

IEEE

October 29 - November 4

San Diego 2006

Conference Program



Nuclear Science Symposium

Medical Imaging Conference

15th International Workshop on
Room-Temperature Semiconductor
X- and Gamma-Ray Detectors

Special Focus Workshops

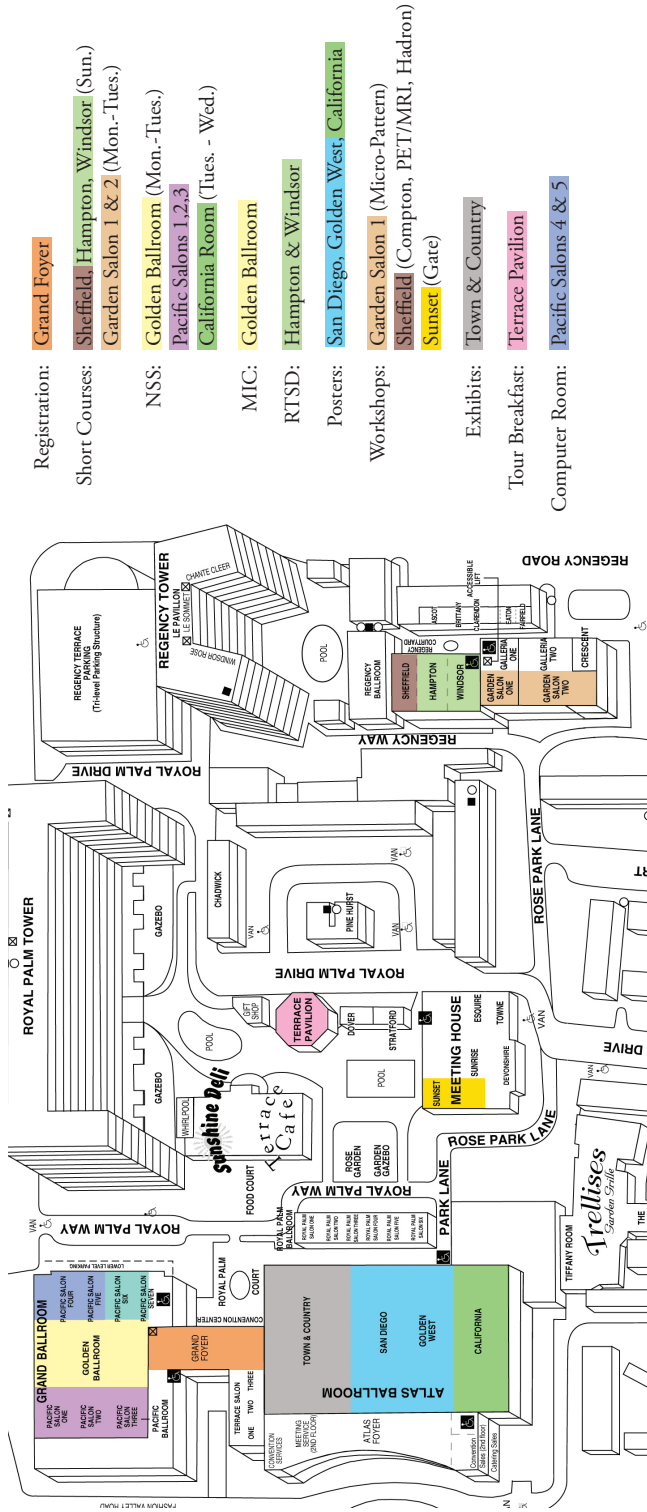
*Town and Country Resort
& Convention Center*

San Diego CA, USA

www.nss-mic.org/2006



Town & Country Resort & Convention Center



- Registration: **Grand Foyer**
- Short Courses: **Sheffield, Hampton, Windsor (Sun.)**
Garden Salon 1 & 2 (Mon.-Tues.)
- NSS: **Golden Ballroom (Mon.-Tues.)**
Pacific Salons 1,2,3
California Room (Tues. - Wed.)
- MIC: **Golden Ballroom**
- RTSD: **Hampton & Windsor**
- Posters: **San Diego, Golden West, California**
- Workshops: **Garden Salon 1 (Micro-Pattern)**
Sheffield (Compton, PET/MRI, Hadron)
Sunset (Gate)
- Exhibits: **Town & Country**
- Tour Breakfast: **Terrace Pavilion**
- Computer Room: **Pacific Salons 4 & 5**

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WELCOME FROM THE GENERAL CHAIR

Dear Colleagues,

It is a pleasure to welcome you to the annual IEEE gathering, which this year is being held in San Diego, California, at the Town and Country Resort & Convention Center. The conference includes presentations of the latest research and applications under the banners of the Nuclear Science Symposium, the Medical Imaging Conference, the 15th International Workshop on Room-Temperature Semiconductor X- and Gamma-Ray Detectors, and a number of Special Focus Workshops. In addition, a comprehensive set of short courses has been arranged in the continuing education program. The Town and Country provides an ideal setting for the conference, with ample lecture space, accommodation and restaurants on a gorgeous site that allows attendees to stroll comfortably from one session to another. Accommodation ranges from modern multi-story towers to quaint bungalow-style rooms. Adjacent to the resort is a large shopping mall, and a light rail system that provides easy access to downtown San Diego.

The program chairs have arranged an exciting and varied scientific program from the more than 1300 submissions that we have received. Integrated into the scientific program is an industrial exhibition featuring the most up-to-date products and services from a wide range of vendors. To supplement the conference program, a companion program will provide daily trips to some of the many attractions in and around the San Diego area.

On behalf of the Conference Committee, I look forward to seeing you in San Diego at the end of October. The Committee has worked extremely hard toward making this a stimulating occasion both technically and socially.

Graham Smith
General Chair



PROGRAM OUTLINE

Sunday, October 29

- 07:30-09:30 Registration Open, Grand Foyer.
- 08:30-17:00 Short Course #1. The Interaction of Radiation with Matter: Theory and Practice. Sheffield.
- 08:30-17:00 Short Course #2. Nuclear Science for Homeland Security. Hampton.
- 08:30-17:00 Short Course #3. Integrated Circuit Front Ends for Nuclear Pulse Processing. Windsor.
- 09:45-13:45 Tour #1: Sightseeing in Old Town San Diego.
- 09:00-10:30 MP1: Plenary Session. Garden Salon 1
- 10:50-12:10 MP2: MICROMEGAS detectors. Garden Salon 1
- 13:30-14:50 MP3: GEM detectors. Garden Salon 1
- 15:15-16:15 MP4: GEM/Capillary Plate detectors. Garden Salon 1
- 16:30-18:35 MP5: Pixel Readout for Micro-Pattern Gas Detectors. Garden Salon 1
- 15:30-18:30 Registration Open, Grand Foyer.

Monday, October 30

- 07:30-17:00 Registration Open, Grand Foyer.
- 08:30-17:00 Short Course #4. Molecular Biology for Imaging Scientists. Garden Salon 1.
- 08:30-17:00 Short Course #5. Detectors for PET and SPECT. Garden Salon 2.
- 09:00-11:50 N01. NSS Plenary
- 09:30-16:00 Tour #2: South of the Border Adventure.
- 12:00-14:00 NSS Luncheon, Awards and Speaker. California.
- 13:30-15:05 R01. CZT 1. Hampton & Windsor.
- 14:00-15:30 N02. Computing in HEP Experiments. Golden Ballroom
- 14:00-15:30 N03. Detector and Electronics for the SNS. Pacific Salon 1.
- 14:00-15:15 N04. Gas Detectors 1. Pacific Salon 2.
- 14:00-15:30 N05. Photodetectors and Radiation Imaging 1. Pacific Salon 3.
- 15:30-17:20 R02. CZT II
- 16:00-18:00 N06. Instrumentation for Homeland Security. Golden Ballroom.
- 16:00-17:30 N07. Core Software Tools. Pacific Salon 1.
- 16:00-17:45 N08. Data Acquisition and Analysis Systems 1. Pacific Salon 2.
- 16:00-18:00 N09. Radiation Damage Effects. Pacific Salon 3.

Welcome

Tuesday, October 31

- 07:30-20:00 Registration Open, Grand Foyer.
- 08:30-17:00 Short Course #6. Small Animal Imaging: Detectors and Technical Aspects. Garden Salon 1.
- 08:30-17:00 Short Course #7. Image Quality. Garden Salon 2.
- 08:30-10:00 N10. HEP & NP Instrumentation 1: Calorimetry. Golden Ballroom.
- 08:30-10:00 N11. Neutron Imaging & Radiography. Pacific Salon 1.
- 08:30-10:00 N12. Nuclear Measurements and Monitoring Techniques 1. Pacific Salon 3.
- 08:30-10:00 N13. Analog and Digital Circuits 1. California.
- 08:30-10:00 R03. Pixel Detectors. Hampton & Windsor.
- 09:30-16:00 Tour #3: San Diego City Tour
- 10:30-12:00 N14. NSS Poster 1. San Diego and Golden West.
- 10:30-12:00 R04. Wide Band-gap Materials. Hampton & Windsor.
- 12:00-21:00 Exhibits Open
- 13:00-16:30 Tour #4: Sailing Aboard the Aolani Catamaran
- 13:30-15:00 NM1. NSS MIC Joint Session 1. Golden Ballroom.
- 13:30-15:00 N15. HEP & NP Instrumentation II. Pixel Detectors. Pacific Salon 1.
- 13:30-15:00 N16. Gas Detectors II. Pacific Salon 3.
- 13:30-15:00 N17. Analog and Digital Circuits II. California.
- 13:30-15:05 R05. Detectors for Homeland Security. Hampton & Windsor.
- 15:30-17:30 NM2. NSS MIC Joint Session 2. Golden Ballroom.
- 15:30-17:00 N18. HEP & NP Instrumentation 3: Silicon and Diamond Detectors. Pacific Salon 1.
- 15:30-17:00 N19. Synchrotron Radiation Instrumentation. Pacific Salon 2.
- 15:30-17:30 N20. Data Acquisition and Analysis Systems II. Pacific Salon 3.
- 15:30-17:30 N21. Astrophysics and Space Instrumentation 1. California.
- 15:30-17:30 R06. RTSD Posters. Atlas Ballroom
- 19:00-21:00 Exhibitors Reception. Atlas Ballroom.

Wednesday, November 1

- 07:30-18:00 Registration Open, Grand Foyer.
- 08:00-10:00 M01. X-ray and CT. Golden Ballroom.
- 08:25-10:00 R07. CZT III. Hampton & Windsor.
- 08:30-10:00 N22. Software for Radiobiology and Hadron Therapy. Pacific Salon 1.
- 08:30-10:00 N23. HEP & NP Instrumentation IV: New Detection Techniques. Pacific Salon 2.

- 08:30-10:00 N24. Gas Detectors III. Pacific Salon 3.
- 08:30-10:00 N25. Analog and Digital Circuits III. California.
- 09:00-18:00 Exhibits Open
- 10:30-15:30 Tour #5: Jewels by the Sea
- 10:25-11:05 R08. Neutron Detectors. Hampton & Windsor.
- 10:30-12:15 N26. Data Analysis and Grid. Pacific Salon 1.
- 10:30-12:00 N27. HEP & NP Instrumentation V: Detector Commissioning and Engineering Aspects. Pacific Salon 2.
- 10:30-12:00 N28. Nuclear Measurements and Monitoring Techniques II. Pacific Salon 3.
- 10:30-11:45 N29. Scintillators 1 - Plastics & Other Scintillators.
- 10:30-12:20 M02. MIC Plenary. Golden Ballroom.
- 11:20-14:30 R09. RTSD Lunch/Cruise.
- 13:30-15:00 N30. NSS Poster II. Atlas Ballroom.
- 13:30-15:00 M03. Observer Analysis and Modelling. Golden Ballroom.
- 15:30-17:15 N31. Software for Radiation Protection and Nuclear Medicine. Pacific Salon 1.
- 15:30-16:30 N32. HEP & NP Instrumentation VI: Muon Detectors. Pacific Salon 2.
- 15:30-17:30 N33. Trigger and Front End Systems. Pacific Salon 3.
- 15:30-17:30 N34. Solid State Tracking Detectors. California.
- 15:30-17:30 M04. PET Reconstruction. Golden Ballroom.
- 15:30-17:30 MR1. MIC RTSD Joint Session. Hampton & Windsor.
- 18:30-21:00 Conference Reception. Terrace Pavilion.

Thursday, November 2

- 07:30-17:00 Registration Open, Grand Foyer.
- 08:00-10:00 M05. Modelling and Image Analysis. Golden Ballroom.
- 08:00-12:30 Special Focus Workshop: Innovative Techniques for Hadron Therapy. Sheffield.
- 08:25-10:00 R11. Growth and Characterization. Hampton & Windsor.
- 08:30-10:00 N35. Detector Software. Pacific Salon 1.
- 08:30-09:45 N36. HEP & NP Instrumentation VII: Tracking Detectors and Neutrino Experiment Devices. Pacific Salon 2.
- 08:30-09:45 N37. Scintillators II - Energy Resolution - Radiation Damage. Pacific Salon 3.
- 09:00-15:00 Tour #7: Palomar Observatory
- 09:00-16:00 Exhibits Open
- 09:30-14:00 Tour #6: SeaWorld Splash
- 10:30-12:00 N38. Simulation: Physics Models and Validation. Pacific Salon 1.

- 10:30-12:00 N39. Instrumentation for Medical and Biological Research. Pacific Salon 2.
- 10:30-12:00 N40. Scintillators III - Composites and ZnO. Pacific Salon 3.
- 10:30-12:00 M06. MIC Poster 1. Atlas Ballroom.
- 10:30-12:00 R12. CZT, CdTe and Mercury-containing Compounds. Hampton & Windsor.
- 13:30-15:00 N41. HEP & NP Instrumentation VIII: Particle ID Systems. Pacific Salon 1.
- 13:30-15:00 N42. Photodetectors and Radiation Imaging II. Pacific Salon 2.
- 13:30-14:45 N43. Scintillators IV - Lanthanide Scintillators- Light Yield - Time Response. Pacific Salon 3.
- 13:30-15:00 M07. Small Animal Imaging. Golden Ballroom.
- 13:30-14:55 R13. Si, CZT and GaAs Detectors. Hampton & Windsor.
- 13:30-15:00 CS1: Compton Scatter Imaging 1. Sheffield.
- 15:30-17:00 N44. Astrophysics and Space Instrumentation II. Pacific Salon 1.
- 15:30-17:00 N45. New Solid State Detectors. Pacific Salon 2.
- 15:30-17:15 N46. HEP Software Systems. Pacific Salon 3.
- 15:30-17:30 M08. Multimodality Imaging. Golden Ballroom.
- 15:30-17:40 R14. CdTe. Hampton & Windsor.
- 15:30-17:30 CS2: Compton Scatter Imaging 2. Sheffield.
- 19:00-21:00 Special Focus Workshop: Bimodality PET and MRI. Sheffield.

Friday, November 3

- 07:30-12:00 Registration Open, Grand Foyer.
- 08:00-10:00 M09. PET and PET/CT. Golden Ballroom.
- 08:35-10:00 R15. Low-Noise Electronics. Hampton & Windsor.
- 09:00-15:00 Tour #9: Palomar Observatory
- 10:30-12:00 M10. MIC Awards. Golden Ballroom.
- 10:30-11:30 R16. Detectors and Spectrometer Systems. Hampton & Windsor.
- 13:00-17:00 Tour #8: VIP Zoo Venture
- 13:30-15:00 M11. MIC Poster 2. Golden Ballroom.
- 15:00-17:00 Registration Open, Grand Foyer.
- 15:30-17:30 M12. CT and SPECT Reconstruction. Golden Ballroom.
- 18:00-22:00 MIC Dinner at SeaWorld.

Saturday, November 4

- 07:30-14:30 Registration Open, Grand Foyer.

- 08:00-10:00 M13. SPECT and SPECT/CT. Golden Ballroom.
- 09:00-13:30 Tour #10: Orfila Vineyards & Winery
- 09:00-15:00 Tour #11: Palomar Observatory
- 10:30-12:00 M14. MIC Poster 3. Atlas Ballroom.
- 13:00-14:30 M15. Biological and Medical Applications. Golden Ballroom.
- 13:00-17:00 Special Focus Workshop: Nuclear Radiology of Breast Cancer (NRBC). Pacific Salon 1 & 2.
- 15:00-17:00 M16. Imaging Techniques and Advances. Golden Ballroom.
- 17:30-20:00 GATE Workshop. Sunset Room.
- 19:00-21:00 NRBC Dinner. Pacific Salon 3.

Sunday, November 5

- 08:30-17:30 Special Focus Workshop: NRBC. Pacific Salon 1 & 2.

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Dora Merelli
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Anthony Lavietes
Treasurer



Bo Yu
Webmaster

REGISTRATION INFORMATION

Pre-registration is advisable to save time and money, and to ensure your registration package will be available for collection when you arrive. The preferred registration method is through the conference web site, as it places your details directly into our database, and where you can pay by Visa, Mastercard, Amex or Discover through our secure web server. You may also pre-register by mail or fax by sending the form at the end of this booklet directly to Travel Destinations Management Group, Inc (TDMG), paying by check, money order or credit card.



**Christina Sanders
Registration Chair**

Checks or money orders must be drawn on or paid through US banks and be in US dollars. Additional copies of the registration form can be downloaded from the registration link of the conference web site. NOTE: Registration and payment must be received by September 26, 2003 in order to qualify for the lower registration, short course and luncheon/dinner fees listed below.

Registration and payment must be received by October 13 2006 to qualify for reduced registration, lunch, dinner, short course and companion program fees.

Electronic Registration (preferred):

Click on the Conference Registration link at <http://www.nss-mic.org/2006> and follow instructions.

By Mail or Fax:

Send form and payment (made out to IEEE 2006 NSS/MIC) to:

IEEE2006 NSS/MIC
c/o TDMG Meetings Dept.
110 Painters Mill Road, Suite 36
Owings Mills MD 21117 USA
Tel: 1 800 437 4589 (US and Canada only)
1 410 363 1300
Fax: 1 410 559 0160 (attn: IEEE 2006 NSS/MIC)

An acknowledgement of your registration will be sent upon its receipt and payment. Please address any questions via e-mail to IEEE@traveld-est.com (Attn: IEEE 2006 NSS/MIC) or by phone.

Registration Hours at the Conference

Registration and general information will be available during the following times at the IEEE Registration Desk located in the Grand Foyer.

Sunday, October 29	07:30–09:30 15:30–18:30
Monday, October 30	07:30–17:00
Tuesday, October 31	07:30–20:00
Wednesday, November 1	07:30–18:00
Thursday, November 2	07:30–17:00
Friday, November 3	07:30–12:00 15:00–17:00
Saturday, November 4	07:30–14:30

Symposium Registration Fees

	By Oct. 13	On-Site
IEEE Member ¹	\$490	\$640
non-IEEE Member	\$615	\$765
IEEE Student ^{1,2}	\$200	\$300
non-IEEE Student ²	\$300	\$400
Retired/Unemployed IEEE Member ¹	\$100	\$150
One Day Only ³	\$200	\$200
NRBC Workshop ⁴	\$125	\$125
IEEE Life Member ¹	No charge	
Consitnuing Education Program Only	No charge	
Exhibits Only	No charge	

¹ IEEE member number required at registration.

² Proof of student status required.

³ Valid for 1 occurrence only – if more than 1 day, full registration will be charged.

⁴ NRBC registration fee includes a dinner on Nov. 4, and a lunch on Nov. 5.

Luncheon/Dinner Fees

	By Oct. 13	On-Site
NSS Luncheon (Mon., Oct. 30)	\$35	\$40
RTSD Luncheon ⁵ (Wed., Nov. 1)	\$42	\$47
MIC Dinner ⁶ (Fri., Nov. 3)	\$65	\$70

⁵ Sponsored in part by eV PRODUCTS.

⁶ Sponsored in part by Siemens Molecular Imaging and Siemens Medical Solutions.

Cancellation and Refund Policy

You are not officially registered until we receive your completed registration form and payment. If your payment is not received by the October 13 deadline, your registration will be cancelled.

All cancellations (partial or full) must be received in writing by October 20, 2006 for consideration. Approved refunds (less a \$25 administrative fee) will be issued after November 15, 2006. No refunds will be issued thereafter.

Hotel Information

The conference is being held at the Town and Country Resort & Convention Center, one of the largest private meeting facilities in San Diego. Spread over about forty acres, it is landscaped with grand arching palms and has several outdoor swimming pools. Ample dining is available at the six on-site restaurants. Adjacent to the hotel is Fashion Valley Shopping Mall, which has a number of further dining options and a wide range of shopping opportunities. There is also a light rail trolley system to many local areas within San Diego.

For reservations, call 1 800 77 ATLAS, or 1 619 291 7131 (mention conference name: IEEE Nuclear Science Symposium). The conference rate is \$139.00 per room (up to 4 people), valid until October 13, 2006. This special rate is extended three days prior to, and three days following, the conference, subject to space availability.

The hotel address is 500 Hotel Circle North
San Diego, CA 92108.

GENERAL INFORMATION

IEEE Membership

An IEEE membership desk will be located in the Grand Foyer close by the Registration Desk. Staff will be available to answer questions concerning the benefits of membership. By joining during the conference, non-members will receive a \$50 deduction from new IEEE membership, plus one year's free membership in the Nuclear and Plasma Sciences Society. Students joining at the conference will receive a year's free membership if they provide a statement from their mentor that they are full-time students. It is more advantageous for students to join prior to coming to the conference, in order to qualify for reduced student registration rate.

Message Board

A message board will be located in the Grand Foyer.

Computer Access

Pacific Salon Four and Five will have computers and printers and technical support. This facility is intended for use by all attendees to carry out final editing of their presentations and papers and to retrieve e-mail. Microsoft Office 2003 will be loaded on all computers. In addition, wireless hotspots will be available in Pacific Salon Six and Seven and in the exhibit area.

Attendees staying in the Town and Country hotel can request an access code at check-in that provides a discount rate for in-room wireless internet access.

Web Site

Information for all up-to-date conference programs (NSS, MIC, RTSD and Special Focus Workshops), short courses, and tours can be found at: <http://www.nss-mic.org/2006>.

Parking

Ample parking is available at the Town and Country, at no charge for hotel registrants. Otherwise, it is \$4 per hour, not to exceed \$16 per day.

Smoking Policy

The conference has adopted a strict no-smoking policy in all of its conference and exhibit areas.

Transportation

Global Tourism Alliance (GTA), Inc., will provide round trip transportation to and from San Diego international airport at a competitive rate. This can be reserved on-line through a link to GTA on the conference web site.

EXHIBITS PROGRAM

The IEEE NSS/MIC/RTSD Industrial Program provides our conference attendees with ample opportunities to meet the different exhibitors on Tuesday, 31 October to Thursday, 2 November. The opening hours will follow the hours of the conference and remain open during the lunch time. More than 30 companies from all around the world will be present to meet conference attendees and to demonstrate their latest products. These represent state-of-the-art in detectors, pulse processing instrumentation, imaging, software, and other associated areas. The exhibition area is located in the Atlas Ballroom. The poster sessions will also be in the Atlas Ballroom.



Ron Keyser
Exhibits Chair

The three-day exhibition is complemented by a series of seminars and technical presentations on Tuesday, Oct. 31 and Wednesday, Nov. 1 in Terrace Salon Three, which will allow an in-depth exchange of information between attendees and exhibitors on existing products, future developments and needs. Terrace Salon Three is located between the Registration Desk and the Atlas Ballroom. The detailed schedule will be posted at the entrance to the exhibit area.

The morning and afternoon coffee breaks will be held in the exhibit area. On Tuesday evening from 19:00 to 21:00, the exhibiting companies will be hosting the Exhibitor Reception.

The Exhibition opening hours are as follows:

Tuesday, October 31,	12:00 – 21:00, with the Exhibitor Reception starting at 19:00
Wednesday, November 1	09:00 – 18:00
Thursday, November 2	09:00 – 16:00

An Exhibitor Program brochure will be available at the meeting with full details of the exhibitors and the seminar program. Companies interested in participating should contact Ronald Keyser, Exhibits Chairman, at ronkeyser@ieec.org.

List of Exhibitors (as of 7 Aug 2006)

Academy of Molecular Imaging	IOP Publishing
Acrorad Co., Ltd.	LND, Inc.
ADIT Eljen Technology	Micron Semiconductor
Alpha Spectra, Inc.	ORTEC
AMPTEK INC.	Photonis
Berkeley Nucleonics	Saint-Gobain Crystals
CAEN Technologies	Scintitech Corp/AMCRYS-H
Canberra	Scionix
CMC/AMAC	SensL Technologies Ltd.
Constellation Technology	Shanghai SICCAS Crystal
Electron Tubes	SII NanoTechnology
eV Products	SINTEF
FAST ComTec GmbH/Quantar	Struck Innovative Systeme
Hamamatsu Corporation	Target Instruments Inc.
Hilger Crystals	Wiener, Plein & Baus, Ltd.
Hitachi Chemical Co., Ltd.	XIA LLC
IAEA/Brookhaven Natl Laboratory	

PUBLICATIONS

The Conference Record (CR)

The Conference Record (CR) is the official repository for manuscripts at the 2006 IEEE conference and will be published on CD-ROM, complimentary to all registered attendees. We will strive to have a timely release of the CD-ROM. The approved word processing templates, available in PDF, MS Word and LaTeX format can be downloaded from <http://www.nss-mic.org/2006/publications/templates>.

All manuscripts submitted to the IEEE must be in the IEEE Xplore-compatible PDF format. We strongly recommend that authors use the web based service "PDF eXpress" from IEEE to create their PDF files. Instructions on the PDF eXpress service are available at www.nss-mic.org/2006/publications/PDFeXpress.html. Please note that the PDF eXpress service will be available between Oct. 2 and Nov. 17, 2006 for the 2006 NSS/MIC authors.

To submit your manuscript to the Guest Editor, log on to the conference website, follow the menu "My Abstracts" to the abstract submission page, where links for uploading both your manuscript and the copyright form will be found. At this time, your PDF file will be checked for Xplore-compatibility.

The deadline for the Conference Record manuscript submission is November 17, 2006.

All manuscripts submitted through the conference web site will be made available immediately to registered conference attendees at www.nss-mic.org/2006/ConferenceRecord. However, only those that meet the following requirements will be included in the CD-ROM:

- Paper has been presented at the conference.
- Manuscript conforms to the specified page layout requirements.
- PDF file is Xplore compatible.
- PDF file and copyright form are received by November 17, 2006.

For further information regarding the Conference Record, please contact:

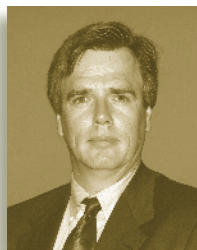
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Transactions on Nuclear Science (TNS)

Additionally, papers presented at the conference that contain important information of lasting value may be submitted for review and publication in the Transactions on Nuclear Science (TNS). The TNS is a premier peer-reviewed journal with a significant distribution within the nuclear science and medical imaging communities. TNS is not the conference record and only those papers that pass the peer review process and are in the fields of interest to TNS will be published. Prospective authors should consult the TNS page at www.ieee.org for a description of the publication. TNS discourages the submission of progress reports and

manuscripts that are more suitable for distribution as an institution's internal document. We expect each manuscript to be cast in the context of the state of the art of its field (including appropriate motivation for the work and a reasonable review of prior work in the field), to present a complete description of the work performed and a set of conclusions supported by the measured and/or calculated data. The TNS is published throughout the year, and you can submit your manuscript to TNS at any time. For instructions on TNS manuscript submission, please visit the IEEE's on-line peer review system Manuscript Central™ (<http://tns-ieee.manuscriptcentral.com>). For further information regarding the Transactions on Nuclear Science, contact:

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Comparison of Requirements (CR and TNS)

The value of the Conference Record is primarily the immediate and timely release of the information, which precludes peer-review of the manuscript. It is possible that a similar, or the same, article can be submitted to both the Conference Record and the TNS, but authors should keep in mind that manuscripts for TNS publication must undergo rigorous peer-review, and publication is not guaranteed. The CR and TNS are two separate publications and submission to one does not imply submission to the other.

	CR	TNS
Page layout	Same as TNS, but without running headers and footers	Standard IEEE Transactions and Journal format
Copyright form	Required, electronic submission	Required, electronic submission
Deadline	Nov. 17, 2006	No
Peer reviewed	No	Yes
Use of color	Free and encouraged	At author's expense
Availability	Online immediately, CD out in early 2007	Published throughout the year
Submission Site	www.nss-mic.org/2006/submissions	tns-ieee.manuscript-central.com

COMPANION PROGRAM

San Diego, and its surroundings, has a historically diverse culture, and a number of famous attractions. The companion program will offer daily trips to places of interest for everyone. It should be noted that individual tours are subject to cancellation and refund of tour fees if an insufficient number of attendees reserve space for a given tour prior to the beginning of the conference.

Every morning, from 8:00am to 8:50am, a continental breakfast will be provided in the Terrace Pavilion for the participants of the tour. Tour coaches depart from the Atlas Ballroom Foyer at the start time indicated. The fees in the table below are for advance registration by October 13. Add \$10 more for on-site registration.

Tour Name	Date	Fee
Sightseeing in Old Town San Diego	Sun., Oct. 29	\$40
South of the Border Adventure	Mon., Oct. 30	\$70
San Diego City Tour	Tues., Oct. 31	\$70
Sailing aboard the Aolani Catamaran	Tues., Oct. 31	\$60
Jewels by the Sea	Wed., Nov. 1	\$70
SeaWorld Splash	Thur., Nov. 2	\$60
Palomar Observatory	Thur., Nov. 2	\$50
VIP Zoo Venture	Fri., Nov. 3	\$60
Palomar Observatory	Fri., Nov. 3	\$50
Orfila Vineyards & Winery	Sat., Nov 4	\$60
Palomar Observatory	Sat., Nov 4	\$50



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Companion Program Co-chairs

Tour #1: Sightseeing in Old Town San Diego

Sunday October 29, 9:45am – 1:45pm

Pre-registration: \$40; at conference: \$50

Old Town San Diego, the first European settlement in what is now California, is called the state's birthplace. In 1769, Spanish priest Father Junipero founded California's first mission here. The mission eventually moved further inland, and 1820s settlers moved closer to the water into the Gaslamp Quarter, leaving "Old Town" behind.

Today's Old Town San Diego centers on the oldest area. It includes a state historic park and related historic sights outside the park. History aficionados will find plenty to interest them, but most people come to shop and eat in the restaurants.

The State Historic Park occupies nine square blocks and preserves many historic buildings, including some built of adobe (mud) bricks. Other structures include California's first schoolhouse, a blacksmith shop, the state's first newspaper office and a stable. These preserved buildings, each a small museum in itself, give a glimpse of life here from 1821 to 1872. Interspersed between museum buildings, you'll find shops, with emphasis on Mexican-style pottery, tinwork and the like. If you just want to stroll and shop, it will be easy, and you can extend your route outside the park and down San Diego Avenue.

- Clothing and shoes suitable for walking recommended
- Lunch included in price

Tour #2: South of the Border Adventure

Monday October 30, 9:30am – 4:00pm

Pre-registration: \$70; at conference: \$80

Spend a casual day in Baja California along Mexico's northern coastline. A deluxe motorcoach transports guests on a 1-hour coastal tour through the festive border town of Tijuana and the spectacular scenery of Baja California's coastline. This area is a haven for Southern Californians who love surfing and relaxing on the beach. En route guests learn shopping and bargaining tips, best value items, and how to get the most out of their international visit.

The first stop is Rosarito Beach, a village between Tijuana and Ensenada. Guests have an opportunity to browse through the bazaars and visit the



once famous Rosarito Beach Town and Country Hotel or stroll along the beach and visit the cantinas before continuing the journey.

After a short ride along the coast, guests arrive at Calafia. Surrounded by breathtaking ocean and coastline views, Calafia is a perfect location for a delicious Mexican lunch. This one-of-a-kind restaurant provides guests with a beautiful setting for a tasty margarita followed by a succulent shrimp and carne asada lunch with all the traditional trimmings.

Following lunch, guests relax and enjoy the return trip to the Town & Country Hotel. Experience the flavor of Mexico and its northern coastline in a fun and relaxing environment ... a day in Mexico that will not soon be forgotten!

- The Mexican government requires that all US citizens present proof of citizenship and photo ID for entry into Mexico. The US embassy recommends traveling with a valid US passport to avoid delays or misunderstandings. Non-US citizens require a valid passport and either green card or visa with current, endorsed, I-94 card. Foreign travelers will receive an I-94 card when arriving at their US port of entry.
- Lunch included in price

Tour #3: San Diego City Tour

Tuesday October 31, 2006, 9:30am – 4:00pm

Pre-registration: \$70; at conference: \$80

This introduces guests to San Diego with a city overview tour. From the hotel, guests will experience a driving tour through Old Town San Diego, the Gaslamp District, Harbor Drive, the Cruise Ship Terminal and Horton Plaza before their first stop at Seaport Village, San Diego's relaxing bay-front marketplace. Guests will have 45 minutes of free time for shopping and a morning snack.

Following Seaport Village, guests will be taken to Coronado Island. Coronado began in 1886, the dream of Elisha Babcock, who vowed to create a resort that was to be the "finest watering spot on the Pacific Coast". Along with its fabled Hotel del Coronado, the town became one of the great playgrounds of the world, drawing Presidents and Princes, moguls and movie stars to its shores. Concurrently, North Island Naval Air Station was developed into one of the country's most important aviation centers, (Lindbergh and Doolittle lit the skies and shaped the destiny of flight in America). Guests will have free time for shopping at the Hotel del Coronado.

After a couple of hours in Coronado, guests will have free time to explore Balboa Park. Scenic Balboa Park is America's largest municipal park. Nestled above the downtown area and housing museums from two major world expositions, Balboa Park has given San Diego the largest



collection of museums outside our nation's capital. In addition to the fine museums, renowned theaters, Spanish architecture, sculptured fountains, street jugglers, mimes and musicians, there are splendid gardens and excellent restaurants to delight your senses. Today will be an excellent day for guests to see and experience America's Finest City.

- Clothing and shoes suitable for walking recommended
- Boxed lunch included in price

Tour #4: Sailing Aboard the Aolani Catamaran

Tuesday October 31, 2006, 1:00pm – 4:30pm

Pre-registration: \$60; at conference: \$70

Aolani is the prettiest 49-passenger Coast Guard-certified sailing catamaran in Southern California. It's spacious salon lets you get out of the "elements" if wet or cold. Seating is available for 30 inside the salon with 360-degree views and seating for 10 in the adjacent cockpit. She is lightweight and strong (foam and fiberglass). Catamarans are extremely stable with dual hulls, offering speed, comfort and fun – you won't even know you're on the water.



Choose to walk around the boat and mingle or find a peaceful and quiet corner and watch San Diego's most beautiful sites. Fun is guaranteed!

- Warm clothing (layers) recommended
- Light food and drink available at extra cost

Tour #5: Jewels by the Sea

Wednesday November 1, 2006, 10:30am – 3:30pm

Pre-registration: \$70; at conference: \$80

La Jolla is a must-see when visiting San Diego, as well as being one of the most exquisite areas in the country to live. The first approach to this seaside community can feel like entering paradise as La Jolla Cove's sun-dappled water comes into view.

The first stop is the Birch Aquarium at Scripps. Overlooking the Pacific Ocean, this beautiful facility presents undersea creatures in realistic habitats, and allows guests to experience the frontiers of marine science through interactive museum exhibits featuring the latest research at Scripps Institute of Oceanography.

Next stop is "the village" of La Jolla. A delicious California-style lunch will be served at the Crab Catcher, nestled above La Jolla Cove with a spectacular ocean view.

After lunch, guests will enjoy exploring the special boutiques, galleries and designer studios, viewing the coastline, or beachcombing on their own at the famous La Jolla Cove. All of these are set against a stunning backdrop that is often compared to the French Riviera for its aesthetic appeal.

- Clothing and shoes suitable for walking recommended
- Lunch included in price

Tour #6: SeaWorld Splash

Thursday November 2, 2006, 9:30am – 2:00pm

Pre-registration: \$60; at conference: \$70

SeaWorld is America's finest marine adventure park! A brand new Shamu experience, *Believe*, has opened in spring of 2006. This entirely new, visually stunning Shamu show will take you on a sensational, breathtaking journey of curiosity and wonder. Shamu is better than ever, and guests will have the opportunity to marvel at the power and beauty of the ocean's top predators, the killer whales. Next, join the hilarious antics of sea lions, walruses and river otters in *Action! Adventure!* And sea lions Clyde and Seamore in *Deep, Deep Trouble* will drench guests with surprises. These hilarious heroes find themselves on a deep dive to deep trouble aboard a sinister otter-driven submarine, commanded by a quirky captain who's determined to capture a mythical mermaid and her elusive treasure. This action-packed adventure is as big as the sea itself.

Of course, a day would not be complete without a stop at SeaWorld's arctic exhibit. A motion-based simulator flies guests to an arctic wonderland. In this frozen tundra, guests will visit animals such as the graceful beluga whales, powerful yet unpredictable polar bears and massive walruses.

For the thrill seekers, challenge the power of the sea on a new Journey to Atlantis. Ride a mythical rush through uncharted waters where mysterious mists and unpredictable drops lurk around every turn. Journey to Atlantis twists guests around serpentine turns, plunges down eight stories of adrenaline-pumping exhilaration and drenches guests in mystery.

All of this and so much more await guests, as they discover the incredible marine life that dwells in the vast oceans of our world.

- Clothing and shoes suitable for walking recommended
- Lunch not included in price



Tour #7: Palomar Observatory

Thursday, November 2, 9:00am – 3:00pm

Pre-registration: \$50; at conference: \$60

Palomar Observatory is a world-class center of astronomical research that is owned and operated by the California Institute of Technology. The observatory is home to five telescopes that are used nightly for a wide variety of astronomical research programs. The research is conducted by Caltech's faculty, post-doctoral fellows and students, and by researchers at Caltech's collaborating institutions. Palomar Observatory is a privately-owned observatory located in San Diego County, 90 miles (145 km) southeast of Mount Wilson Observatory, on Palomar Mountain. The Observatory currently consists of four main instruments: the 200 inch (5.08 m) Hale Telescope, the 48 inch (1.22 m) Samuel Oschin Telescope, the 18 inch (457 m) Schmidt Telescope, and a 60 inch (1.52 m) reflecting telescope. In addition, the Palomar Testbed Interferometer is located at this Observatory

- Maximum of 42 passengers
- Approximately two-hour bus journey each way
- Boxed lunch included in price

Tour #8: VIP Zoo Venture

Friday November 3, 2006, 1:00pm – 5:00pm

Pre-registration: \$60; at conference: \$70

There's some *Beastly Wonders* going on at the world famous San Diego Zoo. The zoo, founded by Dr. Harry M Wegeforth in 1916, has grown from modest beginnings. Today, guests will enjoy a private *Behind-the-Scenes* tour! Following the tour, guests can further explore the zoo and visit new and innovative exhibits, trademarks of the San Diego Zoo. Recent additions and renovations include: the Giant Panda Research Station, Gorilla Tropics, Hippo Beach, Polar Bear Plunge, Scripps Aviary, Tiger River, and Sun Bear Forest.

- Clothing and shoes suitable for walking recommended
- Lunch not included in price



Tour #9: Palomar Observatory

Friday November 3, 9:00am – 3:00pm
Pre-registration: \$50; at conference: \$60

This tour will be offered again if there is adequate interest. See Tour #7 for description.

Tour #10: Orfila Vineyards & Winery

Saturday November 4, 2006, 9:00am – 1:30pm
Pre-registration: \$60; at conference: \$70

Located in the San Pasqual Valley, Ambassador Alejandro Orfila and his family are the owners of what was once the Thomas Jaeger Winery. Ambassador Orfila has served as the Secretary General of the Organization of American States and as the Argentine Ambassador to the United States and Japan. He is a third generation member of a winemaking family from the Argentine Andes area.

At Orfila guests experience a behind the scenes look at an 8,000-year-old tradition. Guests are introduced first hand to the entire wine making process, from grape to bottle, and taste wines from California's first vineyards. This 120-acre pristine urban reserve produces some of San Diego's finest wines. Among the varietals produced are Merlot, Chardonnay and Sauvignon Blanc with recent awards for the unique Merlot.

- Approximately 45 minutes from hotel
- Clothing and shoes suitable for walking recommended
- Cheese and fruit platter included in price

Tour #11: Palomar Observatory

Saturday November 4, 9:00am – 3:00pm
Pre-registration: \$50; at conference: \$60

This tour will be offered again if there is adequate interest. See Tour #7 for description.



CONTINUING EDUCATION PROGRAM

An excellent set of short courses will be given at the start of the NSS/MIC programs, covering a wide range of nuclear and medical technology. All courses are one day long. They include lunch, refreshments, lecture notes, and a certificate of completion as part of the registration fee.

Course Name	Date	Fee*
1. Interaction of Radiation with Matter: Theory and Practice	Oct. 29	\$275
2. Nuclear Science for Homeland Security	Oct. 29	\$275
3. Integrated Circuit Front Ends for Nuclear Pulse Processing	Oct. 29	\$275
4. Molecular Biology for Imaging Scientists	Oct. 30	\$275
5. Detectors for PET and SPECT	Oct. 30	\$275
6. Small Animal Imaging: Detectors and Technical Aspects	Oct. 31	\$275
7. Image Quality†	Oct. 31	\$350

* Fee is for advance registration by October 13. Add \$50 for on-site registration. IEEE Member qualify for a \$25 discount.

† Textbook included.



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Course 1. The Interaction of Radiation with Matter: Theory and Practice

This one-day course is intended to give an overview of the interaction of directly and indirectly ionizing radiation with matter. The course will cover the basic interaction mechanisms of photons in the energy range 1 keV to 100 MeV, which include photoelectric absorption, coherent and incoherent scattering, and pair-production. Also covered will be neutron absorption and scattering interactions below 20 MeV including radiative capture, fission and other absorption interactions, and elastic and inelastic scattering. The interactions of charged particles will also be considered including both collisional and radiative energy loss mechanisms.

The basic concepts of phase space will be presented and the common radiation field quantities of intensity, flux density, fluence, current vector, and interaction rate density will be defined. Basic models for radiation calculations relevant to radiation detection, shielding, and dosimetry will be presented. Information on sources of radiation also will be reviewed.

In order to address practical issues, some of the many resources for data such as cross sections, response functions, and energies and yields of secondary particles will be identified. These resources include web sites, reports, journals, and books. A basic understanding of calculus and physics is assumed. The course should be useful as an introduction for scientists and engineers unfamiliar with radiation interactions and as a supplement to those who have familiarity with some forms of radiation but not all.

Instructors

Dr. William L. Dunn is Associate Professor in the Department of Mechanical and Nuclear Engineering at Kansas State University (KSU). Dr. Dunn received his B.S. degree in Electrical Engineering from the University of Notre Dame and his M.S. and Ph.D. degrees, both in Nuclear Engineering, from North Carolina State University. Bill spent over twenty years in contract research, fourteen as President of Quantum Research Services, Inc., prior to joining the faculty at KSU in 2002. His research has focused primarily on industrial radiation applications but he has also worked in radiation shielding, detection, transport, and dosimetry. Dr. Dunn is a Councilor of the International Society of Radiation Physics, is on the editorial board of the journal *Applied Radiation and Isotopes*, and is Chair of the Organizing Committee for the Workshop on Use of Monte Carlo Techniques for Design and Analysis of Radiation Detectors, to be held in September 2006 in Coimbra, Portugal.

Dr. Richard Hugtenburg is with the School of Physics and Astronomy at the University of Birmingham, UK. He is involved in a variety of research and teaching activities. His research interests include experimental and atomic physics (especially low-energy photon interaction effects), radiobiology, nuclear weapons exposure simulation, and Monte Carlo methods for radiation transport calculations including Markov Chain Monte Carlo. Dr. Hugtenburg is familiar with several of the general-purpose Monte Carlo radiation transport codes such as MCNP, EGSnrc, and PENELOPE. Dr. Hugtenburg also is involved in clinical activities using ionizing radiation.

Course 2. Nuclear Science for Homeland Security

This one day course will cover the application of nuclear science generally and radiation detection methods specifically in the area of homeland security. This course is intended primarily for those who have some familiarity with nuclear science and radiation detection and would like to better understand homeland security applications and the science and technology issues unique to them. This course will therefore focus on relevant scientific concepts and technology development and deployment issues. The course will touch on, but not focus on, existing commercial instruments and systems deployed for homeland security applications. Prospective students with a general physics or engineering background but little preparation in the area of nuclear science are welcome but are very strongly encouraged to study the book *Radiation Detection and Measurement* (3rd Edition, John Wiley and Sons, New York, 2000) by Professor Glenn Knoll prior to the course.

The course will start by defining what is meant by homeland security and discuss the general areas in which nuclear science expertise and technology comes into play for homeland security applications. A discussion of the operational environments typically encountered along with specific examples will be provided. A generic discussion of threat classes and their associated measurement methods will be given. The course will describe the basic classes of gamma-ray and neutron detection instrumentation considered for deployment and help students understand how decisions are made with respect to their use. The critical topic of “backgrounds” will be described including both natural radiation background and naturally occurring radioactive materials (NORM). Approaches for data collection, analysis, and decision-making for various applied scenarios will be discussed. The role of advanced materials development, particularly the development of room temperature high resolution gamma ray spectrometers, in aiding homeland security applications will be described. The application of a variety of advanced radiation detection methods including imaging, collimation, pulse shape discrimination, and alternative signatures will be covered. Active methods and their role in homeland security will be described.

Instructors

Dr. Anthony Peurrung has a BS degree in Electrical Engineering from Rice University and a Ph.D. degree in Physics from the University of California, Berkeley. His research has entailed contributions to a variety of fields within fundamental and applied physics including fluid mechanics, plasma physics, medical physics, separations science, environmental remediation, nuclear physics, and radiation detection methods and applications. Since 1994, Anthony has worked in the National Security Directorate of Pacific Northwest National Laboratory as a staff scientist, technical group manager, and currently is the director of the Physical and Chemical Sciences Division. His research interests include such topics as special nuclear material detection and characterization and fundamental advances in the areas of neutron detection and spectrometry. Anthony is a long standing member of the DOE’s Radiation Detection Panel and held the senior non-federal leadership role representing the DOE laboratory complex during the standup of DHS’s radiological/nuclear countermeasures science and technology program.

Dr. Eric Smith is a staff scientist at Pacific Northwest National Laboratory, working in the area of applied radiation detection. His primary research areas of interest are modeling and simulation of homeland/

national security scenarios, multi-coincidence trace radionuclide detection techniques, and next-generation radiation sensor technologies. Eric is active in DHS Domestic Nuclear Detection Office R&D and assessment programs, and is a technical advisor to the US Customs and Border Protection's Radiation Portal Monitor program. Eric has also served as PNNL's representative to DOE's Nonproliferation Research and Engineering Radiation Detection Panel. Prior to joining PNNL in 2001, he was a staff member at Argonne National Laboratory and led projects in nondestructive assay and waste characterization. Eric received a B.S. in Nuclear Engineering from Oregon State University, and his M.S. and Ph.D. in Nuclear and Radiological Sciences from the University of Michigan.

Course 3. Integrated Circuit Front Ends for Nuclear Pulse Processing

This one-day course is intended to introduce physicists and detector specialists to the fundamentals of integrated circuit front end design. The class begins with a discussion of low-noise signal processing and semiconductor devices and then delves into the details of implementing practical circuits in modern CMOS technology. A basic knowledge of detectors and electronics is assumed.

Course Outline

1. Pulse Processing Fundamentals
 - Signal formation in detectors
 - Noise and gain mechanisms
 - Pulse processing for amplitude and timing extraction
2. Semiconductor Technology for Integrated Circuit Front Ends
 - Operation and characteristics of MOS and bipolar transistors
 - Sub-micron CMOS and BICMOS technology
 - Feature size scaling
 - Radiation effects and reliability
 - Mixed-signal circuits
3. Analog circuit design
 - The IC design process and CAD tools
 - Foundry access, multiproject services
 - Building blocks for the analog channel: charge-sensitive and pulse-shaping amplifiers, baseline stabilizers, peak detectors, track/hold, multiplexers, output stages
 - Analog-to-digital and time-to-digital converters (ADC and TDC)
4. Packaging and Interconnect
5. Application examples

Course registration fee includes lunch and refreshments, a copy of the lecture notes, and a certificate of completion.

Instructors

Veljko Radeka, Senior Scientist and Head of Instrumentation Division at Brookhaven National laboratory. His interests are in scientific instruments, radiation detectors, noise and signal processing, and low noise electronics. He authored or co-authored about 170 publications. He is a Life Fellow of IEEE and a Fellow of APS.

Paul O'Connor is associate Head of the Instrumentation Division at Brookhaven National Laboratory. He has a Ph.D. degree in solid-state physics from Brown University and worked from 1980-1990 at AT&T Bell Laboratories prior to joining BNL. His research interests are in the field of instrumentation systems for radiation detection, particularly low noise analog CMOS front-end circuits. He is author and co-author of about 50 publications and has been an IEEE member since 1980.

Giovanni Anelli received a M.S. degree from the Polytechnic of Milan (Italy) in 1997 and a Ph.D. degree from the Polytechnic of Grenoble (France) in 2000, both in electronic engineering. He has been working in the Microelectronics Group at CERN since 1998. His research interests deal with radiation effects on submicron CMOS technologies and with the design of low-noise low-power analog and mixed signal VLSI circuits for High-Energy Physics applications. Dr. Anelli is author and co-author of more than 50 publications and is an IEEE senior member.

