST FLOOR
(Ground Level)



FOURTH FLOOR
(South Tower)

Rooms being used for AIAA SciTech activities

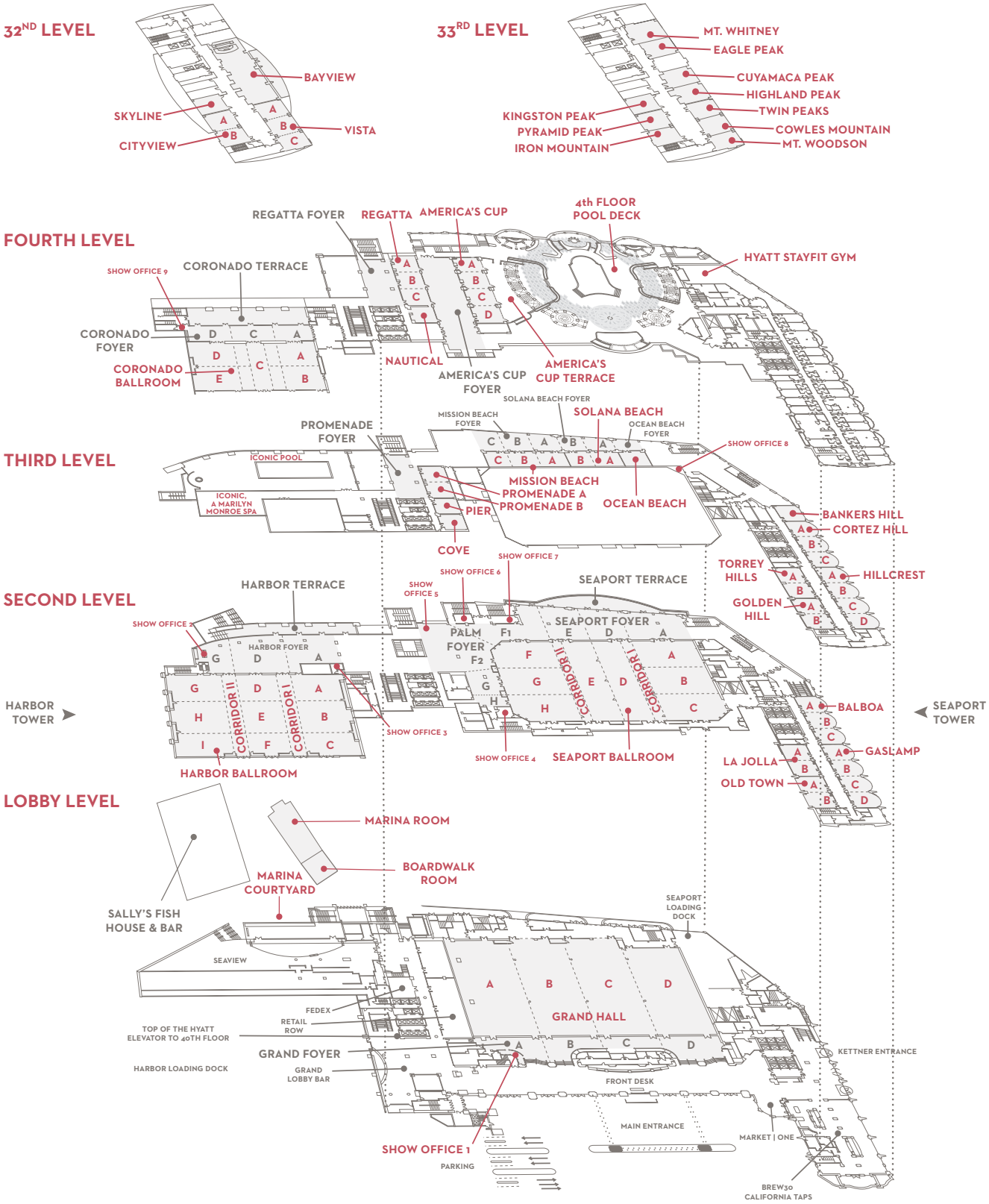
0.3 mile (6 minute walk)

VENUE MAP

MANCHESTER GRAND HYATT SAN DIEGO

FLOOR PLAN

All Floors



SCITECH FORUM

6–10 JANUARY 2020 | ORLANDO, FL

SEE YOU NEXT YEAR

Mark your calendars for the first major aerospace event of 2020 — AIAA Science and Technology Forum and Exposition — where engineers, researchers, students, and aerospace leaders from around the world share the most original perspectives, collaborate on stimulating ideas, and influence the future of aerospace.

The Call for Papers will open March 2019.

Sign up for email alerts!

scitech.aiaa.org/GetAlerts

AIAA

SHAPING THE FUTURE OF AEROSPACE