Course 4. Molecular Biology for Imaging Scientists

This course is intended as an introduction to fundamental concepts of Molecular Biology presented from a consistent point of view, that of an "information-driven" field. In this context, the revolution that has taken place during the last decade in genetics and molecular biology can be traced back to the development of techniques that enabled scientists to manipulate and analyze genetic material. These approaches, together with new data-gathering technologies such as genomics, proteomics and imaging have a significant potential for translation into medically relevant knowledge. The success of this endeavor depends largely on the creation of an interactive, inter-disciplinary scientific culture in which experts in engineering, physics, chemistry, mathematics, and computer science join biologists to ensure the efficient integration of new technologies. Opportunities for such inter-disciplinary interactions will be emphasized during the Molecular Biology course.

Course Outline

Part 1: Nucleic Acids and the Synthesis of Macromolecules

- DNA Replication and Repair
- From DNA to RNA to Protein
- Gene Regulation

Part 2: The Cell

- Biomembranes, Subcellular Organization of Eukaryotic Cells, Membrane transport Mechanisms
- Cell Signaling
- Regulation of Cell Division and Cell Death

Part 3: Molecular Biology Techniques

- DNA Engineering, Gene Replacement, Transgenic Animals, RNA interference
- Recombinant Antibody Technology
- Large scale analyses of gene and protein expression (DNA Microarrays, Proteomics and an Introduction to Systems Biology)

Instructor

Dr. Caius Radu is an Assistant Professor in the Department of Medical & Molecular Pharmacology, David Geffen School of Medicine at UCLA. Dr. Radu received his M.D. degree in Romania and then conducted

post-doctoral research at UT Southwestern Medical Center in Dallas and at UCLA. Dr. Radu's research interest involves two areas: the first is directed towards applying molecular imaging approaches such as Positron Emission Tomography to monitor immune responses in autoimmune disorders, as well as in cancer. A significant focus of this work is development of novel PET imaging probes specific for activated lymphocytes and of non-immunogenic PET reporter gene systems for in vivo cell-tracking studies. The second area involves studying the immunoregulatory roles of novel proton-sensing G protein-coupled receptors during physiological and pathological conditions characterized by alterations of the extracellular acid-base equilibrium.

Course 5. Detectors for SPECT and PET

This course will survey the state of the art in gamma-ray detectors for PET and SPECT, with a discussion of emerging technologies as well as traditional semiconductor and scintillator devices. The course will begin with a discussion of detector physics, cover signal generation, analog and digital pulse processing techniques, triggering, and acquisition strategies. Considerable emphasis will be placed on statistical characterization of the detectors and on optimal estimation methods that take the statistical properties into account. Lecture topics will include:

- Survey of technologies for gamma-ray detection
- Detector requirements for SPECT and PET
- State of the art in scintillation detectors
- State of the art in semiconductor detectors
- Statistical modeling and estimation methods
- Event triggering and coincidence techniques
- Data acquisition systems
- Examples of applications

Dr. Lars Furenid was educated at the University of Arizona and the Georgia Institute of Technology. He is currently Research Professor at the University of Arizona and associate director of the Center for Gamma-ray Imaging, with appointments in the Department of Radiology and the College of Optical Sciences. He was a staff scientist at the National Synchrotron Light Source at Brookhaven National Laboratory. His major research area is the development and application of detectors, electronics, and systems for biomedical imaging.

Instructors

Dr. Harrison Barrett was educated at Virginia Polytechnic Institute, MIT and Harvard. He is currently a Regents Professor at the University of Arizona, with appointments in the College of Optical Sciences, the Dept. of Radiology and the programs in Applied Mathematics and Biomedical Engineering. He is director of the Center for Gamma-ray Imaging and a fellow of the IEEE. In collaboration with Kyle J. Myers, he has written a book entitled Foundations of Image Science, which in 2006 was awarded the First Biennial J. W. Goodman Book Writing Award from OSA and SPIE.

Dr. Tom Lewellen was educated at Occidental College and the University of Washington. He is currently a Professor at the University of Washington, with appointments in the Department of Radiology (School of Medicine) and Electrical Engineering. He is director of the Nuclear Medicine Physics Group and a senior member of the IEEE. His major research is in the development of electronics and detector systems for SPECT and PET.

Course 6. Small Animal Imaging: Detectors and Technical Aspects

Translational research strives to bridge our fundamental understanding of biological principles with clinical practice. Preclinical imaging provides a set of powerful tools that hold the promise to facilitate this translation from basic science to improved patient diagnostics and therapeutics. This course will introduce the attendees to the detectors and other technologies used in preclinical small animal imaging, with focus in high resolution PET, optical bioluminescence and x-ray CT. Special emphasis will be given to practical problems in the design of and use of new imaging systems dedicated for particular applications.

Course outline

The first part of this course will introduce attendees to the concept of molecular imaging probes and their use in preclinical and clinical imaging. Specific applications with emphasis on cancer will be discussed in some detail. Different types of probes based on radiopharmaceuticals and bioluminescence optical signaling will be discussed with emphasis on their inherent characteristics of signal generation, signal propagation in tissues and background levels.

The second part of this course will discuss the instrumentation technology for the design of small animal PET/SPECT, bioluminescence and x-ray CT imaging systems, with emphasis on the issues of sensitivity, radiation dosimetry and spatial resolution limits. Other novel technologies used in preclinical imaging research will also be introduced and discussed.

The third part of this course will discuss practical aspects of imaging experiments, including experimental design and data analysis. Special emphasis will be given to animal handling; including anesthesia, temperature monitoring and control, pathogen control, blood sampling and experiment reproducibility for multimodality imaging. Image and data analysis will be discussed, with emphasis on the types of measurements derived from the image data and factors that influence these measurements.

Instructors

Dr. Arion Chatziioannou is currently an Assistant Professor at the Department of Medical & Molecular Pharmacology, David Geffen School of Medicine at UCLA. He also is a member of the Crump Institute for Molecular Imaging and the Institute for Molecular Medicine. He received his B.S. degree in Physics from the University of Athens, Greece and his Ph.D. degree in Biomedical Physics from the University of California at Los Angeles. His current research interests are in the development of instrumentation for dedicated small animal imaging systems and other preclinical imaging technologies. He is especially interested in multimodality approaches for quantitative imaging including x-ray micro computed tomography, microPET and optical imaging. Dr. Chatziioannou has authored or coauthored more than 50 journal articles, reviews and book chapters. In addition, he has been invited to speak at many national and international symposia.

Dr. David Stout is currently an Assistant Professor at the Department of Medical and Molecular Pharmacology, David Geffen School of Medicine at UCLA and is a member of the Crump Institute for Molecular Imaging. He received his B.S. degree in Biology from the University of California at Irvine and his Ph.D. degree in Biomedical Physics from the University

of California at Los Angeles. His current research interests focus on designing multimodality molecular imaging centers and the methods, equipment and educational training needed to create and operate the Crump molecular imaging center at UCLA. Dr. Stout has authored or coauthored over 25 papers and has frequently presented invited talks and training seminars worldwide.

Dr. Yuan-Chuan Tai is an Assistant Professor of Radiology at Washington University in St. Louis, Missouri, USA. He received his B.S. in Physics from National Tsing-Hua University in Taiwan, M.S. in Electrical Engineering from the University of Texas at Arlington and Ph.D. in Biomedical Physics from the University of California, Los Angeles. Dr. Tai developed the “pseudo-pinhole PET” geometry and holds a patent on the zoom-in imaging techniques for PET. His current research interests include the development of high-resolution PET technologies for animal and human applications, as well as multi-modality small animal imaging techniques.

7. Image Quality

This full-day course is intended to introduce the fundamentals of image quality in medical imaging to engineers and physicists with no experience in this field. The class begins with a short overview of the principles of image quality with an emphasis on the statistical nature of this topic. We then present an in-depth description of the stochastic properties of objects and images relevant to medical imaging, including representations for random objects, noise properties of imaging systems, and models for the statistics of reconstructed data sets. Basic units on image quality for classification and estimation tasks follow. The afternoon will include presentations on psychophysical experimental methods and approaches to the analysis of the resulting data from human observers as well as methods for computation of model observer performance. Finally, applications to nuclear medicine, including experimental results from a range of investigators and institutions, will be presented. A copy of *Foundations of Image Science*, by H.H. Barrett and K.J. Myers, John Wiley & Sons, Inc., 2004, is included in the course tuition.

Organizers:

Matthew A. Kupinski, Ph.D., is an Assistant Professor of Optical Sciences and Radiology at the University of Arizona. He earned his Ph.D. from the University of Chicago in 2000 and joined the faculty at the University of Arizona in 2002. He has published numerous papers and book chapters on image quality and image science. His research interests include observer models, ideal-observer computations, and imaging hardware optimization.

Kyle J. Myers, Ph.D., received a bachelors degree in Mathematics and Physics from Occidental College in 1980, and a Ph.D. in Optical Sciences from the University of Arizona in 1985. Following a post-doc at the University of Arizona, she worked in the research labs of Corning Inc. Since 1987 she has worked for the Center for Devices and Radiological Health of the U.S. Food and Drug Administration, where she is currently the Director of the NIBIB/CDRH Laboratory for the Assessment of Medical Imaging Systems. Along with Harrison H. Barrett, she is the coauthor of *Foundations of Imaging Science*, published in 2004 and winner of the First Biennial J.W. Goodman Book Writing Award from OSA and SPIE.

Instructors:

Harrison H. Barrett, Ph.D., was educated at Virginia Polytechnic Institute, MIT and Harvard. He is currently a Regents Professor at the University of Arizona, with appointments in the College of Optical Sciences, the Dept. of Radiology and the programs in Applied Mathematics and Biomedical Engineering. He is director of the Center for Gamma-ray Imaging and a fellow of the IEEE. In collaboration with Kyle J. Myers, he has written a book entitled *Foundations of Image Science*, which in 2006 was awarded the First Biennial J. W. Goodman Book Writing Award from OSA and SPIE.

Brandon D. Gallas, Ph.D., is a mathematician at the FDA Center for Devices and Radiological Health, working in the NIBIB/CDRH Laboratory for the Assessment of Medical Imaging Systems. He received his Ph.D. in Applied Mathematics from the University of Arizona in 2001. His research and regulatory work focuses on two broad areas: assessing reader performance and evaluating image quality. He has a wealth of experience running psychophysics experiments and has developed estimates of the uncertainty in the resulting performance estimates. In the field of image quality, he has advanced the field's ability for efficiently estimating the ideal linear observer.

Eric C. Frey, Ph.D., is an Associate Professor in the Division of Medical Imaging Physics in the Department of Radiology and Radiological Sciences at Johns Hopkins University. From 1988-2002 he was a postdoctoral fellow and then on the faculty in the Departments of Biomedical Engineering and Radiology at the University of North Carolina at Chapel Hill. His major research interests are in SPECT image reconstruction with compensation for image degrading factors, dual isotope imaging, quantitative imaging for targeted radionuclide therapy dosimetry, evaluation and optimization of imaging systems and reconstruction algorithms, and reconstruction and instrumentation.

We want to welcome you to the 2006 IEEE Nuclear Science Symposium, the premier meeting of nuclear science-based hardware and software researchers. Besides the venue of beautiful San Diego, we have an ample technical program consisting of electronics, gas detectors, solid-state detectors, data acquisition systems, neutron-based imaging and high-energy physics-related papers. In addition, we have seen a great deal of growth in the number of submissions for computing and software. In honor of the completion of the Spallation Neutron Source, we have added a session focused primarily on electronics and detectors for that facility. As is always the case, we also welcome colleagues participating in the Medical Imaging Conference and have two oral sessions that are jointly sponsored by the NSS and the MIC.

We have an excellent short course program this year that features seven short courses. We also have the Room-Temperature Semiconductor Detector (RTSD) Workshop, as well as the Micro-Pattern Gas Detector workshop along with the NSS. We have an excellent companion program which will feature the venue of beautiful southern California.

We want to thank the Topic Conveners (those who take the responsibility of organizing the program along the lines of the submitted topics) and the reviewers themselves. The combined NSS, MIC and the workshops had a total number of submissions this year in excess of 1300. Clearly this meeting could not be held without the effort of these workers.

We sincerely wish you an enjoyable and educational experience this year.



Chuck Britton
NSS Program Chair



Vince Cianciolo
NSS Deputy Program Chair

N01-2: First Neutrons at the Spallation Neutron Source

Thomas E. Mason
Oak Ridge National Laboratory

The wavelengths and energies of thermal and cold neutrons are ideally matched to the length and energy scales in the materials that underpin technologies of the present and future: ranging from semiconductors to magnetic devices, composites to biomaterials and polymers. The Spallation Neutron Source will use an accelerator to produce the most intense beams of neutrons. The project, built by a collaboration of six U.S. Department of Energy laboratories, will serve a diverse community of users drawn from academia, industry, and government labs with interests in condensed matter physics, chemistry, engineering materials, biology, and beyond. Results from the initial commissioning runs will be presented together with an overview of the instruments that will become available in the next few years.



Biography:

Thomas Mason is a native of Dartmouth, Nova Scotia in Canada. After receiving his Ph.D in Experimental Condensed Matter Physics at McMaster University in Hamilton, Ontario, he went on to post-doctoral work at AT&T Bell Laboratories in Murray Hill, New Jersey, then became a Senior Scientist at Risø National Laboratory in Denmark. In 1993 he joined the faculty of the Department of Physics at the University of Toronto. In May 1998 he joined Oak Ridge National Laboratory as Scientific Director for the Spallation Neutron Source (SNS) project at Oak Ridge, and in April 2001 he assumed the role of Associate Laboratory Director.

His research has focused on the application of neutron scattering techniques to novel magnetic materials and superconductors. He was awarded an Alfred P. Sloan Foundation Research Fellowship in 1997 and was named an American Association for the Advancement of Science Fellow in 2001.

N01-3: The New Digital Sky

Tony Tyson
University of California, Davis

Fueled by advances in software, microelectronics, and large optics fabrication, a new type of sky survey is being designed. In a relentless campaign of 15 second exposures, the Large Synoptic Survey Telescope (LSST) will cover the sky to the edge of the optical universe every three nights, opening a movie-like window on objects that change or move on rapid timescales: exploding supernovae and potentially hazardous near-Earth asteroids are just two examples. The superb images from the LSST will also chart billions of remote galaxies in 4-D, providing multiple probes of the mysterious Dark Matter and Dark Energy. Thirty TB of multi-color images per night will be transformed into a new view of our four dimensional universe.

Biography:

Tony Tyson is the Director of the Large Synoptic Survey Telescope. His research interests are in cosmology, dark matter, dark energy, observational optical astronomy, experimental gravitational physics, and new instrumentation. He has been a Distinguished Professor of Physics at UC Davis since 2003. He received his Ph.D. degree from University of Wisconsin in 1967 and was a Member of the Technical Staff at Bell Laboratories from 1969 to 2003. Honors: Elected to American Philosophical Society, Elected to National Academy of Sciences, Aaronson Memorial Prize, Elected Fellow, American Academy of Arts and Sciences, and Fellow, American Physical Society.



N01-4: Science and Technology Needs for the Next Generation of Nuclear Power Reactors

Daniel Ingersoll
Oak Ridge National Laboratory

Interest in nuclear energy is surging worldwide, driven by concerns over the stability and cost of fossil energy supplies and the environmental impacts of fossil fuel consumption. Even in the United States, interest in nuclear energy is growing rapidly within every sector of the industry, supported by new bipartisan policies within the government. The current fleet of nuclear power plants in the U.S., sometimes referred to as “Generation II” systems, have steadily improved their performance over the past 20 years, with average capacity factors now exceeding 90%. Several Generation III systems, now in various stages of design, licensing, and deployment, seek to surpass the previous generation by reducing construction and operating costs, largely through plant simplification. While the promise of these Generation III systems has yet to be demonstrated, the research community is already working toward Generation IV systems, which seek to achieve an even higher performance level in terms of safety, economics, and proliferation resistance.

The most promising path for improved economics appears to be through the use of more efficient power conversion systems that are enabled by higher operating temperatures (>800°C versus <400°C for conventional systems). This creates the potential for nuclear plants also to produce large volumes of hydrogen that will be needed for enriching petroleum fuels in the near term and for hydrogen-based transportation fuels in the long term. There is a need for different reactor designs, the development of efficient fuel recycle technologies, and technologies that minimize proliferation risk. For Generation IV reactors to become a reality, a robust science and technology program is needed to develop the materials, chemical processes, and instrumentation that can provide safe, secure, reliable and economic nuclear energy to the masses.

Biography:

Dr. Daniel Ingersoll is a Senior Program Manager for the Nuclear Technology Programs Office at Oak Ridge National Laboratory, with direct involvement in the Advanced High Temperature Reactor project, the Advanced Fuel Cycle Initiative, the International Reactor Innovative and Secure project, and the Space Reactor Technology Program. He has extensive experience in shielding research projects that support DOE advanced liquid-metal-cooled and gas-cooled reactor concepts, DOD radiation environment studies, and DOE advanced fission reactor and high-energy accelerator programs. He received a BS degree in Physics from Miami University in 1973 and a PhD in Nuclear Engineering from the University of Illinois in 1977. He is a Fellow of the American Nuclear Society and Past Chairman of the ANS Radiation Protection and Shielding Division.



The Whys and Hows of Ultrafast X-ray Science

Jerome Hastings
SLAC

The invention of ultra-fast optical lasers with pulse durations comparable to vibrational periods in solids and motions of molecules undergoing structural changes has provided a look at the dynamics that govern important processes in nature. X-rays, on the other hand, with wavelengths comparable to the distances between atoms, have been a key tool for the study of the average structure of liquids and solids at atomic resolution. With recent developments in ultra-fast X-ray sources, the combination of appropriate temporal resolution and spatial resolution is opening new scientific opportunities for direct observation of atomic scale dynamics. The Linear Coherent Light Source (LCLS), the world's first hard x-ray free electron laser now under construction at SLAC, is just such a source. The science and technology of ultra-fast X-ray studies enabled by the LCLS X-ray free-electron laser will be discussed.



Biography:

Jerome Hastings received his Ph.D. in applied physics from Cornell University in 1975. After spells at both Oak Ridge National Laboratory and Stanford Synchrotron Radiation Laboratory, he spent the next 25 years at Brookhaven National Laboratory, moving to SLAC in 2001, where he is now project director of LCLS Ultra-fast Science Instruments (LUSI). His research interests are in X-ray physics, ultra-fast X-ray optics, and synchrotron radiation instrumentation. He serves on a number of scientific advisory panels to existing and future light sources. He is a Fellow of the American Physical Society.

N01 NSS Plenary

Monday, Oct. 30 09:00-11:50, Golden Ballroom

Session Chairs: **Chuck Britton**, *Oak Ridge National Lab*
Vince Cianciolo, *Oak Ridge National Lab*

N01-1 Welcome from NSS Program Chairs & General Chair

N01-2 (09:15, invited) First Neutrons at the Spallation Neutron Source

T. E. Mason, *Spallation Neutron Source, USA*

Break 10:00-10:20

N01-3 (10:20, invited) The New Digital Sky

T. Tyson, *University of California, Davis, USA*

N01-4 (11:05, invited) Science and Technology Needs for the Next Generation of Nuclear Power Reactors

D. T. Ingersoll, *Oak Ridge National Laboratory, USA*

NSS Luncheon

Monday, Oct. 30 12:00-14:00, California Room

N02 Computing in HEP Experiments

Monday, Oct. 30 14:00-15:30, Golden Ballroom

Session Chair: **Maria Pia**, *CERN*

N02-1 (invited) Preparing for LHC Computing on the Grid

J. Knobloch, *CERN, Switzerland*

N02-2 Analysis of the LHCb Data Challenge 2006 Experience on the LHC

R. Santinelli, **M. Lamanna**, **A. Tsaregorodtsev**, **P. Charpentier**,
N. Brook
CERN, Switzerland

N02-3 The Geant4-Based Simulation Software of the ATLAS Detector

A. Di Simone, *CERN and INFN-CNAF, Switzerland*; **D. Costanzo**,
Univ. of Sheffield, UK; **A. Rimoldi**, *INFN and Univ. of Pavia, Italy*;
J. Boudreau, **V. Tsulaia**, *Univ. of Pittsburgh, USA*; **A. Dell'Acqua**, **M. Gallas**, *CERN, Switzerland*

N02-4 The Physics Software Validation Suite

V. D. Elvira¹, **H. Cheung**¹, **J. Yarba**¹, **F. Ambrogini**², **E. Shabalina**³,
S. Banerjee⁴, **S. Abdulin**¹, **F. Cossutti**⁵, **P. Acre**⁶, **M. Strang**⁷,
U. Berthon⁸, **X. Huang**⁹

¹Fermi National Accelerator Laboratory (FNAL), USA; ²University of Perugia & INFN, Italy; ³University of Illinois at Chicago, USA;

⁴Tata Institute of Fundamental Research, India; ⁵Istituto Nazionale di Fisica Nucleare (INFN), Italy; ⁶Cent.de Investigac.Energeticas Medioambientales y Tecnol. (CIEMAT), Spain; ⁷SUNY-Buffalo, USA;

⁸Laboratoire Leprince-Ringuet(LLR), France; ⁹University of Puerto Rico, USA

N02-5 The Monitoring Data Archiving Service for ATLAS

P. F. Zema^{1,2}

¹Università della Calabria, Italy; ²CERN, Switzerland

N02-6 The LCG Persistency Framework: Status and Perspectives
G. Govi, R. Chytracsek, D. Duellmann, M. Frank, I. Papadopoulos,
 A. Valassi, M. Clemencic, *CERN, Switzerland*; Z. Xie, *Princeton*
University, USA

N03 Detectors and Electronics for the SNS

Monday, Oct. 30 14:00-15:30, Pacific Salon 1

Session Chair: Sara Pozzi, *Oak Ridge National Laboratory*

N03-1 (invited) Neutron Detector Research and Development at the SNS

R. G. Cooper, *ORNL/SNS, USA*

On behalf of the SNS Detector Team

N03-2 Performance of 1 Meter Straw Detector for High Rate Neutron Imaging

J. L. Lacy, A. Athanasiades, N. N. Shehad, C. S. Martin, L. Sun
Proportional Technologies, Inc., U.S.A.

N03-3 (invited) Design and Performance of Vacuum Capable Detector Electronics for Linear Position Neutron Detectors

R. A. Riedel, R. G. Cooper, L. G. Clonts, A. L. Wintenberg
Oak Ridge National Laboratory, USA

N03-4 PATARA: Solid-State Neutron Detector Readout Electronics with Current-Mode Pole-Zero and Shaping and Gated Baseline Restorer for the SNS

J. L. Britton¹, S. C. Bunch¹, B. J. Blalock^{1,2}, C. L. Britton^{1,2},
 D. McGregor³, L. Crow⁴

¹*University of Tennessee, USA*; ²*Oak Ridge National Lab, USA*; ³*Kansas State University, USA*; ⁴*Spallation Neutron Source, USA*

N03-5 A Conceptual Design of a Readout System for a Neutrino Experiment at the Spallation Neutron Source

K. A. Lan, E. V. Hungerford, *University of Houston, USA*

N03-6 Development of a Picosecond-Resolution TDC for Large Scale Time-of-Flight Systems

F. Tang, T. Credo, H. Frisch, H. Sanders, *University of Chicago, USA*; K. Byrum, G. Drake, *Argonne National Laboratory, USA*

N04 Gas Detectors I

Monday, Oct. 30 14:00-15:15, Pacific Salon 2

Session Chair: Fabio Sauli, *INFN-Trieste and CERN*

N04-1 Micromegas TPC R&D Results

P. Colas¹, Y. Giomataris¹, V. Lepeltier², M. T. Ronan³, K. Sachs⁴,
 T. Zerguerras²

¹*LBNL, USA*; ²*LAL and IPN, France*; ³*CEA/DAPNIA, France*;
⁴*Carleton U., Canada*

N04-2 Study in a Beam Test of the Resolution of a Micromegas TPC

P. M. Colas, *CEA/DAPNIA, France*

On behalf of the MP-TPC Collaboration

N04-3 Resolution Studies in a MPGD-TPC with Charge Dispersion in a Magnetic Field

K. Boudjeline, *Carleton University, Canada*

On behalf of part of the ILC TPC R&D groups

N04-4 R&D Ongoing at DESY for a GEM Based TPC: Resolution Studies; Techniques and Results

M. E. Janssen, *DESY - Deutsches Elektronen Synchrotron, Germany*

Monday

On behalf of the FLC TPC Group

N04-5 The Performance of a GEM-Based TPC Prototype for the Linear Collider Experiment

M. Kobayashi, *KEK (High Energy Accelerator Research Organization), Japan*

On behalf of part of the ILC-TPC Collaboration

N05 Photodetectors and Radiation Imaging I

Monday, Oct. 30 14:00-15:30, Pacific Salon 3

Session Chair: Zane Bell, *Oak Ridge National Laboratory*

N05-1 High-Speed HPD for Photon Counting

A. Fukasawa¹, J. Haba², A. Kageyama¹, H. Nakazawa², M. Suyama¹
¹*Hamamatsu Photonics, Japan*; ²*High Energy Accelerator Research Organization, Japan*

N05-2 Development of Thin-Junction Detector

W. Chen, Z. Li, P. Rehak, *Brookhaven National Lab, USA*

N05-3 Monolithic Image Sensors for Charged-Particle Imaging

S. Kleinfelder¹, S. Li¹, M. Ahoovie¹, L. Jin², H. Matis³, H. Wieman³,
 N. Xuong²

¹*University of California, Irvine, USA*; ²*University of California, San Diego, USA*; ³*Lawrence Berkeley National Laboratory, USA*

N05-4 Proximity Focusing RICH with TOF Capabilities

S. Korpar^{1,2}, J. Stefan *Institute, Slovenia*; ²*University of Maribor, Slovenia*

On behalf of the Belle aerogel RICH group

N05-5 Avalanche Photodiodes as Photodetectors for Liquid Xenon Scintillation Light

U. G. Oberlack, P. Shagin, R. Gomez, *Rice University, USA*; R. Farrell, M. McClish, *Radiation Monitoring Devices, Inc., USA*; P. Cushman, B. Sherwood, *University of Minnesota, USA*

N05-6 Sub-Electron Noise Measurements on Repetitive Non-Destructive Readout Devices

S. Woelfel^{1,2}, S. Herrmann^{1,2}, P. Lechner^{3,2}, G. Lutz^{4,2}, M. Porro^{1,2},
 R. Richter^{4,2}, L. Strüder^{1,2}, J. Treis^{1,2}

¹*Max-Planck-Institut für Extraterrestrische Physik, Germany*; ²*MPI Halbleiterlabor, Germany*; ³*PNSensor GmbH, Germany*; ⁴*Max-Planck-Institut für Physik, Germany*

N06 Instrumentation for Homeland Security

Monday, Oct. 30 16:00-18:00, Golden Ballroom

Session Chair: Giancarlo Nebbia, *INFN*

N06-1 Examination of Count-Starved Gamma Spectra Using the Method of Spectral Comparison Ratios

D. M. Pfund, R. C. Runkle, K. K. Anderson, K. D. Jarman
Pacific Northwest National Laboratory, United States

N06-2 Image Processing and Display Systems for the CSIRO Air Cargo Scanner

Y. Liu, J. R. Tickner, *CSIRO Minerals, Australia*

N06-3 Passive Interrogation Using Cosmic Ray Muon Tomography

C. L. Morris¹, G. S. Blanpied², K. N. Borozdin¹, A. M. Fraser¹,
 R. Chartrand¹, M. C. Galassi¹, J. A. Green¹, N. W. Hengartner¹,
 G. E. Hogan¹, A. V. Klimenko¹, W. C. Priedhorsky¹, R. C. Schirato¹,
 L. J. Schultz¹, M. J. Sossong¹

Monday

¹Los Alamos National Laboratory, USA; ²University of South Carolina, USA

N06-4 Prompt Pulsed Neutron Activation Analysis for Detection of Fission Neutrons from Concealed Special Nuclear Materials
F. H. Ruddy, J. G. Seidel, R. W. Flammang
Westinghouse Electric Company, USA

N06-5 3D Mapping of Radioactive Gamma-Ray Sources with a Compton Camera
L. Mihailescu, D. Chivers, K. Vetter
Lawrence Livermore National Laboratory, USA

N06-6 A Directional Gamma Radiation Spectrometer Based on Pixelated CZT Arrays and Coded Mask Apertures
M. A. Capote, G. J. Batinica, H. Lenos, *Aguila Technologies, Inc., USA*; J. Matteson, E. Stephan, R. Rothschild, R. Skelton, G. Huszar, T. Gasaway, M. Pelling, *University of California, San Diego, USA*

N06-7 Design of a Large-Area Fast Neutron Directional Detector
P. E. Vanier¹, L. Forman², I. Dioszegi¹
¹Brookhaven National Laboratory, USA; ²Ion Focus Technology, USA

N06-8 Status of the Pulsed Photonuclear Assessment (PPA) Inspection System
J. L. Jones, B. W. Blackburn, D. R. Norman, K. J. Haskell, S. M. Watson, J. T. Johnson, *Idaho National Laboratory, US*; A. W. Hunt, F. Harmon, *Idaho Accelerator Center/ISU, US*

N07 Core Software Tools

Monday, Oct. 30 16:00-17:30, Pacific Salon 1
Session Chair: Paolo Calafiura, *LBNL*

N07-1 A Geant4-Python Interface: Development and Its Applications
K. Murakami, *KEK, Japan*; H. Yoshida, *Naruto University of Education, Japan*

N07-2 Evaluation of the Power of Goodness-of-Fit Tests for the Comparison of Data Distributions
B. Mascialino¹, A. Pfeiffer², M. G. Pia¹, A. Ribon², P. Viarengo³
¹INFN Genova (Italy), Italy; ²CERN, Switzerland; ³IST - National Cancer Research Institute, Italy

N07-3 RAVE - an Open, Extensible, Detector-Independent Toolkit for Reconstruction of Interaction Vertices
W. Waltenberger, F. Moser, *Hephy Vienna, Austria*

N07-4 (invited) The Geant4 Toolkit: Status and Developments
J. Apostolakis, *CERN, Switzerland*
On behalf of the Geant4 Collaboration

N07-5 Geant4 Simulation in a Distributed Computing Environment
S. Guatelli¹, P. Mendez Lorenzo², J. Moscicki², M. G. Pia¹
¹INFN Genova, Italy; ²CERN, Switzerland

N07-6 GNAM and OHP: Monitoring Tools for the ATLAS Experiment at LHC
M. Della Pietra¹, A. Dotti², P. Adragna³, R. Ferrari⁴, G. Gaudio⁴, C. Roda², D. Salvatore², P. F. Zema⁶, D. Cimino², W. Vandelli⁷
¹INFN - Sez. Napoli, Italy; ²Università di Pisa and INFN sez. Pisa, Italy; ³Queen Mary University of London, United Kingdom; ⁴INFN - Sez. Pavia, Italy; ⁵Università della Calabria and INFN Cosenza, Italy; ⁶Università della Calabria and CERN, Italy; ⁷Università di Pavia and INFN sez. Pavia, Italy

N08 Data Acquisition and Analysis Systems I

Monday, Oct. 30 16:00-17:45, Pacific Salon 2
Session Chair: Nathaniel Bowden, *Sandia National Laboratories*

N08-1 Event Builder and Level 3 Trigger Computing Farm Upgrade at CDF in Run II
M. Klute, *Massachusetts Institute of Technology, USA*
On behalf of the CDF Collaboration

N08-2 A VME-Based Readout System for the CMS Preshower Sub-Detector
G. Antchev¹, D. Barney¹, W. Bialas¹, J. C. Da Silva², N. Manthos³, S. Reynaud¹, G. Sidiropoulos³, W. Snoeys¹, P. Vichoudis^{1,3}
¹CERN, Switzerland; ²LIP, Portugal; ³University of Ioannina, Greece

N08-3 Development of New Data Acquisition Electronics for the Large Water Cherenkov Detector
H. Nishino, Y. Hayato, K. Kaneyuki, K. Okumura, M. Shiozawa, A. Takeda, *Institute for Cosmic Ray Research, University of Tokyo, Japan*; Y. Arai, *KEK, National High Energy Accelerator Research Organization, Institute of Particle and Nuclear Studies, Japan*; K. Ishikawa, A. Minegishi, *Iwatsu Test Instruments Corporation, Japan*

N08-4 Performance of the AMT-3 Based TDC System at Belle
S. Y. Suzuki, T. Higuchi, K. Tauchi, M. Tanaka, Y. Arai, R. Itoh, M. Nakao
High Energy Accelerator Research Organization, Japan

N08-5 Commissioning a Pipelined Data Acquisition System for the Belle Central Drift Chamber
H. Nakayama, *University of Tokyo, JAPAN*; T. Higuchi, S. Y. Suzuki, M. Nakao, R. Itoh, *KEK, High Energy Accelerator Research Organization, JAPAN*

N08-6 The Performance of the Online System of the PHENIX Experiment in the RHIC Run 6
M. L. Putschke, *Brookhaven National Lab, USA*
On behalf of the PHENIX Collaboration

N08-7 Data Acquisition System of the PAMELA Experiment
A. Basili, *INFN, Roma Tor Vergata, Italy*
On behalf of the PAMELA Collaboration

N09 Radiation Damage Effects

Monday, Oct. 30 16:00-18:00, Pacific Salon 3
Session Chair: Lodovico Ratti, *University of Pavia*

N09-1 (invited) The SMART Detectors: Development of Radiation Hard Silicon Devices for SLHC
A. Macchiolo¹, L. Borrello², M. Boscardin³, M. Bruzzi¹, D. Creanza⁴, G. F. Dalla Betta³, M. DePalma⁴, E. Focardì¹, N. Manna⁴, D. Menichelli¹, A. Messineo², C. Piemonte³, S. Ronchin³, C. Tosi¹, N. Zorzi³, V. Radicci²
¹INFN and Università degli Studi di Firenze, Italy; ²INFN and Università degli Studi di Pisa, Italy; ³ITC-IRST, Italy; ⁴INFN and Dipartimento Interateneo di Fisica, Italy

N09-2 Trapping of Electrons and Holes in p-Type Silicon Irradiated with Neutrons
V. Cindro¹, G. Kramberger¹, M. Lozano², I. Mandić¹, M. Mikuž^{1,3}, G. Pellegrini², J. Pulko¹, M. Ullan², M. Zavrtanik¹
¹Jozef Stefan Institute, Slovenia; ²Instituto de Microelectrónica de

Barcelona, Spain; ³University of Ljubljana, Slovenia

N09-3 Measurement of the Trapping Time Constant in Neutron-Irradiated Silicon Pad Detectors

J. Weber, R. Klingenberg, *University of Dortmund, Germany*

N09-4 Radiation Hard Semiconductor Devices for Very High Luminosity Colliders

L. Borrello, *Physics department and INFN Pisa, Italy*

On behalf of the RD50 Collaboration

N09-5 Bias Conditions in Gamma Radiation Assurance Tests of Bipolar Technologies for HEP Applications

M. Ullan, S. Diez, F. Campabadal, M. Lozano, G. Pellegrini, *Centro Nacional de Microelectronica (CNM-CSIC), Spain*; D. Knoll, B. Heinemann, *Innovation for High Performance Microelectronics (IHP), Germany*

N09-6 Radiation Tolerance of High-Resistivity LBNL CCDs

K. S. Dawson, C. J. Bebek, J. H. Emes, D. E. Groom, S. E. Holland, S. Jelinsky, A. Karcher, W. F. Kolbe, N. P. Palaio, N. A. Roe, G. B. Wang

Lawrence Berkeley National Laboratory, USA

N09-7 Proton-Induced Degradation in High-Resolution Geiger Tracking Detectors

S. Vasile, *aPeak Inc., USA*

N09-8 Intensive Irradiation Study on Monitored Drift Tubes Chambers.

F. Petrucci¹, G. Avolio², P. Branchini¹, S. Di Luise¹, E. Graziani¹, L. La Rotonda², E. Meoni², A. Passeri¹, A. Policicchio², D. Salvatore², M. Schioppa²

¹*Dipartimento di Fisica, Universita' Roma Tre and INFN Roma III, Italy*; ²*Dipartimento di Fisica, Universita' degli studi della Calabria and INFN, Italy*

N10 HEP & NP Instrumentation I: Calorimetry

Tuesday, Oct. 31 08:30-10:00, Golden Ballroom

Session Chairs: Bernd Surrow, *Massachusetts Institute of Technology*
Konstantin Goulios, *Rockefeller University*

N10-1 A Study of a New Concept of Compensating Calorimeter

A. Para, H. Wenzel, S.-S. Yu, *Fermi National Accelerator Laboratory, USA*; T. Zhao, *University of Washington, USA*

N10-2 Calorimeters in the Very Forward Region of ILC

J. Zhang, *University of Colorado, USA*

On behalf of the FCAL Collaboration

N10-3 Performance of the Zero Degree Calorimeters for the ALICE Experiment

N. De Marco¹, R. Arnaldi¹, E. Chiavassa¹, C. Cicalo², P. Cortese³, A. De Falco², G. Dellacasa³, A. Ferretti¹, M. Gagliardi¹, M. Gallio¹, R. Gemme¹, A. Masoni², P. Mereu¹, A. Musso¹, C. Oppedisano¹, A. Piccotti¹, F. Poggio¹, G. Puddu², E. Scomparin¹, S. Serci², E. Siddi², D. Stocco¹, G. Usai², E. Vercellin¹, F. Yermia¹

¹*Universita' di Torino and INFN, Italy*; ²*Universita' di Cagliari and INFN, Italy*; ³*Universita' del Piemonte Orientale and INFN, Italy*

N10-4 Calibration of the Lead Tungstate Crystal CMS Electromagnetic Calorimeter Before the LHC Start-Up

A. Ghezzi^{1,2}, ¹*Univeristy of Milano Bicocca, Italy*; ²*ETHZ, Switzerland*

On behalf of the CMS ECAL Collaboration

N10-5 Fluctuations and Energy Estimation Methods in Segmented Calorimeters

S. Bergenius Gavler, P. Carlson, J. Conrad
KTH Stockholm, Sweden

N10-6 The Electromagnetic Calorimeter of the CMS Experiment.

E. Longo, *INFN and Universita' degli Studi di Roma La Sapienza, Italy*
On behalf of the CMS ECAL Group

N11 Neutron Imaging and Radiography

Tuesday, Oct. 31 08:30-10:00, Pacific Salon 1

Session Chair: Carolyn Seifert, *PNNL*

N11-1 Development of a Neutron Scatter Camera for Fission Neutrons

N. Mascarenhas, J. Brennan, J. Lund, *Sandia National Laboratories, USA*; U. Bravar, J. Ryan, *University of New Hampshire, USA*

N11-2 Analytically Computed Small-Angle Scattering in Fast-Neutron Radiography

P. A. Hausladen, P. R. Bingham, J. A. Mullens
Oak Ridge National Laboratory, United States

N11-3 A High Spatial Resolution Sensor for Thermal Neutron Imaging

I. K. Shestakova¹, E. E. Ovechkina¹, V. Gaysinskiy¹, J. J. Antal², L. Bobek², V. V. Nagarkar¹

¹*RMD Inc., USA*; ²*University of Massachusetts Lowell, USA*

N11-4 High Efficiency Thermal Neutron Imaging with Sub-Microsecond Timing Resolution

A. S. Tremsin, *UC Berkeley, USA*; W. B. Feller, *Nova Scientific, USA*

N11-5 Neutron Resonance Capture - Analysis, Scanning and Imaging of Objects

C. W. E. Van Eijk¹, P. Schillebeeckx², M. C. Clarijs¹, H. Postma¹

¹*Delft University of Technology, The Netherlands*; ²*EC-JRC Institute for Reference Materials and Measurements, Belgium*

N11-6 Coded Source Imaging for Neutrons and X-Rays

A. L. Damato, R. C. Lanza

Massachusetts Institute of Technology, USA

N12 Nuclear Measurements and Monitoring Techniques I

Tuesday, Oct. 31 08:30-10:00, Pacific Salon 3

Session Chair: Glen Warren, *Pacific Northwest National Lab*

N12-1 Energy Resolution and Dead Layer Measurement for KATRIN Prototype Silicon PIN Diode Arrays

B. L. Wall¹, T. H. Burritt¹, P. J. Doe¹, H. Gemmeke², G. C. Harper¹, M. A. Howe¹, M. Leber¹, A. W. Meyers¹, H. Robertson¹, M. Stiedl², T. Van Winchel¹, S. Wuestling², J. F. Wilkerson¹, B. VanDevender¹, C. Fredricks¹

¹*University of Washington, USA*; ²*Forschungszentrum Karlsruhe, Germany*

N12-2 Increasing Radiation Hardness and B Field Resistance of Commercial of the Shelf PIR Sensors for the ATLAS/CERN Experiment

A. Maio, *CFNUL/FCUL & LIP, Portugal*; C. Carreira, *IDMEC/IST, Portugal*; G. Benincasa, *LIP, Portugal*

N12-3 Performance of Li-Based Cryogenic Fast-Neutron**Spectrometers**

T. R. Niedermayr¹, I. D. Hau¹, A. Burger², U. N. Roy², Z. W. Bell³, S. Friedrich¹

¹Lawrence Livermore National Laboratory, USA; ²Fisk University, USA;

³Oak Ridge National Laboratory, USA

N12-4 Development of a Liquid Scintillator Neutron Multiplicity Counter (LSMC)

K. C. Frame¹, W. A. Clay², T. E. Elmont¹, E. Esch¹, N. Johansen³, P. Karpus¹, D. MacArthur¹, E. A. McKigney¹, M. K. Smith¹, S. Stange², J. Thron¹, R. B. Williams¹

¹Los Alamos National Laboratory, USA; ²Stanford University, USA;

³University of Michigan, USA

N12-5 Advanced Approach to the Calibration of a Segmented Gamma Scanner for the Radioassay of Drum Waste

A. Bosko, G. Geurkov, S. Croft, R. Venkataraman
Canberra Industries Inc, USA

N12-6 A Digital Pulse Shape Discriminator for the Nuclear Materials Identification System

P. A. Hausladen, Oak Ridge National Laboratory, United States; R. A. Todd, A. R. Miller, RIS Corp., United States

N13 Analog and Digital Circuits I

Tuesday, Oct. 31 08:30-10:00, California Room

Session Chair: Lorenzo Fabris, LLNL

N13-1 Resolution Limits in 130 nm and 90 nm CMOS Technologies for Analog Front-end Applications

M. Manghisoni^{1,2}, L. Ratti^{3,2}, V. Re^{1,2}, V. Speziali^{3,2}, G. Traversi^{1,2}

¹Università degli Studi di Bergamo, Italy; ²INFN, Italy; ³Università di Pavia, Italy

N13-2 A Single Ended Low Noise Rail to Rail CMOS Preamplifier

G. Trampitsch, CERN, Switzerland

N13-3 Parametric Amplifier for Semiconductor Radiation Detectors

R. G. H. Robertson, T. D. Van Wechel

University of Washington, USA

N13-4 Pole-Zero Cancellation Circuit for Charge Sensitive Amplifier with Pile-up Pulses Tracking System

P. Grybos

AGH University of Science and Technology, Faculty of Physics and Applied Computer Science, Poland

N13-5 A High Time-Resolution Analog ASIC Implementing Dual Shapers for Semiconductor Detectors

T. Matsumoto¹, A. Koyama¹, A. Ito¹, T. Moriwaki², N. Kiriki³, T. Yamada³, K. Amemiya¹, Y. Ueno¹, T. Ishitsu¹

¹HITACHI, Ltd., Japan; ²HITACHI Information Technology Co., Ltd., Japan; ³HITACHI ULSI Systems Co., Ltd., Japan

N13-6 A Low Power Multi-Channel Single Ramp ADC with up to 3.2 GHz Virtual Clock.

E. Delagnes¹, D. Breton², F. Lugiez¹, R. Rahmanifard³

¹CEA/DAPNIA/SEDI, France; ²CNRS/INP3/LAL, France; ³L.E.A., France

N14 NSS Poster 1

Tuesday, Oct. 31 10:30-12:00, Atlas Ballroom

Session Chairs: Massimo Caccia, Università dell'Insubria
Ralf Engels, FZ-Juelich

Instrumentation for Homeland Security

N14-1 Comparison of Simulated Handheld Radioisotope Identifier Performance

R. C. Runkle, E. D. Ashbaker, K. D. Jarman, S. M. Robinson, D. V. Jordan, L. E. Smith
PNNL, USA

N14-3 Development of a Depth and Angular-Sensitive Gamma-Camera for Imaging Neutron-Interrogated Materials

M. D. Hammig, University of Michigan, USA; B. T. Wells, Galt LLC, USA

N14-5 Noble Gas Scintillation-Based Radiation Portal Monitors and Active Interrogation Systems

R. S. Chandrasekharan, ETH Zurich, Switzerland

N14-7 Observation of Cosmic Ray Induced Muon X-Rays

A. V. Klimenko, K. N. Borozdin, W. C. Priedhorsky, C. L. Morris, N. Hengartner

Los Alamos National Laboratory, USA

N14-9 Evaluation of Key Detector Parameters for Isotope Identification

C. J. Sullivan, S. E. Garner, M. A. Smith-Nelson, K. B. Butterfield
Los Alamos National Laboratory, United States

N14-11 Simulation of Template Spectra and Study of Nuclide Identification Problems for Scintillator Based Radionuclide Identification Devices Using GEANT4

K. Saucke¹, G. Pausch¹, K. Roemer¹, J. Stein^{1,2}

¹target Systemelectronic GmbH, Germany; ²target instruments, Inc., USA

N14-13 Development of Compact Wide-Angle Imaging Detector for MeV Gamma-Rays Using Stacked BGO Scintillator Rods

K. Watanabe, S. Mihoya, J. Kawarabayashi, T. Iguchi
Nagoya University, Japan

N14-15 Pedestrian Portal with 'Nearby' Source Rejection Capability

A. E. Proctor, S. Pauly, M. Blair, R. Sheldon, T. Thompson, P. Edgley
NuSAFE, Inc., USA

N14-17 An Electronically-Collimated Gamma-Ray Detector for Localization of Radiation Sources

K. L. Matthews II, B. M. Smith, W. Hill, A. W. Lackie, W.-H. Wang, M. L. Cherry
Louisiana State University, USA

N14-19 A Directional Algorithm for an Electronically-Collimated Gamma-Ray Detector

A. W. Lackie, K. L. Matthews II, B. M. Smith, W. Hill, W.-H. Wang, M. L. Cherry
Louisiana State University, USA

N14-21 Detection of Illicit Nuclear Materials Masked with Other Gamma-Ray Emitters

M. I. Reinhard, D. Prokopovich
Australian Nuclear Science and Technology Organisation, Australia

N14-23 Development of Landmine Detection System Using Scintillators by Measuring Radiations from Landmine

Y. Takahashi¹, T. Misawa², C. H. Pyeon², S. Shiroya², K. Yoshikawa³, K. Masuda³, T. Takamatsu¹

¹Graduate school of energy science, Kyoto University, Japan; ²Research Reactor Institute, Kyoto University, Japan; ³Institute of Advanced Energy, Kyoto University, Japan

N14-25 Analysis of Recent Manifests for Goods Imported Through US Ports

M.-A. Descalle, D. Manatt, D. Slaughter
Lawrence Livermore National Lab., USA

N14-27 Optimal Background Attenuation for Fielded Radiation Detection Systems

S. M. Robinson, J. E. Schweppe, E. R. Siciliano
Pacific Northwest National Laboratory, USA

N14-29 Optimizing the Tracking Efficiency for Cosmic Ray Muon Tomography

J. A. Green, Los Alamos National Laboratory, USA

On behalf of the Muon Tomography Collaboration

N14-31 High-Pressure Ionization Chamber Filled with BF₃ Operating as a Neutron Counter

N. Golnik, Warsaw University of Technology, Poland; M. Zielczyński, Z. Rusinowski, P. Tulik, Institute of Atomic Energy, Poland

N14-33 In-Ground Radiation Detection

K. McCormick, D. C. Stromswold, M. L. Woodring, J. Ely, E. R. Siciliano

Pacific Northwest National Lab, US

N14-35 The Effect of the Three-Dimensional Geometry of Cargo on the Detection of Radioactive Sources in Cargo Containers

J. E. Schweppe, J. H. Ely, R. J. McConn, Jr., R. T. Pagh, S. M. Robinson, E. R. Siciliano

Pacific Northwest National Laboratory, USA

N14-37 High-Yield Neutron Source for Cargo Container Screening

B. A. Ludewigt, D. L. Bleuel, J. W. Kwan, D. Li, A. Ratti, J. W. Staples, S. P. Virostek, R. P. Wells

Lawrence Berkeley National Laboratory, U.S.A.

N14-39 Spectral Personal Radiation Detectors (SPRDs) - a New Equipment Category for Use by Front Line Officers and First Responders

R. Arlt, Consultant for the International Atomic Energy Agency, Austria; F. Gabriel, A. Wolf, Forschungszentrum Rossendorf, Germany; K. Baird, M. Schrenk, International Atomic Energy Agency, Austria; R. Oxford, Thermo Electron Corporation, US; M. Swoboda, Atomistitut, Austria; B. Wiggerich, AirRobot GmbH & Co. KG, Germany; J. Stein, target systems GmbH, Germany; A. Georgiev, Target Instruments Inc., US; M. Majorov, Scientific Engineering Center "Nuclear Physics Research, Russia

N14-41 A Comparison of Simulated HPGe and NaI Radiation Portal Monitor Performance Using a Nuisance Source Library

S. M. Robinson, E. D. Ashbaker, K. D. Jarman, D. V. Jordan, W. Kaye, R. C. Runkle, L. E. Smith

Pacific Northwest National Laboratory, USA

N14-43 Fast Neutron Detection and Imaging Using Liquid Ionization Detectors

E. M. Boyd, B. W. Blackburn, G. E. Kohse, R. C. Lanza, V. Ziskin
Massachusetts Institute of Technology, U.S.A.

N14-45 Actively-Induced, Prompt Radiation Utilization in Nonproliferation Applications

B. W. Blackburn, J. L. Jones, Idaho National Laboratory, US; C. E. Moss, Los Alamos National Laboratory, US; J. T. Mihalcz, Oak Ridge National Laboratory, US; A. W. Hunt, F. Harmon, Idaho Accelerator Center/ISU, US

N14-47 Active Nuclear Material Detection at Large Standoff Distances

D. R. Norman, J. L. Jones, B. W. Blackburn, J. W. Sterbentz, K. J. Haskell, S. M. Watson, J. T. Johnson, Idaho National Laboratory, US; A. W. Hunt, F. Harmon, Idaho Accelerator Center/ISU, US

Analog and Digital Circuits

N14-49 Design and Test of the ALICE SDD Data Concentrator Card CARLOSrx

D. Falchieri, S. Antinori, F. Costa, A. Gabrielli, E. Gandolfi, M. Masetti

Department of Physics & INFN, Italy

N14-51 Position Determination and Resolution of Position Sensitive Neutron Detectors Limited by Charge Equalization and Noise

S. P. Boenisch, B. Namaschk, E. Wulf

Hahn-Meitner-Institut Berlin, Germany

N14-53 FETs Array Readout of GEM Detector

Y. Li, X. Zheng, Y. Li, Tsinghua University, China; Y. Lai, Institute of Chemical Defense, China; J. Li, Chinese Academy of Sciences, China

N14-55 Silicon Strips Readout using Deep Sub-Micron Technology

J.-F. C. Genat¹, S. Fougeron², R. Hermel², Y. Karyotakis², H. Lebbolo¹, T. H. Pham¹, A. Savoy-Navarro¹, R. Sefri¹, S. Vilalte²
¹IN2P3-CNRS Universities Paris 6 and 7, France; ²IN2P3-CNRS, France

N14-57 A High Precision Peak Detect Sample and Hold Circuit

P. Y. Chang, H. P. Chou

National Tsing Hua University, Taiwan

N14-59 A Multigigahertz Analog Memory with Fast Read-Out for the HESS2 Front-End Electronics

E. Delagnes¹, F. Feinstein², P. Goret¹, P. Nayman³, F. Toussnel³, P. Vincent³

¹CEA, France; ²Université de Montpellier II, France; ³IN2P3/CNRS, France

N14-61 Cryogenic Operations of Optoelectronic Devices

D. V. Camin, V. Grassi, University of Milano/INFN, Italy

N14-63 A Multi-Chaen Front-End ASIC for Pixelated Detectors

Z. Deng¹, Y. Liu¹, L. Zhang², Y. Li¹, Y. Li¹, J. Li³

¹Tsinghua University, China; ²Nuctech Ltd., China; ³Institute of High Energy Physics, China

N14-65 Data Stream Zero Suppression and Word Recoding Using an Accordion pipeline, an FPGA implementation.

V. Bocci, F. Iacoangeli, R. Nobrega
INFN Sezione di Roma, Italy

N14-67 ASIC Front-End for Position Sensitive Photomultiplier Based PET Systems with Gain Adjustment and DOI Measurement

V. Herrero-Bosch, R. Gadea-Girones, R. Colom-Palero, A. Sebastia-Cortes, J. D. Martinez, Universidad Politecnica de Valencia, Spain; C. W. Lerche, J. M. Benlloch, Universidad de Valencia, Spain

N14-69 A Fast VLSI Preamplifier for Segmented HPGe Gamma-Ray Detectors

A. Pullia^{1,2}, F. Zocca^{1,2}, S. Riboldi^{1,2}, C. Cattadori²

¹University of Milano, Italy; ²INFN, Italy

N14-71 A Low-Impedance Large-Swing Output Stage for CMOS Preamplifiers of Semiconductor Detector Signals

A. Pullia^{1,2}, F. Zocca^{1,2}

¹University of Milano, Italy; ²INFN, Italy

N14-73 A Charge Sensitive Preamplifier with an Active Ultra Fast Recovery Circuit for Experiments at Neutron Time-of-Flight Facilities

C. Boiano¹, R. Bassini¹, A. Pullia^{1,2}, P. Mastinu¹, M. Calviani^{1,3}, C. Massimi^{4,1}

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⁴University of Bologna, Italy

N14-75 An Amplifier for Bolometric Detectors

G. Pessina, C. Arnaboldi

INFN di Milano Bicocca and Dipartimento di Fisica dell'Università di Milano Bicocca P.zza della Scienza 3 20126, Italy

N14-77 Simple Charge Sensitive Preamplifiers for Experiments with a Small Number of Detector Channels

C. Arnaboldi, G. Pessina

Università degli studi e INFN di Milano Bicocca, p.zza della scienza, 3 20126, Italy

N14-79 Design Criteria for the Optimization of Hybrid Charge-Sensitive Preamplifiers for High Resolution Gamma-Ray Spectroscopy

F. Zocca^{1,2}, A. Pullia^{1,2}

¹University of Milano, Italy; ²INFN, Italy

N14-81 The SYNC Chip and the SYNC Test Bench

S. Cadeddu, V. De Leo, C. Deplano, E. Fois, A. Lai

Istituto Nazionale Fisica Nucleare, Italy

N14-83 A Front End Electronic Card Using a High Gain and High Bandwidth Preamplifier with a Fast Discriminator for Time of Flight Measurements.

M. Ciobanu¹, N. Herrmann², K. D. Hildenbrand¹, Y. J. Kim¹, M. Kis¹, A. Schüttauf¹

¹Gesellschaft für Schwerionenforschung, Germany; ²Universität Heidelberg, Germany

N14-85 An ASIC Circuit for Timing Measurements with Strip Detectors, Designed for the SiliPET Project

A. Gola^{1,2}, C. Fiorini^{1,2}, G. Di Domenico^{3,4}, G. Zavattini^{3,4}, N. Auricchio^{3,4}

¹Politecnico di Milano, Italy; ²INFN, Sezione di Milano, Italy;

³Università di Ferrara, Italy; ⁴INFN, Sezione di Ferrara, Italy

N14-87 A Low Power, Low Signal 5 Bit Analog to Digital Pipe Line Converter for Monolithic Active Pixels

D. Dzahini, M. Dahoumane, O. Rossetto, E. Lagorio, J. Bouvier, *IN2P3-LPSC, France*; M. Winter, *IN2P3-IPHC, France*; H. Ghazlane, *CNESTEN, Morocco*; D. Dallet, *IXL, France*

N14-89 MRI Compatible G-Link and PCI Based Data Acquisition Hardware for the RatCAP Scanner

S. S. Junnarkar, J. Fried, P. O'Connor, V. Radeka, P. Vaska, M. Purschke, D. Tomasi, J.-F. Pratte, S.-J. Park, C. Woody, R. Fontaine

Brookhaven National Laboratory, USA

N14-91 Multi-Channel Front-End Readout IC for Position Sensitive Solid-State Detectors

T. O. Tumer, V. Cajipe, M. Clajus, S. Hayakawa, A. Volkovskii

NOVA R&D, Inc., USA

N14-93 Upgrade of the RatCAP Front-End ASIC

J.-F. Pratte, J. Junnarkar, P. O'Connor, V. Radeka, P. Vaska, C. Woody, D. Schlyer, A. Kandasamy, S. Stoll, *Brookhaven National Laboratory, USA*; R. Lecomte, R. Fontaine, *Université de Sherbrooke, CANADA*

N14-95 Two-Dimensional Integrated Circuits for Hybrid Solid-State Pixel Detectors

T. O. Tumer, V. Cajipe, M. Clajus, S. Hayakawa

NOVA R&D, Inc., USA

Detectors and Electronics for the SNS

N14-97 Performance of Radiation Detectors with the Pulse-Reset Readout Based on PentaFET.

V. Polushkin, S. Sharp, P. Statham

Oxford Instruments Nano-Analysis, England

Astrophysics and Space Instrumentation

N14-99 The AMS-02 Transition Radiation Detector to Search for Dark Matter in Space

F. Bucci, *University "La Sapienza", Italy*

On behalf of the AMS collaboration

N14-101 Balloon-Borne Sub-MeV Gamma-Ray Imager Using Electron Tracking Gaseous TPC and Scintillation Camera

H. Kubo¹, K. Hattori¹, S. Kabuki¹, S. Kurosawa¹, K. Miuchi¹, T. Nagayoshi², H. Nishimura¹, Y. Okada¹, R. Orito³, H. Sekiya⁴, A. Takada¹, T. Tanimori¹, K. Ueno¹

¹Kyoto University, Japan; ²Waseda University, Japan; ³Kobe University, Japan; ⁴University of Tokyo, Japan

N14-103 Response of Pentagonal PZT Elements as a Sensor of a 4 π Detector to Hypervelocity Particle Collisions

T. Miyachi, M. Fujii, N. Hasebe, G. Kuraza, M. Miyajima, K. Mori, O. Okudaira, N. Yamashita, *Waseda University, Japan*; T. Iwai, *University of Tokyo, Japan*; H. Matsumoto, *Japan Aerospace Exploration Agency, Japan*; K.-I. Nogami, *Dokkyo University School of Medicine, Japan*; H. Ohashi, *Tokyo University of Marine Science and Technology, Japan*; H. Shibata, *Kyoto University, Japan*; S. Minami, T. Onishi, S. Takachi, *Osaka City University, Japan*; E. Grün, R. Srama, *Max-Planck-Institut für Kernphysik, Germany*; N. Okada, *Honda Electronics Co., Ltd., Japan*

N14-105 A High Fidelity Scintillating Fiber Tracker for SONTRAC

J. S. Legere, J. R. Macri, J. Levasseur, J. M. Ryan, *University of New Hampshire, USA*; R. S. Miller, *University of Alabama in Huntsville, USA*

N14-107 Basic Performance of PHENEX: Polarimeter for High ENERGY X-rays

Y. Kishimoto, S. Gunji, Y. Ishigaki, M. Kanno, H. Murayama, C. Ito, F. Tokanai, K. Suzuki, H. Sakurai, *Yamagata University, Japan*; T. Mihara, M. Kohama, M. Suzuki, A. Hayato, *The Institute of Physical and Chemical Research (RIKEN), Japan*; K. Hayashida, N. Anabuki, M. Morimoto, H. Tsunemi, *Osaka University, Japan*; Y. Saito, T. Yamagami, *Institute of Space and Astronautical Science (ISAS), Japan*; S. Kishimoto, *High Energy Accelerator Research*

Organization(KEK), Japan

N14-109 Accelerator Results for 3-DTI Gamma-Ray Telescopes

G. A. de Nolfo¹, P. F. Bloser², N. A. Guardala³, S. D. Hunter¹, J. F. Krizmanic¹, M. L. McConnell², J. M. Ryan², S. Son¹
¹NASA/GSFC, USA; ²University of New Hampshire, USA; ³Naval Surface Warfare Center, USA

N14-111 Performance of 3-DTI Gamma-Ray Telescopes

J. F. Krizmanic¹, P. F. Bloser², G. A. de Nolfo¹, S. D. Hunter¹, M. L. McConnell², J. M. Ryan², S. Son¹
¹NASA/GSFC, USA; ²University of New Hampshire, USA

N14-113 Front End Electronics and a Transient Digitizer for 3-DTI Gamma-Ray

S. Son¹, P. F. Bloser², G. A. de Nolfo¹, S. D. Hunter¹, J. F. Krizmanic¹, M. L. McConnell², J. M. Ryan²
¹NASA/GSFC, USA; ²University of New Hampshire, USA

High Energy and Nuclear Physics Instrumentation

N14-115 Performance of a 4-7GeV/c Kaon Identification System in KEK-PS E248

Y. Tajima¹, H. Kawai², H. Nakayama², K. Takamatsu³, T. Tsuru³, H. Y. Yoshida¹
¹Yamagata University, Japan; ²Chiba University, Japan; ³High Energy Accelerator Research Organization(KEK), Japan

N14-117 The Silicon Tracker for the CBM Experiment at FAIR

C. Muenz, J. W. Goethe-Universitaet Frankfurt am Main, Germany
On behalf of the CBM Collaboration

N14-119 The Design of the Cooling for the CMS Barrel Electromagnetic Calorimeter

O. Teller, CERN, Switzerland
On behalf of the CMS ECAL Collaboration

N14-121 Implementation of a Software Feedback for the CMS Monitoring Lasers

L. Zhang, D. Bailleux, A. Bornheim, K. Zhu, R.-Y. Zhu
California Institute of Technology, USA

N14-123 The Low-Threshold HPGe Detector for Dark Matter Search

J. Li^{1,2}, Y. Li¹, Q. Yue¹, Z. Wang³
¹Tsinghua University, China; ²Chinese Academy of Sciences, China; ³Academia Sinica, China

N14-125 Results on the Position Sensitivity of Advanced Gamma Tracking Array (AGATA) Prototype Detectors and Generation of Simulated Basis Pulse Shapes

M. R. Dimmock, L. Nelson, S. V. Rigby, A. J. Boston, P. J. Nolan, H. C. Boston, J. R. Cresswell, University of Liverpool, Oliver Lodge Laboratory, Oxford Street, England, UK; I. H. Lazarus, J. Simpson, CCLRC Daresbury Laboratory, England, UK; P. Medina, C. Santos, C. Parisel, Institut de Recherches Subatomiques, 23 Rue du Loess, France

N14-127 Digital Pulse Shape Acquisition from BaF2: Preliminary Results

F. Amorini¹, E. De Filippo², P. Guazzoni², E. Laguidara¹, G. Lanzano², A. Pagano², S. Pirrone², F. Riccio¹, S. Russo², P. Russotto¹, M. Sassi², L. Zetta²
¹INFN and Laboratori Nazionali del Sud, Italy; ²Dipartimento di Fisica and INFN, Italy

N14-129 Digital Signal Processing for MAGNEX Spectrometer: Preliminary Results.

F. Cappuzzello^{1,2}, M. Cavallaro^{1,2}, A. Cunsolo^{1,2}, P. Guazzoni¹, G. Longo^{1,2}, A. Khouaja^{1,2}, S. E. A. Orrigo^{1,2}, F. Riccio¹, S. Russo¹, M. Sassi¹, J. S. Winfield^{1,2}, L. Zetta¹
¹Dipartimento di Fisica, Italy; ²INFN - Laboratori Nazionali del Sud, Italy

N14-131 Construction and Commissioning of the Magnets for the OPERA Experiment

F. Terranova¹, R. Adinolfi Falcone², A. Bergnoli³, A. Cazes¹, A. Cecchetti¹, B. Dulach¹, A. Garfagnini³, F. Grianti⁴, M. Incurvati¹, A. Mengucci¹, D. Orecchini¹, L. Pellegrino¹, C. Sanelli¹, M. Spinetti¹, M. Ventura¹, L. Votano¹
¹Istituto Nazionale di Fisica Nucleare, Laboratori di Frascati, Italy; ²Istituto Nazionale di Fisica Nucleare, Laboratori del Gran Sasso, Italy; ³Univ. di Padova and INFN Padova, Italy; ⁴Univ. di Urbino, Italy

N14-133 The Measurement of the CMS Magnetic Field

V. I. Klyukhin^{1,2}, F. Bergsma¹, D. Campi¹, B. Cure¹, A. Gaddi¹, H. Gerwig¹, A. Herve¹, L. Velleter¹, J. B. Korienek³, C. W. Lindenmeyer³, T. R. Nebel³, R. P. Smith³, J. K. Zimmerman³, F. Linde⁴, R. J. Loveless⁵
¹CERN, Switzerland; ²SINP MSU, Russia; ³FNAL, USA; ⁴NIKHEF, Netherlands; ⁵University of Wisconsin, USA

N14-135 Design and Development of AC-Coupled Single-Sided Silicon Strip Sensor

D. Kah, J. B. Bae, H. J. Hyun, H. D. Kang, H. J. Kim, H. Park
Kyungpook National University, South Korea

N14-137 Study of the ATLAS-MDT Chambers Performance in the Presence of High Energy Neutron Background Radiation

T. Alexopoulos¹, M. Dris¹, E. N. Gazis¹, E. Katsoufis¹, M. Kokkoris¹, A. Lagoyannis², S. Maltezos¹, P. S. Savva¹, G. Tsipolitis¹
¹National Technical University of Athens, Greece; ²National Centre of Scientific Research "Demokritos", Greece

N14-139 Z-Boson Resonance as a Calibration and Alignment Process for the ATLAS

N. C. Benekos, Max-Planck-Institut für Physik, Germany; L. Chevalier, J. F. Laporte, CEA-Saclay, France; M. Schott, Ludwig-Maximilian Universität, Germany

N14-141 Cosmics and Final ATLAS ID-SCT Tests

M. J. Costa, CERN, Switzerland
On behalf of the ATLAS-SCT collaboration

N14-143 Induced Current Signals in Planar pn Diodes for Light Charged Products Identification

A. Castoldi^{1,2}, C. Guazzoni^{1,2}
¹Politecnico di Milano, Italy; ²INFN, Italy

N14-145 A General Study on Sampling Frequency Limits for Digital Spectrometer

X. Deng, Z. Deng, Y. Liu, Tsinghua University, China

N14-147 The Remotely-Controllable Voltage-Regulation Stations for the Distributed Power Supply System of the ATLAS Pixel Detector

M. Citterio, A. Andreatza, A. Andreani, S. Latorre, C. Meroni, F. Sabatini, INFN - Milano, Italy; K. Einsweiler, Lawrence Berkeley National Laboratory (LBNL), USA; S. Kersten, T. Henss, J. Boek, J. Schultes, K. Lantzsch, P. Mattig, Bergische Universität Wuppertal, Germany

N14-149 The ALICE Dimuon Forward SpectrometerE. Siddi, *INFN, Italy*

On behalf of the ALICE Collaboration

N14-151 Study of RICH Counter with Silica Aerogel RadiatorA. Kuratani¹, I. Adachi², K. Fujita³, T. Fukushima¹, A. Gorisek⁴, D. Hayashi³, T. Iijima³, K. Ikado³, T. Ishikawa³, H. Kawai¹, S. Korpar⁶, P. Krizan⁷, Y. Kozakai³, Y. Mazuka³, T. Nakagawa⁵, S. Nishida², S. Ogawa⁸, R. Pestotnik⁴, T. Seki⁵, T. Sumiyoshi⁵, M. Tabata¹, Y. Unno²¹Chiba University, Japan; ²IPNS, High Energy Accelerator Research Organization (KEK), Japan; ³Nagoya University, Japan; ⁴Jozef Stefan Institute, Slovenia; ⁵Tokyo Metropolitan University, Japan; ⁶Faculty of Chemistry and Chemical Engineering, Univ. of Maribor, Slovenia; ⁷Faculty of Mathematics and Physics, Univ. of Ljubljana, Slovenia; ⁸Toho University, Japan**N14-153 Performance of High Resistivity Magnetic Czochralski Silicon Diode as Charged Particle Detector**C. C. Bueno^{1,2}, F. de Camargo¹, J. A. C. Gonçalves^{1,2}, E. Tuominen³, J. Harkonen³¹IPEN-CNEN/SP, Brasil; ²PUC/SP, Brasil; ³Helsinki Institute of Physics, Finland**N14-155 Investigation of FSHA-800 Type Quartz-Polymer Optical Fiber Characteristics in the 60Co Gamma Irradiation Field**I. Rustamov, M. Ashurov, M. Baydjanov, *Scientific Industrial Association (SIA) Phoron, Uzbekistan*; E. Gasanov, B. Yuldashev, *Institute of Nuclear Physics, Uzbekistan***N14-157 An Evaluation of the Efficacy of a Tracking Array**L. Nelson, *The University of Liverpool, United Kingdom*

On behalf of the AGATA Collaboration

N14-159 Optical Transition Radiation Beam Profile Detector for Antiproton Production at FNALG. R. Tassotto, V. E. Scarpine, R. M. Thurman-Keup, *FNAL, USA*; A. H. Lumpkin, *ANL, USA***N14-161 STAR Time of Flight Readout Electronics and DAQ**J. Schambach, J. Hoffmann, *University of Texas at Austin, USA*; G. Eppley, B. Llope, T. Nussbaum, *Rice University, USA*; L. Bridges, J. Kennington, *Blue Sky Electronics, USA*; C. Mesa, *M6 Research, USA***N14-163 Design and Performance of the Alignment System for the CMS Muon Endcaps**M. Hohlmann¹, G. Baksay¹, M. Browngold¹, J. Bellinger², D. Carlsmith², M. Case³, K. Dehmelt¹, D. Early⁴, F. Feyziz², S. Guragain¹, R. Loveless², D. Northacker², O. Prokofiev⁴, V. Sknar⁵, V. Sytnik³¹Florida Institute of Technology, USA; ²University of Wisconsin, USA; ³University of California, USA; ⁴Fermi National Accelerator Lab, USA; ⁵Petersburg Nuclear Physics Institute, Russia**N14-165 Gas Compositions Studies for the ATLAS MDT Calibration Model**R. M. Avramidou^{1,2}, Y. Sedykh²¹National Technical University of Athens, Hellas; ²University of Michigan, USA**N14-167 Pixel Multichip Module Development at Fermilab for the PHENIX Experiment**M. A. Turqueti¹, J. Andresen¹, M. L. Brooks², S. Butsyk², G. Cardoso¹, D. Christian¹, J. Kapustinsky², G. J. Kunde²,S. W. Kwan¹, D. M. Lee²¹Fermi National Accelerator Laboratory, USA; ²Los Alamos National Laboratory, USA**N14-169 Isotopic Identification in Chimera Detector: Recent Results and Perspectives**A. Pagano, *INFN Sezione di Catania, Italy*

On behalf of the CHIMERA Collaboration

N14-171 Upgrade of the DØ Luminosity Monitor Readout SystemJ. Anderson¹, L. Bridges², B. Casey³, Y. Enari³, J. Green¹, M. Johnson¹, R. Kwarciany¹, C. Miao³, R. Partridge³, H. D. Yoo³, J. Wang³¹Fermi National Accelerator Laboratory, United States; ²Blue Sky Electronics, United States; ³Brown University, United States**N14-173 A Modular NIM Electronics for Pulse Shape Method with Large Area Planar Silicon Detectors of CHIMERA**R. Bassini¹, C. Boiano¹, A. Pagano², A. Pullia¹¹INFN-milano, Italy; ²INFN-catania, Italy**N14-175 A Programmable Trigger Emulator Based on True Random Bits**G. Sidiropoulos, N. Manthos, *University of Ioannina, Greece*;P. Vichoudis, *European Organization for Nuclear Research, Switzerland***N14-177 Nonlinearity in Semiconductor Detectors**M. W. Cooper, B. J. Hyronimus, J. L. Orrell, M. W. Shaver, C. E. Seifert*Pacific Northwest National Laboratory, US***N14-179 Pion Decay-Mode Tagging in a Plastic Scintillator Using COPPER 500MHz FADC**K. Yamada¹, M. Yoshida¹, Y. Igarashi², A. Muroi¹, K. Tauchi², M. Tanaka², M. Aoki¹, M. Ikeno², Y. Takubo¹¹Osaka University, Japan; ²KEK, Japan**N14-181 The CMS Beam Condition Monitoring System**R. S. Wallny, *UCLA Dept. of Physics and Astronomy, USA*

On behalf of the CMS BCM Collaboration

Nuclear Measurements and Monitoring Techniques

N14-183 Irradiation Effect on the Microstructure Change of Nano-Filamentary Copper-Silver CompositesY. Choi, *Summoon University, Korea*; K. N. Choo, D. S. Kim, Y. H. Kang, *Korea Atomic Energy Research Institute, Korea***N14-185 Automated Spectrometer for Radionuclide Analysis of Liquid and Gaseous Flows**A. Sokolov, V. Kuzmenko, A. Pchelintsev
*Baltic Scientific Instruments, Latvia***N14-187 Mobile-Dose: a Compact and Flexible Dose-Meter Suitable for Gamma Source Classification and Nuclear Medicine Dose Calibration**R. de Asmundis¹, A. Boiano¹, A. Ramaglia^{2,3}¹INFN Naples, Italy; ²University of Napoli, Italy; ³INFN Naples, Italy**N14-189 Safeguards and Non-Proliferation Issues as Related to Advanced Fuel Cycle and Advanced Fast Reactor Development with Processing of Reactor Fuel**R. Aryaeinejad, J. D. Cole, M. W. Drigert
Idaho National Laboratory, US

N14-191 Installation and Final Testing of an On-Line, Multi-Spectrometer Fission Product Monitoring System (FPMS) to Support Advanced Gas Reactor (AGR) Fuel Testing and Qualification in the Advanced Test Reactor

J. K. Hartwell, D. M. Scates, M. W. Drigert, J. B. Walter
Idaho National Laboratory, USA

N14-193 Fissile Mass Flow Monitor Source-Strength Calibration Using the ORNL Neutron Detector System

T. Uckan, J. March-Leuba, D. Powell
Oak Ridge National Laboratory, USA

N14-195 Nuclear Microcalorimeter Spectrometers

M. W. Rabin, A. S. Hoover, S. P. Lamont, D. M. Tournear, D. T. Vo, J. A. Beall, *Los Alamos National Laboratory, USA*; W. B. Doriese, R. D. Horansky, K. D. Irwing, G. C. O'Neil, J. N. Ullom, B. L. Zink, *National Institute of Standards and Technology (NIST), USA*

N14-197 1 and 10 Gigabit Ethernet Readout Interfaces for DETNI

B. A. Mindur^{1,2}
¹*Hahn-Meitner-Institut Berlin GmbH, Germany*; ²*AGH University of Science and Technology, Poland*

N14-199 Effect of Temperature on Counting Information in a Uranium Enrichment Monitor Based on a NaI(Tl) Spectrometer and Transmission Source

K. D. Janakiev, T. R. Hill, T. J. Marks, B. S. Alexandrov, C. E. Moss, D. A. Close, D. J. Dale, J. M. Goda
Los Alamos National Laboratory, USA

N14-201 Positron Lifetime Instrumentation Developed for the Australian National University Positron Beam

T. J. Paulus¹, A. J. Hill², S. S. Paulus¹, S. Pas², N. Ciccosillo², Y. Shekibi²
¹*Paulus Engineering Company, USA*; ²*CSIRO, Australia*

N14-203 A Neutron Spectrometer with High Spatial Resolution for the Characterization of Mixed Fast Neutron Fields

A. Fazzi, S. Agosteo, A. Foglio Para, A. Pola, V. Varoli
Politecnico di Milano, Italy

N14-205 HPGe-Base Two-Dimensional Doppler Broadening Instrumentation Developed for the Australian National University Positron Beam

T. J. Paulus¹, A. J. Hill², S. S. Paulus¹, S. Pas², N. Ciccosillo², Y. Shekibi²
¹*Paulus Engineering Company, USA*; ²*CSIRO, Australia*

N14-207 A Way to Deal with Saturation of CVD Diamond Neutron Detectors at the National Ignition Facility

L. S. Dauffy, J. A. Koch, N. Izumi, R. Tommasini
Lawrence Livermore National Laboratory, USA

N14-209 Radiation Fields in the Vicinity of Compact Accelerator Neutron Generators

D. L. Chichester, B. W. Blackburn, A. J. Caffrey
Idaho National Laboratory, US

N14-211 Using RPC Detectors as a Cosmic Rays Monitor in the Naples Area

R. de Asmundis, *INFN Naples, Italy*; P. Avella, F. Toglia, *University of Napoli "Federico II", Italy*

Radiation Damage Effects

N14-213 A Special Capsule with Multi-Channels for Irradiation Creep Test in HANARO

Y. Choi¹, B. G. Kim², M. S. Cho³, Y. H. Kang²
¹*Sunmoon University, Korea*; ²*Korea Atomic Energy Research Institute, Korea*; ³*Korea Atomic Energy Research Institute, Korea*

N14-215 Radiation Hardness of CCD Vertex Detectors

A. Sopczak, C. Bowdery, G. Davies, M. Koziel
Lancaster University, UK

N14-217 Investigation of the Thermo-Annealing of Gamma-Induced Transmission Losses in the FVP-400 Type Quartz-Quartz Optical Fiber

I. Rustamov, M. Ashurov, M. Baydjanov, *Scientific Industrial Association (SIA) Phonon, Uzbekistan*; E. Gasanov, B. Yuldashev, *Institute of Nuclear Physics (INP), Uzbekistan*

N14-219 Radiation Damage in Lead Tungstate Crystal Phosphor

A. Rakov, S. Ismoilov
Institute of Nuclear Physics Uzb AS, Uzbekistan

N14-221 Effects of Gamma Irradiation on Silicon Carbide Semiconductor Radiation Detectors

F. H. Ruddy, J. G. Seidel
Westinghouse Electric Company, USA

N14-223 Target Theory Applied in the Radiation Damage Analysis for Organic Detectors

C. H. de Mesquita^{1,2}, J. M. Fernandes Neto¹, M. M. Hamada¹
¹*IPEN/CNEN-SP, Brazil*; ²*Sao Paulo University, Brazil*

Computing and Software for Experiments

N14-225 Computations of Ballistic Deficits in Pulse Shaping Amplifiers for the Pulses from Cylindrical Ionization Chambers

A. K. Gourishetty
Indian Institute of Technology, Kharagpur, India

N14-227 Deterministic Transport Methods for the Simulation of Gamma-Ray Spectroscopy Scenarios

L. E. Smith, J. E. Ellis, C. J. Gesh, R. J. McConn, G. H. Meriwether, E. A. Miller, R. T. Pagh, A. B. Valsan, *Pacific Northwest National Laboratory, USA*; T. Wareing, *Transpire, Inc., USA*

N14-229 Gene Expression Programming and Artificial Neural Network Approaches for Event Selection in High Energy Physics

L. Teodorescu, *Brunel University, UK*

N14-231 Gene Expression Programming Software Application for High Energy Physics Data Analysis

L. Teodorescu, *Brunel University, UK*

N14-233 Development and Performance of Grid Accounting for LHC

A. Khan, X. Chen, *Brunel University, UK*

N14-235 Designing SWORD--SoftWare for Optimization of Radiation Detectors

E. I. Novikova¹, M. S. Strickman¹, C. Fitzgerald², E. A. Wulf¹, B. F. Philips¹
¹*Naval Research Laboratory, USA*; ²*Loyola College in Maryland, USA*

N14-237 Identification and Reconstruction of Muons in the ATLAS Detector

E. C. Lançon, *CEA-Saclay, France*
On behalf of the ATLAS Collaboration

N14-239 Distributed Analysis in ARDA/CMS

A. Khan, C. Munro, *Brunel University, UK*

N14-241 Muon Identification in ATLAS from the Inside Out

S. Tarem, N. Panikashvili, *Technion, Israel Institute of Technology, Israel*; Z. Tarem, *CERN, Switzerland*

N14-243 Conditions Database and Calibration Software Framework for ATLAS Monitored Drift Tube Chambers

M. Verducci, *CERN, Switzerland*

On behalf of the ATLAS Muon Collaboration

N14-245 The CMS Simulation Software

J. V. Yarba, *Fermilab, USA*

On behalf of the CMS Collaboration

N14-247 Visual Risk Assessment of Space Radiation Exposure for Future Space Exploration Missions

H. F. Hussein, *University of Houston/NASA Johnson Space Center, USA*; M.-H. Y. Kim, *Wyle Laboratories/NASA Johnson Space Center, USA*; F. A. Cucinotta, *NASA Johnson Space Center, USA*

N14-249 A Dual-Grid Implementation of SPM Analysis for Early Diagnosis of Alzheimer's Disease

S. Bagnasco, *Istituto Nazionale di Fisica Nucleare, Italy*

On behalf of the MAGIC-5 Collaboration

N14-251 Implementation of a Generic Surface Sampler Using Geant4

J. A. Detwiler, *University of Washington, USA*

On behalf of the Majorana Collaboration

N14-253 A Framework of Defect Recognition for Industrial Computed Tomography

Z. Qi, L. Zhang, Y. Xing, *Tsinghua University, P.R. China*

N14-255 An Edge Services Framework (ESF) for EGEE, LCG, and OSG

A. S. Rana, F. Würthwein, *University of California at San Diego, USA*; K. Keahey, T. Freeman, A. Vaniachine, *Argonne National Laboratory, USA*

N14-257 gPLAZMA 'grid-aware PLuggable AuthoriZation MAnagement System': Introducing RBAC (Role Based Access Control) Security in dCache-SRM

A. S. Rana, F. Würthwein, *University of California at San Diego, USA*; T. Perelmutov, R. Kennedy, J. Bakken, I. Fisk, *Fermi National Accelerator Laboratory, USA*; P. Fuhrmann, M. Ernst, *Deutsches Elektronen Synchrotron (DESY), Germany*; D. Skow, *Argonne National Laboratory, USA*; M. Lorch, *IBM, Germany*

N14-259 "MaGe", a Simulation Framework for Germanium-Based Neutrinoless Double-Beta Decay Experiments

R. Henning¹, S. Belogurov², Y.-D. Chan¹, A. Denisov³, J. Detwiler⁴, M. Di Marco⁵, B. Fujikawa¹, V. Gehman^{4,6}, K. Hudek¹, R. Johnson⁴, D. Jordan⁷, K. Kazkaz⁴, A. Klimenko³, M. Knapp⁸, K. Kroeninger⁹, K. Lesko¹, X. Liu⁹, M. Marino⁴, A. Mokhtarani¹, L. Pandola¹⁰, D. Radford¹¹, C. Tomei¹⁰, C. Tull¹

¹Lawrence Berkeley National Laboratory, USA; ²Institute for Theoretical and Experimental Physics, Russia; ³Joint Institute for Nuclear Research, Russia; ⁴University of Washington, USA; ⁵Queen's University, Canada; ⁶Los Alamos National Laboratory, USA; ⁷Pacific Northwest National Laboratory, USA; ⁸Universität Tübingen, Germany; ⁹Max-Planck-Institut für Physik, Germany; ¹⁰INFN Laboratori Nazionali del Gran Sasso, Italy; ¹¹Oakridge National Laboratory, USA

N14-261 The ATLAS Job Options Inspector

S. Binet, P. Calafiura, W. Lavrijsen, *Lawrence Berkeley National Laboratory, United States*; M. Gheysen, N. Richoz, F. Bapst, O. Johnsen, *University of Applied Sciences of Western Switzerland, Switzerland*

N14-263 Measurement of Muon Energy Loss in ATLAS

K. Nikolopoulos, D. Fassouliotis, C. Kourkoumelis, *University of Athens, Greece*; A. Poppleton, *CERN, Switzerland*

N14-265 Efficient Job Handling in the GRID

J. Moscicki, *CERN, Switzerland*

N14-267 Microdisimetry for Microbeam Radiation Therapy (MRT): Theoretical Calculations Using the Monte Carlo Toolkit Geant4

J. Spiga^{1,2,3}, E. A. Siegbahn¹, E. Bräuer-Krisch¹, P. Randaccio^{2,3}, A. Bravin¹

¹European Radiation Synchrotron Facility, France; ²University of Cagliari, Italy; ³Istituto Nazionale di Fisica Nucleare, Italy

N14-269 An Original Model for the Simulation of Low Energy Antiprotons

S. Chauvie^{1,2}, ¹INFN, Italy; ²S Croce e Carle Hospital, Italy

On behalf of the Geant4 Low Energy Electromagnetic Group

N14-271 A Platform for Monte Carlo Simulation of Cancer Therapy with Photon and Light Ions Beams Based on the Geant 4 Toolkit

L. Guigues¹, D. Sarrut^{1,2}, A. Vacavant², N. Dufour^{2,3}, M.-C. Ricol³, E. Testa³, M. Boutemeur³, N. Freud⁴, J.-M. Létang⁴

¹CREATIS, UMR CNRS 5515, France; ²Centre Leon Bérard, France; ³Institut de Physique Nucléaire de Lyon, France; ⁴Institut National des Sciences Appliquées, France

N14-273 The Development of a Set of Images to Test Analysis and Visualization Software in Commercial Nuclear Medicine Software

S. Chauvie^{1,2}, G. Perno², A. Boriano², A. Biggi²

¹INFN Torino, Italy; ²S Croce e Carle Hospital, Italy

N14-275 P326 Photon Vetoes Simulation

E. Leonardi, *INFN - Sezione di Roma 1, Italy*

N14-277 Monte-Carlo Simulation of a Biochip Irradiation with the Geant4 Toolkit

A. Le Postollec, M. Dobrijevic, *Laboratoire d'astrodynamique, d'astrophysique et d'aéronomie de bordeaux, France*; S. Incerti, P. Moretto, H. Seznec, *Centre d'études nucléaires de bordeaux-gradignan, France*

N14-279 The New ROOT Mathematical Software Libraries

M. Lorenzo, *CERN, Switzerland*

N14-281 The LCG SPI Project in LCG Phase II

A. Pfeiffer, *CERN, Switzerland*

On behalf of the SPI team

N14-283 Glandular Dose in Mammography: a Comparison Between a BR12 Model and a Realistic Breast Voxel Model

G. Hoff, *Pontifical Catholic University in Rio Grande do Sul, Brazil*; C. E. de Almeida, G. Drexler, *State University of Rio de Janeiro - UERJ, Brazil*

N14-285 Evaluation of Different Ways to Describe an X-Ray Spectrum and the Implications in the Absorbed Energy in a Head Voxel Model

G. Hoff, V. Cassola

Pontifical Catholic University in Rio Grande do Sul, Brazil

NM1 NSS MIC Joint Session 1

Tuesday, Oct. 31 13:30-15:00, Golden Ballroom

Session Chairs: **Neal Clinthorne**, *University of Michigan*
Stephen Derenzo, *LBNL*

NM1-1 Direct Detection of Beta Particles on a Microfluidic Chip Using Position Sensitive APDs

N. T. Vu¹, Y. H. Chung¹, Z. T. F. Yu¹, R. W. Silverman¹,
R. Taschereau¹, R. Farrell², K. S. Shah², H. R. Tseng¹,
A. F. Chatzioannou¹

¹*UCLA, U.S.A.*; ²*Radiation Monitoring Devices, U.S.A.*

NM1-2 A Low-Cost Approach to High-Resolution, Single-Photon Imaging Using Columnar Scintillators and Image Intensifiers

B. W. Miller, H. B. Barber, H. H. Barrett, L. Y. Chen
University of Arizona Health Sciences Center, USA

NM1-3 Neutron Spectroscopy of Mouse Using Neutron Stimulated Emission Computed Tomography (NSECT)

A. J. Kapadia, C. E. Floyd, J. E. Bender, A. C. Sharma, C. R. Howell,
A. S. Crowell, M. R. Kiser
Duke University, USA

NM1-4 Design and Development of a High Performance Micro-CT System for Small-Animal Imaging

E. Lage, J. J. Vaquero, S. Redondo, M. Abella, G. Tapias, M. Desco
Hospital G. U. Gregorio Marañón, Spain

NM1-5 Assessment of a New CT System for Small Animals

S. Redondo, J. J. Vaquero, E. Lage, M. Abella, G. Tapias, M. Desco
Hospital G. U. Gregorio Marañón, Spain

NM1-6 The Medipix3 Prototype, a Pixel Readout Chip Working in Single Photon Counting Mode with Improved Spectrometric Performance

R. Ballabriga, M. Campbell, E. H. M. Heijne, X. Llopart, L. Tlustos
CERN, Switzerland

N15 HEP & NP Instrumentation II: Pixel Detectors

Tuesday, Oct. 31 13:30-15:00, Pacific Salon 1

Session Chairs: **Andre Sopczak**, *Lancaster University*
Jan Jakubek, *Czech Technical University in Prague*

N15-1 Column Parallel CCDs and In-situ Storage Image Sensors for the Vertex Detector of the International Linear Collider

T. J. Greenshaw, *Oliver Lodge Laboratory, England*
On behalf of the LCFI Collaboration

N15-2 Forward Pixel-Based Vertex Detector for PHENIX

S. A. Butsyk, *Los Alamos National Laboratory, USA*
On behalf of the PHENIX Collaboration

N15-3 Status of the ATLAS Pixel Detector

M. Gilchriese, *Lawrence Berkeley National Laboratory, USA*
On behalf of the ATLAS Pixel Collaboration

N15-4 A Pixel Telescope for Detector R&D for a Future Linear Collider

I.-M. Gregor, *DESY, Germany*
On behalf of the EUDET Collaboration

N15-5 Integration Studies for the ATLAS Pixel Detector

K. Reeves, *University of Wuppertal, Germany*

Tuesday

N15-6 The Silicon Pixel Plane for the PHENIX Forward Vertex Tracker

G. Cardoso, *Fermi National Accelerator Laboratory, IL*
On behalf of the Fermilab/Los Alamos PHENIX collaboration

N16 Gas Detectors II

Tuesday, Oct. 31 13:30-14:45, Pacific Salon 3

Session Chair: **Mar Capeans**, *CERN*

N16-1 50 μm Pitch Multi-Grid-Type Nano-Strip Gas Counter as a New Generation Gaseous Counter

H. Niko, H. Takahashi, K. Fujita, P. Siritiprussamee, S. Paes, *The University of Tokyo, JAPAN*; H. Toyokawa, *Japan Synchrotron Radiation Research Institute, JAPAN*; S. Kishimoto, T. Ino, H. M. Shimizu, *High Energy Accelerator Research Organization, JAPAN*; M. Furusaka, *Hokkaido University, JAPAN*

N16-2 Micro-Pocket Fission Detector (MPFD) Performance Characteristics

M. F. Ohmes, A. S. M. S. Ahmed, R. E. Ortiz, J. K. Shultis,
D. S. McGregor
Kansas State University, United States

N16-3 Development of Tracking Detectors with Industrially Produced GEM Foils

F. Simon¹, B. Azmoun², L. Burns¹, K. Kearney³, G. Keeler³,
R. Maika⁴, F. Sauli^{5,6}, N. Smirnov⁴, B. Surrow¹, C. Woody², D. Cray³
¹*Massachusetts Institute of Technology, USA*; ²*Brookhaven National Laboratory, USA*; ³*Tech Etch, USA*; ⁴*Yale University, USA*; ⁵*INFN Trieste, Italy*; ⁶*CERN, Switzerland*

N16-4 Study of a Charge Distribution on a Readout Board with a Triple GEM Chamber

S. Uno, T. Uchida, M. Sekimoto, T. Murakami, M. Tanaka,
S. Tanaka, N. Ujiie, K. Nakayoshi, *High Energy Accelerator Research Organization(KEK), Japan*; K. Kadomatsu, A. Sugiyama, *Saga University, Japan*; E. Nakano, S. Nakagawa, *Osaka City University, Japan*

N16-5 Experimental Measurement of Drift Velocities of Ar⁺ Ions in Atmospheric Pressure Argon

P. N. B. Neves¹, C. A. N. Conde¹, L. M. N. Tavora^{1,2}
¹*Universidade de Coimbra, Portugal*; ²*ESTG, Instituto Politecnico de Leiria, Portugal*

N17 Analog and Digital Circuits II

Tuesday, Oct. 31 13:30-15:00, California Room

Session Chair: **Gian Franco Dalla Betta**, *University of Trento*

N17-1 Optimum Segmentation and Thickness of Silicon Pixel Detectors for Signal to Noise Ratio and Timing Resolution

G. M. Anelli, *CERN, Switzerland*; G. De Geronimo, P. O'Connor,
BNL, USA; C. Piemonte, *ITC-irst, Italy*

N17-2 A Mixed-Signal High Functionality CMOS Front-End for X-Ray Detectors

S. Caccia, G. Bertuccio, D. Maiocchi, *Politecnico di Milano, Italy*; P. Malcovati, *University di Pavia, Italy*; D. Martin, *European Space Agency, ESTEC, The Netherlands*; N. Ratti, *Alcatel Alenia Space - Italia, Italy*

Tuesday

N17-3 Design and Performance of Analog Circuits for DNW-MAPS in 100-nm-scale CMOS Technology

L. Ratti^{1,2}, M. Manghisoni^{3,2}, V. Re^{3,2}, V. Speziali^{1,2}, G. Traversi^{3,2}
¹University of Pavia, Italy; ²INFN, Italy; ³University of Bergamo, Italy

N17-4 VELA: the CMOS Circuit Based on Fast Current Read-Out for X-Ray Spectroscopy with DePMOS Pixels

L. Bombelli^{1,2}, C. Fiorini^{1,2}, M. Porro³, A. Longoni^{1,2}, S. Herrmann³, W. Buttler⁴

¹Politecnico di Milano, Italy; ²INFN, Italy; ³Max-Planck-Institut Halbleiterlabor, Germany; ⁴Ingenieurbüro Werner Buttler, Germany

N17-5 DEDIX - Development of Fully Integrated Multichannel ASIC for High Count Rate Digital X-Ray Imaging Systems

P. Grybos¹, M. Idzik¹, K. Swientek¹, P. Maj², L. Ramello³, T. Stobiecki²

¹AGH University of Science and Technology, Faculty of Physics and Applied Computer Science, Poland; ²AGH University of Science and Technology, Faculty of Electrical Engineering, Automatics, Computer Science and Electronics, Poland; ³DISTA, Università del Piemonte Orientale and INFN, Italy

N17-6 ASIC with Multiple Energy Discrimination for High Rate Photon Counting Applications

G. De Geronimo¹, A. Dragone¹, J. Grosholz², P. O'Connor¹, E. Vernon¹

¹Brookhaven National Laboratory, USA; ²eV PRODUCTS, USA

NM2 NSS MIC Joint Session 2

Tuesday, Oct. 31 15:30-17:30, Golden Ballroom

Session Chairs: William Moses, LBNL
 Craig Woody, BNL

NM2-1 Thick Silicon Strip Detectors for Small-Animal SPECT Imaging

S. Shokouhi¹, M. A. Fritz¹, L. R. Furenli², T. E. Peterson¹

¹Vanderbilt University, USA; ²University of Arizona, USA

NM2-2 Suppression of Afterglow in CsI(Tl) by Codoping with Eu2+: Fabrication of Microcolumnar Films for High-Resolution High-Speed Imaging

V. V. Nagarkar¹, V. Gaysinskiy¹, E. E. Ovechkina¹, S. R. Miller¹,

C. Brecher², A. Lempicki², M. R. Squillante¹

¹RMD Inc., USA; ²ALEM Associates, USA

NM2-3 Internal-Gain CMOS APD Pixels for SPECT Imaging of Small Animals

J. F. Christian, C. J. Stapels, Radiation Monitoring Devices, Inc.,

USA; F. L. Augustine, Augustine Engineering, USA

NM2-4 Prototype Solid State Photomultiplier Based Intra-Operative Beta Camera

E. S. Heckathorne¹, R. Silverman¹, F. Daghighian², M. Dahlbom¹

¹UCLA School of Medicine, United States; ²IntraMedical Imaging, LLC, United States

NM2-5 A Novel Active Pixel Sensor with on-Pixel Analog-to-Digital Converter for Mammography

C. D. Arvanitis¹, S. Bohndiek¹, G. Segneri¹, C. Venanzi¹, G. Royle¹, A. T. Clark², J. P. Crooks², R. Halsall², M. L. Key-Charriere²,

S. Martin², M. Prydderch², R. Turchetta², R. Speller¹

¹University College London, United Kingdom; ²Rutherford Appleton Laboratory, United Kingdom

NM2-6 Detection of Early Markers in Mammography Project

R. Martínez¹, B. George², C. Mokhtar², D. Angel¹, D. Francisco³, G. Eva³, G. Jorge², K. Franz⁴, L. Manuel¹, M. Marino², M. Jean Philippe⁵, M. Ildefonso³, P. Giulio¹, P. Carles², S. Melcior⁶, T. Lluis¹, T. Meritxell⁶, U. Migue¹

¹IMB-CNM (CSIC), SPAIN; ²IFAE, SPAIN; ³Sedecal, Spain;

⁴University of Vienna, Austria; ⁵Hôpital D'enfants Armand Trousseau, France; ⁶UDIAT, Spain

NM2-7 DRAGO: a High Resolution Gamma-Ray Imager for Medical Imaging

C. Fiorini^{1,2}, A. Gola^{1,2}, M. Zanchi^{1,2}, A. Longoni^{1,2}, M. Porro³, P. Lechner⁴, H. Soltner⁴, L. Strüder³

¹Politecnico di Milano, Italy; ²INFN-Milano, Italy; ³MPI für Extraterrestrische Physik Halbleiterlabor, Germany; ⁴PNSensor GmbH, Germany

NM2-8 Microdosimetry Within Heterogenous Tissue-Equivalent Structures

A. J. Wroe¹, A. B. Rosenfeld¹, D. Prokopovich², M. Reinhard², R. W. Schulte³, I. Cornelius¹, V. Bashkirov³

¹University of Wollongong, Australia; ²Australian Nuclear Science and Technology Organisation, Australia; ³Loma Linda University Medical Center, USA

N18 HEP & NP Instrumentation III: Silicon and Diamond Detectors

Tuesday, Oct. 31 15:30-17:00, Pacific Salon 1

Session Chair: Christoph Ilgner, CERN & University of Dortmund

N18-1 The CDF Run II Silicon Detector

A. Mitra, Academia Sinica, Taiwan

On behalf of the CDF Run II Silicon Operations Group

N18-2 A Beam Condition Monitoring System for the CDF Experiment

R. S. Wallny, UCLA, USA

On behalf of the CDF Collaboration

N18-3 Design and Performance of the Layer 0 Detector for D0

R. J. Lipton, Fermilab, USA

On behalf of the D0 Layer 0 Collaboration

N18-4 Performance Study of the Silicon Strip Detector

H. Hyun¹, S. H. Do², S. W. Jung¹, D. H. Kah¹, H. D. Kang¹, D. S. Kim³, H. J. Kim¹, Y. I. Kim¹, H. Park¹, S. S. Ryu¹

¹Kyungpook National University, South Korea; ²Pukyong National University, South Korea; ³Daegu University, South Korea

N18-5 Bandwidth of Micro-Twisted Cables and Spliced SIMM/GRIN Fibers and Radiation Hardness of PIN/VCSEL Arrays

K. K. Gan, The Ohio State University, USA

N18-6 Polycrystalline CVD Diamonds for the Beam Calorimeter of the ILC

C. Grah, U. Harder, H. Henschel, E. Kouznetsova,

W. Lange, W. Lohmann, M. Ohlerich, R. Schmidt, DESY, Germany; K. Afanaciev, A. Ignatenko, NCPHEP BSU, Belarus

N19 Synchrotron Radiation Instrumentation

Tuesday, Oct. 31 15:30-17:00, Pacific Salon 2

Session Chair: Paul O'Connor, BNL

N19-1 (invited) High Speed Semiconductor Detectors for Synchrotron Experiments at LCLS and XFEL
 L. W. J. Strueder, *MPI für extraterrestrische Physik, Germany*
 On behalf of the European Consortium for High Speed Imaging

N19-2 A High-Speed Detector System for X-Ray Fluorescence Microprobes

D. P. Siddons¹, C. Ryan², G. De Geronimo¹, A. Dragone³, A. Kuczewski¹, P. O'Connor¹, Z. Li¹, G. Moorhead², P. Dunn²
¹BNL, USA; ²CSIRO, Australia; ³Politecnico Di Bari, Italy

N19-3 Lens-Based CCD Detector for X-Ray Crystallography
 T. J. Madden, A. McArthur, *Argonne Laboratory, USA*; M. Molitsky, *Structural Biology Center, USA*; I. Naday, *Aviex Electronics, USA*; E. Westbrook, *Lawrence Berkeley Laboratory, USA*

N19-4 The PILATUS 6M Detector for Macromolecular Crystallography and Other Applications
 C. Broennimann, *Paul Scherrer Institut, Switzerland*
 On behalf of the SLS Detector Group

N19-5 High Resolution Photon Counting Detection System for Advanced Inelastic X-Ray Scattering Studies
 A. S. Tremsin, O. H. W. Siegmund, J. S. Hull, J. V. Vallerga, J. B. McPhate, *UC Berkeley, USA*; J. Soderstrom, J. W. Chiou, J. H. Guo, *Lawrence Berkeley National Laboratory, USA*

N19-6 EMCCD-Based Detector for Time-Resolved X-Ray Diffraction and Scattering Studies of Biological Specimens
 V. V. Nagarkar, B. Singh, *RMD Inc., USA*; L. Guo, D. Gore, T. Irving, *Illinois Institute of Technology, USA*

N20 Data Acquisition and Analysis Systems II

Tuesday, Oct. 31 15:30-17:15, Pacific Salon 3
 Session Chair: Nicholas Mascarenhas, *Sandia National Laboratories*

N20-1 The Realization of Distributed Information Management System in DAQ Testbed
 M. Ye, K. Zhu, Y. Chu
Institute of High Energy Physics, Academia Sinica, China

N20-2 Bus-Invert Coding for Low Noise 2cSST Block Transfers on VME64x
 A. Aloisio¹, P. Branchini², F. Cevenini¹, V. Izzo¹, S. Loffredo², R. Giordano¹
¹University of Naples 'Federico II' and INFN, Italy; ²INFN, Sezione di Roma 3, Roma, Italy, Italy

N20-3 Offline Pulse Shape Discrimination Algorithms for Neutron Spectrum Unfolding
 M. Flaska, S. A. Pozzi, *Oak Ridge National Lab, USA*

N20-4 A DWDM Link for Real-Time Data Acquisition Systems
 A. Aloisio¹, F. Ameli², F. Cevenini¹, E. Giacomozzi², V. Izzo¹
¹University of Naples 'Federico II' and INFN, Italy; ²INFN, Sezione di Roma 1, Italy

N20-5 Control and Operation of the LHCB Readout Boards Using Embedded Microcontrollers and the PVSS II SCADA System
 S. Koestner, *CERN, Switzerland*

N20-6 Using High Level Software Packages for Controlling a Network Based Detector System
 C. C. W. Robson, A. Bousselham, S. Silverstein, C. Bohm
Stockholms Universitet, Sweden

N20-7 A High Speed Time-Stamping and Histogramming Data Acquisition System for Position Encoded Data
 J. A. Mead, *Brookhaven National Laboratory, USA*; F. Bartsch, *Australian Nuclear Science and Technology, Australia*

N21 Astrophysics and Space Instrumentation I

Tuesday, Oct. 31 15:30-17:30, California Room
 Session Chair: Steven Boggs, *University of California Berkeley Space Sciences Laboratory*

N21-1 Position Calibrations and Angular Resolution of the Prototype Nuclear Compton Telescope
 M. E. Bandstra¹, J. D. Bowen¹, A. C. Zoglauer¹, S. E. Boggs^{1,2}, W. Coburn¹, C. B. Wunderer¹, M. Amman³, P. N. Luke³
¹Space Sciences Laboratory, University of California, USA; ²Department of Physics, University of California, USA; ³Lawrence Berkeley National Laboratory, USA

N21-2 Astrophysics with 3-DTI Gamma-Ray Telescopes
 S. D. Hunter¹, P. F. Bloser², G. A. de Nolfo¹, J. F. Krizmanic¹, M. L. McConnell², J. M. Ryan², S. Son¹
¹NASA/GSFC, USA; ²University of New Hampshire, USA

N21-3 The PAMELA Space Experiment
 M. Boezio, *Istituto Nazionale di Fisica Nucleare Sezione di Trieste, Italy*
 On behalf of the PAMELA Collaboration

N21-4 The Low-Energy Limits to Background Discrimination in Two-Phase Liquid-Xenon Dark Matter Detectors
 J. Kwong¹, T. Shutt², C. E. Dahl¹, A. Bolozdynya², P. Brusov²
¹Princeton University, USA; ²Case Western Reserve University, USA

N21-5 Noble Liquid Scintillation Detectors for Low-Energy Particle Astrophysics
 L. C. Stonehill, *Los Alamos National Laboratory, USA*
 On behalf of the DEAP Collaboration

N21-6 TIGRE Prototype Gamma-Ray Telescope
 A. D. Zych, T. J. O'Neill, D. Bhattacharya, M. Polsen, V. Kong, C. Trojanowski
University of California, Riverside, U.S.

N21-7 A Track Imaging Cerenkov Experiment (TrICE)
 K. Byrum¹, G. Drake¹, E. Hays¹, D. Kieda², E. Kovacs¹, S. Magill¹, L. Nodulman¹, R. Northrup³, S. Swordy³, R. Talaga¹, R. G. Wagner¹, S. P. Wakely³, S. A. Wissel³
¹Argonne National Laboratory, USA; ²University of Utah, USA; ³University of Chicago, USA

N21-8 In Orbit Timing Calibration of the Suzaku Hard X-Ray Detector
 Y. Terada¹, T. Enoto², R. Miyawaki², Y. Fukazawa³, M. Kawaharada², T. Kamae⁴, M. Kokubun², K. Makishima^{1,2}, T. Mizuno³, T. Murakami⁵, K. Nakazawa⁶, M. Nomachi⁷, T. Takahashi⁶, H. Takahashi³, M. S. Tashiro⁸, T. Tamagawa¹, S. Watanabe⁶, K. Yamaoka⁹, D. Yonetoku⁵
¹RIKEN, Japan; ²University of Tokyo, Japan; ³Hiroshima University, Japan; ⁴Stanford University, USA; ⁵Kanazawa University, Japan; ⁶Japan Aerospace Exploration Agency, Japan; ⁷Osaka University, Japan; ⁸Saitama University, Japan; ⁹Aoyama Gakuin University, Japan

N22 Software for Radiobiology and Hadrontherapy

Wednesday, Nov. 1 08:30-10:00, Pacific Salon 1

Session Chair: **Paul Gueye**, *Hampton University*

N22-1 (invited) An Example of Technology Transfer from High Energy Physics to Medicine, Simulation in Radiotherapy

T. Sasaki, *KEK, Japan*

N22-2 Validation of Geant4 Electromagnetic and Hadronic Models Against Proton Data

P. G. A. Cirrone, G. Cuttone, F. Di Rosa, S. Guatelli, B. Mascialino, G. Russo, *Istituto Nazionale di Fisica Nucleare, Italy*

N22-3 Simulation of Heavy Ion Therapy System Using Geant4

S. Kameoka, T. Sasaki, K. Murakami, K. Amako, *High Energy Accelerator Research Organization (KEK), Japan*; T. Aso, *Toyama National College of Maritime Technology, Japan*; A. Kimura, *Ashikaga Institute of Technology, Japan*; M. Komori, N. Kanematsu, T. Kanai, Y. Takei, S. Yonai, *National Institute of Radiological Sciences (NIRS), Japan*; Y. Kusano, T. Nakajima, O. Takahashi, *Accelerator Engineering Corporation (AEC), Japan*; M. Tashiro, *Gunma University, Japan*; Y. Ihara, H. Koikegami, *Ishikawa-harima Heavy Industries (IHI), Japan*

N22-4 A Visualization Tool for Geant4-Based Medical Physics Applications

A. Kimura, *Ashikaga Institute of Technology, Japan*; S. Tanaka, *Ritsumeikan University, Japan*; A. Saitoh, *Japan Science and Technology Agency, Japan*; T. Sasaki, *High Energy Accelerator Research Organization, Japan*

N22-5 Monte Carlo Simulation of Electromagnetic Interactions of Radiation with Liquid Water in the Framework of the Geant4-DNA Project

Z. Francis¹, S. Chauvie², S. Incerti³, B. Mascialino⁴, G. Montarou¹, P. Moretto³, P. Nieminen⁵, M. G. Pia⁴

¹Laboratoire de Physique Corpusculaire - CRNS/IN2P3, France;

²Azienda Ospedaliera Santa Croce e Carle Cuneo and INFN, Italy;

³Centre d'Etudes Nucléaires de Bordeaux-Mérignac CNRS/IN2P3, France;

⁴INFN, Italy; ⁵European Space Agency, The Netherlands

N22-6 Models of Biological Effects of Radiation in the Geant4 Toolkit

S. Chauvie¹, Z. Francis², S. Incerti³, B. Mascialino⁴, G. Montarou², P. Moretto³, P. Nieminen⁵, M. G. Pia⁴

¹Azienda Ospedaliera Santa Croce e Carle Cuneo and INFN Sezione di Torino, Italy;

²Laboratoire de Physique Corpusculaire, CNRS/IN2P3, Université Blaise Pascal, France;

³Centre d'Etudes Nucléaires de Bordeaux-Mérignac, CNRS/IN2P3, Université Bordeaux I, France;

⁴INFN Sezione di Genova, Italy; ⁵European Space Agency, The Netherlands

N23 HEP & NP Instrumentation IV: New Detection Techniques

Wednesday, Nov. 1 08:30-10:00, Pacific Salon 2

Session Chairs: **Anatoly Rosenfeld**, *Centre for Medical Radiation Physics, University of Wollongong*

Michael Lerch, *Centre for Medical Radiation Physics, University of Wollongong*

N23-1 Pulsed Neutron Dose Monitoring - a New Approach

A. Klett, *Berthold Technologies, Germany*; A. Leuschner, *DESY, Germany*

Wednesday

N23-2 Multi-Anode Readout Chip for MaPMTs

P. Barrillon, S. Blin, T. Caceres, C. de La Taille, P. Puzo, N. Seguin-Moreau

Laboratoire de l'accélérateur linéaire, France

N23-3 Hybrid Photon Detectors for the LHCb RICH Counters

A. N. Pickford, *University of Glasgow, UK*

On behalf of the LHCb RICH Collaboration

N23-4 MCP-PMT Anode Development for Picosecond-Resolution Time-of-Flight Detectors

T. Credo, H. Frisch, H. Sanders, F. Tang, *Enrico Fermi Institute, University of Chicago, USA*; K. Byrum, G. Drake, *Argonne National Laboratory, USA*

N23-5 Avalanche Photodetector Readout for the NOvA Detector

R. W. Rusack, *The University of Minnesota, USA*

On behalf of the NOvA collaboration

N23-6 Study on Nuclear Fragmentation by High Speed Emulsion Read-Out System

T. Toshito, *High Energy Accelerator Research Organization (KEK), Japan*

On behalf of the HIMAC-P152 Collaboration

N24 Gas Detectors III

Wednesday, Nov. 1 08:30-09:45, Pacific Salon 3

Session Chair: **Jaroslav Va'vra**, *SLAC*

N24-1 BESIII Muon Identification System

J. Zhang

Institute of High Energy Physics, Chinese Academy Sciences, China

N24-2 R&D on Developing a Bakelite RPC Without Linseed Oil Coating

C. Lu, *Princeton University, USA*; J. Zhang, *Institute of High Energy Physics, China*; M. Su, *Gaonenedi Co., China*

N24-3 The RPC System for CMS Experiment

G. Pugliese, *University & INFN of Bari, Italy*

On behalf of the CMS Collaboration

N24-4 Cosmic Ray Certification of the ATLAS Muon Barrel Chambers

A. Di Girolamo, *INFN Roma1, Italia*; P. Iengo, M. Della Pietra, *INFN Napoli, Italia*; S. Zimmermann, *CERN, Svizzera*

N24-5 Development of a He-3 MicroStrip Tube for Neutron Scattering Experiment

K. Fujita, H. Takahashi, S. Prasit, H. Niko, *Graduate school of Engineering, The University of Tokyo, Japan*; T. Ino, H. M. Shimizu,

S. Kishimoto, *High Energy Accelerator Research Organization, Japan*; M. Furusaka, *Graduate School of Engineering, Hokkaido University, Japan*; H. Toyokawa, *Japan Synchrotron Radiation Research Institute, Japan*; M. Kanazawa, *Futaba Corporation, Japan*

N25 Analog and Digital Circuits III

Wednesday, Nov. 1 08:30-09:45, California Room

Session Chair: **Giovanni Anelli**, *CERN*

N25-1 ASIC for Small Angle Neutron Scattering Experiments at the SNS

G. De Geronimo, J. Fried, G. C. Smith, B. Yu, E. Vernon,

Wednesday

Brookhaven National Laboratory, USA; W. L. Brian, C. L. Britton, L. G. Clonts, S. S. Frank, *Oak Ridge National Laboratory, USA*

N25-2 IDeF-X V1.1: Performances of a CMOS 16 Channels

Analogue Readout ASIC for Cd(Zn)Te Detectors

F. Lugièz, P. Baron, O. Gevin, O. Limousin, B. Dirks, E. Delagnes
Commissariat à l'Energie Atomique, FRANCE

N25-3 CASIS: a Very High Dynamic Range Front-End Electronics with Integrated Cyclic ADC for Calorimetry Applications

G. Zampa, V. Bonvicini, G. Orzan, N. Zampa
INFN Sezione di Trieste, Italy

N25-4 The SIDDHARTA Chip: a CMOS Multi-Channel Circuit for Silicon Drift Detectors Readout in Exotic Atoms Research

L. Bombelli^{1,2}, C. Fiorini^{1,2}, T. Frizzi^{1,2}, A. Longoni^{1,2}
¹*Politecnico di Milano, Italy*; ²*INFN, Italy*

N25-5 ACD, a New, Very Low-Power, Compact Analogue-to-Digital Conversion Technique for Particle Tracking Detectors

F. Anghinolfi, *CERN, Switzerland*

N25-6 A Programmable Analogue Front-End ASIC for Gas Micro-Strip Detectors having a wide range of Input Capacitance

F. F. Khalid, L. L. Jones, R. Stephenson, J. D. Lipp
CCLRC Rutherford Appleton Laboratory, UK

N26 Data Analysis and Grid

Wednesday, Nov. 1 10:30-12:15, Pacific Salon 1

Session Chair: **Juergen Knobloch**, *CERN*

N26-1 (invited) Distributed Data Analysis in the LHC Era

M. Lamanna, *CERN, Switzerland*

N26-2 Distributed Data Mining and Analysis for Data-Intensive Science Applications

T. M. Kechadi, *University College Dublin, Ireland*

N26-3 Emon - Peer-to-Peer Data Distribution in High Energy Physics

I. Scholtes, *University of Trier, Germany*; S. Kolos, *University of California, Irvine, USA*

N26-4 Grid Computing and the BaBar Experiment

E. Luppi¹, T. J. Adye², D. Andreotti¹, C. A. J. Brew², G. Castelli², F. F. Wilson²

¹*Ferrara University and INFN, Italy*; ²*Rutherford Appleton Laboratory, United Kingdom*

N26-5 LcgCAF: a CDF Submission Portal to Access Grid Resources

D. Lucchesi, F. Delli Paoli, *University and INFN of Padova, Italy*; D. Jeans, S. Sarkar, *INFN National Center for Telematics and Informatics, Italy*; I. Sfiligoi, *Laboratori Nazionali di Frascati, Italy*

N26-6 Ganga - an Optimiser and Front-End for Grid Job Submission

A. Maier, *CERN, Switzerland*

On behalf of the Ganga Development Team

N26-7 Experiences in the Gridification of the Geant4 Toolkit in the LCG/EGEE Environment

P. P. Mendez Lorenzo, M. M. Lamanna, A. A. Ribon, J. J. Moscicki
CERN, Switzerland

N27 HEP & NP Instrumentation V: Detector Commissioning and Engineering Aspects

Wednesday, Nov. 1 10:30-12:00, Pacific Salon 2

Session Chair: **Rolf-Dieter Heuer**, *DESY*

N27-1 The ATLAS Liquid Argon Calorimeter: Integration, Installation, Commissioning and Performance from Selected Particle Beam Test Results

M. Aleksa, *CERN, Switzerland*

On behalf of the ATLAS Liquid Argon Calorimeter Group

N27-2 Gas Analysis and Monitoring System for the RPC Detector of CMS at LHC

S. Bianco, *Laboratori Nazionali di Frascati dell'Infn, Italy*

On behalf of the CMS RPC Collaboration (Bari - Frascati - Napoli - Pavia)

N27-3 Engineering Overview of the ATLAS Inner Detector

M. Olcese

Istituto Nazionale di Fisica Nucleare (INFN), Italy

N27-4 Module Integration on the Inner Shells (TIB) of the CMS Tracker

C. Genta, *INFN and University of Florence, Italy*

On behalf of the CMS Collaboration

N27-5 The CMS Magnet Test and Cosmic Challenge

A. Ball, *CERN, Switzerland*

On behalf of the CMS Collaboration

N27-6 Digital Hadron Calorimetry for the International Linear Collider Using Gas Electron Multiplier Technology

A. P. White¹, A. Brandt¹, H. Brown¹, K. De¹, C. Han², J. Li¹, C. Medina¹, A. Nozawa¹, J. Smith¹, J. Yu¹, T. Zhao³

¹*University of Texas at Arlington, USA*; ²*Changwon National University, Korea*; ³*University of Washington, USA*

N28 Nuclear Measurements and Monitoring Techniques II

Wednesday, Nov. 1 10:30-12:00, Pacific Salon 3

Session Chair: **Ingrid-Maria Gregor**, *DESY*

N28-1 Identification of Actinides Inside Nuclear Waste Packages by Measurement of Fission Delayed Gammas

F. Carrel, M. Gmar, F. Lainé, J. Loridon, J.-L. Ma, C. Passard
CEA, France

N28-2 Nuclear Resonance Fluorescence of U-235

G. A. Warren¹, W. K. Hensley¹, W. Bertozzi^{2,3}, S. E. Korbly², R. J. Ledoux², W. H. Park²

¹*Pacific Northwest National Lab, USA*; ²*Passport Systems, Inc, USA*; ³*Massachusetts Institute of Technology, USA*

N28-3 New Results of the $\Delta E/E$ Silicon Microdosimeter

A. Fazzi^{1,2}, A. Pola^{1,2}, D. Moro^{2,3}, S. Agosteo^{1,2}, P. Colautti²

¹*Politecnico di Milano, Italy*; ²*Istituto Nazionale di Fisica Nucleare, Italy*; ³*Università di Ferrara, Italy*

N28-4 Characterization of CMOS Solid-State Photomultiplier for a Digital Radiation Rate Meter

C. J. Stapels¹, F. L. Augustine², M. R. Squillante¹, J. F. Christian¹

¹*Radiation Monitoring Devices, Inc., USA*; ²*Augustine Engineering, USA*

N28-5 Optimization of the Canberra UltraRadiac GM Tube Wrapping

H. Zhu, S. Kane, S. Croft, R. Venkataraman, F. Bronson
Canberra Industries, Inc., USA

N28-6 Optimized Strategies for Smart Nuclear Search

K. N. Borozdin, A. V. Klimenko, W. C. Priedhorsky, N. Hengartner,
C. C. Alexander, R. A. Cortez, *Los Alamos National Laboratory, USA*;
H. G. Tanner, *University of New Mexico, USA*

N29 Scintillators I - Plastics & Other Scintillators

Wednesday, Nov. 1 10:30-11:45, California Room

Session Chairs: Rainer Novotny, *University Giessen*
Ren-yuan Zhu, *Caltech*

N29-1 Luminosity Measurement at ATLAS - Development, Construction and Test of Scintillating Fibre Prototype Detectors

S. Ask, *CERN, Switzerland*

On behalf of the ATLAS Luminosity and Forward Physics Working Group

N29-2 Extruded Plastic Scintillator with Solid-State Photomultipliers

V. Rykalin¹, A. Pla-Dalmau², A. Dyshkant¹, J. Blazey¹, V. Zutshi¹,
K. Francis¹

¹*NICADD, USA*; ²*FERMILAB, USA*

N29-3 New Effective Organic Scintillators for Fast Neutron and Short-Range Radiation Detection

N. Z. Galunov¹, S. V. Budakovskiy¹, J. K. Kim², Y. K. Kim²,
O. A. Tarasenko¹, E. V. Martynenko¹

¹*Institute for Scintillation Materials, National Ac.Science of Ukraine, Ukraine*;
²*Innovative Technology Center for Radiation Safety Hanyang University, Republic of Korea*

N29-4 Performance of the Liquid Xenon Scintillation Detector for the MEG Experiment

W. Ootani, *International Center for Elementary Particle Physics, University of Tokyo, Japan*

On behalf of the MEG collaboration

N29-5 Position Resolution and Imaging Performance of Lanthanum Bromide Scintillators with Crossed Fiber Readout

B. Budden, G. L. Case, M. L. Cherry, J. Isbert, M. Stewart
Louisiana State University, USA

N30 NSS Poster 2

Wednesday, Nov. 1 13:30-15:00, Atlas Ballroom

Session Chairs: Simon Kwan, *Fermilab*
Jean-Francois Pratte, *BNL*

Data Acquisition and Analysis Systems

N30-2 Reliability Assessment of Wireless Controller and Data Acquisition Systems

M. Fathizadeh, A. Hossain, *Purdue University, USA*

N30-4 An FPGA Based Implementation for Real-Time Processing of the LHC Beam Loss Monitoring System's Data.

C. Zamantzas, B. Dehning, E. Effinger, J. Emery, G. Ferioli
CERN, Switzerland

N30-6 ADONIS : a New System for High Count Rate HPGe Spectrometry

T. Montagu, E. Barat, T. Dautremere, J. Lefevre, L. Laribiere, J.-
C. Trama

Commissariat à l'Energie Atomique - CEA Saclay, France

N30-8 Configurable Digital Emulator of Radiation Sources

R. Abbiati^{1,2}, S. Scarpaci^{1,2}, A. Geraci^{1,2}, G. Ripamonti^{1,2}

¹*Politecnico di Milano, Italy*; ²*INFN, Italy*

N30-10 Radiographic Inspection of Thick Metal Components, Part I: Fitting the Standard Linear Image Formation Model

M. C. Robini, I. E. Magnin

CREATIS (CNRS UMR5515 and INSERM research unit U630), France

N30-12 A Configurable Digital Processor for Scintillation Detector Events

A. Geraci^{1,2}, R. Abbiati^{1,2}, S. Brambilla², F. Camera², B. Million²,
S. Scarpaci^{1,2}

¹*Politecnico di Milano, Italy*; ²*INFN, Italy*

N30-14 Radiographic Inspection of Thick Metal Components, Part II: a New Stochastic Approach to 3-D Reconstruction

M. C. Robini, I. E. Magnin

CREATIS (CNRS UMR5515 and INSERM research unit U630), France

N30-16 A Multiplexer Design for a PS-APD PET Scanner

Y. Wu, C. Catana, S. R. Cherry, *UC Davis, USA*

N30-18 "Software Requirements Analysis for Nuclear Experiments"

E. Gayrán Gallardo, F. J. Ramírez Jiménez

Instituto Nacional de Investigaciones Nucleares, México

N30-20 A Reliable Multicast Protocol, TRMP, for Data Acquisition Systems

Y. Nagasaka, S. Kajiyama

Hiroshima Institute of Technology, Japan

N30-22 De-Oscillating Preamplifier Signals Through Digital Filtering Techniques

F. Zocca^{1,2}, A. Pullia^{1,2}

¹*University of Milano, Italy*; ²*INFN, Italy*

N30-24 14-Bit and 2GS/s Low Power Digitizing Boards for Physics Experiments

D. R. Breton, *CNRS - LAL ORSAY, FRANCE*; E. Delagnes, *CEA/DSM/DAPNIA/SEDI, FRANCE*

N30-26 Automatic Test System for Wafer Level Probing of Optical and Electrical Parameters of Photodiode Array Dies

I. Goushcha, B. Tabbert, M. Peters, R. Langeveld, A. O. Goushcha
Semicoa, USA

N30-28 A High-Speed Data Acquisition System for Segmented Ge-Detectors

A. Hidvegi¹, D. Eriksson¹, B. Cederwall², S. Silversein¹, C. Bohm¹

¹*Stockholm University, Sweden*; ²*Royal Institute of Technology, Sweden*

N30-30 Replaceable Middleware Communication Modules for Distributed Data Acquisition Systems

C. C. W. Robson, A. Bousselham, C. Bohm

Stockholms universitet, Sweden

N30-32 Development of a High Resolution TDC Module for the WASA Detector System Based on the GPX ASIC

H. Kleines, W. Erven, P. Wüstner, A. Ackens, G. Kemmerling,

M. Wolke, K. Zwill

Forschungszentrum Jülich, Germany

N30-34 The DAQ System of ARGO-YBJ Experiment

S. Mastroianni, *INFN, Italy*

On behalf of the ARGO-YBJ

Gaseous Detectors

N30-36 Correcting for the Scattered X-Rays Contribution at When Calibrating for Low Energy X-Rays

A. Nohtomi, N. Takata, *National Institute of Advanced Industrial Science and Technology, Japan*; T. Sakae, *Proton Medical Research Center, Japan*

N30-38 Simulation Study of the ATLAS Muon Drift Tube Chambers Performance in Presence of Magnetic Field

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N30-40 A Simple Technique for Identifying Natural Alpha Emitters

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N30-42 The Performance of the ATLAS Innermost MDT Muon Precision Tracker in Cosmic Rays and in Positron and Muon Beams.

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N30-44 Scintillation Light, Ionization Yield and Scintillation Decay Times in High Pressure Xenon and Xenon Methane

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N30-46 Large Pulse-Height Loss Due to Capacitive Decay in the Detector-Circuit During Collection of Charges

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N30-48 Measurements of Ballistic Deficits for Parallel Plate Ionization Chambers

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N30-50 Photoelectron Collection Efficiency in Mixtures of Gases with CF₄

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N30-52 Performance of Glass RPC in Streamer Mode for Irradiating Coherent Photons

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N30-54 High-Pressure Xe Cylindrical Ionization Chamber with Different Shielding Mesh Configurations

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N30-56 Elimination of Ballistic Deficits for Ionization Chamber Pulses by Using Trapezoidal Pulse Shaper

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N30-58 Energy Calibration of MAXI/GSC for the International Space Station

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N30-60 Studying Performance of a Coplanar-Anode High-Pressure Xenon Gamma-Ray Spectrometer

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N30-62 Improving Spectroscopic Performance of a Coplanar-Anode High-Pressure Xenon Gamma-Ray Spectrometer

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N30-64 Monte Carlo Calculation of Drift Velocities and Diffusion Coefficients for Ar⁺ Ions in Gaseous Argon

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N30-66 The ATLAS RPC Test Stand at INFN Roma Tor Vergata

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N30-68 Performance of a Large-Volume, Low-Background, Internal-Source Proportional Counter

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Photodetectors and Radiation Imaging

N30-70 Linearity of the Photocurrent Response with Light Intensity for Silicon PIN Photodiode Array

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N30-72 Gamma-Ray Channeling Optics

D. M. Tournear, R. I. Epstein, M. A. Hoffbauer, E. A. Akhadov *Los Alamos National Laboratory, USA*

N30-74 Analysis of Dynamic Range and SNR in 128x128 CMOS Image Sensor for X-Ray Imaging

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N30-76 Simulation Study of Silicon Avalanche Photodiodes

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N30-78 High-Sensitivity Compton Imaging with Position-Sensitive Si and Ge Detectors

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N30-80 Effects of the Resistivity and Crystal Orientation of the Silicon PIN Detector on the Dark Current, Junction Capacitance and Radiation Response Characteristics

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N30-82 Analysis and Optimization of Signal-to-Noise Ratio in CMOS Active Pixels for High Resolution X-Ray Imaging

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N30-84 Compact System for High Resolution X-Ray Transmission Radiography, in-Line Phase Enhanced Imaging and Micro CT of Biological Samples

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N30-86 Microradiographic Observation of Material Damage Evolution

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N30-88 Assessment of New Silicon Photomultipliers by Monte Carlo Simulation

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N30-90 Performance Test of a 2D μ -Strip Ge(i) Detector

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N30-92 Development of an Active Gamma-Ray Imaging Spectrometer with Pixelated Scintillators

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N30-94 Probabilistic ISOCS Uncertainty Estimator Application for Segmented Gamma Scanner

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N30-96 Timing in Thick Silicon Pad Detectors

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N30-98 Reducing the Distortion in Resistive Layer Positioning Devices: a Simulation Study

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N30-100 Timing Resolution Studies Using Various Scintillator Materials

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N30-102 Development of Multi-Pixel Photon Counter (MPPC)

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N30-104 Silicon Photomultiplier (SiPM) for the Experimental Physics and Medical Imaging System

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N30-106 Study of Performance with Diverting Agents in Formation Damage and Return of Permeability for Unconsolidated Sandstones Using Computed Tomography

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N30-108 Development of Multi-Pixel Photon Counters

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Scintillators and Scintillation Detectors

N30-110 Influence of RE Doping on the Scintillation Properties of LSO Crystals

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N30-112 Comparison of LaBr₃ and NaI(Tl) Scintillators for Radioactive Isotope Identification Devices

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N30-114 Thin Film Scintillators for Rapid Screening of Potential Radiation Detection Materials

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N30-116 Radiation Induced Color Centers in Lead Tungstate Crystals

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N30-118 A Study on the Radiation Damage in Large Size LSO and LYSO Crystal Samples

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N30-120 Energy Resolution of a Pixelated NaI (TI) Detector

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N30-122 Simultaneous Beta and Gamma-Ray Digital Spectroscopy Using a Triple-Layer Phoswich Detector

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N30-124 High-Energy Photon Detection with LYSO Crystals

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N30-126 Non-Proportionality and Energy Resolution of NaI(Tl) at Wide Temperature Range (-40°C to +23°C)

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N30-128 A Grid-Type Scintillating Device for Radiation Imaging

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N30-130 Radiation Detectors “Scintillator-Photodiode” on the Base A2B6 Crystals for Application in Homeland Security and Medical Equipment

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N30-132 Pixelated CsI(Tl) Scintillator for CMOS-Based X-Ray Image Sensor

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N30-134 Non-Proportionality and Energy Resolution of CsI(Tl)

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N30-136 Plasma Panel Sensors as Scintillation Detectors

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N30-138 Floating Zone Growth and Luminescence Characteristics of Cerium-Doped Gadolinium Pyrosilicate Single Crystals.

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N30-140 Distributed Radiation Sensor with Flexible Light Guide Filled with Liquid Organic Scintillator

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N30-142 Improvement on Scintillation Properties and Afterglow for Lu₂xGd₂(1-x)SiO₅:Ce (LGSO, x=0.2) Single Crystals

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N30-144 Study of Statistical and Non-Statistical Components of Energy Resolution for Position Sensitive Beta Camera

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N30-146 Light Output Response of GSO(Ce) Crystal to Relativistic Carbon Ions

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N30-148 Luminescence Efficiency of Lu₂SiO₅: Ce (LSO) Powder Scintillator for X-Ray Medical Radiography Applications

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N30-150 Thermoluminescence of Cs₂LiYCl₆, Cs₂LiYCl₆:Ce³⁺ and Cs₂LiYCl₆:Pr³⁺ Crystals

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N30-152 Investigation of the Luminescence Emission Properties of (Lu,Y)2SiO₅:Ce (LYSO:Ce) and (Lu,Y)AlO₃:Ce (LuYAP:Ce) Single Crystal Scintillators under X-Ray Medical Imaging Exposure Conditions

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N30-154 Radiation Damage to Scintillator in the DØ Luminosity Monitor

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N30-156 Study of a New Class of Picosecond X-Ray Scintillators: Organic/Inorganic Perovskite

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N30-158 Theoretical Assessment of the Causes of Spectral Peak Broadening in Gamma Detectors

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N30-160 Characterization of Silicon Photomultipliers for PET Imaging

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N30-162 Position Resolution in LaBr₃ and LaCl₃ Scintillators Using Position-Sensitive Photomultiplier Tubes

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N30-164 Scintillation Properties of Cs₂NaLaCl₆:Ce

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N30-166 A Beta-Particle Hodoscope Constructed Using A Position-Sensitive Plastic Scintillator Active Element

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N30-168 Correlating Temporal Luminosity of Scintillators to Pulse Shape Discrimination

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N30-170 Facility for Studying Non-Proportionality and Energy Resolution of Scintillator

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N30-172 Response of a LaBr₃(Ce) Detector to 2-11 MeV Gamma Rays

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N30-174 Temperature- and Trap-State-Dependent Measurements of Detector Nonlinearity: an Experimental Approach and Apparatus

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N30-176 Evaluation of a Junction Termination Extension APD for Use with Scintillators

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N30-178 Angular Response Functions for Sodium Iodide and Cesium Iodide Detectors

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N30-180 Recent Results with Large Volume LaBr₃ and LaCl₃ Scintillator Detectors

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Solid State Tracking Detectors

N30-182 Position Sensing with Nonuniform Electrode Designs on High-Resistivity Silicon

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N30-184 Design and Quality Assurance of the Sensors of the CMS Silicon Strip Tracker

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N30-186 Charge Collection Delay Phenomena of a 3D Detector Structure and Its Applications

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N30-188 Intelligent Particle Finders with the Micro Vertex Detector at ZEUS

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N30-190 Development of a Micro Vertex Detector for the PANDA-Experiment at the FAIR Facility

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N30-192 Performance, Background Studies and Reconstruction Software Improvements for the Silicon Vertex Tracker of the BaBar Experiment

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N30-194 Developmet of the Next-generation Gamma-ray Burst Detector based on the Silicon Drift Detector and Scintillator

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N30-196 Serial Powering of ATLAS Silicon Strip Sensors

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N30-198 Integration

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New Solid State Detectors

N30-200 Characterization of a Megavolt, Megahertz Fluoroscope

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N30-202 Double Sided 3D Detector Technologies at IMB-CNM

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N30-204 Low Energy X-Ray Detection with a Silicon Multi-Cathode Detector

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N30-206 Radiation Detectors for HEP Applications Using Standard CMOS Technology

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N30-208 Characterization and Scintillation Studies of a Solid-State Photomultiplier

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N30-210 Development of Particle Detector Based on GaN/SiC Schottky Barrier Diode

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N30-212 Impact of Non Ideal Signal Transfer of On-Chip Source-Follower JFET on Silicon Drift Detector Noise Performance

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N30-214 Monte Carlo Studies of High-Resolution Microcalorimeter Detectors

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N30-216 64-Pixel GPD Array for WLS Fiber Readout

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N30-218 Large-Volume Si(Li) Compton Polarimeter

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N30-220 Advanced Modeling Techniques for Signal Decomposition of Planar HPGe Double-Sided Strip Detectors

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N30-222 Electrical Characterization of Silicon Photo Multiplier Detectors for Optimal Front-End Design

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N30-224 Recent Developments in Lithium Silicate Fiber Neutron Sensors

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N30-226 Modified Internal Gate - a Novel Detector Concept

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N30-228 Neutron and Gamma Dosimetry with a Single Silicon Sensor: Theoretical and Experimental Verification

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¹University of Wollongong, Australia; ²Karmanos Cancer Institute, USA; ³Institute for Nuclear Research, Ukraine; ⁴Australian Nuclear Science and Technology Organisation, Australia; ⁵SPA Detector, Ukraine

N30-230 Position-Sensitive Si(Li) Transmission Detectors for the EXL-Experiments at GSI-Darmstadt

D. Protic, T. Krings, S. Niessen, Institut fuer Kernphysik, Germany; P. Egelhof, Gesellschaft fuer Schwerionenforschung, Germany; E. C. Pollacco, CEA Saclay, France

Synchrotron Radiation Instrumentation

N30-232 High Performance Detectors for New Powder Diffraction X-Ray Beamline at Diamond

N. Tartoni, G. E. Derbyshire, B. L. Willis, S. P. Thompson, C. C. Tang, Diamond Light Source Ltd., United Kingdom; A. M. P. Bell, CLRC Daresbury Laboratory, United Kingdom

Trigger and Front-End Systems

N30-234 Curved Track Segment Finding Using Tiny Triplet Finder (TTF)

J. Wu, M. H. Wang, E. Gottschalk, Z. Shi, Fermilab, USA

N30-236 Time Calibration of the LHCb Muon System

A. Lai, S. Cadeddu, V. De Leo, C. Deplano, E. Fois
 Istituto Nazionale Fisica Nucleare, Italy

N30-238 FPGA Curved Track Fitter with Very Low Resource Usage

J. Wu, M. Wang, E. Gottschalk, Z. Shi, Fermilab, USA

N30-240 Status of the Trigger System of BESIII

Z. Liu, Inst. of High Energy Physics, Chinese Academy of Sciences, China
 On behalf of the Trigger Group, BESIII Collaboration

N30-242 Hardware Aspects of the Upgraded D0 Central Track Trigger

E. S. Hazen, Boston University, USA

On behalf of the D0 CTT Group

N30-244 The CDF II eXtremely Fast Tracker Upgrade

S. Donati, Istituto nazionale di Fisica Nucleare, sezione di Pisa, Italy
 On behalf of the XFT Collaboration

N30-246 The off Detector Electronics of the LHCb Muon Detector

A. Balla, M. Beretta, M. Carletti, P. Ciambrone, M. Gatta, G. Felici, S. Cadeddu, V. De Leo, C. Deplano, E. Fois, A. Lai
 Istituto Nazionale Fisica Nucleare, Italy

N30-248 Treating the Gain Non-Uniformity of Multi Channel PMTs by Channel-Specific Trigger-Levels

M. Streun, U. Chavan, H. Larue, C. Parl, K. Ziemons
 Research Center Juelich (FZJ), Germany

N30-250 The ATLAS Trigger Muon Vertical Slice

M. Biglietti, G. Carlino, F. Conventi, Università degli Studi di Napoli and INFN, Italy; G. Usai, Enrico Fermi Institute, University of Chicago, USA; T. Kono, Z. Tarem, CERN, Switzerland; A. Krasznahorkay, CERN and University of Debrecen Debrecen, Hungary; N. Panikashvili, S. Tarem, Technion Israel Institute of Technology, Israel; G. Cataldi, E. Gorini, M. Primavera, S. Spagnolo, A. Ventura, Università degli Studi di Lecce and INFN, Italy; M. Bellomo, D. Scannicchio, V. Vercesi, Università di Pavia and INFN, Italy; T. Del Prete, Università di Pisa and INFN, Italy; T. Lagouri, Charles University, INPN, Czech Republic; A. Di Mattia, S. Falciano, C. Luci, L. Luminari, F. Marzano, A. Nisati, E. Pasqualucci, A. Sidoti, Università di Roma I and INFN, Italy; K. Nagano, KEK, Japan; N. Kanaya, Kobe University, Japan

N30-252 Di-Muon Selection for the Second Level Trigger in the ATLAS Experiment

S. Tarem, N. Panikashvili
 Technion, Israel Institute of Technology, Israel

N30-254 Automatic Test Fixture for the FE Control Electronics of the LHCb Muon Detector

F. Iacoangeli, R. Nobrega, V. Bocci, INFN, Italy

N30-256 Trigger Algorithms, Simulation and Performance Optimization of the Dzero Central Track Trigger

G. W. Wilson, University of Kansas, U.S.

On behalf of the D0 CTT Group

N30-258 Signal splitting effect analysis for Muon tracker signal in frequency domain

K. Lee, E. Kim, J. Park
 Seoul National University, South Korea

N30-260 The Time of Flight System and Trigger Electronics for the PAMELA Experiment in Space

S. Russo¹, G. Barbarino¹, D. Campana¹, G. De Rosa¹, W. Mann², G. Osteria¹, M. Simon²

¹Universita' Federico II di Napoli & INFN, Italia; ²Universitaet-GH Siegen, FB Physik, Germany

N30-262 Very Front End Card Calibration and Front-End Electronics of the CMS Eletromagnetic Calorimeter

N. Cartiglia, INFN, Italy

On behalf of the CMS Collaboration

Instrumentation for Medical and Biological Research

N30-264 Method of Generating Monochromatic Soft X-ray with Small Focal Spot

A. Yamaguchi, M. Izumi, Toshiba Corporation, Japan; N. Aoki, E. Seki, Toshiba Electron Tubes and Devices Corporation, Japan

N30-266 The Data Acquisition Software of the RatCAP Conscious Small Animal PET Tomograph

M. L. Purschke¹, R. Fontaine², J. Friedl¹, S. Junnarkar¹, S. Krishnamoorthy³, P. O'Connor¹, S.-J. Park¹, J.-F. Pratte¹, D. Schlyer¹, S. Southekal³, S. Stoll¹, P. Vaska³, C. Woody¹

¹Brookhaven National Lab, USA; ²Université de Sherbrooke, Canada;

³Stony Brook University, USA

N30-268 A Novel Apparatus for Analysis of Skin in Vivo

S. S. Tudisco^{1,2}, L. L. Lanzano^{1,2}, F. F. Musumeci^{1,2}, S. S. Privitera^{1,2}, A. A. Scordino^{1,2}

¹INFN, Italy; ²Università di Catania, Italy

N30-270 The Readout Electronics and the DAQ System of the DRAGO Anger Camera

A. Gola^{1,2}, C. Fiorini^{1,2}, M. Porro³, M. Zanchi^{1,2}

¹Politecnico di Milano, Italy; ²INFN, Sezione di Milano, Italy; ³MPI für Extraterrestrische Physik Halbleiterlabor, Germany

Accelerators and Beam Line Instrumentation

N30-272 Development of the Optical Transition Radiation Monitor for the High Intensity Proton Beam Profile Measurement

A. Toyoda¹, K. Agari¹, M. Ieiri¹, Y. Katoh¹, E. Hirose¹, M. Minakawa¹, T. Mitsuhashi², H. Noumi¹, Y. Sato¹, Y. Suzuki¹, H. Takahashi¹, M. Takasaki¹, K. Tanaka¹, Y. Yamano¹, H. Watanabe¹

¹Institute of Particle and Nuclear Studies (IPNS), High Energy Accelerator Research Organization (KEK), JAPAN; ²Institute of Materials Structure Science (IMSS), High Energy Accelerator Research Organization (KEK), JAPAN

N30-274 Measurements and Simulations of Ionization Chamber Signals in Mixed Radiation Fields for the LHC BLM System

M. Stockner, B. Dehning, E. Holzer, for the BLM team CERN, Switzerland

N30-276 Instrumentation Packaging Standards for the ILC

R. S. Larsen, Stanford Linear Accelerator Center, USA; R. W. Downing, R. W. Downing, Inc., USA

Neutron Imaging and Radiography

N30-278 Highly Sensitive Silicon Detectors of Thermal Neutrons

J. Uher¹, C. Fröjdhl², J. Jakubek¹, C. Kenney³, Z. Kohout¹, V. Linhart¹, S. Parker⁴, S. Petersson², S. Pospisil¹, G. Thungström²

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N31 Software for Radiation Protection and Nuclear Medicine

Wednesday, Nov. 1 15:30-17:15, Pacific Salon 1

Session Chair: Maria Pia, CERN

N31-1 Geant4 Anthropomorphic Phantoms

B. Mascialino, S. Guatelli, M. G. Pia

INFN Sezione di Genova, Italy

N31-2 Geant4 Modelling of Anatomy Trough DICOM Interface

S. Chauvie^{1,2}, C. Andenna³, G. Amati⁴, B. Caccia⁵, M. Mattia⁵, G. Frustagli⁵, S. Valentini⁵, B. Mascialino¹, S. Guatelli¹

¹INFN, Italy; ²S Croce e Carle Hospital, Italy; ³ISPESL, Italy;

⁴CASPUR, Italy; ⁵Italian National Institute of Health, Italy

N31-3 Monte Carlo Geant4 Code for Internal Dose Assessment in Nuclear Medicine

L. Strigari, M. Benassi, M. D'Andrea, E. Menghi, M. C. Pressello,

A. d'Angelo

Regina Elena National Cancer Institute, Italy

N31-4 Interactive Distributed Analysis for Medical Images

P. Cerello, INFN, Italy

On behalf of the MAGIC-5 Collaboration

N31-5 Geant4 Studies for the HPD-PET Crystals

F. Ciocia¹, A. Braem², E. Chesi², R. Deleo¹, C. Joram², E. Nappi¹, J. Seguinot², I. Vilardi¹, P. Weilhammer²

¹Universita' degli Studi di Bari, Italy; ²PH-Department, Switzerland

N31-6 Estimating Conversion Coefficient of KERMA Free in Air to Glandular Dose in Mammography: a Comparison Between BR12 Model and a Realistic Voxel Model

G. Hoff, Pontifical Catholic University in Rio Grande do Sul, Brazil;

C. E. de Almeida, G. Drexler, State University of Rio de Janeiro - UERJ, Brazil

N31-7 DisteMe: a Java Based Toolbox for the Distribution of Parallel Monte Carlo Simulations. Application to Nuclear Medicine Using the GATE Simulation Package

R. Reuillon, D. Hill, Université Blaise Pascal, France; Z. El Bitar, V. Breton, CNRS-IN2P3, France

N32 HEP & NP Instrumentation VI: Muon Detectors

Wednesday, Nov. 1 15:30-16:30, Pacific Salon 2

Session Chair: Uwe Bratzler, CERN

N32-1 Final Evaluation of the Mechanical Precision of the ATLAS Muon Drift Tube Chambers

S. Horvat, J. Dubbert, O. Kortner, S. Kotov, H. Kroha, S. Mohrdieck-Möck, R. Richter

Max-Planck-Institut für Physik, Germany

N32-2 Integration, Installation, and Commissioning of Large Monitored Drift Tube Chambers of the ATLAS Barrel Muon Spectrometer

J. Dubbert, M. Groh, O. Kortner, H. Kroha, J. von Loeben, H. von der Schmitt, Max-Planck-Institut für Physik,

Germany; O. Biebel, D. Merkl, F. Rauscher, A. Staude, Ludwig-Maximilians-Universität, Germany

N32-3 Commissioning of the BIL Tracking Chambers for the ATLAS Muon Spectrometer

F. Petrucci

Dipartimento di Fisica, Universita' Roma Tre and INFN Roma III, Italy

N32-4 Tracks Finding Without External Trigger on MDT Muon Chambers for the ATLAS Muon Spectrometer

S. Di Luise, M. Iodice, P. Branchini, F. Petrucci
INFN Roma Tre, Italy

N33 Trigger and Front End Systems

Wednesday, Nov. 1 15:30-17:30, Pacific Salon 3

Session Chairs: Yasuo Arai, *KEK*,

Friedrich Wulf, *Hahn-Meitner-Institut Berlin*

N33-1 Level-2 Calorimeter Trigger Upgrade at CDF

A. Bhatti¹, L. Sartori², M. Dell'Orso¹, T. Liu², M. Convey³,
H. Frisch⁴, V. Rusu⁴, G. Flanagan⁵, M. Piendibene¹, L. Rogondino¹,
S. Torre⁶, V. Veszpremi⁵

¹University of Pisa and INFN, Italy; ²Fermilab, USA; ³Rockefeller University, USA; ⁴University of Chicago, USA; ⁵Purdue University, USA; ⁶Laboratori Nazionali di Frascati, Italy

N33-2 The New D0 Level-1 Calorimeter Trigger

M. Abolins¹, M. Adams², T. Adams³, E. Agulio⁴, L. Bagby⁵, J. Ban⁶,
E. Barberis⁷, S. Beale⁸, J. Benitez¹, J. Biel¹, R. Brock¹, J. Bystriky⁹,
D. Calvet⁹, S. Cihangir⁵, M. Cwiok¹⁰, D. Edmunds¹, H. Evans¹¹,
C. Fantasia¹, J. Foglesong³, J. Green³, J. Hegeman¹², R. Kehoe¹³,
P. Laurens¹, P. LeDu⁹, C. Johnson⁶, S. Lammers⁶, J. Mitrevski⁶,
M. Mulhearn⁶, M. Naimuddin¹⁴, B. P. Padley¹⁵, J. Parsons⁶,
G. Pawloski¹⁵, E. Perez⁹, P. Renkel¹³, A. Roe⁷, W. Sippach⁶, A. Stone⁵,
G. Tarte⁹, W. Taylor⁸, R. Unalan¹, N. Varelas², H. Weerts¹, D. Wood⁹,
L. Zhang⁶, T. Zmuda⁵

¹Michigan State University, USA; ²University of Illinois at Chicago, USA; ³Florida State University, USA; ⁴University of Alberta, Canada; ⁵Fermi National Accelerator Laboratory, USA; ⁶Columbia University, USA; ⁷Northeastern University, USA; ⁸York University, Canada; ⁹DAPNIA/CEA, France; ¹⁰University College Dublin, Ireland; ¹¹Indiana University, USA; ¹²NIKHEF, The Netherlands; ¹³Southern Methodist University, USA; ¹⁴Delhi University, India; ¹⁵Rice University, USA

N33-3 Performance Measurement of the Upgraded DØ Central Track Trigger

R. K. Mommsen^{1,2}, ¹University of Manchester, United Kingdom; ²Fermi National Accelerator Laboratory, US

On behalf of the DØ CTT Group

N33-4 The ATLAS LVL1 Barrel Muon Trigger Commissioning with Cosmic Rays

S. Veneziano¹, A. Aloisio², G. Carlino², F. Conventi²,
M. Della Pietra², D. della Volpe², V. Izzo², A. Migliaccio², G. Chiodi¹,
G. Ciapetti¹, D. De Pedis¹, A. Di Girolamo¹, A. Di Mattia¹,
E. Gennari¹, C. Luci¹, A. Nisati¹, E. Pasqualucci¹, F. Pastore¹,
E. Petrolo¹, F. Spila¹, L. Zanello¹, A. De Simone³, A. Salamon³,
E. Solfaroli³

¹Un. Of Roma "La Sapienza" and I.N.F.N. Roma, Italy; ²Un. Of Napoli "Federico II" and I.N.F.N. Napoli, Italy; ³Un. Of Roma "Tor Vergata" and I.N.F.N. Roma 2, Italy

N33-5 The CMS Regional Calorimeter Trigger Electronics Integration

S. Dasu, R. Fobes, T. Gorski, M. Grothe, M. Jaworski, P. Klappers,
J. Lackey, G. Ott, P. Robl, W. H. Smith
University of Wisconsin, USA

N33-6 Development of a TCP/IP Processing Hardware

T. Uchida, M. Tanaka, *KEK, Japan*

N33-7 An Asynchronous Level-1 Tracking Trigger for Future LHC Detector Upgrades

A. Madorsky, D. E. Acosta, H. Patodia
University of Florida, USA

N33-8 A Complete Read Out Chain for X-Ray Spectrometry

A. Rossini¹, S. Caccia², G. Bertuccio², F. Borghetti¹, V. Ferragina¹,
P. Malcovati¹, D. Martin³, N. Ratti⁴

¹University of Pavia, Italy; ²Politecnico di Milano, Italy; ³European Space Agency, ESTEC, The Netherlands; ⁴Alcatel Alenia Space – Italia, Italy

N34 Solid State Tracking Detectors

Wednesday, Nov. 1 15:30-17:30, California Room

Session Chairs: Z. Li, *BNL*

N34-1 Charge Collection Efficiency of ALICE Silicon Drift Detectors

I. V. Kotoy, *The Ohio State University, USA*

On behalf of the ALICE ITS collaboration

N34-2 Experience with the Test and Qualification of Double-Sided Silicon Microstrip Sensors for the ALICE Inner Tracking System

L. Bosisio^{1,2}, O. Borysov^{1,3}, M. Bregant^{1,2}, P. Camerini^{1,2},
E. Cattaruzza^{1,2}, G. Contin^{1,2}, A. Dyatlovich^{1,4}, E. Fragiaco¹,
G. Gacomini^{1,2}, N. Grion¹, G.-V. Margagliotti^{1,2}, S. Piano¹,
S. Potin^{1,5}, I. Rashevskaya¹, R. Rui^{1,2}, O. Starodubtsev^{1,5}, S. Naumov^{1,5}
¹INFN, Sezione di Trieste, Italy; ²Università di Trieste, Italy; ³BITP, Ukraine; ⁴JINR, Russia; ⁵NSC KhIPT, Ukraine

N34-3 Silicon Detectors for Low Energy Particle Detection

C. S. Tindall, N. P. Palaio, B. A. Ludewig, S. E. Holland, *Lawrence Berkeley National Laboratory, USA*; D. E. Larson, S. E. McBride, T. Moreau, R. P. Lin, V. Angelopoulos, *University of California Berkeley, USA*

N34-4 Monolithic Pixel Detector in a 0.15um SOI Technology

Y. Arai, Y. Ikegami, Y. Ushiroda, Y. Unno, O. Tajima, T. Tsuboyama, S. Terada, M. Hazumi, T. Kohriki, *KEK, High Energy Accelerator Research Organization, JAPAN*; H. Ikeda, *JAXA, JAPAN*; K. Hara, *Univ. of Tsukuba, JAPAN*; H. Ishino, *Tokyo Inst. Tech., JAPAN*; T. Kawasaki, *Niigata Univ., JAPAN*; G. Varner, E. Martin, *Univ. of Hawaii, USA*; H. Tajima, *SLAC, USA*; M. Ohno, H. Komatsubara, K. Fukuda, J. Ida, *Oki Electric Industry Co. Ltd., JAPAN*; H. Miyake, *Osaka Univ., JAPAN*

N34-5 Development of New 3d Si Detectors at BNL and CNM

Z. Li, W. Chen, Y. H. Guo, D. Lissauer, D. Lynn, V. Radeka, *Brookhaven National Lab, USA*; M. Lozano, G. Pellegrini, *Centro Nacional de Microelectrónica, Spain*

N34-6 Development of Large Area Integrated Silicon Tracking Elements for the LHC Luminosity Upgrade

C. Haber, R. Ely, M. Gilchriese, W. Miller, *Lawrence Berkeley National Laboratory, USA*; D. Lynn, D. Lissauer, Z. Li, J. Kierstead, Y. Semertzidis, *Brookhaven National Laboratory, USA*; O. K. Baker, K. W. McFarlane, *Hampton University, USA*; A. Tuonen, M. Weber, G. Villani, *Rutherford Appelton Laboratory, UK*

N34-7 Development of 130 nm Monolithic Active Pixels with In-Pixel Signal Processing

F. Forti, *University and INFN, Pisa, Italy*

On behalf of the SLIM5 Collaboration

N34-8 Status and Test Procedure of the Full Equipped MWP Chambers for the LHCb Muon System

A. Massafferri, G. Carboni, E. Santovetti, *INFN - Universita Tor Vergata - Sezione II, Italia*; R. Nobrega, V. Bocci, *INFN - Universita La Sapienza - Sezione I, Italia*

N35 Detector Software

Thursday, Oct. 26 08:30-10:00, Pacific Salon 1

Session Chair: **Julia Yarba**, *Fermilab*

N35-1 (invited) Detectors for Software

P. L. Gueye, *Hampton University, USA*

N35-2 The CMS Hadronic Calorimeter Simulation

S. Banerjee, *Tata Institute of Fundamental Research, India*

On behalf of the CMS Collaboration

N35-3 The CMS Electromagnetic Calorimeter Simulation

F. Cossutti, *Istituto Nazionale di Fisica Nucleare - Sezione di Trieste, Italy*

On behalf of the CMS Collaboration

N35-4 Simulation for LHC Radiation Background: Optimisation of Monitoring Detectors and Experimental Validation

S. Guatelli¹, M. Glaser², B. Mascialino¹, M. Moll², M. G. Pia¹, F. Ravotti²

¹*INFN Genova, Italy*; ²*CERN, Switzerland*

N35-5 Geometrical Optimization of HPGe Radiation Detector Exploiting Multi-Physics Nature of the Simulations

D. Huang, R. M. Eichler West, D. V. Jordan, K. F. Ferris
Pacific Northwest National Laboratory, USA

N35-6 Simulation with GEANT4 of a Novel Position Detector Based on Nanotechnologies

A. Montanari¹, R. Angelucci², M. Cuffiani³, G. M. Dallavalle¹, L. Malferrari¹, F. Odorici¹, R. Rizzoli², G. P. Veronese³

¹*Istituto Nazionale di Fisica Nucleare, Italy*; ²*Consiglio Nazionale delle Ricerche, Italy*; ³*Dipartimento di Fisica, Italy*

N36 HEP & NP Instrumentation VII: Tracking Detectors and Neutrino Experiment Devices

Thursday, Nov. 2 08:30-09:45, Pacific Salon 2

Session Chair: **Janet Conrad**, *Columbia University*

N36-1 The Fbg OMEGA-LIKE. A Novel Device Using Fbg Sensors to Position Vertex Detectors in High Energy Experiments.

F. L. Fabbri¹, L. Benussi¹, M. Bertani¹, S. Bianco¹, M. A. Caponero², D. Colonna³, F. Felli³, M. Giardonì¹, A. La Monaca¹, F. Massa³, B. Ortenzi¹, M. Pallotta¹, A. Paolozzi³, L. Passamonti¹, D. Pierluigi¹, B. Pozzio¹, C. Pucci³, A. Russo¹, G. Saviano³

¹*Laboratori Nazionali di Frascati dell'INFN, Italy*; ²*Laboratori Nazionali di Frascati dell'INFN and ENEA Frascati, Italy*; ³*Laboratori Nazionali di Frascati dell'INFN and Universita' di Roma I, Italy*

N36-2 Construction of the BES III Drift Chamber

Y. Chen, *Institute of High Energy Physics, Academia Sinica, China*

N36-3 Enclosure Effects on the Internal Field Distribution in HPGe Planar Detectors

I. Kojouharov, J. Kojouharova, J. Gerl, *GSI, Germany*

N36-4 CERN Neutrinos to Gran Sasso (CNGS): First Beam

E. Gschwendtner, *CERN, Switzerland*

On behalf of the CNGS project team

N36-5 The Spectrometers of the OPERA Experiment

R. Brugnera, A. Bergnoli, R. Ciesielski, E. Carrara, F. Dal Corso, S. Dusini, C. Fanin, A. Garfagnini, A. Longhin, L. Stanco, *Padova University and INFN, Italy*; A. Cazes, G. Felici, A. Mengucci, A. Paoloni, M. Spinetti, F. Terranova, M. Ventura, L. Votano, B. Dulach, C. Di Troia, *INFN Laboratori Nazionali di Frascati, Italy*; M. Ambrosio, V. Masone, G. Sorrentino, *Napoli University and INFN, Italy*

N37 Scintillators II - Energy Resolution - Radiation Damage

Thursday, Nov. 2 08:30-09:45, Pacific Salon 3

Session Chairs: **Pieter Dorenbos**, *Delft University of Technology*
Kanai Shah, *RMD*

N37-1 Energy Resolution of LGSO Scintillators

M. Moszynski, A. Nassalski, W. Czarnacki, A. Syntfeld-Kazuch, D. Wolski, T. Batsch, *Soltan Institute for Nuclear Studies, Poland*; T. Usui, S. Shimizu, N. Shimura, K. Kurashige, K. Kurata, H. Ishibashi, *Hitachi Chemical Co, Ltd., Japan*

N37-2 Beging Experiments with Segmented NaI(Tl) Scintillation Detectors

M. M. Allen, N. Bowden, J. Brennan, J. Lund, W. Mengesha
Sandia National Laboratories, USA

N37-3 Development of High Resolution Scintillator Systems Based on Photocell Technology

W. J. Kernan, *Bechtel Nevada Remote Sensing Laboratory and University of Nevada, Las Vegas, U.S.A.*; L. A. Franks, *Keystone International, U.S.A.*; M. Groza, A. Burger, *Fisk University, U.S.A.*

N37-4 Radiation Damage and Activation from Proton Irradiation of Advanced Scintillators

P. F. Bloser, M. L. McConnell, J. R. Macri, P. J. Bruillard, J. M. Ryan, *University of New Hampshire, USA*; W. Hajdas, *Paul Scherrer Institut, Switzerland*

N37-5 Resistance of LaBr3:5%Ce3+ and LaCl3:10%Ce3+ Scintillators to 100 MeV Proton Irradiation

P. Dorenbos, A. J. J. Bos, J. T. M. de Haas, H. Brouwer, *Delft University of Technology, Netherlands*; S. Kraft, E. J. Buis, E. Maddox, *Cosine Research BV, Netherlands*; A. Owens, F. G. A. Quarati, *European Space Agency ESTEC, Netherlands*; C. Dathy, V. Ouspenski, *Saint Gobain Crystals, France*

N38 Simulation: Physics Models and Validation

Thursday, Nov. 2 10:30-12:00, Pacific Salon 1

Session Chair: **Massimo Lamanna**, *CERN*

N38-1 (invited) Geant4 Physics Capabilities for Multidisciplinary Applications - a Review

A. Heikkinen, *Helsinki Institute of Physics, Finland*

On behalf of the Geant4 Collaboration

N38-2 Thermal Neutron Scattering from Nuclei Within Chemically Bound Atoms in Geant4.

T. Koi, *SLAC, USA*

N38-3 Validation of Neutrons in Geant4 Using TARC DataA. S. Howard, *CERN, Switzerland***N38-4 Neutron Verification Studies Within the Geant4- and ROOT-Based Package MaGe**M. G. Marino, A. G. Schubert, J. A. Detwiler, R. A. Johnson, J. F. Wilkerson, *University of Washington, USA*; Y.-D. Chan, R. Henning, *Lawrence Berkeley National Laboratory, USA*; S. R. Elliott, V. M. Gehman, K. Kazkaz, D. Mei, *Los Alamos National Laboratory, USA***N38-5 Validation of the Bremsstrahlung Models of Geant4**L. Pandola, *Laboratori Nazionali del Gran Sasso, Italy*
On behalf of the Geant4 Low Energy Electromagnetic Group**N38-6 Geant4 Atomic Relaxation Validation Against the NIST Reference Data**V. Zampichelli, S. Guatelli, A. Mantero, B. Mascialino, M. G. Pia *INFN Sezione di Genova, Italy***N39 Instrumentation for Medical and Biological Research**

Thursday, Nov. 2 10:30-12:00, Pacific Salon 2

Session Chairs: **Richard Lanza**, *MIT***Roberto Accorsi**, *The Children's Hospital of Philadelphia***N39-1 (invited) Parametric Imaging of Photosynthesis with ¹¹CO₂ and Positron Emitting Tracer Imaging System (PETIS)**N. Kawachi, S. Ishii, S. Fujimaki, N. Suzui, N. S. Ishioka, S. Matsuhashi, *Japan Atomic Energy Agency, Japan***N39-2 Adaptive Imaging Using the I-ImaS X-Ray Imaging System**M. Noy, J. Jones, G. Hall, *Imperial College, UK*; R. Speller, *University College, UK*; R. Turchetta, *Rutherford Appleton Laboratory, UK*; R. Longo, *University of Trieste, Italy*; J. Ostby, *SINTEF, Norway*; D. Cavouras, *University of Athens, Greece*; F. Triantis, *University of Ioannina, Greece*; P. van der Stelt, *University of Amsterdam, Netherlands*; F. Psomadellis, *ANCO S.A., Greece***N39-3 Feasibility Evaluation of the Application of Silicon Drift Detectors in Studies of Drug Delivery in Liver**R. Alberti^{1,2}, C. Fiorini^{1,2}, C. Guazzoni^{1,2}, T. Klatka^{1,2}, A. Longoni^{1,2,3}, R. Delfino^{4,5}, V. Lorusso⁶, L. Pascolo^{4,5}, L. Vaccari⁷, F. Arfelli^{5,2}, L. Mancini⁸, R. H. Menk⁸, L. Rigon⁹, G. Tromba⁸
¹Politecnico di Milano, Italy; ²INFN, Italy; ³IFN-CNR, Italy; ⁴Centro Studi Fegato, Italy; ⁵Universita' degli Studi di Trieste, Italy; ⁶Bracco, Italy; ⁷Center of Molecular Biomedicine, Italy; ⁸Sincrotrone Trieste S.c.p.A., Italy; ⁹The Abdus Salam International Centre for Theoretical Physics, Italy**N39-4 A CMOS Active Pixel Sensor and Microelectrode Array for Retinal Stimulation**K. Mathieson, C. Adams, D. E. Gunning, D. Murdoch, V. O'Shea, A. R. Moodie, J. D. Morrison, *University of Glasgow, Scotland*; M. L. Prydderch, M. J. French, *CCLRC Rutherford Appleton Laboratories, England***N39-5 Improving the Peak-to-Valley Dose Ratio in a Synchrotron X-Ray Microbeam Array**M. L. F. Lerch¹, E. A. Siegbahn², H. Nettelbeck¹, E. Brauer-Krisch², B. Oborn¹, G. Takacs¹, W. Zealey¹, A. Bravin², A. Rosenfeld¹
¹University of Wollongong, Australia; ²European Synchrotron Radiation Facility, France**N39-6 Effects of Sinogram Filtering in the Quality of PET Reconstructions: Preliminary Results**M. Abella, S. Redondo, J. J. Vaquero, J. Sánchez-González, M. Desco *Hospital G. U. Gregorio Marañón, Spain***N40 Scintillators III - Composites - ZnO**

Thursday, Nov. 2 10:30-11:45, Pacific Salon 3

Session Chairs: **Kent Burr**, *GE Research***Marek Moszynski**, *Soltan Institute for Nuclear Studies***N40-1 Transparent Ceramic Lutetium Aluminum Garnet Scintillators**N. J. Cherepy, J. D. Kuntz, T. R. Niedermayr, J. J. Roberts, T. M. Tillotson, S. A. Payne
*Lawrence Livermore National Laboratory, USA***N40-2 Composite Scintillators for Radiation Detection and Nuclear Spectroscopy**E. A. McKigney, R. E. Del Sesto, L. G. Jacobsohn, P. A. Santi, R. E. Muenchausen, K. C. Ott, T. M. McCleskey, B. L. Bennett, J. F. Smith, D. W. Cooke
*Los Alamos National Laboratory, USA***N40-3 Scintillation Properties of SrHfO₃:Ce³⁺ and BaHfO₃:Ce³⁺ Ceramics**E. V. Van Loef¹, W. M. Higgins¹, J. Glodo¹, C. Brecher², A. Lempicki², V. Venkataramani³, W. W. Moses⁴, S. E. Derenzo⁴, K. S. Shah¹
¹Radiation Monitoring Devices, USA; ²ALEM Associates, USA; ³General Electric, USA; ⁴Lawrence Berkeley National Laboratory, USA**N40-4 The Effects of Thermochemical Treatments on the Scintillation and Photoluminescence Properties of ZnO Single Crystals**J. S. Neal, L. A. Boatner, *Oak Ridge National Laboratory, USA*; S. E. Derenzo, E. D. Bourret-Courchesne, *Lawrence Berkeley National Laboratory, USA***N40-5 Development of ZnO:Ga as an Ultra-Fast Alpha Particle Detector**E. D. Bourret-Courchesne, S. E. Derenzo, M. J. Weber
*Lawrence Berkeley National Laboratory, USA***N41 HEP & NP Instrumentation VIII: Particle ID Systems**

Thursday, Nov. 2 13:30-15:00, Pacific Salon 1

Session Chairs: **Riccardo de Asmundis**, *INFN, Napoli***Luca Lista**, *INFN, Napoli***N41-1 The Time of Flight Detector Upgrade at PHENIX**S. Huang, *Vanderbilt University, USA*
On behalf of the PHENIX Collaboration**N41-2 Aging Studies of 2nd Generation BaBar RPCs**H. R. Band, *U. of Wisconsin, US*
On behalf of the BaBar IFR Group**N41-3 Development of a Readout System for Large Scale Time-of-Flight Systems with Picosecond Resolution**T. Credo, H. Frisch, H. Sanders, F. Tang, J. van Santen, *Enrico Fermi Institute, University of Chicago, USA*; K. Byrum, G. Drake, *Argonne National Laboratory, USA*

N41-4 Progress on the Focusing DIRC Development

J. Vavra, J. F. Benitez, J. Schwiening, I. Bedajane, B. N. Ratcliff,
D. W. G. S. Leith, G. Mazaheri, J. Coleman, J. Uher
SLAC, USA

N41-5 Initial Tests of a Hadron Blind Detector for the PHENIX Experiment at RHIC

C. Woody, B. Azmoun, A. Milov, T. Sakaguchi, A. Sickles,
R. P. Pisani, *Brookhaven National Lab, USA*; I. Tserruya, Z. Frankel,
A. Kozolov, A. Dubey, D. Sharma, I. Ravinovich, L. Shekhtman,
Weizmann Institute of Science, Israel; W. Anderson, J. Kamin,
T. Hemmick, *Stony Brook University, USA*; C.-Y. Chi, *Columbia University, USA*

N41-6 Performance of the PHENIX Time Expansion Chamber/Transition Radiation Detector

M. Leite, *University of Sao Paulo, Brazil*
On behalf of the Phenix TEC/TRD Group

N42 Photodetectors and Radiation Imaging II

Thursday, Nov. 2 13:30-15:00, Pacific Salon 2

Session Chair: **Ronald Wurtz, LLNL**

N42-1 Critical Comparison of Silicon Photomultipliers and Photomultiplier Tubes for Low Light Sensing Applications

P. J. Hughes, V. Saveliev, M. O'Shea, D. J. Herbert, A. G. Stewart,
J. C. Jackson
SensL, Ireland

N42-2 Combined Study of SiPM Saturation and Recovery Time Effects for PET Applications: Towards a Direct Comparison with an LSO-APD Detector

V. C. Spanoudaki¹, N. A. Otte², A. B. Mann³, I. Konorov³, S. Paul³,
I. Torres-Espallardo¹, J. Galindo¹, S. I. Ziegler¹
¹*Klinikum rechts der Isar, Technical University of Munich, Germany*;
²*Max-Planck-Institut für Physik, Germany*; ³*Technical University of Munich, Germany*

N42-3 Avalanche Drift Diode as Novel Detector for Single Photon Counting

C. Merck¹, R. Eckhardt², R. Hartmann³, P. Holl², G. Lutz¹,
H.-G. Moser¹, J. Ninkovic¹, N. Otte¹, R. Richter¹, H. Soltau²,
L. Strueder³
¹*Max-Planck-Institut fuer Physik, Germany*; ²*PNSensor GmbH, Germany*; ³*Max-Planck-Institut fuer extraterrestrische Physik, Germany*

N42-4 New Developments on Silicon Photomultiplier for Medical and High-Energy Physics Applications

C. Piemonte, *ITC-irst, Italy*
On behalf of the DASiPM collaboration

N42-5 5 X 5 Array of Single Photon Avalanche Diodes (SPAD)

S. S. Tudisco^{1,2}, S. S. Privitera^{1,2}, F. F. Musumeci^{1,2}, L. L. Lanzano^{1,2},
A. A. Scordino^{1,2}, A. A. Campisi¹, L. L. Cosentino¹, P. P. F. Finocchiaro¹,
G. G. Fallica³, S. S. Lombardo³, M. M. Mazziello³,
D. D. Sanfilippo³, E. E. Sciacca³, G. G. Valvo³
¹*INFN, Italy*; ²*Università di Catania, Italy*; ³*ST-Microelectronics, Italy*

N42-6 SPM Tiles: Large Area, Position Sensitive Photodetectors

D. J. Herbert, P. J. Hughes, A. G. Stewart, L. Wall, F. Quinlan,
C. J. Jackson
SensL, Ireland

Thursday

N43 Scintillators IV - Lanthanide Scintillators - Light Yield - Time Response

Thursday, Nov. 2 13:30-14:45, Pacific Salon 3

Session Chairs: **Neal Clinthorne, University of Michigan**
John Valentine, LLNL

N43-1 The Concentration and Temperature Dependent Scintillation Performance of Cerium Doped LaX₃ (X=Cl, Br)

P. Dorenbos, G. Bizarri
Delft University of Technology, Netherlands

N43-2 CeBr₃ for Time-of-Flight PET

J. Glodo¹, A. Kuhn², W. M. Higgins¹, E. V. D. van Loef¹, J. S. Karp²,
W. W. Moses³, S. E. Derenzo³, K. S. Shah¹
¹*Radiation Monitoring Devices, Inc., USA*; ²*University of Pennsylvania, USA*; ³*Lawrence Berkeley National Laboratory, USA*

N43-3 Gd₂O₃:Ce - a New Gamma and Neutron Scintillator

J. Glodo, W. M. Higgins, E. V. D. van Loef, K. S. Shah
Radiation Monitoring Devices, Inc., USA

N43-4 Systematic Search for New Lanthanum Scintillators*

S. E. Derenzo, E. Bourret-Courchesne, Y. Porter-Chapman, S. Taylor,
M. J. Weber
Lawrence Berkeley National Laboratory, U.S.A.

N43-5 Investigation of Absolute Light Output Techniques

M. Gierlik, M. Moszyński, A. Nassalski, A. Syntfeld-Kazuch,
T. Szczyński, L. Świdarski
Soltan Institute for Nuclear Studies, Poland

N44 Astrophysics and Space Instrumentation II

Thursday, Nov. 2 15:30-17:00, Pacific Salon 1

Session Chairs: **Michael Pivovarov, LLNL**
Helmuth Spieler, LBNL

N44-1 A New High-Speed, Single Photon Imaging CCD for the Optical

P. Holl¹, R. P. Eckhart¹, R. Hartmann¹, C. Koitsch¹, G. Lutz²,
N. Meidinger³, J. Ninkovic², R. H. Richter², G. Schaller³, H. Soltau¹,
L. Strüder³, G. Vălceanu¹
¹*PNSensor GmbH, Germany*; ²*Max-Planck-Institut für Physik, Germany*; ³*Max-Planck-Institut für extraterrestrische Physik, Germany*

N44-2 The Wide Field Imager of the European X-Ray Observatory

P. H. Lechner¹, L. Andricsek², S. Herrmann³, G. Lutz², M. Porro³,
R. H. Richter², L. Strueder³, J. Treis³
¹*PNSensor GmbH, Germany*; ²*MPI für Physik, Germany*; ³*MPI für extraterrestrische Physik, Germany*

N44-3 Large Area Silicon Pixel Detectors for X-Ray Timing Applications

B. E. Philips, E. A. Wulf, *Naval Research Laboratory, USA*;
G. Deptuch, P. O'Connor, *BNL, USA*; E. Frost, *Praxis, Inc., USA*

N44-4 Multi-Channel Charge Amplifier-Discriminator-Counter IC for the Space Sciences

V. B. Cajipe¹, J. H. Clemmons², M. Clajus¹, W. R. Crain²,
S. Hayakawa¹, T. O. Tumer¹
¹*NOVA R&D, Inc., USA*; ²*The Aerospace Corporation, USA*

N44-5 The X-Ray Telescope of the CAST Experiment

R. Kotthaus¹, H. Bräuninger², P. Friedrich², R. Hartmann³, D. Kang⁴,
M. Kuster⁵, G. Lutz¹, L. Strüder², J. Vogel⁴

Thursday

¹Max-Planck-Institut für Physik, Germany; ²Max-Planck-Institut für Extraterrestrische Physik, Germany; ³PNSensor GmbH, Germany; ⁴Physikalisches Institut, Germany; ⁵Institut für Kernphysik, Germany

N44-6 Radiation Shielding Study of Advanced Data and Power Management Systems (ADPMS) Housing for LEO and MEO Earth Orbits of Carbon Fiber Reinforced Plastic (CFRP) with Wolfram Laminate Using Geant4 – Simulations and Experiments

F. Garcia¹, K. Kurvinen¹, T. Brandt², R. Orava¹, J. Heino¹, A. Virtanen³, H. Kettunen³, M. Tenhunen⁴

¹Helsinki Institute of Physics and University of Helsinki, Finland;

²Helsinki University of Technology, Finland; ³University of Jyväskylä, Finland; ⁴Helsinki University Central Hospital, Finland

N45 New Solid State Detectors

Thursday, Nov. 2 15:30-17:00, Pacific Salon 2

Session Chair: **Douglas McGregor**, *Kansas State University*

N45-1 Simulation Results from Double Sided 3D Detectors

D. Pennicard¹, G. Pellegrini², M. Lozano², R. Bates¹, C. Parkes¹, V. Wright³

¹University of Glasgow, UK; ²Centro Nacional de Microelectrónica, Spain; ³Diamond Light Source, UK

N45-2 Experimental Study of Pre-Diffusion in Multilinear Silicon Drift Detectors

A. Castoldi^{1,2}, C. Guazzoni^{1,2}, R. Hartmann³, P. Madoglio¹, L. Strüder⁴

¹Politecnico di Milano, Italy; ²INFN, Italy; ³PNSensor GmbH, Germany; ⁴Max Planck Institut, Germany

N45-3 Wafer-Bonded Silicon Gamma-Ray Detectors

E. A. Wulf, B. F. Philips, J. D. Kurfess, K. D. Hobart, F. J. Kub *Naval Research Laboratory, USA*

N45-4 Development of Large Arrays of Microcalorimeters for Precision Gamma-Ray Spectroscopy

J. N. Ullom, W. B. Doriese, J. A. Beall, W. D. Duncan, L. Ferreira, G. C. Hilton, R. D. Horansky, K. D. Irwin, C. D. Reintsema, L. R. Vale, B. L. Zink, *National Institute of Standards and Technology, USA*; A. Hoover, C. R. Rudy, D. M. Tournear, D. T. Vo, M. W. Rabin, *Los Alamos National Laboratory, USA*

N45-5 Geiger Sensor Arrays for Microvertex Applications

S. Vasile, J. Rau, *aPeak Inc., USA*

N45-6 The Influence of Defects on Charge Transport in Single-Crystal Synthetic Diamond Detectors

P. J. Sellin, A. Lohstroh, S. G. Wang, J. Parkin, A. W. Davies, *University of Surrey, UK*; D. Twitchen, *Element Six Ltd, UK*

N46 HEP Software Systems

Thursday, Nov. 2 15:30-17:15, Pacific Salon 3

Session Chair: **Paolo Calafiura**, *LLNL*

N46-1 Offline Data Handling in the NA48 Experiment

R. Fantechi, *INFN - Sezione di Pisa, Italy*

N46-2 P326 Software Architecture

R. Fantechi, *INFN - Sezione di Pisa, Italy*

N46-3 Alignment of the Inner Detector of the ATLAS Experiment

J. R. Schieck, *Max-Planck-Institute for Physics, Germany*

On behalf of the ATLAS Inner Detector Collaboration

N46-4 Muon Detector-Description as-Built and Its Simulation for the ATLAS Experiment

D. M. Rebuffi¹, N. C. Benekos², S. Baranov³, L. Chevalier⁴, S. Goldfarb⁵, J.-F. Laporte⁴, T. Moore⁶, A. Ouraou⁴, D. Pomaredé⁴, M. Schott⁷, S. Spagnolo⁸, I. Trigger⁹

¹INFN Pavia and Pavia University, Italy; ²MPI für Physik, Germany;

³Albert-Ludwigs-Universität, Germany; ⁴CEA-Saclay, France;

⁵University of Michigan, USA; ⁶University of Massachusetts, USA;

⁷Ludwig-Maximilians-Universität, Germany; ⁸Università degli Studi di Lecce, Italy; ⁹TRIUMF, Canada

N46-5 The CMS Tracker Simulation

F. Ambrogini, *University of Perugia & INFN, Italy*

On behalf of the CMS Collaboration

N46-6 The Use of Cluster Quality for Track Fitting in the CSC Detector

D. Primor¹, N. Amram¹, E. Etzion¹, G. Mikenberg², H. Messer¹

¹Tel Aviv University, Israel; ²Weizmann Institute of Science, Israel

N46-7 The Simulation and the Recent Results of HARP Experiment

V. N. Ivanchenko, *CERN, Switzerland*

On behalf of the HARP Collaboration

The IEEE Medical Imaging Conference (MIC) is the premier research gathering for scientists and engineers interested in the physics and engineering of the use of ionizing radiation in medical imaging. We, the MIC chairs, welcome you to the 2006 MIC and express our pleasure that you have chosen to attend and participate in this year's conference. We hope the conference is, as it has been each year it has been held, an excellent forum for communicating and discussing the most recent advances in the science and engineering of nuclear, radiological, and novel medical imaging technologies and techniques.

The 2006 MIC scientific program, including joint NSS/MIC and MIC/RTSD sessions, runs from Tuesday afternoon October 31 through Saturday afternoon November 4 with the core MIC program Wed Nov 1 through Sat Nov 4. The program is a vibrant scientific program that includes a two-speaker plenary session; an awards/oral session; approximately 450 posters in 3 poster sessions; and 96 oral presentations in the awards/oral session, 12 oral MIC sessions, and 3 joint oral session. Two excellent scientists and speakers, Jan Schnitzer, MD, Scientific Director, Sidney Kimmel Cancer Center, San Diego, CA, and Ron Nutt, PhD, Chief Executive Officer, Advanced Biomarker Technologies, Knoxville, TN, will give the plenary talks. The MIC also includes the MIC dinner/evening at Sea World San Diego.

The MIC thrives and excels only through the generous but essential volunteer activities of many individuals at many levels. We conclude with heartfelt 'thank you' to all who helped shape the 2006 MIC, especially, the reviewers of this year's submissions. The reviewers are 220 colleagues who volunteered their time and expertise in the assessment of 588 submissions and whose contributions were critical to creation of the outstanding scientific program of this year's MIC. These individuals produced $3 \times 588 = 1764$ reviews. Many thanks to the reviewers and all other contributors to the planning and running of the 2006 MIC. Again, welcome to the preeminent 2006 scientific conference devoted to the physics and engineering of x-ray and radionuclide medical imaging. Welcome to the 2006 Medical Imaging Conference!



John N. Aarsvold, PhD
MIC Program Chair



Bruce Hasegawa, PhD
MIC Deputy Program Chair

M02-2: Systems Biology Approach for *In Vivo* Proteomic Mapping of Endothelia in Organs and Solid Tumors for Targeted Imaging and Therapy

Jan Schnitzer, M.D.

Sidney Kimmel Cancer Center, San Diego



New targets are needed for detecting disease through molecular imaging and for treating disease through directed delivery *in vivo*. Sequencing the human genome has identified a target pool of 25,000 genes that may generate posttranslationally a million distinct, possible protein targets. Genomic and proteomic analysis of normal and diseased tissues has yielded thousands of candidates for diagnostic and tissue assessment as well as potential therapeutic targets. But the sheer number of candidates can overwhelm the required *in vivo* validation process leading some to question the ultimate impact of these approaches on speeding up achieving targeting *in vivo*. Moreover, *in vivo* epithelial and endothelial cell barriers prevent access of many circulating agents into tissue compartments where these "omic" targets are expressed and where biologics, imaging agents, nanoparticles, gene vectors and drugs can be most effective. The sheer volume and complexity of the "omic" tissue data can be reduced to a manageable subset of intravenously accessible candidates most relevant to targeting, imaging, and treating disease by using newly-developed global analytical techniques to map proteins expressed *in vivo* at the luminal endothelial cell surface. This approach has demonstrated distinct molecular signatures for endothelia of normal and neoplastic tissues. We applied this strategy to various rodent and human organs and solid tissues to uncover, from the vast number of proteins expressed in tissue, about 50 differentially expressed proteins in each tissue, including several promising tissue-selective endothelial cell surface proteins that permit rapid and specific immunotargeting and imaging *in vivo*. More recently, we have identified such targets concentrated in transport vesicles called caveolae. Intravital microscopy and SPECT imaging show that antibodies targeting caveolae are not only tissue-specific but perhaps more importantly, are pumped actively across endothelium to penetrate and percolate throughout the tissue within seconds to minutes (normal lung) and minutes to hours (solid tumors) after intravenous injection. This unique integration of proteomic and imaging methods allow us to study how disease and tissue microenvironments can influence protein expression at the surface of endothelial cells lining blood vessels and how caveolae function to transport endogenous molecules as well as possibly targeted drugs, nanoparticles and gene vectors from the circulatory blood across the endothelial cell barrier to reach underlying tissue and even tumor cells. This strategy may be useful clinically for noninvasively diagnosing, treating and even monitoring many diseases.

Biography:

Dr. Jan E. Schnitzer is the Scientific Director of the Sidney Kimmel Cancer Center, in San Diego, California, an independent, nonprofit research institution dedicated to the development and advancement of

biomedical research to eliminate cancer. Dr. Schnitzer earned a BSE in Chemical Engineering from Princeton University and an M.D. (1985) from the University of Pittsburgh Medical School. He completed his postdoctoral training at Yale University Medical School in the Department of Cell Biology, then held faculty positions as Assistant Professor at the University of California School of Medicine with appointments in the Departments of Medicine and Pathology and the Institute of Biomedical Engineering (1990-1994), and as Associate Professor at Harvard Medical School, Beth Israel Hospital, Boston, Massachusetts (1994-1999). He joined the faculty of the SKCC in 1999, where he currently is Professor of Molecular and Cellular Biology, Director of the Vascular Biology and Angiogenesis Program, and Scientific Director. As the Scientific Director, Dr. Schnitzer is responsible for many administrative duties in addition to running his laboratory of approximately 30 scientists and technicians. The SKCC was recently awarded a \$14.4 million Program Project Grant, over five years, from the National Cancer Institute, with Dr. Schnitzer as the Principal Investigator. He is the author of over 65 publications and book chapters and serves on many NIH and NCI Grant Review Panels. He also lectures at major symposia worldwide as an invited speaker and has received numerous honors and awards.

M02-3: Molecular Imaging-The Path to Molecular Medicine

Ron Nutt

Advanced Biomarker Technologies, Knoxville

Molecular imaging with PET and SPECT, as well as with other imaging technologies and other major modalities (CT, MRI, MRS, ultrasound, and optical) are seeing expanded use in the diagnosing of, and in the following of therapies for, cancer, cardiovascular disease, and neurological disorders. Several important technological developments made PET and PET/CT clinically viable and routine, and propelled them, in the last decade, to the forefront of molecular medicine. Recently, microPET, microSPECT, microCT, microMRI, and integrated versions of these modalities have found significant roles in molecular medicine in the economical development of new pharmaceuticals and in the scientific advancement of biological research. Newer technologies under development will further advance the adoption and use of molecular imaging. These include a PET insert with novel solid-state radiation detectors that can be operated inside a whole-body MRI system and innovative microchemistry systems with new biomarker generators, microfluidics, and/or minicyclotrons for molecular imaging probe development. These technological advances can and have produced significant changes in the ways that medical imaging, laboratory research, and clinical medicine are practiced. This presentation will discuss the above with focus on the emergence of molecular imaging as the key to the development of molecular medicine and the expectation that PET (and integrations) will emerge as the most widely used of all imaging modalities.



Biography:

Dr. Ronald Nutt is CEO of Advanced Biomarker Technologies (Knoxville, TN), a company dedicated to developing molecular imaging biomarkers. He earned his undergraduate and graduate degrees in electrical engineering from the University of Tennessee, and began his rich career as a researcher at Oak Ridge National Laboratory, as a faculty member at the University of Tennessee, and then as Vice-President of EG&G Ortec where he was responsible for many innovations in nuclear physics instrumentation. Dr. Nutt co-founded several companies, including CTI Molecular Imaging in 1983 where he served as VP of Research and Development, and then as President and CEO, and CTI PET Systems Inc., a joint venture with Siemens Medical Solutions, where he served as President. Dr. Nutt has contributed more than 30 patents, numerous technical publications, and many invited talks at scientific conferences in the field of molecular imaging. In 1993, Dr. Nutt received the Region 3 IEEE Outstanding Engineer Award for "Outstanding Technical and Entrepreneurial Achievements in Medical Imaging". Dr. Nutt was recognized as a Fellow of the IEEE in 1995 with a citation that reads in part "For contributions to nuclear research, especially to that in the area of positron emission tomography (PET)". Dr. Nutt also received the Nathan W. Daugherty Award in 1997, the highest Engineering Alumni Award from the University of Tennessee. In 1999, Dr. Nutt was named the Academy of Molecular Imaging's Distinguished Scientist of the Year; and in 2000, his contributions to the invention and development of PET/CT were recognized by TIME magazine when they named PET/CT the Medical Invention of the Year.

MIC PROGRAM

NM1 NSS MIC Joint Session 1

Tuesday, Oct. 31 13:30-15:00, Golden Ballroom

Session Chairs: Neal Clinthorne, *University of Michigan*
Stephen Derenzo, *LBNL*

NM1-1 Direct Detection of Beta Particles on a Microfluidic Chip Using Position Sensitive APDs

N. T. Vu¹, Y. H. Chung¹, Z. T. F. Yu¹, R. W. Silverman¹, R. Taschereau¹, R. Farrell², K. S. Shah², H. R. Tseng¹, A. F. Chatziioannou¹

¹*UCLA, U.S.A.*; ²*Radiation Monitoring Devices, U.S.A.*

NM1-2 A Low-Cost Approach to High-Resolution, Single-Photon Imaging Using Columnar Scintillators and Image Intensifiers

B. W. Miller, H. B. Barber, H. H. Barrett, L. Y. Chen
University of Arizona Health Sciences Center, USA

NM1-3 Neutron Spectroscopy of Mouse Using Neutron Stimulated Emission Computed Tomography (NSECT)

A. J. Kapadia, C. E. Floyd, J. E. Bender, A. C. Sharma, C. R. Howell, A. S. Crowell, M. R. Kiser

Duke University, USA

NM1-4 Design and Development of a High Performance Micro-CT System for Small-Animal Imaging

E. Lage, J. J. Vaquero, S. Redondo, M. Abella, G. Tapias, M. Desco
Hospital G. U. Gregorio Marañón, Spain

NM1-5 Assessment of a New CT System for Small Animals

S. Redondo, J. J. Vaquero, E. Lage, M. Abella, G. Tapias, M. Desco
Hospital G. U. Gregorio Marañón, Spain

NM1-6 The Medipix3 Prototype, a Pixel Readout Chip Working in Single Photon Counting Mode with Improved Spectrometric Performance

R. Ballabriga, M. Campbell, E. H. M. Heijne, X. Llopert, L. Tlustos
CERN, Switzerland

NM2 NSS MIC Joint Session 2

Tuesday, Oct. 31 15:30-17:30, Golden Ballroom

Session Chairs: William Moses, *LBNL*
Craig Woody, *Brookhaven National Lab*

NM2-1 Thick Silicon Strip Detectors for Small-Animal SPECT Imaging

S. Shokouhi¹, M. A. Fritz¹, L. R. Furenli², T. E. Peterson¹

¹*Vanderbilt University, USA*; ²*University of Arizona, USA*

NM2-2 Internal-Gain CMOS APD Pixels for SPECT Imaging of Small Animals

J. F. Christian, C. J. Stapels, *Radiation Monitoring Devices, Inc., USA*; F. L. Augustine, *Augustine Engineering, USA*

NM2-3 Suppression of Afterglow in CsI(Tl) by Codoping with Eu²⁺: Fabrication of Microcolumnar Films for High-Resolution High-Speed Imaging

V. V. Nagarkar¹, V. Gaysinskiy¹, E. E. Ovechkin¹, S. R. Miller¹, C. Brecher², A. Lempicki², M. R. Squillante¹

¹*RMD Inc., USA*; ²*ALEM Associates, USA*

Tuesday

NM2-4 Prototype Solid State Photomultiplier Based Intra-Operative Beta Camera

E. S. Heckathorne¹, R. Silverman¹, F. Daghighian², M. Dahlbom¹

¹*UCLA School of Medicine, United States*; ²*IntraMedical Imaging, LLC, United States*

NM2-5 A Novel Active Pixel Sensor with on-Pixel Analog-to-Digital Converter for Mammography

C. D. Arvanitis¹, S. Bohndiek¹, G. Segneri¹, C. Venanzi¹, G. Royle¹, A. T. Clark², J. P. Crooks², R. Halsall², M. L. Key-Charriere², S. Martin², M. Prydderch², R. Turchetta², R. Speller¹

¹*University College London, United Kingdom*; ²*Rutherford Appleton Laboratory, United Kingdom*

NM2-6 Detection of Early Markers in Mammography Project

R. Martínez¹, B. George², C. Mokhtar², D. Angel³, D. Francisco³, G. Eva³, G. Jorge², K. Franz⁴, L. Manuel¹, M. Marino², M. Jean Philippe⁵, M. Ildefonso³, P. Giullio¹, P. Carles², S. Melcior⁶, T. Lluís¹, T. Meritxell⁶, U. Miguel¹

¹*IMB-CNM (CSIC), SPAIN*; ²*IFAE, SPAIN*; ³*Sedecal, Spain*; ⁴*University of Vienna, Austria*; ⁵*Hôpital D'enfants Armand Trousseau, France*; ⁶*UDIAT, Spain*

NM2-7 DRAGO: a High Resolution Gamma-Ray Imager for Medical Imaging

C. Fiorini^{1,2}, A. Gola^{1,2}, M. Zanchi^{1,2}, A. Longoni^{1,2}, M. Porro³, P. Lechner⁴, H. Soltan⁴, L. Strüder³

¹*Politecnico di Milano, Italy*; ²*INFN, Sezione di Milano, Italy*; ³*MPI für Extraterrestrische Physik Halbleiterlabor, Germany*; ⁴*PNSensor GmbH, Germany*

NM2-8 Microdosimetry Within Heterogenous Tissue-Equivalent Structures

A. J. Wroe¹, A. B. Rosenfeld¹, D. Prokopovich², M. Reinhard², R. W. Schulte³, I. Cornelius¹, V. Bashkurov³

¹*University of Wollongong, Australia*; ²*Australian Nuclear Science and Technology Organisation, Australia*; ³*Loma Linda University Medical Center, USA*

M01 X-Ray and CT

Wednesday, Nov. 1 08:00-10:00, Golden Ballroom

Session Chairs: Jiang Hsieh, *GE Healthcare*
Marc Kachelriess, *Institute of Medical Physics (IMP)*

M01-1 Bi-Directional anti-Scatter Grid for a Wide Axial Coverage CT

D. Braunstein, R. Carmi, M. Kleinman, A. Elgaly, I. Uman, A. Altman

Philips Medical Systems Technologies Ltd., Israel

M01-2 A Tile-Based Multislice CT Scanner

M. Kleinman, I. Uman, D. Braunstein, N. Weiss, N. Wainer, L. Gregorian, D. Yogev, G. Kafri, A. Altman

Philips Medical Systems, Israel

M01-3 EKG-Gated Low-Dose Chest CT Imaging

J. Hsieh, J. Londt, S. Dutta, D. Okerlund

GE Healthcare, USA

M01-4 Three-Dimensional Tomosynthesis Reconstruction from 1D and 2D X-Ray Source Arrays

D. S. Lalush¹, R. Rajaram², E. Quan¹, J. Zhang², J. Lu², O. Zhou²

¹*North Carolina State University, USA*; ²*The University of North Carolina at Chapel Hill, USA*

Tuesday

M01-5 Unified Algorithm for kV and MV X-Ray Scatter and Beam-Hardening Correction Using the Convolution-Superposition Method

J. S. Maltz, B. Gangadharan, D. Hristov, A. Paidi, S. Bose, A. R. Bani-Hashemi
Siemens Medical Solutions, USA, Inc., USA

M01-6 Noise Reduction Using a Theoretically-Exact Algorithm for Helical Cone-Beam Tomography

R. Venkataraman, F. Noo, University of Utah, USA; H. Kudo, University of Tsukuba, Japan

M01-7 Hyperfast Perspective Cone-Beam Backprojection

M. Kachelriess, M. Knaup, Institute of Medical Physics (IMP), Germany; O. Bockenbach, Mercury Computer Systems, Germany

M01-8 Iterative Method for Multiple-Image Radiography Parametric Image Estimation

J. G. Brankov, L. C. Cobo Rus
Illinois Institute of Technology, USA

M02 MIC Plenary

Wednesday, Nov. 1 10:30-12:20, Golden Ballroom

Session Chairs: John Aarsvold, Emory University & Atlanta Veterans Affairs Medical Center

Bruce Hasegawa, University of California, San Francisco

M02-1 Welcome from MIC Program Chairs & General Chair

M02-2 (invited) Systems Biology Approach for *In Vivo* Proteomic Mapping of Endothelia in Organs and Solid Tumors for Targeted Imaging and Therapy

J. Schnitzer, Sidney Kimmel Cancer Center, USA

M02-3 (invited) Molecular Imaging- The Path to Molecular Medicine

R. Nutt, Siemens Medical Solutions, Inc., USA

M03 Observer Analysis and Modelling

Wednesday, Nov. 1 13:30-15:00, Golden Ballroom

Session Chairs: Stephen Moore, Brigham & Women's Hospital
Michael King, Univ of Mass Med School

M03-1 Effect of Object Variability in Observer Performance Studies for Image Quality Assessment

B. M. W. Tsui¹, E. C. Frey¹, L. Volokh², K. L. Gilland¹, C. Liu¹, X. He¹, S. Chen¹

¹The Johns Hopkins Medical Institutions, USA; ²GE Health Care, Israel

M03-2 A Multiclass Model Observer for Multislice-Multiview Images

H. C. Gifford, M. A. King, Univ Mass Medical School, USA

M03-3 Optimizing Sensitivity-Resolution Trade-off Using Generalized Detection/Discrimination Task and Three-Class ROC Analysis

L. Volokh, GE Healthcare Technologies, Johns Hopkins University, Israel; X. He, E. C. Frey, B. M. W. Tsui, Johns Hopkins Medical Institutions, USA

M03-4 Generalization Evaluation of Numerical Observers for Image Quality Assessment

J. G. Brankov, L. Wei, Y. Yang, M. N. Wernick
Illinois Institute of Technology, USA

Wednesday

M03-5 Human-Observer LROC Study of Lesion Detection in Ga-67

SPECT Images Reconstructed Using MAP with Anatomical Priors
A. Lehovich¹, P. P. Bruyant², H. C. Gifford¹, G. Gindi³, P. B. Schneider¹, S. Squires¹, M. A. King¹

¹U. Mass Medical School, USA; ²Univ. Brest, France; ³SUNY Stony Brook, USA

M03-6 Aperture Optimization in Emission Imaging Using Optimal LROC Observers

P. Khurd, University of Pennsylvania, USA; A. Rangarajan, University of Florida, USA; G. R. Gindi, SUNY at Stony Brook, USA

M04 PET Reconstruction

Wednesday, Nov. 1 15:30-17:30, Golden Ballroom

Session Chairs: Paul Kinahan, University of Washington

Margaret Daube-Witherspoon, University of Pennsylvania

M04-1 Generalized 3D Kernel Computation Method and Its Application in PET-Insert System

D. Pal, J. A. O'Sullivan, H. Wu, Y. C. Tai
Washington University in St. Louis, USA

M04-2 Systematic and Distributed Time-of-Flight List Mode PET Reconstruction

W. Wang¹, Z. Hu¹, E. E. Gualtieri¹, M. J. Parma¹, E. S. Walsh¹, D. Sebok¹, Y.-L. Hsieh¹, C.-H. Tung¹, X. Song¹, J. J. Griesmer¹, J. A. Kolthammer¹, L. M. Popescu², M. Werner², J. S. Karp², D. Gagnon¹

¹Philips Medical Systems, USA; ²University of Pennsylvania, USA

M04-3 Accuracy of Time-of-Flight Kernel in TOF-PET Reconstruction

M. E. Daube-Witherspoon, S. Surti, S. Matej, M. Werner, J. S. Karp
University of Pennsylvania, USA

M04-4 Efficient 3D TOF PET Reconstruction Using View-Grouped Histo-Images

S. Matej, S. Jayanthi, S. Surti, J. S. Karp, G. Muehllehner
University of Pennsylvania, USA

M04-5 Image Noise Variance in 3D OSEM Reconstruction of Clinical Time-of-Flight PET

C. C. Watson
Siemens Medical Solutions Molecular Imaging, USA

M04-6 A Method to Include Single Photon Events in Image Reconstruction for a 1 mm Resolution PET System Built with Advanced 3-D Positioning Detectors

G. Chinn¹, A. M. K. Foudray^{1,2}, C. S. Levin¹

¹Stanford University, USA; ²UCSD, USA

M04-7 Accurately Positioning and Incorporating Large-Angle Tissue-Scattered Photons into PET Image Reconstruction

G. Chinn¹, A. M. K. Foudray^{1,2}, C. S. Levin¹

¹Stanford University, USA; ²UCSD, USA

M04-8 Iterative Kinetic Parameter Estimation Within Fully 4D Image Reconstruction

A. J. Reader, J. C. Matthews, The University of Manchester, UK; I. Buvat, INSERM, France

Wednesday

MR1 MIC RTSD Joint Session

Wednesday, Nov. 1 15:30-17:30, Hampton & Windsor Rooms

Session Chairs: **Kanai Shah**, *RMD*

Lars Furenlid, *University of Arizona*

MR1-1 (invited) MICROGAMI: a Versatile Gamma Camera Based on CdZnTe Detectors with an Orthogonal Capacitive Strip Technology

L. Verger, **F. Mathy**, **O. Monnet**, **G. Montemont**

CEA-Recherche Technologique, FRANCE

MR1-2 Evaluation of a Large Pixelated Cadmium Zinc Telluride Detector for Small Animal Radionuclide Imaging

E. W. Izaguirre¹, **M. Sun**¹, **T. Vandehei**², **Y. Huang**³, **T. Funk**¹, **J. Li**², **K. Parnham**², **B. Patt**², **B. H. Hasegawa**¹

¹*University of California San Francisco, USA*; ²*Gamma Medica Ideas, USA*; ³*University of Shanghai for Science and Technology, P.R. China*

MR1-3 Dual-Isotope SPECT Imaging of Mice with Semiconductor CZT

D. J. Wagenaar¹, **J. Zhang**¹, **T. Kazules**¹, **T. VandeHei**¹,

M. Szawlowski¹, **E. Bolle**², **B. E. Patt**¹

¹*Gamma Medica-Ideas, Inc., USA*; ²*Gamma Medica-Ideas, Inc., Norway*

MR1-4 Design of a Small-Animal SPECT System with a Stationary CZT Detector Ring

J. W. Hugg, **F. P. Jansen**, **J. Uribe**, **R. M. Manjeshwar**, *GE Global*

Research, USA; **H. Lai**, **J. C. Pang**, **X. Guo**, *GE Healthcare Biosciences, Canada*

MR1-5 CdTe Orthogonal Strip Detector for Small Animal PET

H. Kim¹, **L. Cirignano**¹, **P. Dokhale**¹, **P. Bennett**¹, **J. R. Stickel**², **G. S. Mitchell**², **S. R. Cherry**², **M. Squillante**¹, **K. Shah**¹

¹*RMD, USA*; ²*University of California, USA*

MR1-6 CZT Gamma Camera for Scintimammography

I. M. Bleviss¹, **M. K. O'Connor**², **E. Shai**¹, **Y. Malinovich**¹

¹*General Electric Healthcare, Israel*; ²*Mayo Clinic, USA*

MR1-7 New Hand-Held Preoperative Gamma Camera Based on CZT Pixelized Detectors for Sentinel Node Observation

C. Scheiber, **A. Zumbiehl**, *Hôpital Cardiovasculaire Biophysique,*

France; **J. Chambron**, **M. Friedrich**, **M. Sowinska**, **P. Siffert**,

EURORAD, France

MR1-8 (invited) A CZT Pixelated Detector: Advantages, Drawbacks and Solutions

U. El-Hanany, *Orbotech Medical Solutions, Israel*

M05 Modeling and Image Analysis

Thursday, Nov. 2 08:00-10:00, Golden Ballroom

Session Chairs: **Gene Gindi**, *SUNY at Stony Brook*

Sung-Cheng (Henry) Huang, *UCLA David Geffen School of Medicine*

M05-1 Modeling Spatial Smoothness in Fully 3-D SPECT Image Reconstruction Using Multiresolution B-Splines

B. W. Reutter¹, **A. Sitek**¹, **R. Bouchko**¹, **E. H. Botvinick**²,

G. T. Gullberg¹, **R. H. Huesman**¹

¹*Lawrence Berkeley National Laboratory, USA*; ²*University of California, USA*

M05-2 Theoretical Comparison of Motion Correction Techniques for PET Image Reconstruction

E. Asma, **R. Manjeshwar**, *General Electric Global Research, USA*; **K. Thielemans**, *General Electric Healthcare, UK*

M05-3 Implementation and Evaluation of a 3D PET Single Scatter Simulation with TOF Modeling

M. E. Werner, **S. Surti**, **J. S. Karp**

University of Pennsylvania, USA

M05-4 Comparison Between TOF and Non-TOF PET Using a Scan Statistic Numerical Observer

L. M. Popescu, **R. M. Lewitt**

University of Pennsylvania, USA

M05-5 Analysis of Region of Interest Quantification for PET Image Reconstruction with Selective Regularization

S. Ahn, **R. M. Leahy**, *University of Southern California, USA*

M05-6 Unbiased Quantification of Tomographic Data by Projecting Continuous Regions-of-Interest

D. Schottlander¹, **T. Kadir**², **J. Declerck**², **M. Brady**¹

¹*University of Oxford, UK*; ²*Siemens Molecular Imaging Limited, UK*

M05-7 Validation of the Active Shape Model (ASM) for Automatic Brain Region Segmentation

V. Boronikolas¹, **M. Michaelides**¹, **J. Zhou**², **G.-J. Wang**¹,

S. Blackband³, **S. C. Grant**³, **D. Metaxas**², **N. Volkow**⁴,

P. K. Thanos^{1,4,5}

¹*Brookhaven National Laboratory, USA*; ²*Rutgers University, USA*;

³*University of Florida McKnight Brain Institute, USA*; ⁴*Dept. of Health*

and Human Services, USA; ⁵*SUNY Stony Brook, USA*

M05-8 Spatially Penalized Methods for Linear Parametric Imaging

G. Wang, **J. Qi**, *University of California, USA*

M06 MIC Poster 1

Thursday, Nov. 2 10:30-12:00, Atlas Ballroom

Session Chairs: **Kenneth Wong**, *Georgetown University*

Enrique Izaguirre, *University of California San Francisco*

David Gilland, *University of Florida*

M06-4 A Computer-Assisted Diagnostic Procedure for Digital Mammograms Using Adaptive Neuro Fuzzy Soft Computing

M. Bhattacharya

West Bengal University of Technology, Dept. of Computer Science and Engg, Reader, India

M06-7 PEM-PET Image Reconstruction in a Clinically-Relevant Time Frame

M. F. Smith, *Thomas Jefferson National Accelerator Facility,*

USA; **R. R. Raylman**, *West Virginia University, USA*

M06-10 Characterization of Imaging Performance of the Positron Emission Mammography System

D. Beylin, **P. Stepanov**, **D. Narayanan**, **E. Anashkin**, **V. Zavarzin**

Naviscan PET Systems, Inc., USA

M06-13 Evaluation of the Conical Scanning Scheme for SPECT Applications

V. Y. Pedash, **A. V. Gektin**, **O. V. Dyomin**, *Institute for scintillation*

materials NAS of Ukraine, Ukraine; **V. L. Gayshan**, *ScintiTech, Inc., USA*

M06-16 Gamma Camera Imaging of Permanent Breast Seed Implantation (GIPSI)

A. Ravi¹, C. B. Caldwell^{1,2}, B. Keller², A. Reznick¹, J.-P. Pignol^{1,2}
¹University of Toronto, Canada; ²Sunnybrook Hospital, Canada

M06-19 Development of Triple GEM Structure for Medical Imaging

E. N. Tsyganov¹, P. P. Antich¹, A. F. Buzulutskov², R. W. Parkey¹,
 S. Y. Seliounine¹

¹The University of Texas Southwestern Medical Center at Dalls, USA;

²Budker Institute of Nuclear Physics (BINP), Russia

M06-23 Multi-Energy, Single-Isotope Pinhole Imaging Using Stacked Detectors

B. S. McDonald¹, S. Shokouhi¹, H. H. Barrett², T. E. Peterson¹

¹Vanderbilt University, USA; ²University of Arizona, USA

M06-26 Design of Multi-Slit and Multi-Pinhole Collimators for a Small-Animal SPECT System with a Stationary CZT Detector Ring

J. W. Hugg, F. P. Jansen, J. Uribe, R. M. Manjeshwar

GE Global Research, USA

M06-29 Second-Generation, Tri-Modality Pre-Clinical Imaging System

K. Parnham, D. J. Wagenaar, J. Li, S. Chowdhury, B. E. Patt

Gamma Medica-Ideas, Inc., USA

M06-32 An Attenuation Correction System for a Dedicated Small FOV, Dual Head, Fixed-90°, Cardiac Gamma Camera Using Arrays of Gd-153 Line Sources

E. G. Hawman, M. Ray, R. Xu, H. Vija

Siemens Medical Solutions USA, Inc., USA

M06-35 Development of Rapid SPECT Acquisition Protocol for Myocardial Perfusion Imaging

A. H. Vija, J. T. Chapman, E. G. Hawman, Siemens Medical Solutions USA, Inc., USA; J. Zeintl, J. Hornegger, University of Erlangen-Nuernberg, Germany

M06-38 Brain PET Partial-Volume Compensation Using Blurred Anatomical Labels

F. Bataille, C. Comtat, S. Jan, F. Sureau, R. Trébossen

CEA,DSV,DRM,SHFJ, France

M06-41 Development of MRI-Compatible Nuclear Medicine Imaging Detectors

D. J. Wagenaar¹, M. Szawlowski¹, M. Kapusta¹, K. Parnham¹,
 G. Maehlum², N. Pavlov², J. A. Gjaerum², K. Yoshioka², B. E. Patt¹

¹Gamma Medica-Ideas, Inc., USA; ²Gamma Medica-Ideas, Inc., Norway

M06-43 Small Animal Positron Emission Tomography with Hyperpure Germanium Detectors

R. J. Cooper, A. J. Boston, H. C. Boston, J. R. Cresswell,
 A. N. Grint, A. R. Mather, P. J. Nolan, D. P. Scraggs, G. Turk,
 The University of Liverpool, UK; C. J. Hall, I. H. Lazarus, CCLRC

Daresbury Laboratory, UK; A. Berry, T. Beveridge, J. Gillam,
 R. Lewis, Monash University, Australia

M06-46 MRI Based Attenuation Correction for Combined PET/MR

I. B. Malone, R. E. Ansorge, T. D. Fryer, G. B. Williams,
 T. A. Carpenter

University of Cambridge, UK

M06-49 Comparison of Position-Sensitive Versus Discrete Avalanche Photodiodes in a Continuous Crystal Gamma Camera

P. Després¹, T. Funk¹, W. C. Barber¹, K. S. Shah², B. H. Hasegawa¹

¹Physics Research Laboratory, University of California, San Francisco, USA; ²Radiation Monitoring Devices Inc., USA

M06-52 Experimental Measurement of Axial and Transaxial Resolutions of a Slit-Slat Collimator and Comparison to Theoretical Expectations

J. R. Novak¹, S. D. Metzler¹, R. Accorsi², A. S. Ayan¹, R. J. Jaszczak^{3,4}

¹University of Pennsylvania, USA; ²The Children's Hospital of Philadelphia, USA; ³Duke University Medical Center, USA; ⁴Duke University, USA

M06-55 Helical Path, Half-Cone-Beam Acquisition for SPECT Brain Imaging

R. J. Jaszczak^{1,2}, K. L. Greer¹, J. E. Bowsher¹, S. D. Metzler³, R. Ter-Antonyan¹, K. V. Bobkov^{1,4}

¹Duke University Medical Center, USA; ²Duke University, USA;

³University of Pennsylvania, USA; ⁴University of Michigan, USA

M06-58 Development of High Spatial Resolution Mini Gamma Cameras Based on Pixelated CsI(Tl) Scintillator and H9500 PSPMTs for Small Animal Imaging

S. Majewski, V. Popov, J. Proffitt, W. Hammond, B. Kross,

A. Weisenberger, Jefferson Lab, USA; Y. Wang, B. Tsui, Johns Hopkins University, USA

M06-61 A Sensitivity Model for Multi-Pinhole SPECT

F. P. DiFilippo, Cleveland Clinic Foundation, USA

M06-65 Comparison of Singles-Mode Transmission Imaging on a microPET P4 Tomograph Using Co-57 and Ge-68 Sources

J. P. J. Carney, C. M. Laymon, B. J. Lopresti

University of Pittsburgh, USA

M06-68 Real Time Implementation of a Wiener Filter Based Crystal Identification Algorithm for Photon Counting CT Imaging

N. Viscogliosi, P. Bérard, J. Riendeau, R. Lecomte, R. Fontaine

Université de Sherbrooke, Canada

M06-71 Maximizing the Useful Field of View of the MicroPET: Feasibility of Imaging Large Animals

S. Naidoo, W. Lehnert, P. Kench, S. R. Meikle

University of Sydney, Australia

M06-74 Software Development Framework Supporting Multimodal Tomographic Imaging

M. Emri¹, G. Opposits¹, S. A. Kis¹, L. Tron¹, P. Veres¹, A. Panyik¹,
 I. Valastyan², J. Imrek², J. Molnar², D. Novak², A. Kerek³, L. Balkai¹

¹University of Debrecen, Hungary; ²Hungarian Academy of Sciences, Hungary; ³Royal Institute of Technology, Sweden

M06-77 Inter-Crystal Scatter Identification for a Depth-Sensitive Detector Using Multi-Anode Outputs

E. Yoshida¹, K. Kitamura^{1,2}, Y. Kimura³, F. Nishikido¹, K. Shibuya¹,
 T. Yamaya¹, H. Murayama¹

¹National Institute of Radiological Sciences, Japan; ²Shimadzu Corporation, Japan; ³Tokyo Metropolitan Institute of Gerontology, Japan

M06-80 A Low-Cost Ultrahigh-Resolution Detector Development Using PMT-Quadrant-Sharing Lutetium Crystals for Small Animal PET

R. A. Ramirez, W.-H. Wong, S. Kim, H. Li, Y. Wang, H. Baghaei,
 Y. Zhang, S. Liu, J. Liu

University of Texas M.D. Anderson Cancer Center, U.S.A.

M06-83 Assessment of the LabPET™ Dual-Crystal APD-Based Detector Module

C. M. Pepin¹, J. Cadorette¹, M.-A. Tétrault², M. D. Lepage³,
 H. Semmaoui², M. Bergeron², F. Lemieux², H. Dautet⁴, M. Davies⁴,
 R. Fontaine², R. Lecomte¹

¹Université de Sherbrooke, 3001, 12 Avenue N, Canada; ²Université de Sherbrooke, 2500, boul. de l'Université, Canada; ³Advanced Molecular Imaging (AMI) Inc., Canada; ⁴PerkinElmer Optoelectronics, Canada

M06-85 Wavelet Based Crystal Identification of Phoswich Detectors for Small-Animal PET

H. Semmaoui, N. Viscogliosi, R. Lecomte, R. Fontaine
Université de Sherbrooke, Canada

M06-88 Novel Silicon Photomultipliers for PET Application

G. Llosa, INFN - PISA, Italy

On behalf of the DASIPM collaboration- University and INFN Pisa-Bari-Bologna-Perugia-Trento and ITC-irst (Italy)

M06-91 A Dual Layer DOI GSO Block Detector for a Small Animal PET

S. Yamamoto, Kobe City College of Technology, Japan

M06-94 Design of a Gamma Detector with Submillimeter Spatial Resolution and High Efficiency for Small Animal Molecular Imaging Applications

E. Cisbani, F. Cusanno, F. Garibaldi, M. L. Magliozzi, S. Torrioli, Italian National Institute of Health, Italy; S. Majewski, Thomas Jefferson National Accelerator Laboratory, USA; B. M. W. Tsui, Johns Hopkins University, USA

M06-97 Extending the GATE software for simulating the performance characteristics of the miniPET scanner

S. A. Kis¹, M. Emri¹, L. Trón¹, G. Opposits¹, T. Bükki², G. Hegyesi³, I. Valastyán³, J. Imrek³, J. Molnár³, D. Novák³, A. Kerek⁴, L. Balkay¹
¹University of Debrecen, Hungary; ²MEDISO Ltd, Hungary; ³Institute of Nuclear Research of the Hungarian Academy of Sciences, Hungary; ⁴Royal Institute of Technology, Sweden

M06-100 System Integration of the LabPETTM Small Animal PET Scanner

M.-A. Tétrault¹, N. Viscogliosi¹, J. Riendeau¹, F. Bélanger¹, J.-B. Michaud¹, H. Semmaoui¹, P. Bérard¹, F. Lemieux¹, L. Arpin¹, J. Cadorette², C. M. Pépin¹, G. Robert², M. D. Lepage², R. Lecomte¹, R. Fontaine¹
¹Sherbrooke University, Canada; ²Advanced Molecular Imaging (AMI) Inc., Canada

M06-103 Effect of Number of Readout Channels on the Performance of a Continuous Miniature Crystal Element (eMiCE) Detector

R. S. Miyaoka, T. Ling, T. K. Lewellen
University of Washington, USA

M06-107 A Healthy Volunteer FDG-PET Study on the Limit of the Spatial Resolution due to Annihilation Radiation Non-Collinearity

K. Shibuya, E. Yoshida, F. Nishikido, T. Suzuki, N. Inadama, T. Yamaya, H. Murayama
National Institute of Radiological Sciences, Japan

M06-110 Evaluation of Planar Tomography Using Large Area Planar Positron Imaging System

Y. C. Ni¹, M. L. Jan¹, T. Yamashita², T. Okamoto², H. Kume², S. M. Chen³, N. Tsurumi²
¹Institute of Nuclear Energy Research, Taiwan; ²Hamamatsu Photonics K.K., Japan; ³Thoughtek Co., Taiwan

M06-113 Evaluation of an LYSO Based Multi-PMT Detector for Both Positron and Single Photon Imaging Usage

H. C. Liang^{1,2}, M. L. Jan¹, J. L. Su²
¹Institute of Nuclear Energy Research, Taiwan, Taiwan; ²Chung-Yuan Christian University, Taiwan

M06-116 Emission characteristics of Lu₂xGd₂(1-x)SiO₅:Ce (LGSO) scintillator

Y. Kurata, T. Usui, S. Shimizu, N. Shimura, K. Kurashige, H. Ishibashi, Hitachi Chemical Co., Ltd. Yamazaki Works(Katsuta), Japan; H. Yamamoto, Tokyo University of Technology, Japan

M06-119 Low-Cost High-Resolution 3rd Generation PMT-Quadrant-Sharing (PQS) BGO Block Detector for Whole Body PET

S. Liu, G. Wong, H. Li, R. A. Ramirez, S. Kim, J. Liu, H. Baghaei, Y. Wang, Y. Zhang
The University of Texas, M. D. Anderson Cancer Center, USA

M06-122 The Road to the Common PET/CT Detector

A. Nassalski, M. Moszyński, T. Szczęśniak, D. Wolski, T. Batsch
Soltan Institute for Nuclear Studies, Poland

M06-125 A high speed fully digital data acquisition system for Positron Emission Tomography

P. D. Olcott¹, A. Fallu-Labruyere², C. S. Levin¹, F. Habte¹, W. K. Warburton²
¹Stanford University, USA; ²Xia, LLC, USA

M06-127 Quarter-Trio Mapping Electronics Readout Scheme for APD Block Detector in PET

N. Zhang, R. F. Grazioso, N. K. Doshi, J. L. Corbeil, M. J. Schmand
Siemens Molecular Imaging, U.S.A.

M06-130 Evaluation of a Multi-Anode Microchannel Plate PMT for Time-of Flight PET

W.-S. Choong, Lawrence Berkeley National Laboratory, USA

M06-133 Light Decay Time/gain Shift in a LaBr₃(3):Ce/LYSO:Ce Phoswich Detector

M. V. Green, J. Seidel, P. Choyke, W. Xi
National Cancer Institute/NIH, USA

M06-136 Evaluation of Position Sensitive Photomultiplier for Time-of-Flight Positron Emission Tomography

C. L. Kim, GE Healthcare, USA

M06-139 Identification of Convolved Signals Resulting from Compton Scattering Within Single Pixels

D. P. Scraggs¹, A. Berry², T. Beveridge², A. Boston¹, H. Boston¹, R. Cooper¹, J. Cresswell¹, J. Gillam², A. Mather¹, P. Nolan¹, C. Hall³, I. Lazarus³, R. Lewis²
¹University of Liverpool, England; ²Monash University, Australia; ³CCLRC Daresbury, England

M06-142 Detailed Modelling of Pixelated CdZnTe Detectors for an Accurate Performance Characterization of a Multi-Modality Imaging System

P. Guerra¹, G. Kontaxakis¹, D. Visvikis², A. Santos¹, D. Darambara³
¹Universidad Politecnica de Madrid, Spain; ²National Institute of Health and Medical Research, France; ³Royal Marsden/Institute of Cancer Research, United Kingdom

M06-145 Digital Timing in Positron Emission Tomography

P. Guerra¹, J. E. Ortuño¹, G. Kontaxakis¹, M. J. Ledesma¹, J. J. Vaquero², M. Desco², A. Santos¹
¹Universidad Politecnica de Madrid, Spain; ²Hospital General Universitario Gregorio Marañón, Spain

M06-149 A Further Study of Timing with LSO on XP20D0 and XP20E0 for TOF PET

T. Szczęśniak, M. Moszyński, A. Nassalski, Soltan Institute for Nuclear Studies, Poland; P. Lavoute, A. G. Dehaine, Photonis, France

M06-152 PET Performance of the Gemini TF: a Time-of-Flight PET/CT Scanner

R. F. Muzic, Jr.^{1,2}, J. A. Kolthammer³

¹Case Western Reserve University, USA; ²University Hospitals of Cleveland, USA; ³Philips Medical Systems, USA

M06-155 Single- and Dual-Energy Quantitative CT for Quantifying Adipose Tissue in Rodents Using a MicroCT System

F. A. Dilmanian^{1,2}, V. Boronikolas^{1,2}, Z. Zhong^{1,2}, P. K. Thanos^{1,2}, D. M. Connor¹, M. Michaelides¹, G.-J. Wang¹, L. Li³, A. Tatiparthi⁴, P. Salmon⁵, X. Liu⁵

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M06-158 Medical Dual-Energy Imaging of Bone Tissues Using ZnSe-Based Scintillator-Photodiode Detectors

B. V. Grinyov¹, V. D. Ryzhikov¹, S. V. Naydenov^{1,2}, A. D. Opolonin¹, E. K. Lisetska¹

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M06-161 Optimal Energy Threshold Arrangement in Photon-Counting Spectral X-Ray Imaging

E. Roessel, R. Proksa, Philips Research Europe, Germany

M06-164 Development and Evaluation Study of Single Photon Counting X-Ray Detectors and CMOS ROIC in X-Ray Imaging

S. Jeon^{1,2}, Y. Huh¹, S. O. Jin¹, J. D. Park¹, G. Cho²

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M06-167 Characterization of Gd₂O₃:Eu Nano Phosphor for X-Ray Imaging Applications

J. W. Shin¹, S. H. Cho¹, J. K. Park², S. S. Kang², S. Y. Kim¹, C. W. Choi¹, S. H. Nam²

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M06-169 A Method to Determine the DQE for Photon Counting Pixel Detectors

T. Michel, J. Durst, G. Anton, P. Bartl, M. Boehnel, M. Firsching, B. Kreisler, A. Korn, A. Loehr, F. Nachtrab, D. Niederloehner, F. Sukowski, P. Takoukam-Talla

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M06-172 Quantitative Investigation of Printed X-Ray Photoconductors for Use in Medical Diagnostics

J. W. Shin¹, S. S. Kang², J. K. Park², B. Y. Cha¹, K. J. Kim¹, D. W. Son¹, S. H. Nam²

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M06-175 An Experimental Study on the Variation of MTF and NPS Caused by X-Ray Beam Conditions for Three Indirect Digital Radiographic Imagers

H. Jeon, G. Cho, Y. K. Chi, Korea Advanced Institute of Science and Technology, South Korea; M. J. Chung, Samsung Medical Center, South Korea; K. H. Kim, Chosun University, South Korea

M06-178 MTF Measurement and a Phantom Study for Scatter Correction in CBCT Using Primary Modulation

L. Zhu, J. Starman, R. Fahrig, Stanford University, USA

M06-181 ROI-Driven CT Trajectories

C. Penßel, W. A. Kalender, M. Kachelriess, Institute of Medical Physics, University of Erlangen-Nuremberg, Germany

M06-184 A New Multimodal and Quantitative Approach for in Vivo Small Animal Brain Studies: Combination of Nuclear Magnetic Resonance and the Beta-Microprobe

A. Desbree¹, L. Rbah², A. Dubois³, J.-B. Langlois⁴, J. Godart¹, D. Grenier⁵, R. Mastrippolito¹, F. Pain¹, L. Pinot¹, T. Delzescaux³, L. Zimmer², H. Gurden¹, P. Laniece¹

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M06-187 A Comparison of Five Whole-Body PET Scanners by Scanning Hoffman Brain Phantom

H. Baghaei, O. R. Mawlawi, Y. Wang, H. Li, R. Ramirez, S. Kim, Y. Zhang, T. Pan, J. Liu, S. Liu, W. H.

University of Texas M. D. Anderson Cancer Center, USA

M06-191 Detection of Beta Particles in a Microfluidic Chip Using a Scintillator and CCD

J. S. Cho, N. T. Vu, Y. H. Chung, Z. T. Yu, R. W. Silverman, R. Taschereau, H.-R. Tseng, A. F. Chatziioannou

UCLA, U.S.A.

M06-194 From Human MRI to Microscopy: Co-registration of Human Brain Images to Postmortem Histological Sections

M. Singh, A. Rajagopalan, C. Zarow, X.-L. Zhang, T.-S. Kim, D. Hwang, A.-Y. Lee, H. Chui

University of Southern California, USA

M06-197 A Power Law for Determining Renal Sufficiency Using Volume of Distribution and Weight from Bolus ^{99m}Tc-DTPA, Two Blood Sample, Pediatric Data

C. A. Wesolowski, Memorial University of Newfoundland,

Canada; P. S. Babyn, The Hospital for Sick Children, Canada; R. C. Puetter, University of California, USA

M06-200 The Effects of Object Variability on the Channelized Hotelling Observer Performance in the Evaluation of R4SSH and PH Myocardial SPECT

C. Liu, B. M. W. Tsui

The Johns Hopkins Medical Institutions, USA

M06-203 Simulated PET acquisition with GATE using the moved NCAT- human torso phantom with cardiac and respiratory motion

N. Lang, M. Dawood, F. Büther, O. Schober, K. P. Schäfers

Department of Nuclear Medicine / University Hospital Münster, Germany

M06-206 GATE simulations for small animal SPECT/PET using voxelized phantoms and rotating-head detectors

N. Sakellios¹, J. L. Rubio², N. Karakatsanis¹, G. Kontaxakis², G. Loudos², A. Santos², K. Nikita¹, S. Majewski³

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M06-209 Monte Carlo Computations for Radiotherapy with the Use of Dedicated Processors

Y. Fanti, R. Marzettu, P. Randaccio, J. Spiga

Universita' di Cagliari e INFN sezione di Cagliari, Italy

M06-211 The Feasibility Study of Phosphor-Light Modulator for X-Ray Detector Application

J. W. Shin¹, S. S. Kang², B. Y. Cha¹, J. K. Park², S. H. Cho¹, C. H. Lee³, S. H. Nam², K. H. Lee⁴

¹Radiation Image Lab., Korea; ²Medical Imaging research center, Korea; ³Radiation detection & medical Imaging Lab., Korea; ⁴Department of Surface engineering, Korea

M06-214 Incident Photon Direction Calculation Using Bayesian Estimation for Detector Systems with 3D Positioning Capability

A. M. K. Foudray^{1,2}, G. Chinn¹, C. S. Levin¹
¹Stanford University, USA; ²University of California, San Diego, USA

M06-217 GRAY: Photon Ray Tracer for PET Applications

P. D. Olcott¹, S. R. Buss², G. Prax¹, C. K. Sramek¹, C. S. Levin¹
¹Stanford University, USA; ²University of California at San Diego, USA

M06-220 Object Description for Increasing a Calculation Speed of the Photon Transportation in a Monte Carlo Method

T. Kurihara, K. Ogawa
 Hosei University, Faculty of Engineering, Japan

M06-223 Design and Construction of a Prototype Rotation Modulation Collimator for Near-Field High-Energy Spectroscopic Gamma Imaging

A. C. Sharma, C. E. Floyd, B. P. Harrawood, A. J. Kapadia, J. E. Bender, C. R. Howell
 Duke University, USA

M06-226 Micro-Polarimetry for Pre-Clinical Diagnostics of Pathological Changes in Human Tissues

N. Golnik, T. Pałko, T. Sołtysiński
 Warsaw University of Technology, Poland

M06-229 1H MRS and MRSI: Analysis of Acquisition Parameters and Improvement of Various Clinical Applications.

A. Karatopis^{1,2}, O. Benekos¹, E. Eustathopoulos¹, K. Ioannis², N. L. Kelekis¹
¹Medical school, University General Hospital "Attikon", Greece;
²Technological Educational Institution of Athens, Greece

M06-233 Toward Time Resolved Cardiac CT Images with Patient Dose Reduction: Image-Based Motion Estimation

K. Taguchi¹, W. P. Segars¹, H. Kudo², E. C. Frey¹, E. K. Fishman¹, B. M. W. Tsui¹
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M06-236 A Toolbox to Extract STL Files from CT Data for Computer-Aided Detection

M. K. Cho, H. K. Kim, S. M. Youn, H. B. Youn, H. H. Cho, J. Park, S. K. Heo, C. H. Lim, C.-S. Shon, M. H. Cheong
 Pusan National University, South Korea

M06-239 Acquiring Localization of Permanent Radioactive Sources (I-125) in Prostate Brachytherapy

Y. Nyui, Tokyo Metropolitan Univ., Japan; K. Ogawa, Hosei Univ., Japan; E. Kunieda, Keio Univ., Japan

M06-242 Enhanced Feature Extraction in Planar Nuclear Medicine Using Pixon® Minimum-Complexity Image Processing

A. Yahil, ImageRecon LLC, USA; A. H. Vija, E. G. Hawman, Siemens Medical Solutions USA, Inc., USA

M06-245 An Edge Directed Image Interpolation Technique Based on Wavelet Preprocessing

E. P. Lam, Thales Raytheon Systems, USA

M06-248 Dynamic PET Image Segmentation Using Multi-Phase Level Set Method

J. Liao, J. Qi, University of California, USA

M06-251 Convolution-Based Forced Detection Monte Carlo Simulation Incorporating Septal Penetration Modeling

S. Liu, McMaster University, Canada; H. R. Khosravi, Tehran University of Medical Sciences, Iran; T. H. Farncombe, Hamilton

Health Sciences, Canada

M06-253 An APD-Based Iterative Method for Simultaneous Technetium-99m/Iodine-123 SPECT Imaging

S. Shcherbinin, A. M. Celler, University of British Columbia, Canada; M. Trummer, T. D. Humphries, Simon Fraser University, Canada

M06-256 FDG PET Images Segmentation Using Morphological Watershed : a Phantom Study

P. Tyłski¹, G. Bonniaud¹, E. Decencièrè², J. Stawiński², D. Lefkopoulos¹, M. Ricard¹
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M06-259 Automated Detection of Myocardium Boundary in Rb-82 Pet Images Using a Wavelet Based Approach

K. Saha, J. A. Case, S. J. Cullom, T. Bateman, B.-L. Hsu
 Cardiovascular Imaging Technologies, USA

M06-262 Comparison of LROC and Traditional ROC Studies for Lesion-Detection Task

S. Chen¹, L. Volokh², C. Liu¹, B. M. W. Tsui¹
¹Johns Hopkins Medical Institutions, US; ²GE Healthcare Technologies, Johns Hopkins Medical Institutions, Israel

M06-265 Non-Invasive Estimation of Potassium (39K) in Bovine Liver Using Neutron Stimulated Emission Computed Tomography (NSECT)

A. J. Kapadia, C. E. Floyd, J. E. Bender, A. C. Sharma, C. R. Howell, A. S. Crowell, M. R. Kiser
 Duke University, USA

M06-268 Quantitative CT Characterization of Body Fluids with Spectral rhoZ Projection Method

B. J. Heismann, Siemens Medical, Germany; A. H. Mahnken, University Hospital Aachen, Germany

M06-271 A Hybrid Approach for Fusion of Medical Images and Their Performance Evaluation

S. R. Medapati, M. Yeasin, University of Memphis, USA

M06-275 Evaluation of an Input Function Model That Incorporates the Injection Schedule in FDG-PET Studies

K.-P. Wong¹, S.-C. Huang¹, M. J. Fulham²
¹University of California at Los Angeles, USA; ²Royal Prince Alfred Hospital, Australia

M06-278 Partial Volume Correction for Image-Generated Arterial Input Functions

D. Rodriguez Gutierrez, J. Chiverton, K. Wells, University of Surrey, UK; M. Partridge, Institute of Cancer Research and Royal Marsden NHS Trust, UK

M06-281 Automatic Control System of a Microfluidic Blood Sampler for Quantitative microPET Studies in Small Laboratory Animals

H.-D. Lin¹, G. Sui¹, C.-C. Lee², R. W. Silverman¹, G. Cole¹, J. Leong¹, S.-C. Huang¹, M. E. Phelps¹, H.-M. Wu¹
¹University of California in Los Angeles, Unite State; ²California Institute of Technology, Unite State

M06-284 A Quantitative Method for Assessing Performance of Cardiac Imaging Systems

J. T. Chapman, A. H. Vija, E. G. Hawman, Siemens Medical Solutions, USA; J. Zeintl, J. Hornegger, University of Erlangen-Nuremberg, Germany

M06-287 Partial Volume Correction Using Median Priors in Penalized-Likelihood Image Reconstruction Methods

A. Todd-Pokropek, M. Ahmed, *University College London, UK*

M06-290 Compensation for Rigid-Body Patient Motion During Reconstruction and Respiratory Motion Post-Reconstruction in Phase-Binned Slices

B. Feng, J. Dey, P. H. Hendrik, R. D. Beach, M. S. Smyczynski, K. Johnson, M. A. King
University of Massachusetts Medical School, U. S. A.

M06-293 Investigation of Equal Magnitude Respiratory Gating in Quantitative Myocardial SPECT

W. P. Segars, S. P. Mok, B. M. W. Tsui
Johns Hopkins University, USA

M06-295 Estimation and Correction of Rigid and Non-Rigid Respiration Motion of the Heart for SPECT

J. Dey, B. Feng, K. Johnson, R. D. Beach, P. H. Pretorius, M. A. King
University of Massachusetts Medical School, USA

M06-298 Wall Motion Estimation for Gated Cardiac Emission Tomography: Physical Phantom Evaluation

J. G. Parker¹, K. Seabolt¹, T. Harrington², S. Shukla², D. R. Gilland¹
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M06-301 Left Ventricular Ejection Fraction on Gated 4 hr-Rest TI-201 in Stress-Rest Thallium-201 SPECT- Comparison with Equilibrium Radionuclide Ventriculography

S. K. Gupta, M. R. Nadig, C. D. Patel, A. Malhotra
All India Institute of Medical Sciences, India

M06-304 Ultra Low Dose CT Attenuation Correction Maps for Emission Computed Tomography

H. D. Kadhem, J. R. Tena, D. Rodriguez, K. Wells, E. Lewis,
University of Surrey, UK; M. Guy, *Royal Surrey County Hospital, UK*

M06-307 Simultaneous Dual Tracer PET Using Generalized Factor Analysis of Dynamic Sequences

G. El Fakhri¹, A. Sitek², B. Guérin¹
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²*Lawrence Berkeley National Laboratories, USA*

M06-310 Evaluation of Optimal Scan Time by Bootstrap Approach for Quantitative Analysis in PET Receptor Study

Y. Ikoma, M. Shidahara, H. Ito, C. Seki, T. Suhara, I. Kanno
National Institute of Radiological Sciences, JAPAN

M06-313 Performance of Matched Subspace Detectors for Dynamic FDG PET

Z. Li¹, Q. Li¹, X. Yu^{1,2}, P. S. Conti², R. M. Leahy^{1,2}
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M06-317 Characterization of Spillover and Recovery Coefficients in the Gated Mouse Heart for Non-Invasive Extraction of Input Function in microPET Studies: Feasibility and Sensitivity Analysis

K. I. Shoghi, D. J. Rowland, R. Laforest, M. J. Welch
Washington University School of Medicine, USA

M06-320 Motion Correction of 3D PET/CT Data with Optical Flow Algorithms

M. Dawood, F. Büther, N. Lang, X. Jiang, K. P. Schäfers
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M06-323 System Matrix Modeling of Externally Tracked Motion

A. Rahmim¹, J.-C. Cheng², K. Dinelle², P. W. Segars¹, M. Shilov¹,
O. G. Rousset¹, B. M. W. Tsui¹, D. F. Wong¹, V. Sossi²

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M06-326 Challenges in Cardiac PET/CT: Common Artifacts and Possible Corrections

F. Büther, K. P. Schäfers, A. Brunegraf, O. Schober
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M06-329 Attenuation Correction of PET Scanning Based on MRT-Images

E. Rota Kops¹, P. Qin^{1,2}, M. Mueller-Veggian², H. Herzog¹
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M06-332 3D Implementation of Scatter Estimation in 3D PET

M. Jatrou¹, R. M. Manjeshwar¹, S. G. Ross², K. Thielemans³, C. W. Stearns²
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³*Hammersmith Imanet, UK*

M06-335 A Simple Method to Measure PET Scatter Fractions for Daily Quality Control

H. W. A. M. de Jong¹, M. Lubberink¹, H. Watabe², H. Iida², A. A. Lammertsma¹
¹*VU University Medical Center, the Netherlands;* ²*National Cardiovascular Center, Japan*

M06-337 A Rapid Iterative Monte-Carlo Based Scatter Correction Algorithm for 3D Rb-82 Myocardial Perfusion PET

J. A. Case, B. L. Hsu, J. S. Cullom, T. M. Bateman
Cardiovascular Imaging Technologies, USA

M06-340 Double Scatter Simulation Using the Polarized Klein-Nishina Formula

N. Dikaios¹, T. Spinks¹, K. Nikita², K. Thielemans¹
¹*Hammersmith Imanet Ltd, UK;* ²*National Technical University of Athens, Greece*

M06-343 Scatter Correction Requirements for Likelihood-Based Attenuation Artifact Correction in PET

C. M. Laymon¹, J. E. Bowsher², J. P. Carney¹, T. M. Blodgett¹
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M06-346 Implementation of Histogram Based Soft-Tissue Segmentation for Single Spiral Transmission Scanning in Whole Body PET

T. Mizuta, K. Kitamura, A. Ishikawa, K. Tanaka, M. Amano
Medical Systems Division, Shimadzu Corporation, Japan

M06-349 Impact of X-Ray Scatter When Using CT-Based Attenuation Correction in PET: a Monte Carlo Investigation

H. Zaidi, M. R. Ay, *Geneva University Hospital, Switzerland*

M06-352 PET Motion Tracking with Radioactive Fiducial Markers

C. A. Cardin, P. D. Acton, *Thomas Jefferson University, USA*

M06-355 Integrated PET/CT Guidance System for Oncologic Interventional Radiology

K. H. Wong¹, E. Levy², Z. Yaniv¹, F. Banovac², D. Earl-Graef, K. Cleary¹
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M06-359 STIR: Software for Tomographic Image Reconstruction Release 2

K. Thielemans, S. Mustafovic, *Hammersmith Imanet Ltd, UK*

M06-362 Improved PET Detection of Focal Brain Activity Using Subset-Dependent Relaxation 'Dynamic' Row-Action Maximum Likelihood Algorithm (DRAMA)

B. L. Lewellen¹, D. Cross¹, S. Craft¹, L. Baker¹, T. Kosugi², H. Okada², T. K. Lewellen¹, P. E. Kinahan¹, S. Minoshima¹
¹University of Washington, USA; ²Hamamatsu Photonics, K.K., Japan

M06-365 Data Sampling in Multislice Mode PET for Multi-Ring Scanner

Y. Grondin^{1,2}, L. Desbat², M. Defrise³, T. Rodet⁴, M. Desvignes¹, S. Mancini¹
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M06-368 Incorporation of Axial System Response in Iterative Reconstruction from Axially Compressed Data of Cylindrical Scanner Using on-the-Fly Computing

V. Y. Panin, F. Kehren, M. E. Casey
 Siemens Medical Solutions, USA

M06-371 Parallelization and Runtime Prediction of the ListMode OSEM Algorithm for 3D PET Reconstruction

M. Schellmann, T. Kösters, S. Gorchach
 University Münster, Germany

M06-374 Fully 3-D List-Mode OSEM on Graphics Processing Units

G. Prax, G. Chinn, P. D. Olcott, C. S. Levin
 Stanford University, United States

M06-377 Randoms Mean Value Estimation with Exact Method for Ring PET Scanner

M. Chen, V. P. Panin, M. E. Casey
 Siemens Molecular Imaging, USA

M06-379 Normalization in 3D PET: Dependence on the Activity Distribution of the Source

E. Vicente¹, J. J. Vaquero¹, S. España², J. López-Herraiz², J. M. Udías², M. Desco¹
¹Hospital GU Gregorio Marañón, Spain; ²Universidad Complutense, Spain

M06-382 Radiation Dose During CT Scan with PET/CT Clinical Protocols

H.-K. Son¹, S. H. Lee², S. Nam¹, T.-S. Kim¹, H. Jung¹, H.-J. Kim¹
¹Yonsei University, Korea; ²NHIC Ilsan Hospital, Korea

M06-385 Multi-Resolution 3D-OSEM Reconstruction Technique for High Resolution Rotating-Head PET Scanners

J. E. Ortuno, J. L. Rubio, P. Guerra, G. Kontaxakis, A. Santos
 Universidad Politecnica de Madrid, Spain

M06-388 Simultaneous Estimation of Temporal Basis Functions and Fully 4D PET Images

A. J. Reader, The University of Manchester, UK; F. C. Sureau, C. Comtat, R. Trébossen, CEA/DSV/DRM, France; I. Buvat, INSERM, France

M06-391 Data Processing Methods for a High-Throughput Brain Imaging PET Research Center

D. F. Wong, A. Rahmim, A. H. Crabb, Johns Hopkins University School of Medicine, USA; C. B. Cavanaugh, IBM Corporation, USA; J. P. Jones, M. Sibomana, C. Michel, Z. Burbar, Siemens Medical Solutions Molecular Imaging, USA

M06-394 Analytical Geometric Model for Photon Coincidence Detection in 3D PET

R. de la Prieta, J. A. Hernández, E. Schiavi, N. Malpica
 Universidad Rey Juan Carlos, Spain

M06-397 Quantitative Analysis of PET Reconstruction Techniques over a Wide Activity Range with 2D and 3D Acquisition Modes

S. D. Wollenweber, GE Healthcare, USA; S. C. Moore, G. El Fakhri, Brigham & Women's Hospital and Harvard Medical School, USA

M06-401 Evaluation of 2D Iterative ROI Image Reconstruction with ML-EM method from Truncated Projections

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M06-404 Fan-Beam Short Scan SPECT with Uniform Attenuation

Q. Huang¹, J. You², G. L. Zeng¹
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M06-407 Consistency Condition and ML-EM Checkerboard Artifacts

J. You^{1,2}, J. Wang¹, Z. Liang¹
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M06-410 Fast Monte Carlo Simulation Based Joint Iterative Reconstruction for Simultaneous Tc-99m/I-123 Brain SPECT Imaging

J. Ouyang, G. El Fakhri, S. C. Moore, M. F. Kijewski
 Harvard Medical School and Brigham and Women's Hospital, U.S.A.

M06-413 Development of Image Reconstruction Method for a New Gamma-Ray 3D Camera (CPT Camera)

T. Shirahata, R. Kohara, T. Nakazawa, O. Miyazaki, Hitachi Medical Corporation, Japan; T. Tanimori, Kyoto University, Japan; K. Ogawa, Hosei University, Japan

M06-416 Quantitative Material Reconstruction in CT with Spectroscopic X-Ray Pixel Detectors

M. Firsching, D. Niederlöhner, T. Michel, G. Anton
 Friedrich-Alexander-Universitaet, Germany

M06-419 A Novel Approach for Reducing Metal Artifacts Due to Metallic Dental Implants

M. Yazdi^{1,2}, L. Beaulieu^{2,3}
¹School of Engineering, Shiraz University, Iran; ²Centre de Recherche en Cancérologie, Canada; ³Université Laval, Canada

M06-421 Helical CT Reconstruction with Large Cone Angle

A. A. Zamyatin¹, A. A. Katsevich², M. D. Silver¹, S. Nakanishi³
¹Bio-Imaging Research, Inc, USA; ²University of Central Florida, USA; ³Toshiba Medical Systems Corp., Japan

M06-424 Evaluation of a Fast 3D Reconstruction Algorithm for an Inverse-Geometry CT System

S. R. Mazin, N. J. Pelc, Stanford University, USA

M06-427 Proton Radiography Studies for Proton CT

H. F. Sadrozinski, Univ. of California Santa Cruz, USA
 On behalf of the pCT Collaboration

M06-430 Fast Dynamic Image Reconstruction for Dynamic Gated Cardiac SPECT

M. Jin, Y. Yang, M. N. Wernick, Illinois Institute Of Technology, USA; M. A. King, University of Massachusetts Medical School, USA

M06-433 Iterative SPECT Reconstruction Using Matched Filtering for Improved Image Quality

J. Ye, X. Song, Z. Zhao, A. J. Da Silva, J. S. Wiener, L. Shao
 Philips Medical Systems, USA

M06-436 Image Reconstruction from Truncated Data in SPECT with Uniform Attenuation

E. Noo¹, M. Defrise², J. D. Pack^{1,3}, R. Clackdoyle⁴

¹University of Utah, USA; ²Vrije Universiteit of Brussels, Belgium; ³GE Global Research Center, USA; ⁴CNRS, France

M06-439 Quantitative Comparison of Binding Potential Derived from Dynamic Rat Brain PET Images Using 3-D MAP and 2-D FBP Reconstruction

D. E. Lee¹, D. Schottlander², D. L. Alexoff¹, P. Vaska¹

¹Brookhaven National Laboratory, USA; ²University of Oxford, UK

M06-443 Up-Sampling with Shift Method for Windmill Correction

A. A. Zamyatin, I. A. Hein, M. D. Silver, *Bio-Imaging Research, Inc, USA*; S. Nakanishi, *Toshiba Medical Systems Corp., Japan*

M06-446 Fan-Beam CT Image Reconstruction from Few-Views and Limited-Angular Scans

E. Y. Sidky, C.-M. Kao, X. Pan

University of Chicago, United States

M06-449 Resampling Density Values on R-Lines into Density Values on a Cartesian Grid

S. Zabic¹, S. Hoppe², F. Dennerlein¹, G. Lauritsch³, F. Noo¹

¹University of Utah, USA; ²University of Erlangen/Nurnberg, Germany;

³Siemens AG, Germany

M06-452 An Extrapolation Method for Image Reconstruction from a Straight-Line Trajectory

H. Gao, L. Zhang, Z. Chen, Y. Xing, J. Cheng, Y. Li

Tsinghua University, P. R. China

M06-455 New Saddle Trajectories for CT

C. Bontus, R. Proksa, T. Koehler

Philips Research Europe, Germany

M06-458 Cone-Beam Tomography with Linearly Distorted Source Trajectories

F. Dennerlein, F. Noo, *University of Utah, USA*; S. Hoppe,

J. Hornegger, *University of Erlangen/Nuremberg,*

Germany; G. Lauritsch, *Siemens Medical Solutions, Germany*

M06-461 Particle Initial Energy Choice in Proton Computed Tomography for Medical Purposes

H. R. Schelin, V. V. Denyak, S. A. Paschuk, R. Rocha, J. A. P. Setti,

M. C. L. Klock, *Federal University of Technology - Parana,*

Brazil; I. G. Evseev, O. I. Yevseyeva, *Polytechnic Institute of the Rio de Janeiro State University, Brazil*

M07 Small Animal Imaging

Thursday, Nov. 2 13:30-15:00, Golden Ballroom

Session Chairs: Yuan-Chuan Tai, *Washington University in St. Louis*

Freek Beekman, *University Medical Center Utrecht*

M07-1 Quantification of the Multiplexing Effect in Multi-Pinhole Small Animal SPECT

G. S. P. Mok, Y. Wang, B. M. W. Tsui

Johns Hopkins Medical Institutions, USA

M07-2 In Search of the Optimum Scanning Protocols for microCT Imaging Using Iodine-based contrast agent

H. Liang, Y. Yang, K. Yang, J. M. Boone, S. R. Cherry

University of California, Davis, U.S.A

M07-3 A Prototype PET Scanner with DOI-Encoding Detectors

Y. Yang¹, Y. Wu¹, J. Qi¹, P. A. Dokhale², K. S. Shah², M. A. McClish², R. Farrell², G. Entine², S. R. Cherry¹

¹University of California at Davis, USA; ²Radiation Monitoring Devices Inc., USA

Thursday

M07-4 A Prototype Micro-Insert for MicroPET F-220 and Its Initial Performance

H. Wu, D. Pal, M. Janecek, J. A. O'Sullivan, Y.-C. Tai

Washington University in St. Louis, USA

M07-5 On the Imaging of Very Weak Sources in an LSO PET Scanner

A. L. Goertzen^{1,2}, J. Suk², C. J. Thompson²

¹University of Manitoba, Canada; ²Montreal Neurological Institute, Canada

M07-6 Design and Calibration of a Small Animal PET Scanner Based on Continuous LYSO Crystals and PSPMTs

J. M. Benlloch¹, V. Carrilero¹, J. V. Catre¹, C. W. Lerche¹,

F. Sanchez¹, N. Pavon¹, F. J. Garcia de Quiros¹, M. Gimenez¹,

A. J. Gonzalez¹, J. Martinez², J. Modia¹, A. Sebastia², L. F. Vidal¹

¹I.F.I.C. (Instituto de Física Corpuscular), Spain; ²Universidad Politécnica de Valencia, Spain

M08 Multimodality Imaging

Thursday, Nov. 2 15:30-17:30, Golden Ballroom

Session Chairs: Sibylle Ziegler, *Nuklearmedizin Klinikum rechts der*

Isar der TU München

Joel Karp, *University of Pennsylvania*

M08-1 QuickSilver: A Flexible, Extensible, and High-Speed Architecture for Multi-Modality Imaging

D. F. Newport, S. B. Siegel, B. K. Swann, B. E. Atkins,

A. R. McFarland, D. R. Pressley, M. W. Lenox, R. E. Nutt

Siemens Molecular Imaging, USA

M08-2 Characteristics of the PET Component of a Dedicated Breast PET/CT Scanner Prototype

Y. Wu¹, K. Yang², L. Fu¹, V.-H. Tran³, J. Qi¹, J. M. Boone²,

S. R. Cherry¹, R. D. Badawi²

¹UC Davis, USA; ²UC Davis Medical Center, USA; ³Thomas Jefferson

National Accelerator Facility, USA

M08-3 A Machine Learning Approach for Determining the PET Attenuation Map from Magnetic Resonance Images

M. Hofmann^{1,2}, F. Steinke², M. S. Judenhofer¹, C. D. Claussen¹,

B. Schoelkopf², B. J. Pichler¹

¹University of Tuebingen, Germany; ²Max-Planck Institute for Biological Cybernetics, Germany

M08-4 Preliminary Studies of a Simultaneous PET/MRI Scanner Based on the RatCAP Small Animal Tomograph

D. J. Schlyer¹, P. Vaska¹, D. Tomasi¹, C. Woody¹, S. Solis-Najera¹,

J.-F. Pratte¹, S. Junnarkar¹, W. Rooney², S. Stoll¹, M. Purschke¹, S.-

J. Park¹, Z. Master³, S.-H. Maramraju³, S. Southehal³, P. O'Connor¹,

V. Radeka¹

¹Brookhaven National Laboratory, USA; ²Oregon Health Science Center,

USA; ³SUNY Stony Brook, USA

M08-5 Development of a Combined microPET(R)-MR System

A. J. Lucas¹, R. C. Hawkes¹, R. E. Ansorge¹, G. B. Williams¹,

R. E. Nutt², J. C. Clark¹, T. D. Fryer¹, T. A. Carpenter¹

¹University of Cambridge, UK; ²Siemens Molecular Imaging, USA

M08-6 APD Based PET System for Simultaneous Small Animal PET-MR-Imaging in a 7 Tesla Magnet

M. S. Judenhofer¹, S. B. Siegel², C. Catana³, B. K. Swann²,

D. F. Newport², W.-I. Jung³, R. E. Nutt², S. R. Cherry³,

C. D. Claussen¹, B. J. Pichler¹

Thursday

¹University of Tübingen, Germany; ²Siemens Preclinical Solutions, USA;
³University of California, USA; ⁴Bruker BioSpin MRI, Germany

M08-7 Initial Performance Tests of a PSAPD-Based MRI Compatible PET Scanner

C. Catana¹, Y. Wu¹, M. S. Judenhofer², J. Qi¹, B. J. Pichler²,
 P. Dokhale³, K. S. Shah³, R. Farrell³, S. R. Cherry¹

¹University of California, Davis, USA; ²University of Tübingen,
 Germany; ³Radiation Monitoring Devices Inc., USA

M08-8 PET Performance of MR/PET Brain Insert Tomograph

Z. Burbar, R. Grazioso, J. Corbeil, N. Zhang, R. Paul, L. Byars,
 L. Eriksson, C. Michel, M. Schmand
 Siemens Medical Solutions, USA

M09 PET and PET/CT

Friday, Nov. 3 08:00-10:00, Golden Ballroom

Session Chairs: **Tom Lewellen**, *University of Washington*
David Townsend, *Department of Medicine, University
 of Tennessee, Knoxville*

M09-1 Initial Results with LabPET, a Second-Generation APD-Based Digital PET Scanner for High-Performance Pre-Clinical Molecular Imaging

R. Lecomte¹, R. A. deKemp², T. Dumouchel², S. Thorn²,
 J. Cadorette¹, D. Lapointe³, M. D. Lepage³, M. Pinet³, G. Robert³,
 V. Selivanov³, F. Bélanger¹, F. Lemieux¹, H. Semmaoui¹, M.-
 A. Tétrault¹, N. Viscogliosi¹, M. Bergeron¹, J.-F. Pratte⁴, R. Fontaine¹

¹Université de Sherbrooke, Canada; ²University of Ottawa Heart
 Institute, Canada; ³Advanced Molecular Imaging (AMI) Inc., Canada;
⁴Brookhaven National Laboratory, USA

M09-2 Validation of the Raytest ClearPET(TM) on the Animage Platform

C. Pautrot¹, O. Dietzel², L. Magnier³, P. Sempere Roldan¹,
 A. Wagner², M. Janier³, V. Tarazona¹

¹raytest France; ²raytest Germany; ³Animage Platform, France

M09-3 CdTe Strip Detector Performance for a High Resolution Small Animal PET System

G. S. Mitchell¹, S. Sinha¹, J. R. Stickel¹, S. L. Bowen¹,
 L. J. Cirignano², P. Dokhale², H. Kim², K. S. Shah², S. R. Cherry¹

¹University of California, Davis, USA; ²Radiation Monitoring Devices,
 Inc., USA

M09-4 Design and Development of a High-Performance Readout Electronics for Time-of-Flight PET Systems

W.-S. Choong, W. W. Moses, B. T. Turko, C. Q. Vu, J.-F. Beche,
 D. Doering, *Lawrence Berkeley National Laboratory, USA*; M. Aykac,
 M. E. Casey, *Siemens Medical Solutions, USA*

M09-5 Tailoring PET Time Coincidence Window Using CT Morphological Information

M. Conti, *Siemens Medical Solution, USA*

M09-6 Optimizing Acquisition Parameters in TOF PET Scanners

S. Surti¹, G. E. Fakhri², J. S. Karp¹
¹University of Pennsylvania, USA; ²Harvard University, USA

M09-7 The Engineering and Initial Results of a Transformable Low-Cost Ultra-High Resolution PET Camera

H. Li, W.-H. Wong, H. Baghaei, Y. Wang, Y. Zhang, S. Kim,
 R. Ramirez, J. Liu, S. Liu, J. Uribe

University of Texas, M.D. Anderson Cancer Center, USA

M09-8 Prostate Imaging with the LBNL Prostate-Optimized Positron Emission Tomograph

J. S. Huber¹, W.-S. Choong¹, W. W. Moses¹, J. Qi², J. Hu¹,
 G. C. Wang¹, D. Wilson¹, R. H. Huesman¹, T. F. Budinger¹

¹Lawrence Berkeley National Lab, USA; ²University of California,
 Davis, USA

M10 MIC Awards

Friday, Nov. 3 10:30-12:00, Golden Ballroom

Session Chairs: **John Aarsvold**, *Emory University & Atlanta Veterans
 Affairs Medical Center*
Bruce Hasegawa, *UC San Francisco*

Student Travel Awards and IEEE Fellows

Presented by John Aarsvold, PhD

Edward J Hoffman Medical Imaging Scientist Award

Presented by Paul Kinahan, PhD

Young Investigator Medical Imaging Science Award

Presented by Paul Kinahan, PhD

M10-1 (11:15) Respiratory Motion Correction in 4D PET/CT: Comparison of Implementation Methodologies for Incorporation of Elastic Transformations in the Reconstruction System Matrix

F. Lamare¹, M. J. Ledesma Carbayo², A. J. Reader³, O. R. Mawlawi⁴,
 G. Kontaxakis², A. Santos², Y. Bizais¹, C. Cheze-Le Rest¹, D. Visvikis¹

¹U650 INSERM, Laboratoire du traitement de l'information
 médicale (LaTIM), Université de Bretagne occidentale, France;
²ETSI Telecomunicacion Universidad Politecnica de Madrid, Spain;
³Department of Instrumentation and Analytical Science, UMIST, UK;
⁴University of Texas M.D. Anderson Cancer Center, United States

M10-2 Discrete Axial Rebinning for Time-of-Flight PET

M. Defrise, *Dept. of Nuclear Medicine, Vrije Universiteit Brussel,
 Belgium*; V. Panin, C. Michel, M. E. Casey, *Siemens Medical
 Solutions, Molecular Imaging, USA*

M10-3 Development and Initial Results of a Tomographic Dual-Modality Positron/Optical Small Animal Imager

J. Peter, D. Unholtz, R. B. Schulz, W. Semmler
German Cancer Research Center, Germany

M11 MIC Poster 2

Friday, Nov. 3 13:30-15:00, Atlas Ballroom

Session Chairs: **Philippe Després**, *UC San Francisco*
Yuni Dewaraja, *University of Michigan*
Lawrence MacDonald, *University of Washington,
 Seattle*

M11-2 Ganciclovir Induces the Metastasis of Breast Tumor Xenograft Expressing eGFP-HSV1tk Fusion Reporter Gene

K. M. Lin^{1,2}, C.-H. Hsu³, J. L. Hsu¹, C.-T. Chen⁴

¹National Health Research Institutes, Taiwan; ²National Yang Ming
 University, Taiwan; ³National Tsing Hua University, Taiwan; ⁴University
 of Chicago, USA

M11-5 Development and Evaluation of High Performance Detectors and Readout for PEM/PET Breast Imager

S. Majewski¹, R. Raylman², W. Gunning¹, W. Hammond¹, B. Kross¹,
 M. Smith¹, V. Popov¹, J. Proffitt¹, A. Weisenberger¹, R. Wojcik¹,
 C. Zorn¹

¹Jefferson Lab, USA; ²West Virginia University, USA

M11-8 A Large Field of View Coincidence Imaging System Based on One-Dimensional Sharing Block Detectors

S. Yamamoto, *Kobe City College of Technology, Japan*; K. Matsumoto, M. Senda, *Institute of Biomedical Research and Innovation, Japan*

M11-11 A New Vision for X-ray Soft Tissue Imaging

M. O. Hasnah, *Qatar University, Qatar*; L. D. Chapman, *University of Saskatchewan, Canada*

M11-14 Initial Development of a Dual-Modality SPECT-CT System for Dedicated Mammotomography

P. Madhav^{1,2}, D. J. Crotty^{1,2}, R. L. McKinley^{1,2}, M. P. Tornai^{1,2}
¹*Duke University Medical Center, USA*; ²*Duke University, USA*

M11-17 A Pinhole Orbit for Sufficient SPECT Sampling of the Breast, Axilla, and Upper Chest

J. E. Bowsher, J. Roper, R. J. Jaszczak
Duke University Medical Center, USA

M11-20 Dual Modality Surgical Guidance for Non-Palpable Breast Lesions

P. G. Judy, P. Raghunathan, M. B. Williams
University of Virginia, Charlottesville, USA

M11-22 Optics Optimization for a Solid State Gamma Camera Detector Module Based on CR Lower Bound Study

T. Y. Song¹, Y. Choi¹, J. G. Kim¹, J. Joung², J. Y. Choi¹, Y. S. Choe¹, K.-H. Lee¹, B.-T. Kim¹
¹*Samsung Medical Center, Sungkyunkwan University School of Medicine, Korea*; ²*Siemens Medical Solutions, USA*

M11-25 Design of a Multi-Pinhole Collimator in a Dual-Headed, Stationary Small-Animal SPECT

S. Shokouhi¹, B. S. McDonald¹, D. W. Wilson², T. E. Peterson¹
¹*Vanderbilt University, USA*; ²*University of Arizona, USA*

M11-28 Dual-Modality Scanner for Small Animal Imaging

A. V. Stolin¹, D. J. Pole¹, R. Wojcik², M. B. Williams¹
¹*University of Virginia, USA*; ²*Ray Visions, Inc, USA*

M11-31 Dimensioning A Versatile CdZnTe Small Field Of View Gamma-Camera With SINDBAD, A Mixed Analytical-Monte Carlo Simulation Tool

F. Mathy, L. Guerin, O. Monnet, L. Verger, *CEA, FRANCE*

M11-34 On-Chip Binning in an EMCCD-Based Gamma Camera: a Powerful Method for Improving Energy Spectra.

A. H. Westra, P. M. Linotte, J. W. T. Heemskerk, K. M. Ligtoet, F. J. Beckman
University Medical Center Utrecht, the Netherlands

M11-37 Guard Ring Elimination in CdTe and CdZnTe Detectors

W. C. Barber¹, A. Arodzero¹, N. Malakhov², M. Q. Damron¹, N. E. Hartsough¹, D. Moraes³, P. Jarron³, P. Weilhammer³, E. Nygard², J. S. Wanczyk¹
¹*DxRay Inc., USA*; ²*Interon AS, Norway*; ³*CERN, Switzerland*

M11-40 Very High Resolution Small Animal PET Using Solid-State Detectors in a Strong Magnetic Field

D. J. Burdette¹, E. Chesi², N. H. Clinthorne³, S. S. Huh³, H. Kagan¹, M. Knopp¹, C. Lacasta³, G. Llosa⁴, M. Mikuz², W. L. Rogers³, P. Schmalbrock¹, A. Studen⁵, P. Weilhammer^{2,6}
¹*The Ohio State University, USA*; ²*CERN, Switzerland*; ³*University of Michigan, USA*; ⁴*IFIC/CSIC-UVEG, Spain*; ⁵*University of Ljubljana, Slovenia*; ⁶*Universita degli Studi di Perugia, Italy*

M11-44 Design of a Small Animal MRI-PET Imaging Insert

R. Raylman¹, S. Majewski², S. K. Lemieux¹, S. S. Velan¹, B. Kross², V. Popov², M. F. Smith², A. G. Weisenberger², C. Zorn², J. Holmes¹
¹*West Virginia University, USA*; ²*Jefferson National Accelerator Facility, USA*

M11-47 Monte Carlo Simulations of a Clinical Whole-Body MR-PET System

M.-J. Martinez¹, I. Torres-Espallardo¹, R. Ladebeck², S. Nekolla¹, S. I. Ziegler¹
¹*Klinikum rechts der Isar der Technischen Universitaet Muenchen, Germany*; ²*Siemens AG, Medical Solutions, Germany*

M11-50 Simulation Study on an Ultra-High Resolution SPECT with CdTe Detectors

K. Ogawa, M. Muraishi
Hosei University, Faculty of Engineering, Japan

M11-53 Development of a Semiconductor Gamma-Camera System with CdZnTe Detectors

K. Ogawa, A. Ohta, *Hosei University, Faculty of Engineering, Japan*; K. Shuto, N. Motomura, H. Kobayashi, *Toshiba Medical Systems, Japan*; S. Makino, *Toshiba Corporation Power Systems Company, Japan*; T. Nakahara, A. Kubo, *Keio University, School of Medicine, Japan*

M11-56 The NanoSPECT/CT: a High-Sensitivity Small-Animal SPECT/CT with Submillimeter Spatial Resolution

N. U. Schramm, C. Lackas, J. W. Hoppin, *Research Center Juelich, Germany*; F. Forrer, M. deJong, *Erasmus Medical Center, The Netherlands*

M11-59 A Multi-Function Compact Small-Animal Imaging System Incorporating Multipinhole Standard and Helical SPECT and Parallel-Hole SPECT

J. Qian¹, E. L. Bradley¹, S. Majewski², V. Popov², M. S. Saha¹, M. F. Smith², A. G. Weisenberger², R. E. Welsh¹
¹*College of William and Mary, USA*; ²*Thomas Jefferson National Accelerator Facility, USA*

M11-62 A Data Acquisition, Event Processing and Coincidence Determination Module for a Distributed Parallel Processing Architecture for PET and SPECT Imaging

B. E. Atkins, D. R. Pressley, M. W. Lenox, B. K. Swann, D. F. Newport, S. B. Siegel
Siemens Molecular Imaging, USA

M11-64 Performance Enhancement of the RatCAP Awake Rat Brain PET System

P. Vaska¹, C. L. Woody¹, D. J. Schlyer¹, V. Radeka¹, P. O'Connor¹, S.-J. Park¹, J.-F. Pratte¹, S. S. Junnarkar¹, M. Purschke¹, S. Southekal¹, S. P. Stoll¹, W. Schiffer¹, D. Lee¹, J. Neill³, D. Wharton³, N. Myers³, S. Wiley³, A. Kandasamy¹, J. Fried¹, A. Kriplani², R. Lecomte⁴, R. Fontaine⁴
¹*Brookhaven National Laboratory, USA*; ²*Stony Brook University, USA*; ³*Long Island University, USA*; ⁴*University of Sherbrooke, Canada*

M11-67 A New Highly Versatile Multi-Modality Small Animal Imaging Platform

S. S. Gleason, D. W. Austin, R. S. Beach, R. E. Nutt, M. J. Paulus, S. Yan
Siemens Medical Solutions, Inc., USA

M11-70 Imaging with the MADPET-II Small Animal PET Scanner : First Quantitative Results of the Spatial Resolution Using Depth of Interaction Information

V. C. Spanoudaki¹, I. Torres-Espallardo¹, M. Rafecas-Lopez², M. C. Huisman¹, D. P. McElroy³, S. I. Ziegler¹

¹Klinikum rechts der Isar, Technical University of Munich, Germany;

²Institute of Particle Physics - IFIC, Spain; ³Sunnybrook and Women's College Health Sciences Centre, Canada

M11-73 Digital Time Alignment of High Resolution PET Inveon Block Detectors

M. W. Lenox, B. A. Atkins, D. F. Newport, A. McFarland, D. Pressley, S. B. Siegel

Siemens Molecular Imaging, USA

M11-76 Feasibility of Ultra High Spatial Resolution Better Than 1mm FWHM of Small Animal PET by Using CdTe Detector Arrays

Y. Kikuchi¹, K. Ishii¹, H. Yamazaki², S. Matsuyama¹, G. Momose¹, A. Ishizaki¹, J. Kisaka¹, T. Kudoh¹

¹Graduate School of Engineering, Tohoku University, Japan; ²Cyclotron and Radioisotope Center, Tohoku University, Japan

M11-79 A Neural Network Based Algorithm for Building Crystal Look-up Table of PET Block Detector

D. Hu, B. Atkins, M. Lenox, Siemens Medical Solutions, USA

M11-82 Small Animal PET Camera Design Based on 2-mm Straw Detectors

N. N. Shehad, A. Athanasiades, C. S. Martin, L. Sun, J. L. Lacy

Proportional Technologies, Inc., U.S.A.

M11-86 Coincidence Measurements with a 1mm Resolution 3-D Positioning Scintillation Detector for PET That Uses Light Multiplexing

F. Habte, P. D. Olcott, C. S. Levin

Stanford University, USA

M11-89 Characterization of Two Thin Position-Sensitive Avalanche Photodiodes on a Single Flex Circuit

A. M. K. Foudray^{1,2}, R. Farrell³, P. D. Olcott¹, K. S. Shah³, C. S. Levin¹

¹Stanford University, USA; ²University of California, San Diego, USA;

³Radiation Monitoring Devices, Inc., USA

M11-92 A Dual Layer GSO PET System for Small Animals

S. Yamamoto, Kobe City College of Technology, Japan; H. Mashino, Espec Techno Co., Ltd., Japan; H. Kudo, Tsukuba University, Japan;

K. Matsumoto, M. Senda, Institute of Biomedical Research and Innovations, Japan

M11-95 Multi-Channel Waveform Sampling ASIC for Animal PET System

K. Shimazoe, Y. J. Yoel, H. Takahashi, T. Kojo, Y. Minamikawa, K. Fujita, The University of Tokyo, JAPAN; H. Murayama, National Institute of Radiological Sciences, Japan

M11-98 A GATE Monte Carlo Simulation of Performance of a High-Sensitivity and High-Resolution LSO Based Small Animal PET Camera

H. Baghaei, Y. Zhang, H. Li, Y. Wang, R. Ramirez, S. Kim, J. Liu, S. Liu, W. H. Wong

University of Texas M. D. Anderson Cancer Center, USA

M11-101 Evaluation of the Spatial Resolution Improvement of the MicroPET R4 Scanner with Wobbling Bed

J. Suk^{1,2}, C. J. Thompson^{1,2}, A. Labuda¹, A. Goertzen^{1,3}

¹McGill University, Canada; ²Montreal Neurological Institute, Canada;

³University of Manitoba, Canada

M11-104 Count Rate Performance and Dead Time in Singles Transmission Scanning for the microPET Focus 220 Scanner

W. Lehnert, S. R. Meikle, University of Sydney, Australia; D. Newport, Siemens Preclinical Solutions, USA

M11-106 Optimized List-Mode Acquisition and Data Processing Procedures for ACS2 Based PET Systems

J. Langner¹, P. Bühler^{2,1}, U. Just¹, C. Pöttsch¹, J. van den Hoff^{1,2}

¹Institute of Radiopharmacy, Research Center Rossendorf, Germany;

²Technical University of Dresden, Germany

M11-109 Count-Rate Performance of the DSTE PET Scanner Using Partial Collimation

L. R. MacDonald¹, R. E. Schmitz¹, S. D. Wollenweber²,

C. W. Stearns², A. Ganin², R. L. Harrison¹, A. M. Alessio¹,

T. K. Lewellen¹, P. E. Kinahan¹

¹University of Washington, USA; ²GE Healthcare Technologies, USA

M11-112 A Time-Based Front End Readout System for PET & CT

T. C. Meyer, E. Auffray-Hillemanns, M. Dosanjh, P. Jarron,

J. Kaplon, P. Lecoq, D. Moraes, J. Trummer, S. Velitchko, F. Powlony
CERN, SWITZERLAND

M11-115 ISPA Front End Integrated Circuit for PET Application

V. Orsolini Cencelli, F. de Notaristefani, INFN, Italy; E. D'Abramo, A. Fabbri, L. Zerilli, Università degli Studi di Roma Tre, Italy

M11-118 A Bi-Exponential Timing Model for Calculating Scintillator Detector's Intrinsic Timing Resolution

Y. Shao, State University of New York at Buffalo, USA

M11-121 Evaluation of a Micro-Channel Plate PMT in PET

F. Bauer^{1,2}, M. Loope¹, M. Schmand¹, L. Eriksson^{1,2}

¹Siemens Medical Solutions, Molecular Imaging, USA; ²Stockholm University, Sweden

M11-124 Spatial Resolution in Position-Sensitive Monolithic Scintillation Detectors

D. J. (van der Laan¹, M. C. Maas¹, D. R. Schaart¹, P. Bruyndonckx², C. Lemaitre², C. W. E. van Eijk¹

¹Delft University of Technology, The Netherlands; ²Vrije Universiteit Brussel, Belgium

M11-128 A Study of a Monolithic Detector in PET

M. Aykac, Siemens Molecular Imaging, U.S.

M11-131 DOI-Encoding Detector Using Wavelength Shifting (WLS) Fibers for a Laboratory PET Scanner

H. Du, Y. Yang, S. R. Cherry

University of California, Davis, USA

M11-134 Comparison of Nonlinear Position Estimators for Continuous Scintillator Detectors in PET

P. Bruyndonckx¹, C. Lemaitre¹, D. Schaart², M. Maas²,

D. J. Van der Laan², M. Krieguer¹, O. Devroede¹, S. Tavernier¹

¹Vrije Universiteit Brussel, Belgium; ²Delft University of Technology, The Netherlands

M11-137 Evaluation of a Novel Rectangular Variable Field of View Whole Body Clinical PET System Design Using Monte Carlo Simulation

F. Habte, G. Pratz, C. S. Levin, Stanford University, USA

M11-140 Multi-Channel Readout ASIC for ToF-PET

P. Fischer, M. Ritzert, I. Peric, University of Mannheim,

Germany; T. Solf, *Philips Research Laboratories, Germany*

M11-143 Influence of Crystal Material on the Performance of the HiRez 3D PET Scanner: a Monte-Carlo Study

C. J. Michel, L. Eriksson, H. Rothfuss, B. Bendriem, *Siemens Medical Solutions, USA*; D. Lazaro, I. Buvat, *CHU Pitie Salpetriere, France*

M11-146 The jPET-D4: Performance Evaluation of Four-Layer DOI-PET Scanner Using the NEMA NU2-2001 Standard

E. Yoshida¹, A. Kobayashi², T. Yamaya¹, M. Watanabe³, F. Nishikido¹, K. Kitamura^{1,4}, T. Hasegawa⁵, M. Fukushi², H. Murayama¹
¹National Institute of Radiological Sciences, Japan; ²Tokyo Metropolitan University, Japan; ³Hamamatsu Photonics K.K., Japan; ⁴Shimadzu Co., Japan; ⁵Kitasato University, Japan

M11-148 On-Line Time-of-Flight Mashing: the PDR Card Applied to a Long-Axis PET-TOF System for Reduced Transaxial Angular Sampling with 3-D Nearest-Neighbor Projection-Space Rebinning in Clinical PET/CT

W. F. Jones, E. Breeding, M. Conti, F. Kehren, M. E. Casey
Siemens Molecular Imaging, USA

M11-151 Future Instrumentation in Positron Emission Tomography

L. A. Eriksson^{1,2,3}, D. Townsend⁴, M. Conti¹, M. Eriksson², C. Bohm³, H. Rothfuss¹, M. Schmand¹, M. E. Casey¹, B. Bendriem¹
¹Siemens Medical Solutions, Molecular Imaging, USA; ²Karolinska Institute, Sweden; ³University of Stockholm, Sweden; ⁴University of Tennessee Medical center, USA

M11-154 Development of a Cone-Beam Dental CT System

H. K. Kim, M. K. Cho, *Pusan National University, South Korea*; T. W. Kim, *Value Added Technologies Co., Ltd., South Korea*

M11-157 The Compound Refractive X-Ray Lens by High-Gravity Assisted Self-Assembly Method

J. Choi, *Dankook University, South Korea*

M11-160 Empirical Dual Energy Calibration for Cone-Beam Dual Energy Computed Tomography

M. Kachelriess, W. A. Kalender
Institute of Medical Physics (IMP), Germany

M11-163 Radiation Effects on Image Quality of CMOS Photodiode Array Detectors

M. K. Cho, H. K. Kim, M. H. Cheong, C. H. Lim, C.-S. Shon, *Pusan National University, South Korea*; T. Graeve, *Rad-Icon Imaging Corp., USA*

M11-166 A New High Dynamic Range, High Speed, 2D-Tiled Detector for Cardiac CT

R. Luhta¹, M. Chappo¹, R. Goshen², B. Harwood¹, R. Mattson¹, D. Salk¹, H. Shpitzer², C. Vrettos¹
¹Philips Medical Systems, USA; ²Philips Medical Systems, Israel

M11-170 Modeling of MTF and DQE for Arbitrary Scintillator Thicknesses

S. Zelakiewicz, J. Shaw
General Electric Research Center, USA

M11-173 A New Kind of X-Ray Detector for Imaging

E. Pachoud, *CANBERRA France - Lingolsheim factory, FRANCE*
On behalf of the CANBERRA France - Group AREVA

M11-176 A Multi-Element Detector System for Intelligent Imaging: I-ImaS

J. A. Griffiths¹, C. Venanzi^{1,2}, R. D. Speller¹, G. J. Royle¹, M. G. Metaxas¹, C. Esbrand¹, P. F. van der Stelt³, G. Li³,

H. Verheij³, R. Turchetta⁴, A. Fant¹, P. Gasiorek⁴, S. Theodoridis⁵, H. Georgiou⁵, D. Cavouras⁶, G. Hall⁷, M. Noy⁷, J. Jones⁷, J. Leaver⁷, D. Machin⁷, S. Greenwood⁷, M. Khaleeq⁷, J. Ostby⁸, H. Schulerud⁸, F. Triantis⁹, A. Asimakis⁹, D. Bolanakis⁹, N. Manthos⁹, R. Longo², A. Bergamaschi²

¹University College London, U.K.; ²University of Trieste, Italy; ³Academic Centre for Dentistry, The Netherlands; ⁴Rutherford Appleton Laboratory, U.K.; ⁵University of Athens, Greece; ⁶Technological Education Institute of Athens, Greece; ⁷Imperial College, U.K.; ⁸SINTEF, Norway; ⁹University of Ioannina, Greece

M11-179 Simulation Study on an Energy-Modulated X-Ray CT

K. Ogawa, M. Kishino, *Hosei University, Faculty of Engineering, Japan*; T. Yamakawa, *Axion Japan Co. Ltd, Japan*

M11-185 An Investigation of the Potential Benefits in Trading Energy Resolution for Timing Resolution in Time-of-Flight Positron Emission Tomography

C.-M. Kao¹, D. Yun², Q. Xie^{1,3}, C.-T. Chen¹

¹The University of Chicago, USA; ²Illinois Institute of Technology, USA; ³Huazhong University of Science and Technology, China

M11-188 Positron Range Effects on the Spatial Resolution of RPC-PET

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¹LIP-Coimbra, Laboratório de instrumentação e Física Experimental de Partículas, Portugal; ²Departamento de Física, Universidade de Coimbra, Portugal; ³ISEC, Instituto Superior de Engenharia de Coimbra, Portugal

M11-190 ML/EM Reconstruction Algorithm for Cosmic Ray Muon Tomography

L. J. Schultz, K. N. Borozdin, A. M. Fraser, M. C. Galassi, N. W. Hengartner, A. V. Klimenko, C. L. Morris, C. C. Orum, M. J. Sossong
Los Alamos National Laboratory, USA

M11-193 Analysis of Gyrfication in Fetal MR Brain Images Using 3-Dimensional Mean Curvature

H.-Y. Chen^{1,2}, H.-H. Hu^{1,2}, Y.-T. Wu^{1,2}, W.-Y. Guo^{2,1}

¹National Yang-Ming University, Taiwan; ²Taipei Veterans General Hospital, Taiwan

M11-196 Spatial Resolution for Time-Resolved Optical Tomography in Slab Geometry

R. Ziegler, T. Köhler, T. Nielsen, *Philips Research Europe, Germany*; O. Steinkellner, D. Grosenick, H. Rinneberg, *Physikalisches Technische Bundesanstalt, Germany*

M11-202 The Application of GATE and NCAT to Respiratory Motion Simulation in Allegro PET

J. He¹, G. O'Keefe¹, G. Jones¹, T. Saunder¹, S. Gong¹, M. Geso², A. M. Scott¹

¹Austin Hospital, Australia; ²RMIT University, Australia

M11-205 Optimization of Gated Liver FDG PET with Non-Uniform Respiration

M. A. Shilov, E. C. Frey, P. W. Segars, J. Xu, B. M. W. Tsui
Johns Hopkins University, USA

M11-208 PeneloPET, a Monte Carlo PET Simulation Tool Based on PENELOPE: Features and Validation

S. España¹, E. Vicente², J. L. Herraiz¹, J. J. Vaquero², M. Desco², J. M. Udias¹

¹Universidad Complutense de Madrid, Spain; ²Hospital G. U. Gregorio Marañón, Spain

M11-212 Impact of Photon Transport Properties on the Detection Efficiency of Scintillator Arrays

S. Wirth, B. Heismann, *Siemens Medical Solutions, Germany*; W. Metzger, K. Pham-Gia, *Siemens Corporate Technology, Germany*

M11-215 Accurate and Fast Modeling of Detector Dead-Time in PET Using Variance Reduction

B. Guerin, *Harvard University, University of Paris 6, USA*; G. El Fakhri, *Harvard Medical School, Brigham and Women's Hospital, USA*

M11-218 Performance Evaluation of jPET-D4 with the Monte Carlo Code GATE

T. Hasegawa¹, E. Yoshida², A. Kobayashi³, T. Kobayashi⁴, M. Suga⁴, T. Yamaya², K. Yoda¹, H. Murayama¹

¹*Kitasato University, Japan*; ²*National Institute of Radiological Sciences, Japan*; ³*Tokyo Metropolitan University, Japan*; ⁴*Chiba University, Japan*

M11-221 A Compton-scattering and a collimation model for gamma images enhancement

B. Nicolas, L. Verger, P. Grangeat, O. Monnet, J.-M. Dinten
CEA - Recherche Technologique (CEA/GRE), FRANCE

M11-224 Thermoacoustic Tomography - Attenuation Impact on Reconstructed Images

S. K. Patch, *UW-Milwaukee, USA*; M. Haltmeier, *University of Innsbruck, Austria*

M11-227 Digital Autoradiography Imaging Using CCD and CMOS Technology

J. Cabello, K. Wells, A. Bailey, I. Kitchen, *University of Surrey, UK*; A. Clark, J. Crooks, R. Halsall, M. Key-Charriere, S. Martin, M. Prydderch, R. Turchetta, *Rutherford Appleton Laboratory, UK*

M11-230 Classification of MR Brain Tissue Using Fuzzy Estimation

R. Parveen, A. Todd-Pokropek
University College London, United Kingdom

M11-232 Blood Vessel Detection and Blood Flow Velocity Determination in Coronary Angiograms

N. D. Subramanian, D. Munirathnam, K. Natesan
Anna university, India

M11-235 Cardiac C-Arm CT: Efficient Motion Correction for 4D-FBP

M. Pruemmer¹, L. Wigstroem², J. Hornegger¹, J. Boese³, G. Lauritsch³, N. Strobel⁴, R. Fahrig²
¹*Institute of Pattern Recognition, Germany*; ²*Department of Radiology, USA*; ³*Siemens AG, Medical Solutions, Germany*; ⁴*Siemens AG, Medical Solutions, USA*

M11-238 Sequential Contrast Enhancement of Portal Images: Study of the Influence on Image Quality and Clinical Usefulness.

K. Koutsofios, *University of Patras, Greece*; S. Nikolettopoulos, *"Iaso" Hospital, Greece*; A. Episkopakis, I. Kandarakis, *Technological Educational Institute of Athens, Greece*

M11-241 A Unified Segmentation Method for CT Image Segmentation with Contrast Agent

C.-H. Hsu¹, H.-F. Lee¹, K. M. Lin², C.-T. Chen³, I.-T. Hsiao⁴, P.-C. Huang¹, C. Wietholt²

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M11-244 ROC Analysis of Lesion Detectability in a Torso Phantom for PET Images from Two PET/CT Scanners

K. R. Bernstein, K. L. Matthews II, B. M. Smith, *Louisiana State University, USA*; L. S. Bujenovic, *Our Lady of the Lake Regional Medical Center, USA*

M11-247 A Surface Adaptive Region Growing Algorithm for Tumor Localization, Object Reconstruction and Shape Visualization

D. Y. Y. Yun¹, S. Kwee², H. Wei¹, M. Coel²
¹*University of Hawaii and i. Solutions, inc., USA*; ²*Queen's Medical Center, USA*

M11-250 3D Robust Adaptive Region Growing for Segmenting [18F]fluoride Ion PET Images

T. Grenier¹, C. Revol-Muller¹, N. Costes², M. Janier^{1,2}, G. Gimenez^{1,2}
¹*CREATIS, France*; ²*CERMEP, France*

M11-254 A post-processing method for scatter and collimator blurring compensation using spatially variant point spread function

Y. Yan, G. L. Zeng, *University of Utah, U.S.A.*

M11-257 Comparison Between the ROI Based and Pixel Based Analysis for Neuroreceptor Studies Performed on the High Resolution Research Tomograph (HRRT)

V. Sossi¹, S. Blinder¹, K. Dinelle¹, S. Lidstone¹, K. Cheng¹, A. Rahmim², S. McCormick¹, D. Doudet¹, T. Ruth³

¹*University of British Columbia, Canada*; ²*John Hopkins, USA*; ³*Triumph, Canada*

M11-260 Clinical Study of 2D and 3D Scan Time Reduction in Head / Neck Cancer with BGO Based PET /CT Using Statistical Image Analysis.

B. Sanghera¹, J. Lowe¹, G. Lowe¹, D. Wellsted², H. Bammer³, R. J. Chambers¹, W. L. Wong¹

¹*Mount Vernon Hospital, United Kingdom*; ²*University of Hertfordshire, United Kingdom*; ³*GE Healthcare Technologies, Austria*

M11-263 Factors Influencing Lesion Detection in SPECT Lung Images

H. C. Gifford¹, X. M. Zheng², R. Licho¹, P. B. Schneider¹, P. H. Simkin¹, M. A. King¹

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M11-266 3D Ant-Based Reconstruction of Bronchial and Vascular Tree in Lung Computed Tomography

C. S. Crisitian^{1,2}, *INFN - Turin, Italy*; ²*Universita degli Studi di Torino, Italy*

On behalf of the MAGIC-5 Collaboration

M11-269 Image Registration of Radiographic Images Using an Elastic Approach

A. B. Abche¹, E. Tohme¹, T. El Chaer¹, E. H. Karam¹, Y. Hamam², M. Bouchoucha³, F. Rocaries²

¹*University of Balamand, Lebanon*; ²*ESIEE, France*; ³*University of rene Descartes, France*

M11-272 Investigation of Calcified Coronary Plaque Tracking in Cardiac CT

M. T. King, M. L. Giger, X. Pan, *University of Chicago, USA*

M11-274 Kinetics of (R)-[11C]rolipram and (S)-[11C]rolipram in the Dog Heart: Investigation of Four Compartment Models

M. Lortie, J. DaSilva, M. Kenk, S. Thorn, R. Beanlands, R. deKemp
University of Ottawa Heart Institute, Canada

M11-277 Kinetic Modeling of FDG Uptake in Rat Tumors During Photodynamic Therapy

M. Bentourkia, V. Bérard, P. Boubacar, J. E. van Lier, R. Lecomte
Université de Sherbrooke, Canada

M11-280 A Public Domain Dynamic Mouse FDG MicroPET Image Data Set for Evaluation and Validation of Input Function Derivation Methods

S.-C. Huang, H.-M. Wu, D. Truong, M. Prins, X. Zhang,
D. B. Stout, A. F. Chatziioannou, H. R. Schelbert
UCLA David Geffen School of Medicine, U.S.A.

M11-283 Evaluation of Scatter and Attenuation Compensation Method Using Only Emission Data Acquired with a Triple Energy Window Setting in Myocardial SPECT

N. Motomura¹, H. Maeda², N. Yamaki³, A. Kinda¹, S. Shirakawa²,
K. Takeda³
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M11-286 Quantitative Simultaneous In-111-WBC / Tc-99m-MDP Planar Imaging of the Foot

X. Zhu, M.-A. Park, S. C. Moore
Brigham & Women's Hospital and Harvard Medical School, USA

M11-289 Cardiac Motion Estimation from Gated Emission Computed Tomography Images

J. Tang, W. P. Segars, B. M. W. Tsui
Johns Hopkins University, USA

M11-292 Splitting Frames Based on Hypothesis Testing for Patient Motion Compensation in SPECT

L. Ma¹, B. Feng², J. McNamara², M. A. Gennert¹, M. A. King²
¹Worcester Polytechnic Institute, USA; ²University of Massachusetts Medical School, USA

M11-296 Estimation of 6-Degree-of-Freedom (6-DOF) Rigid-Body Patient Motion from Attenuation-Compensated Projection Data in Iterative Reconstruction

B. Feng, M. A. King
University of Massachusetts Medical School, U. S. A.

M11-299 Motion Estimation in Gated Cardiac Emission Tomography by Optical Flow Techniques

D. R. Gilland, B. A. Mair
University of Florida, U.S.A.

M11-302 Evaluation of 3D Monte-Carlo Based Scatter Correction for Tl-201 Cardiac Perfusion SPECT

J. Xiao¹, T. C. de Wit¹, S. G. Staelens², W. Zbijewski¹, F. J. Beekman¹
¹Utrecht University Medical Center, The Netherlands; ²Ghent University, Belgium

M11-305 A Quantitative Study of the Minimal Data Requirement for Accurate Attenuation Correction for Cardiac SPECT Using Small Field-of-View Detectors

C. Bai, R. Conwell, *Digirad Corporation, USA*

M11-308 Variation of Kinetic Model Parameters Due to Input Peak Distortions and Noise in Simulated 82Rb PET Perfusion Studies

C. Meyer, M. Weibrecht, D. Peligrad
Philips Research Laboratories, Germany

M11-311 Ensemble Learning - Independent Component Analysis Approach to Extract the Arterial Input Function from FDG-PET Images in Mice

Z. Fu, *Vanderbilt University, U.S.A.*; M. N. Tantawy, T. E. Peterson,

Vanderbilt University Institute of Image Science, U.S.A.

M11-314 A LSO Beta Microprobe for Measuring Input Functions for Quantitative Small Animal PET

S. H. Maramraju, *Stony Brook University, U.S.A.*; C. L. Woody, S. Stoll, D. J. Schlyer, W. Schiffer, D. Lee, S. Dewey, P. Vaska,
Brookhaven National Laboratory, U.S.A.

M11-316 Partial Volume Correction Using Continuous Wavelet Technique in Small Animal PET Imaging

L. Arhjoul, O. Sarrhini, M. Bentourkia
University of Sherbrooke, Canada

M11-319 Region of Interest Motion Compensation in PET Image Reconstruction

F. Qiao¹, T. Pan², J. W. Clark, Jr.¹, O. R. Mawlawi²
¹Rice University, USA; ²The University of Texas M. D. Anderson Cancer Center, USA

M11-322 Implementation of Retrospective Respiratory Motion Compensation under Deep Breathing in Spiral Transmission Scanning of 3D PET

A. Ishikawa, K. Kitamura, T. Mizuta, K. Tanaka, M. Amano, Y. Inoue
SHIMADZU Corporation, JAPAN

M11-325 Simulation-Based Assessment of the Impact of Contrast Medium on CT-Based Attenuation Correction in PET

M. R. Ay, H. Zaidi, *Geneva University Hospital, Switzerland*

M11-328 A Simulation Study of Respiratory-Motion and 4DCT-Attenuation Correction in Cardiac PET/CT

B. Lewden¹, G. Wells^{1,2,3}
¹Lawson Health Research Institute, Canada; ²University of Western Ontario, Canada; ³St. Joseph's Health Care, Canada

M11-331 Quantitative Image Reconstruction for the RatCAP PET Scanner

S. Southekal^{1,2}, M. Purschke², S.-J. Park², S. Junnarkar², J.-F. Pratte², S. Stoll², V. Boronikolas², D. Lee², D. J. Schlyer², C. L. Woody², P. Vaska²
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M11-334 Geometric Model of Single Scatter in PET

I. G. Kazantsev, *The City University of New York, USA*; S. Matej, R. M. Lewitt, *University of Pennsylvania, USA*

M11-338 The Quantitative Accuracy and Efficiency of the Dual Reconstruction Scheme Including a Practical Scatter/random Approximation in Dynamic PET Imaging

J.-C. C. Cheng¹, A. Rahmim², S. Blinder³, K. Dinelle¹, V. Sossi¹
¹University of British Columbia, CANADA; ²Johns Hopkins University School of Medicine, USA; ³Pacific Parkinson's Research Centre, CANADA

M11-341 A New, Dedicated, High Accuracy Multiple Order Scatter Model for 3D Whole Body PET

P. J. Markiewicz^{1,2}, A. J. Reader¹, M. Tamal¹, P. J. Julian², D. L. Hastings²
¹University of Manchester, United Kingdom; ²Christie Hospital NHS Trust, United Kingdom

M11-344 A Breath Control Device with EKG Monitoring (ABCDE) for Routine Imaging and Therapy

S. Chauvie^{1,2}, G. Perno², S. Peano², A. Bianchi², A. Biggi²
¹INFN, Italy; ²Scroce e Carle Hospital, Italy

M11-347 Evaluation of CT Field of View Restoration for PET-CT Attenuation Correction

A. H. Lonn, J. Hsieh, M. L. Nyka, *GE Healthcare, USA*

M11-350 Monitoring of and Correction for Subject's Head Movement During High Resolution PET Studies

K. M. Woch, C. J. Thompson, J. Suk
McGill University, Canada

M11-353 Respiratory Gating of MicroPET and Clinical CT Studies Using List-mode Acquisition

S. K. Woo, K. M. Kim, G. J. Cheon, K. S. Woo, W. S. Chung, J. H. Kang, T. H. Choi, T. S. Lee, C. W. Choi, S. M. Lim
Korea Institute of Radiological and Medical Science, Korea

M11-356 Evaluation of PET Tracer Binding Recovered by Partial Volume Correction Technique in Case of Hippocampic Atrophy

N. Costes, A. Reilhac, *CERMEP - Imagerie du vivant, France*

M11-358 New Sinogram Filter Design Utilizing Sinusoidal Trajectories

S. Peltonen, U. Ruotsalainen
Tampere University of Technology, Finland

M11-361 A Generalization of Green's One-Step-Late Algorithm for Penalized ML Reconstruction of PET Images

B. Mair, J. Zahnen, *University of Florida, USA*

M11-364 Experimental Evaluation of System Models for PET with Block Detectors

M. S. Tohme, J. Qi, *University of California, USA*

M11-367 Parallel List-Mode Reconstruction and Calculation of the System Matrix for the High-Resolution ClearPET (TM) Neuro

P. Musmann¹, U. Pietrzyk^{1,2}, N. Schramm¹, S. Weber¹
¹Forschungszentrum Jülich GmbH, Germany; ²University of Wuppertal, Germany

M11-370 Fast 3D Iterative Reconstruction of PET Images Using PC Graphics Hardware

B. Bai, A. M. Smith, *Siemens Molecular Imaging, U.S.A*

M11-373 Dynamic List-Mode Reconstruction of PET Data Based on the ML-EM Algorithm

B. Gundlich, P. Musmann, S. Weber
Forschungszentrum Jülich GmbH, Germany

M11-376 Accurate Estimation of Single Counts from Random Data in the Case of Axially Compressed Data

V. Y. Panin, *Siemens Medical Solutions, USA*

M11-380 Respiratory-Averaged CT for Attenuation Correction in Canine Cardiac PET Imaging

R. A. Cook¹, G. Carnes^{2,3}, T.-Y. Lee^{1,2,4,3}, G. Wells^{1,2,4}
¹Lawson Health Research Institute, Canada; ²University of Western Ontario, Canada; ³Robarts Research Institute, Canada; ⁴St. Joseph's Health Care, Canada

M11-383 Inter-Relationship of Resolution Model, Spatial Basis and Post-Smoothing in EM PET Reconstruction

H. Zhao, A. J. Reader
University of Manchester, United Kingdom, United Kingdom

M11-386 GATE Monte-Carlo Generated System Matrix for Iterative List-Mode EM Reconstruction of 3-D MOSAIC PET Data

C. Merheb¹, A. J. Reader², Y. Petegnief³, S. Nicol¹, J. N. Talbot^{1,2}, I. Buvat⁴
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³Hôpital TENON, France; ⁴INSERM, France

M11-389 Comparison of Maximum-Likelihood List-Mode Reconstruction Algorithms in PET

R. Brinks¹, C. Schretter², C. Meyer¹
¹Philips Reseach, Germany; ²Université Libre de Bruxelles, Belgium

M11-392 Fully 3D PET Iterative Reconstruction Using Distance-Driven Projectors and Native Scanner Geometry

R. M. Manjeshwar¹, S. G. Ross², M. Iatrou¹, C. W. Stearns²
¹Global Research Center, General Electric, USA; ²General Electric Healthcare Technologies, USA

M11-395 An Efficient Algorithm for Targeted Reconstruction of Tomographic Data

C. W. Stearns¹, R. M. Manjeshwar², S. D. Wollenweber¹
¹GE Healthcare, USA; ²GE Global Research, USA

M11-398 Enhanced System Matrix Compression for Iterative PET Reconstruction Using Non-Cuboid, Rotationally Symmetric Voxel Formations

J. J. Scheins, H. Herzog, *Institute of Medicine, Germany*

M11-400 Polar Pixels for High Resolution Small Animal PET

C. Mora, M. Rafecas
Instituto de Fisica Corpuscular (IFIC) - CSIC/ Universidad de Valencia, Spain

M11-403 An Inversion of the 180° Exponential Radon Transform

Q. Huang, G. L. Zeng, *University of Utah, USA*

M11-406 An Analytical Algorithm for Skew-Slit Imaging Geometry with Uniform Attenuation Correction in SPECT

Q. Tang, G. L. Zeng, *University of Utah, USA*

M11-409 CT Priors in SPECT/CT Wrist Imaging

E. Sabondjian^{1,2}, R. G. Wells^{1,2,3}
¹Lawson Health Research Institute, Canada; ²The University of Western Ontario, Canada; ³St. Joseph's Health Care, Canada

M11-412 Effect of Overlapping Projections on Reconstruction Image Quality in Multipinhole SPECT

K. Vunckx, J. Nuyts, *K.U.Leuven, Belgium*

M11-415 Quadratic Regularization Design for Iterative Reconstruction in 3D Multi-Slice Axial CT

H. R. Shi, J. A. Fessler, *University of Michigan, USA*

M11-418 A Maximum-Likelihood Iterative Algorithm for X-Ray CT Reconstruction

J. Xu, B. M. W. Tsui, *Johns Hopkins University, USA*

M11-422 Statistical Cone-Beam CT Image Reconstruction Using the Cell Broadband Engine

M. Knaup, W. A. Kalender, M. Kachelriess
University of Erlangen-Nuremberg, Germany

M11-425 Accelerated Line Search for Coordinate Descent Optimization

Z. Yu¹, J.-B. Thibault², K. Sauer³, C. Bouman¹, J. Hsieh²
¹Purdue University, US; ²General Electric Health Care, US; ³University of Notre Dame, US

M11-428 A Comparison Between Filtered Backprojection, Post-Smoothed Weighted Least Squares, and Penalized Weighted Least Squares for CT Reconstruction.

M. Iatrou, B. DeMan, S. Basu, *GE Global Research Center, USA*

M11-431 Compensation for Patient and Detector Scatter and Crosstalk Contamination in in-111 SPECT Using Fast Monte Carlo-Based Iterative Reconstruction

J. Ouyang, G. El Fakhri, R. E. Zimmerman, S. C. Moore
Brigham and Women's Hospital and Harvard Medical School, U.S.A.

M11-434 SPECT Image Quality and Quantification

H. Wiczorek
Philips Technology Research Laboratories, Germany

M11-437 Cone-Beam Imaging of Delta Functions

R. Clackdoyle¹, L. Grezes-Besset², L. Desbat², C. Mennessier¹, I. Bricault²

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M11-440 Reconstruction of a Dual-Head Small-Animal PET System: An SVD Study

Y. Dong, *Illinois Institute of Technology, USA*; C.-M. Kao, *The University of Chicago, USA*

M11-442 A Rebinning-Type Backprojection-Filtration Algorithm for Image Reconstruction in Helical Cone-Beam CT

L. Yu, D. Xia, Y. Zou, X. Pan
The University of Chicago, USA

M11-445 Cone-Beam Tomography from Short-Scan Circle-plus-Arc Data Measured on a C-Arm System

S. Hoppe¹, F. Dennerlein², G. Lauritsch³, J. Hornegger¹, F. Noo²

¹University of Erlangen-Nuremberg, Germany; ²University of Utah, USA; ³Siemens AG, Medical Solutions, Germany

M11-448 Metal Artifact Reduction in Helical Cone-Beam Computed Tomography

J. Tang, L. Zhang, Z. Chen, Y. Xing, J. Cheng
Tsinghua University, China

M11-451 Sampling Requirements for Circular Cone Beam Tomography

J. Brokish, *InstaRecon, Inc., USA*; Y. Bresler, *University of Illinois, USA*

M11-454 Two Finite Inverse Hilbert Transform Formulae for Local Tomography

G. L. Zeng¹, J. You², Q. Huang¹

¹University of Utah, USA; ²Viisage Technology Inc., USA

M11-457 Circular CT in Combination with a Helical Segment

C. Bontus, P. Koken, T. Koehler
Philips Research Europe, Germany

M11-460 Circular Cone-Beam Micro-CT for Small Animal Imaging with Truncated Data

S. Cho, L. Yu, C. A. Pelizzari, X. Pan
The University of Chicago, USA

M12 CT and SPECT Reconstruction

Friday, Nov. 3 15:30-17:30, Golden Ballroom

Session Chairs: Xiaochuan Pan, *The University of Chicago*
Richard Leahy, *University of Southern California*

M12-1 Stochastic Discrete Reconstruction (SDR) for Nuclear Medicine Tomographic Systems

A. Sitek¹, A. M. Celler², G. T. Gullberg¹
¹E. O. Lawrence Berkeley National Laboratory, USA; ²University of British Columbia and Vancouver General Hospital, Canada

M12-2 A FBP Reconstruction Formula for 2D Tomography with Bilateral Truncation

R. Clackdoyle^{1,2}, F. Noo², M. S. Ould Mohamed¹, C. Mennessier¹
¹Laboratoire TSI, CNRS-UMR5516, France; ²University of Utah, USA

M12-3 An Immediate After-Backprojection Filtering Method with Blob-Shaped Window Functions for Voxel-Based Iterative Reconstruction

B. Zhang, G. L. Zeng, *University of Utah, U.S.A*

M12-4 Accurate Image Reconstruction in Circular Cone-Beam CT

E. Y. Sidky, X. Pan, *University of Chicago, United States*

M12-5 Factorization of the Reconstruction Problem in Circular Cone-Beam Tomography and Its Use for Stability Analysis

F. Dennerlein, F. Noo, *UCAIR, Dept. of Radiology, Univ. of Utah, USA*; J. Hornegger, *University of Erlangen/Nuremberg, Germany*; G. Lauritsch, *Siemens AG, Medical Solutions, Germany*

M12-6 Calibration of the Circle-plus-Arc Trajectory

S. Hoppe¹, F. Noo², F. Dennerlein², G. Lauritsch³, J. Hornegger¹

¹University of Erlangen-Nuremberg, Germany; ²University of Utah, USA; ³Siemens AG, Medical Solutions, Germany

M12-7 Sinogram-Domain Correction for Resolution Non-Uniformities Caused by Anode Angulation in CT

P. J. La Riviere, P. Vargas, *The University of Chicago, USA*

M12-8 Monotonic Iterative Reconstruction Algorithms for Targeted Reconstruction in Emission and Transmission Computed Tomography

P. J. La Riviere, *The University of Chicago, USA*

MIC Dinner

Friday, Nov. 3 18:00-22:00, SeaWorld

An evening of relaxation and collegial interaction, with dinner and entertainment is planned for the MIC Dinner at SeaWorld San Diego. Buses will leave promptly at 6 pm from the Atlas Foyer. This event, including dinner, will be held outdoors and dress is casual. Attendance is limited, so be sure to register early for the MIC dinner (\$65 per person) as part of your conference registration. Please plan to join us for an enjoyable evening and dinner at this outstanding venue! (The MIC Dinner at SeaWorld is sponsored in part by a generous contribution by Siemens Molecular Imaging and Siemens Medical Solutions).

M13 SPECT and SPECT/CT

Saturday, Nov. 4 08:00-10:00, Golden Ballroom

Session Chairs: Ronald Jaszczak, *Duke University Medical Center*
James Hugg, *GE Global Research*

M13-1 Data Readout and Processing Toolkit for Small-Size Gamma Cameras

V. Popov^{1,2}, P. Degtiarenko^{1,2}, I. Musatov², M. Williams³

¹Thomas Jefferson National Accelerator Facility, USA; ²Lintech Inc, USA; ³University of Virginia, USA

M13-2 Deriving the system matrix of a slit-hole micro-SPECT system using Monte Carlo simulation

R. Yao¹, T. Ma², V. G. Rathod¹, Y. Shao¹, S. Balakrishnan¹, R. E. Carson³

¹State University of New York at Buffalo, USA; ²Tsinghua University, China; ³Yale University, USA

M13-3 Development of High Performance Mini Gamma Cameras Based on LaBr₃ Scintillator and H8500 and H9500 PSPMTs and Their Use in Small Animal Studies

W. Hammond¹, Y. Tekabe², L. Johnson², S. Majewski¹, V. Popov¹, B. Kross¹, R. Wojcik³, A. G. Weisenberger¹, J. Proffitt¹
¹Jefferson Laboratory, USA; ²Columbia Medical Center, USA; ³Ray Visions, USA

M13-4 A Small-Animal SPECT/CT System with a Stationary CZT Detector Ring and Rotating Multiple Slit or Pinhole Collimator

J. W. Hugg, F. P. Jansen, J. Uribe, R. M. Manjeshwar, *GE Global Research, USA*; H. Lai, J. C. Pang, X. Guo, *GE Healthcare Biosciences, Canada*

M13-5 Front-Illuminated Versus Back-Illuminated Photon-Counting CCD-Based Gamma Camera: Important Consequences for Spatial Resolution and Energy Resolution.

J. W. T. Heemskerk^{1,2}, P. M. Linotte^{1,2}, A. H. Westra¹, W. Zbijewski^{1,2}, K. M. Ligetvoet¹, F. J. Beekman^{1,2}
¹University Medical Center Utrecht, the Netherlands; ²Rudolph Magnus Institute for Neuroscience, the Netherlands

M13-6 Quantitative Processing of Cardiac Dynamic Patient Data with Slow Camera Rotation

R. Bouchko¹, A. Sitek¹, J. Hu², B. W. Reutter¹, E. H. Botvinick³, G. T. Gullberg¹
¹Lawrence Berkeley National Laboratory, USA; ²TeraRecon, Inc., USA; ³University of California at San Francisco, USA

M13-7 High Countrate Second Detector for Compton Cameras

N. Clinthorne¹, D. Burdette², E. Ches³, L. Han¹, K. Honscheid², S. Huh¹, H. Kagan², C. Lacasta⁴, G. Llosa⁴, M. Mikuz⁵, W. L. Rogers¹, S. Smith², A. Studen^{1,5}, P. Weillhammer^{3,6}
¹University of Michigan, USA; ²Ohio State University, USA; ³CERN, Switzerland; ⁴IFIC/CSIC University of Valencia, Spain; ⁵Jozef Stefan Institute, University of Ljubljana, Slovenia; ⁶University of Perugia, INFN, Italy

M13-8 Theory of Adaptive SPECT Imaging

H. H. Barrett, L. R. Furenlid, M. E. Freed, J. Y. Hesterman, M. A. Kupinski, E. W. Clarkson
University of Arizona, USA

M14 MIC Poster 3

Saturday, Nov. 4 10:30-12:00, Atlas Ballroom

Session Chairs: Youngho Seo, *University of California, San Francisco*
Andrew Weisenberger, *Thomas Jefferson National Accelerator Facility*
Todd Peterson, *Vanderbilt University*

M14-3 Correlation of Diffraction MicroCT Images of Breast Tissue with Pathological Analysis

J. A. Griffiths, G. J. Royle, R. D. Speller, *University College London, U.K.*; J. A. Horrocks, *Barts and The London NHS Trust, U.K.*; A. M. Hanby, *St. James' University Hospital, U.K.*

M14-6 Bayesian Image Reconstruction for the Clear-PEM Scanner

M. V. Martins¹, N. Matela¹, A. Trindade², P. Rodrigues², N. Oliveira¹, H. Cordeiro¹, N. C. Ferreira³, J. Varela², P. Almeida¹
¹IBEB - Instituto de Biofísica e Engenharia Biomédica, Portugal; ²LIP - Laboratório de Instrumentação e Física Experimental de Partículas, Portugal; ³IBIBLI - Instituto Biomédico de Investigação em Luz e Imagem, Portugal

M14-9 A Study of the Application of MWPC-Based Positron Cameras for Breast Imaging

R. J. Ott, N. Evans, *Institute of Cancer Research, UK*; A. Jeavons, *Oxford Positron Systems, UK*

M14-12 A near Field Correction for Coded Aperture Imaging in Scintimammography

M. A. Alnafea, K. Wells, N. M. Spyrou, M. I. Saripan, *University of Surrey, UK*; M. Guy, *Royal Surrey County Hospital, UK*

M14-15 3-D Contrast-Detail Analysis for Dedicated Emission Mammotomography

S. J. Cutler, M. P. Tornai, *Duke University, USA*

M14-18 Optimization of the Acquisition Parameters for a SPET System Dedicated to Breast Imaging

N. Lanconelli, R. Campanini, E. Iampieri, *Università di Bologna, Italy*; R. Pani, M. N. Cinti, P. Bennati, *Università La Sapienza, Italy*; P. Randaccio, *Università di Cagliari, Italy*; P. Russo, *Università Federico II, Italy*; A. Del Guerra, *Università di Pisa, Italy*

M14-21 Evaluation of a CZT Intra-Operative Gamma Camera

I. M. Bleviss¹, D. Kopelman^{2,3}, M. Hashmonai², G. Iosilevsky⁴, O. Israel^{2,4}
¹General Electric Healthcare, Israel; ²Technion, Israel Institute of Technology, Israel; ³Haemek Medical Center, Israel; ⁴Rambam Medical Center, Israel

M14-24 Feasibility Study of Multipinhole Collimators for High Resolution Small Animal Imaging

E. W. Izaguirre, M. Sun, B. H. Hasegawa
University of California San Francisco, USA

M14-27 Reconstruction of Phantom SPECT Scans Acquired with a Slit-Slat Collimator

S. D. Metzler¹, A. S. Ayan¹, R. Accorsi², J. R. Novak¹
¹University of Pennsylvania, USA; ²Children's Hospital of Philadelphia, USA

M14-30 Development of a Electron Tracking Compton Gamma-Ray Camera Using a Gas Micro-Tracking Device for Nuclear Medicine

S. Kabuki¹, K. Hattori¹, A. Kubo², H. Kubo¹, E. Kunieda², K. Miuchi¹, T. Nakahara², H. Nishimura¹, T. Tanimori¹
¹kyoto university, Japan; ²Keio university, Japan

M14-33 Analytical Derivation and Experimental Verification of a Sensitivity Formula for Slit-Slat SPECT Collimation

R. Accorsi¹, S. D. Metzler², J. R. Novak², A. S. Ayan², R. J. Jaszczak^{3,4}
¹The Children's Hospital of Philadelphia, USA; ²University of Pennsylvania, USA; ³Duke University Medical Center, USA; ⁴Duke University, USA

M14-36 A Compact High Performance Readout Electronics Solution for H9500 Hamamatsu 256 Multianode Photomultiplier Tube for Application in Gamma Cameras.

Y. Popov, S. Majewski
Thomas Jefferson National Accelerator Facility, USA

M14-39 Evaluation of Silicon Photomultipliers for Use as MR Compatible PET Detectors

D. P. McElroy¹, A. Reznik¹, V. Saveliev², C. J. Thompson³, W. Zhao⁴, J. A. Rowlands¹
¹University of Toronto, Sunnybrook Health Sciences Centre, Canada; ²DESY, Germany; ³McGill University, Canada; ⁴State University of New York at Stonybrook, USA

M14-42 A Multi-Slice Dual Layer MR-Compatible Animal PET System

S. Yamamoto, *Kobe City College of Technology, Japan*; H. Mashino, *Espec Techno Co., Ltd., Japan*; S. Takamatsu, *Nara Institute of Technology, Japan*; K. Matsumoto, M. Senda, *Institute of Biomedical Research and Innovations, Japan*

M14-45 An MR Compatible LSO-PET Scanner for Molecular Imaging Studies

J. E. Mackewn¹, S. F. Keevil¹, W. A. Hallett¹, P. Halsted¹, R. A. Page¹, M. T. Kelly¹, S. C. Williams², P. K. Marsden¹

¹*Guy's, King's and St Thomas' school of medicine and dentistry, UK*;

²*Institute of Psychiatry, UK*

M14-48 A CsI-Active Pixel Sensor Based Detector for Gamma Ray Imaging

R. J. Ott, E. Harris, P. Evans, N. Evans, *Institute of Cancer Research, UK*; J. Osmond, A. Holland, *Brunel University, UK*

M14-51 The Effects of Spatial Resolution and Interaction Identification on Image Resolution in HPGe Compton Cameras

J. E. Gillam¹, T. E. Beveridge¹, S. Midgley¹, H. C. Boston², A. J. Boston², R. J. Cooper², A. Grint², A. R. Mather², P. J. Nolan², D. P. Scraggs², G. Turk², C. Hall³, I. Lazarus³, R. A. Lewis¹, A. Berry¹

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³*CCLRC Daresbury, UK*

M14-54 Localizing of the Imaged-Object Position by a Stationary Position-Sensitive Scintillation Camera Using Tilted-Collimator Technique

N. M. Uzunov^{1,2}, M. Bello^{1,3}, P. Boccaccio¹, G. Moschini^{1,3}, D. Camporese³, D. Bollini^{4,5}, G. Baldazzi^{4,5}

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³*University of Padua, Italy*; ⁴*University of Bologna, Italy*; ⁵*INFN, Italy*

M14-57 Instrumentation Development of a SPECT-CT System to Image Awake Mice

A. G. Weisenberger, B. Kross, S. Majewski, V. Popov, V.-H. Tran, B. Welch, *Thomas Jefferson National Accelerator Facility, USA*; J. Baba, J. Goddard, *Oak Ridge National Laboratory, USA*; M. Pomper, B. Tsui, *Johns Hopkins University, USA*

M14-60 An Investigation to Design High Performance Multi-Pinhole Collimator

B. J. Min¹, Y. Choi¹, N. Y. Lee², T. Y. Song¹, J. H. Jung¹, K. J. Hong¹, J. J. Jung³

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M14-63 Design and Performance of a New SPECT Detector for Multimodality Small Animal Imaging Platforms

D. W. Austin, M. J. Paulus, S. S. Gleason, R. A. Mintzer, S. B. Siegel, *Siemens Medical Solutions, USA, Inc., Molecular Imaging, Preclinical Solutions, USA*; S. D. Figueroa, T. J. Hoffman, *Harry S. Truman Memorial VA Hospital, USA*; J. Wall, *University of Tennessee Health Science Center, College of Medicine - Knoxville, USA*

M14-66 Depth of Interaction Decoding of a Continuous Crystal Detector

T. Ling, T. K. Lewellen, R. S. Miyaoka
University of Washington, USA

M14-69 Performance Measurements of the Siemens Inveon Small Animal PET Scanner

B. J. Kemp, *Mayo Clinic, US*; M. Lenox, D. F. Newport, S. Siegel,

R. Nutt, *Siemens Medical Solutions, US*

M14-72 A Monte Carlo Simulation Study on Detector Arrangement for a Small Bore DOI-PET Scanner: jPET-RD

T. Kobayashi¹, T. Yamaya², H. Takahashi¹, K. Kitamura³, T. Hasegawa⁴, H. Murayama², M. Suga¹

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M14-75 Region-Based Efficiency Correction for the High-Resolution Quad-HIDAC PET Scanner

L. Ortega Maynez^{1,2}, A. J. Reader¹, P. J. Julyan³, D. L. Hastings³

¹*The University of Manchester, UK*; ²*The University of Cd. Juárez, Chih. Mexico*; ³*North Western Medical Physics, UK*

M14-78 Performance Comparison of Two DOI-GSO Block Detectors with Different Fabrication Methods

S. Yamamoto, *Kobe City College of Technology, Japan*; N. Shimura, H. Ishibashi, *Hitachi Chemical, Japan*

M14-81 Signal to Noise Ratio of Monolithic Scintillation Detectors for High Resolution PET

M. C. Maas¹, D. J. (. van der Laan¹, D. R. Schaart¹, P. Bruyndonckx², C. Lemaître², C. W. E. van Eijk¹

¹*Delft University of Technology, The Netherlands*; ²*Vrije Universiteit Brussel, Belgium*

M14-84 Impact of Detector Defects on Image Quality and Quantification for the microPET Focus 220 Scanner

W. Lehnert, S. R. Meikle, *University of Sydney, Australia*

M14-87 Development of an Improved Detector Module for miniPET-II

J. Imrek, G. Hegyesi, G. Kalinka, J. Molnar, D. Novak, I. Valastyan, J. Vegh, *Institute of Nuclear Research of the Hungarian Academy of Sciences, Hungary*; L. Balkay, M. Emri, A. Kis, L. Tron, *University Medical School of Debrecen, Hungary*; T. Bukki, *MEDISO Ltd., Hungary*; Z. Szabo, *Institute of Experimental Physics, University of Debrecen, Hungary*; A. Kerek, *Royal Institute of Technology, Sweden*

M14-90 Feasibility Test Performed with Silicon Photomultiplier as Gamma Ray Imaging Sensor

J. G. Kim, Y. Choi, T. Y. Song, J. H. Jung, B. J. Min, K. J. Hong, J. Y. Choi, Y. S. Choe, K.-H. Lee, B.-T. Kim

Samsung Medical Center, SungKyunKwan University School of Medicine, South Korea

M14-93 Photon-Counting CT Performance Assessment of the LabPET™ Detector and Electronics for Molecular Imaging Applications

P. Bérard, J. Riendeau, C. M. Pepin, D. Rouleau, J. Cadorette, R. Fontaine, R. Lecomte
Université de Sherbrooke, Canada

M14-96 Spatial Resolution Measured by a Prototype System of Two 4-Layer DOI Detectors for jPET-RD

F. Nishikido¹, T. Tsuda¹, N. Inadama¹, E. Yoshida¹, K. Takahashi¹, K. Shibuya¹, T. Yamaya¹, K. Kitamura², H. Murayama¹

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M14-99 First Imaging Results of a Dual-Head Small-Animal PET System

C.-M. Kao, C.-T. Chen, *The University of Chicago, USA*

M14-102 Feasibility Studies of a Hybrid microPET and SPECT System for Small Animal Imaging

Y. Shao¹, R. Yao¹, T. Ma², J. C. Luisi¹, K. Gao¹, S. Balakrishnan¹, H. Li¹

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M14-105 Digital Coincidence Processing for the RatCAP Conscious Rat Brain PET Scanner

S.-J. Park¹, S. Southehal², M. Purschke¹, S. S. Junnarkar¹, J.-F. Pratte¹, V. Radeka¹, P. O'Connor¹, S. P. Stoll¹, R. Lecomte³, R. Fontaine³, C. L. Woody¹, D. J. Schlyer¹, P. Vaska¹

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M14-108 Simulations of the Effect of Partial Collimation on Count Rates of an LSO PET System

R. E. Schmitz, P. E. Kinahan, R. L. Harrison, T. K. Lewellen
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M14-111 Dynode-Timing Method for PET Block-Detectors

F. Bauer^{1,2}, N. Zhang¹, M. Schmand¹, M. Loope¹, L. Eriksson^{1,2}

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M14-114 Innovative Electronics Architecture for PET Imaging

P. E. Vert, J. Lecoq, G. Montarou, N. Pauna, B. Joly, M. Boutemour, L.P.C, France; H. Mathez, R. Gaglione, IPNL, France; P. Le Dû, DAPNIA, France

M14-117 A Hybrid Parallel Plate Gas Counter for Medical Imaging

D. Domenici¹, F. Anulli¹, G. Bencivenni¹, C. D'Ambrosio¹, G. Felici¹, C. Morone², F. Murtas¹

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M14-120 A, B, C, (D), E Multiplexing Readout Concept for PET Block Detectors

N. Zhang, M. J. Schmand, N. K. Doshi
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M14-123 Implementation of a High-Rate USB Data Acquisition System for PET and SPECT Imaging

J. Proffitt¹, W. Hammond¹, S. Majewski¹, V. Popov¹, R. R. Raylman², A. G. Weisenberger¹

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M14-126 Noise Optimization and Monte Carlo Simulation of a PET Detector Based on Continuous LSO Crystal and Large-Area APDs

S. Krishnamoorthy, Stony Brook University, U.S.A; S. Stoll, M. Purschke, J.-F. Pratte, C. L. Woody, D. J. Schlyer, P. O'Connor, P. Vaska, Brookhaven National Laboratory, U.S.A

M14-129 Multichannel Readout Electronics for Flat Panel PSPMT

E. D'Abramo, Università di Roma Tre, Italy; F. de Notaristefani, V. Orsolini Cencelli, INFN, Italy

M14-132 Design Consideration for Double-Sided Silicon Detectors Applicable to PET Imaging

A. Studen, N. H. Clinthorne, University of Michigan, USA

M14-135 Optimization of Crystal Arrangement on 8-Layer DOI PET Detector

N. Inadama¹, H. Murayama¹, T. Tsuda¹, F. Nishikido¹, K. Shibuya¹, T. Yamaya¹, E. Yoshida¹, K. Takahashi^{2,1}, A. Ohmura^{3,1}

¹National Institute of Radiological Sciences, Japan; ²Chiba university, Japan; ³Waseda university, Japan

M14-138 Design of a Modular and Efficient LabVIEW-Based Data Acquisition System for a Time of Flight PET Test-Bed

K. A. Wangerin, J. Uribe, F. P. Jansen, S. Dolinsky, A. Ivan, GE Global Research, USA; N. Haupt, GE Healthcare, USA

M14-141 A CompactPCI Based Event Routing Subsystem for PET and SPECT Data Acquisition

A. R. McFarland, D. Newport, B. Atkins, D. Pressley, S. Siegel, M. Lenox

Siemens Molecular Imaging, USA

M14-144 Development and Evaluation of Detector Heads and Readout for a Mobile Cardiac Imager System

S. Majewski, W. Gunning, W. Hammond, B. Kross, M. Smith, V. Popov, J. Proffitt, A. Weisenberger, R. Wojcik, Jefferson Lab, USA; D. Gilland, University of Florida, USA

M14-147 Clinical Comparison of HiRez Vs Non-HiRez LSO Crystal Sampling for Lesion Detection and SUV Quantification

S. Hapdey^{1,2}, S. Vauclin^{2,3}, A. Manrique^{1,2}, I. Buvat⁴, M. Fourcade⁵, O. de Dreuille³, I. Gardin^{1,2}, P. Vera^{1,2}

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M14-150 Quantitative Experimental Comparison of HRRT Versus HR+ PET Brain Studies

F. H. P. van Velden, R. W. Kloet, H. W. de Jong, A. A. Lammertsma, R. Boellaard

VU University Medical Center, Netherlands

M14-153 A Large Volume PET Scanner for Low Dose Applications

B. W. Jakoby^{1,2}, D. W. Townsend¹, M. Sibomana², C. Nahmias¹, A. K. LeBlanc³, G. B. Daniel³

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M14-156 Small Animal X-Ray Micro-CT with Zoom-in Imaging Capability

S. Y. Lee, M. H. Cho, S. C. Lee, I. K. Chun, J. J. Park
Kyung Hee University, Korea

M14-159 X-Ray Spectrum Optimization for CT Angiography, and for Dual Energy CT Detector

N. Weiss, A. Altman, S. Shenhav
Philips Medical Systems, Israel

M14-162 A High Brightness X-Ray Tube with Micrometer-Sized Focal Spot Based on CNT Emitters

S. H. Heo, A. Ihsan, S. O. Cho
Korea Advanced Institute of Science and Technology, South Korea

M14-165 Ultra-High Resolution X-Ray CT System with a CdTe Detector

J. Yoshitake, K. Ogawa
Hosei University, Faculty of Engineering, Japan

M14-168 Hyperfast Parallel-Beam Backprojection

M. Kachelriess, M. Knaup, Institute of Medical Physics (IMP), Germany; O. Bockenbach, Mercury Computer Systems, Germany

M14-171 Potential of a Hybrid Scatter Estimation Model for Scatter Correction of Flat-Panel CT Data

Y. Kyriakou, W. A. Kalender
Institute of Medical Physics, Germany

M14-174 Optical Determination of the Cross Talk of CT Detection Systems

N. Wainer, O. Buchinsky, L. Gregorian, I. Uman
Philips Medical Systems & Technologies Ltd, Israel

M14-177 Photon Counting X-Ray CT System with a Semiconductor Detector

K. Kowase, K. Ogawa
Hosei University, Faculty of Engineering, Japan

M14-180 A Proposed Cone Beam Version of Electron Beam CT

H. Schomberg, *Philips Research, Germany*

M14-183 Performance Evaluation of a Prototype Micro-CT System

S. Cho, J. Bian, C. A. Pelizzari, J. S. Souris, C.-T. Chen, X. Pan
The University of Chicago, USA

M14-186 Physical Performance and Clinical Workflow of a New LSO HI-REZ PET/CT Scanner

B. W. Jakoby^{1,2}, Y. Bercier², C. C. Watson², V. Rappoport², J. W. Young², B. Bendriem², D. W. Townsend¹
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M14-189 Automated Calibration Method for Parallax Corrected Positioning Algorithms in Monolithic Scintillators

P. Bruyndonckx¹, C. Lemaître¹, D. Schaart², M. Maas², D. J. Van der Laan², M. Krieguer¹, O. Devroede¹, S. Tavernier¹
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M14-192 Assessment of the activity distribution of metal radionuclides in plastic phantoms using μ SPECT imaging and gamma counting

M.-A. Park^{1,2}, A. Mahmood^{1,2}, R. E. Zimmerman^{1,2}, N. Limpamara^{1,2}, G. M. Makrigiorgos^{3,2}, S. C. Moore^{1,2}
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M14-195 Texture Analysis of Skin Lesion Images for Early Melanoma Detection

Z. Yang¹, X. Yuan¹, R. Jiamthapthaksin¹, N. Mullani², G. Zouridakis¹
¹*University of Houston, United States;* ²*Translite LLC, United States*

M14-198 Extraction and Reconstruction of Retinal Vasculature for Diabetic Retinopathy

L. I. Izhar, A. F. M. Hani, P. A. Venkatachalam, *University Technology of PETRONAS, Malaysia;* T. V. N. Karunakar, *General Hospital of Kuala Lumpur, Malaysia*

M14-201 Accelerated SPECT Monte Carlo Simulation Using Multiple Projection Sampling and Convolution-Based Forced Detection

S. Liu, *McMaster University, Canada;* H. R. Khosravi, *Tehran University of Medical Sciences, Iran;* T. H. Farncombe, *Hamilton Health Sciences, Canada*

M14-204 Evaluation of Different Random Estimation Methods for the MADPET-II Small Animal PET Scanner Using GATE

I. Torres-Espallardo¹, M. Rafecas², V. C. Spanoudaki¹, D. P. McElroy³, S. I. Ziegler¹
¹*Klinikum rechts der Isar, Technical University of Munich, Germany;* ²*Institute of Particle Physics - IFIC, Spain;* ³*Sunnybrook and Women's College Health Sciences Centre, Canada*

M14-207 Design and Implementation of a Block Detector Simulation in SimSET

R. L. Harrison, S. B. Gillispie, T. K. Lewellen
University of Washington, USA

M14-210 Monte Carlo Spectral Analysis of Phosphor Screens for X-Ray Imaging

C. H. Lim, H. K. Kim, M. K. Cho, M. H. Cheong, C.-S. Shon, *Pusan National University, South Korea;* H. Cho, *Yonsei University, South Korea*

M14-213 Impact of Scatter Modeling Error on 3D Maximum Likelihood Reconstruction in PET

M. Tamal, A. J. Reader, P. J. Markiewicz, *The University of Manchester, UK;* P. J. Jolyan, D. L. Hastings, *Christie Hospital NHS Trust, UK*

M14-216 Monte Carlo Database Production for Human Brain PET Imaging Using GATE

S. Jan, C. Comtat, R. Trébossen
CEA/DSV/DRM/SHFJ - Service Hospitalier Frédéric Joliot, France

M14-219 RTNCAT (Real Time NCAT): Implementing Real Time Physiological Movement of Voxelized Phantoms in GATE

P. Descourt^{1,2}, W. P. Segars³, F. Lamare¹, L. Ferrer², B. Tsui³, Y. Bizais¹, M. Bardies², D. Visvikis¹
¹*U650 INSERM, Laboratoire du Traitement de l'Information Médicale, France;* ²*U601 INSERM, France;* ³*Department of Radiology, USA*

M14-222 Image Registration Technique for 3-D Visualization of Brain Fiber Tracts from DTI

D. Sanchez, M. Adjouadi, D. Sanchez
Florida International University, USA

M14-225 Image Reconstruction from Sparse Data Samples in Echo-Planar Imaging

S. J. LaRoque, E. Y. Sidky, X. Pan
University of Chicago, USA

M14-228 Investigating the Cortical Development of Normal Fetal MR Brain Images Using Two-Dimensional Curvature Method

H.-H. Hu^{1,2}, H.-Y. Chen^{1,2}, Y.-T. Wu^{1,2}, W.-Y. Guo^{2,1}
¹*National Yang-Ming University, Taiwan;* ²*Taipei Veterans General Hospital, Taiwan*

M14-231 Evaluation of 5-123I-Iodo-2'-Hydroxy-2'-Deoxyuridine ([123I]IaraU) as a Gene Probe

W.-L. Sun¹, C.-F. Yu¹, L.-W. Chiang¹, C.-S. Yu¹, C.-S. Chiang¹, T.-W. Lee², J.-M. Lo¹
¹*National Tsing Hua University, Taiwan;* ²*Institute of Nuclear Energy Research, Taiwan*

M14-234 Geometrical Repeatability and Motion Blur Analysis of a New Multi-Projection X-Ray Imaging System.

A. Chawla, E. Samei, *Duke University, USA*

M14-237 Signal-to-Noise Monte-Carlo Analysis of Base Material Decomposed CT Projections

B. J. Heismann, *Siemens Medical, Germany*

M14-240 Simulation and Experimental Study of Multiple-Fibers per Voxel Detection by ICA in DTI Tractography

M. Singh, C.-W. Wong, J.-W. Jeong
University of Southern California, USA

M14-243 Quantifying Phase Analysis Parameters for Normal Cardiac Synchrony

B. Dej, *Carleton University, Canada;* R. Wassenaar, *Ottawa Hospital,*

Canada

M14-246 Fully Automated Software for Polar-Map Registration and Sampling from PET Images

R. Klein^{1,2}, M. Lortie¹, R. S. Beanlands¹, R. A. deKemp¹, A. Adler²
¹University of Ottawa Heart Institute, Canada; ²University of Ottawa, Canada

M14-249 A Method for Automatic Extraction of Striatal Structures for PET Dose-Finding Studies

E. Wallius¹, J. Tohka¹, J. Hirvonen², J. Hietala³, U. Ruotsalainen¹
¹Tampere University of Technology, Finland; ²Turku PET centre, Finland; ³University of Turku, Finland

M14-252 Efficient Model of the Collimator Blurring in Pinhole SPECT

A. Andreyev, M. Defrise, C. Vanhove
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M14-255 Iterative Reconstruction of Combined Voxelized Images and Volumes-of-Interest for SPECT Imaging

Y. Du, E. C. Frey, Johns Hopkins University, USA

M14-258 Comparison of Image Segmentation and Registration Based Methods for Analysis of Misaligned Dynamic H₂¹⁵O Cardiac PET Images

A. Juslin¹, J. Tohka¹, J. Lötjönen², U. Ruotsalainen¹
¹Institute Of Signal Processing, Finland; ²VTT Information Technology, Finland

M14-261 A Human Observer Study Comparing Parallel-Hole, Fan-Beam and Cone-Beam Collimation in ^{99m}Tc-Sestamibi Myocardial SPECT Defect Detection with a Heterogeneous Phantom Population

K. L. Gilland, B. M. W. Tsui, Johns Hopkins University, USA; G. T. Gullberg, E. O. Lawrence Berkeley National Laboratory, USA

M14-264 Images of Small Brain Phantom with Contrast Agents and Rat Kidney, Using 20, 30 and 40 keV Synchrotron X-Rays: Utilization of DEI and CT.

R. V. Donepudi, Sir.C.R.R. (A) College, India; Z. Zhong, Brookhaven National Laboratory, USA; T. Yuasa, T. Akatsuka, Yamagata University, Japan; T. Takeda, University of Tsukuba, Japan; G. Tromba, Elettra, Italy

M14-267 A Template Based Approach for Automatic Seed Detection in Post-Implant CT Images for Prostate Brachytherapy

M. Yazdi^{1,2}, S. GhadarGhadri¹, L. Beaulieu^{2,3}
¹School of Engineering, Shiraz University, Iran; ²Centre de Recherche en Cancérologie, Canada; ³Université Laval, Canada

M14-270 Multi-Modal and Multi-Temporal Image Registration in the Presence of Gross Outliers Using Feature Voxel-Weighted Normalized Mutual Information

Z. Gu, B. Qin, Shanghai Jiao Tong University, China

M14-273 Three-Dimensional Gated Reconstructed Images of the Coronary Arteries Based on Rotational Coronary Angiography: First in Human Results

B. Movassaghi¹, J. Garcia², M. Grass³, D. Schaefer³, V. Rasche³, O. Wink², J. Y. Chen², B. M. Groves², J. C. Messenger², J. D. Carroll¹
¹Philips Research Laboratories - North America, USA; ²University of Colorado Health Sciences Center, USA; ³Philips Research Laboratories Hamburg, Germany

M14-276 A Fast Method for Kinetic Parameter Estimation

I. S. Yetik, J. Qi, University of California at Davis, USA

M14-279 Wavelet Denoising of Dynamic PET Data: Application to the Parametric Imaging of Peripheral Benzodiazepine Receptor

M. Shidahara, Y. Ikoma, C. Seki, Y. Fujimura, K. Yoshida, H. Ito, T. Suhara, I. Kanno
 Molecular Imaging Center, NIRS, JAPAN

M14-282 A Combined Noise Reduction and Partial Volume Estimation Method for Image Quantitation

J. P. Chiverton, K. Wells, Centre for Vision, Speech and Signal Processing, University of Surrey, UK; M. Partridge, Institute of Cancer Research and Royal Marsden NHS Trust, UK

M14-285 Location-Known-Exactly Human-Observer ROC Studies of Attenuation and Other Corrections for SPECT Lung Imaging

A. Lehovich, H. C. Gifford, M. A. King
 U. Mass Medical School, USA

M14-288 Calculation of Left Ventricular Ejection Fraction of Abnormal Hearts in SPECT

R. Boutchko, A. Sitek, B. W. Reutter, T. F. Budinger, G. T. Gullberg
 Lawrence Berkeley National Laboratory, USA

M14-291 An Assessment of a Visual Tracking System (VTS) to Detect and Compensate for Patient Motion During SPECT: Calibration, Stability and Initial Results

J. E. McNamara¹, P. P. Bruyant¹, B. Feng¹, A. Lehovich¹, J. Dey¹, R. D. Beach¹, M. Gennert², M. A. King¹
¹University of Massachusetts Medical School, USA; ²Worcester Polytechnic Institute, USA

M14-294 Effect of Truncation in Quantitative Cardiac Imaging with Small Field-of-View Pinhole SPECT

T. Zeniya¹, H. Watabe¹, A. Sohlberg¹, T. Inomata¹, H. Kudo², H. Iida¹
¹National Cardiovascular Center Research Institute, Japan; ²University of Tsukuba, Japan

M14-297 Error Evaluation for Camera Calibration

S. Gu¹, J. McNamara², M. Ward¹, M. A. Gennert¹, M. A. King²
¹Worcester Polytechnic Institute, United States; ²University of Massachusetts Medical School, United States

M14-300 Evaluation of Spillover and Partial Volume Effect Compensation on Quantitative Accuracy in Cardiac SPECT Perfusion Imaging

P. H. Pretorius, M. A. King
 University of Massachusetts Medical School, USA

M14-303 Quantifying the Effects of Acquisition Parameters in Cardiac SPECT Imaging and Comparison with Visual Observers

J. Zeintl¹, J. T. Chapman², A. H. Vija², J. Hornegger¹
¹University of Erlangen, Germany; ²Siemens Medical Solutions USA, Inc., USA

M14-306 Body-Contour Acquisition Versus Circular Orbit Acquisition with Resolution Recovery in Cardiac SPECT

A. O. Sohlberg, H. Watabe, H. Iida
 National Cardiovascular Center Research Institute, Japan

M14-309 The Current Status of a Non-Invasive Arterial Monitor under Development

G. R. Jones¹, G. J. O'Keefe¹, R. P. Rassoof², A. M. Scott¹
¹Austin Health, Australia; ²The University of Melbourne, Australia

M14-312 Non-Invasive and Selective Measurement of the Arterial Input Function Using a PET Wrist Scanner

A. M. Kriplani^{1,2}, D. J. Schlyer², P. Vaska², V. Dzordzhadze², S. P. Stoll², S. S. Southekal^{1,2}, S. J. Park², C. L. Woody², S. Junnarkar², J.-F. Pratte²

¹*Stony Brook University, USA*; ²*Brookhaven National Laboratory, USA*

M14-315 Optimizing the quantitative in vivo imaging for longitudinal studies in rat brain using FDG and microPET

H.-M. Wu, N. G. Harris, W. Ladno, J. Edwards, H.-D. Lin, G. Cole, R. L. Sutton, D. A. Hovda, M. E. Phelps, S.-C. Huang

David Geffen School of Medicine, University of California, Los Angeles, USA

M14-318 Motion Correction for Respiratory Gated PET Images

N. C. Detorie, M. Dahlbom

University of California, Los Angeles, USA

M14-321 Lesion Detectability in Motion Compensated Image Reconstruction of Respiratory Gated PET/CT

K. Thielemans, *Hammersmith Imanet Ltd, UK*; R. Manjeshwar, X. Tao, E. Asma, *GE Global Research, US*

M14-324 Investigation of Subject Motion Encountered During a Typical Positron Emission Tomography Scan.

K. Dinelle¹, S. Blinder¹, J. C. Cheng¹, S. Lidstone¹, K. Buckley², T. Ruth², V. Sossi¹

¹*University Of British Columbia, Canada*; ²*TRIUMF, Canada*

M14-327 Attenuation-Emission Alignment in Cardiac PET/CT with Consistency Conditions

A. M. Alessio, P. Kinahan, G. Chen, K. Branch, J. Caldwell
University of Washington, USA

M14-330 An Attenuation Correction Method for Respiratory-Gated PET/CT Image

T. Yamazaki¹, H. Ue¹, H. Haneishi¹, A. Hirayama², T. Sato³, S. Nawano³

¹*Chiba university, Japan*; ²*GE Yokogawa Medical Systems, Japan*;

³*National Cancer Center, Japan*

M14-333 Evaluation of an Energy-Based Method for Scatter Correction in Positron Emission Tomography

H.-T. Chen, C.-M. Kao, B. Penney, C.-T. Chen

The University of Chicago, USA

M14-336 Scatter Correction in PET Using the Transport Equation

T. Koesters, F. Natterer, F. Wuebbeling

University of Muenster, Germany

M14-339 An Analytical Scatter Correction for Singles-Mode Transmission Data in PET

E. Vandervoort¹, S. Jan², S. Vesna¹

¹*University of British Columbia, Canada*; ²*Commissariat a l'Energie Atomique, France*

M14-342 Simultaneous Attenuation and Scatter Correction in Small Animal PET Imaging

M. Bentourkia, O. Sarrhini

Université de Sherbrooke, Canada

M14-345 CT-Based Attenuation Correction for PET Brain Imaging

S. J. Lokitz, R. E. Coleman, T. G. Turkington

Duke University Medical Center, USA

M14-348 Quantitative VOI-Based Analysis of Template-Guided Attenuation Correction in 3D Brain PET

M.-L. Montandon, H. Zaidi

Geneva University Hospital, Switzerland

M14-351 Accurate Motion Compensation Incorporating All Detected Events in the HRRT Scanner

A. Rahmim¹, K. Dinelle², J.-C. Cheng², M. Shilov¹, P. W. Segars¹, O. G. Rousset¹, B. M. W. Tsui¹, D. F. Wong¹, V. Sossi²

¹*Johns Hopkins University, USA*; ²*University of British Columbia, Canada*

M14-354 Optimal Respiratory Gating Scheme in Listmode PET/CT: Motion Tracking Using a Video Camera

K. P. Schäfers, M. Dawood, F. Büther, N. Lang, M. Schäfers

University Hospital of Münster, Germany

M14-357 A Monte Carlo Study of Deconvolution Algorithms for Partial Volume Correction in Quantitative PET

J. Tohka, *Tampere University of Technology, Finland*; A. Reilhac, *CERMER, France*

M14-360 A New Rebinning Algorithm for 3D PET Data

K. Erlandsson, R. van Heertum, J. J. Mann

Columbia University, USA

M14-363 On the Impact of Arc Correction and Axial Resampling in Inverse Fourier Rebinning

S. Cho, Q. Li, S. Ahn, R. M. Leahy

University of Southern California, USA

M14-366 A Method for System Matrix Construction and Processing for Reconstruction of In-Beam PET Data

G. Shakirin¹, P. Crespo¹, W. Enghardt^{1,2}

¹*Institute of Nuclear and Hadron Physics, Forschungszentrum Rossendorf, Germany*; ²*University Hospital and Medical Faculty C.G. Carus, Technische Universität Dresden, Germany*

M14-369 Simulation-Based Evaluation of Iterative Reconstructions in Dynamic [18F]MPPF PET Studies

S. Tomei¹, A. Reilhac¹, I. Buvar², C. Michel³, G. Gimenez¹, N. Costes¹

¹*CERMER - imagerie du vivant, France*; ²*U678 INSERM, France*;

³*CPS-PET system, USA*

M14-372 Fast Forward Projection and Backward Projection Algorithm Using SIMD

I. K. Hong¹, S. T. Chung¹, Y. D. Son^{2,3}, H. G. Lee³, H. K. Kim³, Z. H. Cho^{2,3}

¹*Korea Polytechnic University, South Korea*; ²*Gachon Medical School, South Korea*; ³*University of California, Irvine, USA*

M14-375 Influence of Outside Field of View Activity on the Quality of High Resolution Research Tomograph (HRRT) Brain Studies

R. W. Kloet, H. W. de Jong, F. van Velden, A. A. Lammerstma, R. Boellaard

VU University Medical Center, Netherlands

M14-378 Normalization Approaches for the MADPET-II Small Animal PET Scanner

I. Torres-Espallardo¹, V. C. Spanoudaki¹, M. Rafecas², M. C. Huisman¹, S. I. Ziegler¹

¹*Klinikum rechts der Isar, Technical University of Munich, Germany*;

²*Institute of Particle Physics - IFIC, Spain*

M14-381 Probability Based Positron Range Modeling in**Inhomogeneous Medium for PET**Y. Wan¹, Q. Xie^{1,2}, C. Hu¹, S. Wan¹¹Huazhong University of Science and Technology, China; ²The University of Chicago, America**M14-384 Multi-Scale Selection of the Stopping Criterion for MLEM Reconstructions in PET**N. B. Bissantz¹, B. A. Mair², A. Munk¹¹University of Goettingen, Germany; ²University of Florida, US**M14-387 Noise Study in Monte Carlo Estimated System Matrix for OPET**

F. R. Rannou, University of Santiago of Chile,

Chile; A. F. Chatziioannou, University of California, Los Angeles, USA

M14-390 First Human Brain Images of the jPET-D4 Using 3D OS-EM with a Pre-Computed System MatrixT. Yamaya¹, E. Yoshida¹, K. Kitamura², T. Obi³, K. Tanimoto¹,K. Yoshikawa¹, H. Ito¹, H. Murayama¹¹National Institute of Radiological Sciences, JAPAN; ²Shimadzu Co., Japan; ³Tokyo Institute of Technology, Japan**M14-393 MLEM Reconstructed Image Resolution from the LabPET Animal Scanner**T. Dumouchel¹, V. Selivanov², J. Cadorette^{2,3}, R. Lecomte³,R. deKemp¹¹University of Ottawa Heart Institute, Canada; ²Advanced Molecular Imaging Inc., Canada; ³Université de Sherbrooke, Canada**M14-396 Dynamic Load Balancing on Distributed Listmode Time-of-Flight Image Reconstruction**

Z. Hu, W. Wang, E. E. Gualtieri, M. J. Parma, E. S. Walsh,

D. Sebok, Y.-L. Hsieh, C.-H. Tung, J. J. Griesmer, J. A. Kolthammer,

D. Gagnon

Philips Medical Systems, USA

M14-399 Adaptive Spatially Variant Optimization of a Temporal Spline Basis for Dynamic PET Reconstruction

J. Verhaeghe, R. Phlypo, S. Vandenberghe, S. Staelens, Y. D'Asseler,

I. Lemahieu

Ghent University, Belgium

M14-402 Optimal and Robust Filter for PET Data Based on the System Response MatrixJ. L. Herraiz¹, S. España¹, E. Vicente², J. J. Vaquero², M. Desco²,J. M. Udias¹¹universidad Complutense de Madrid, Spain; ²Hospital GU Gregorio Marañon, Spain**M14-405 A Radon Space Spline Interpolation Method for Circular Orbit Cone Beam Reconstruction**

F. Jing, G. L. Zeng, University of Utah, USA

M14-408 Targeted Fully 3D Monte Carlo Reconstruction in SPECTZ. El Bitar^{1,2}, Y. Petegnief³, D. Hill⁴, V. Breton², I. Buvat¹¹U678 INSERM, UPMC, France; ²Laboratoire de Physique Corpusculaire, France; ³LIP, Hôpital Tenon, France; ⁴LIMOS, France**M14-411 New Ray-Driven System Matrix for Small-Animal Pinhole-SPECT with Detector Blur, Geometric Response and Edge Penetration Modeling**C. Wietholt^{1,2}, I.-T. Hsiao², C.-T. Chen^{1,3}¹National Health Research Institute, Taiwan; ²Chang Gung University, Taiwan; ³University of Chicago, U.S.A.**M14-414 Level Set Reconstruction for Sparse Angularly Sampled Data**

S. Yoon, A. R. Pineda, R. Fahrig

Stanford University, USA

M14-417 A Faster Ordered-Subset Convex Algorithm for Iterative Reconstruction

E. Quan, D. S. Lalush

North Carolina State University, United States

M14-420 Noise Properties in Helical Cone-Beam CT Images

D. Xia, E. Y. Sidky, L. Yu, X. Pan

The University of Chicago, USA

M14-423 Suppression of Metal Streak Artifacts in CT Using a MAP Reconstruction ProcedureC. Lemmens¹, D. Faul², J. Hamill², S. Stroobants¹, J. Nuyts¹¹KULeuven, Belgium; ²Siemens Medical Solutions, USA**M14-426 Sinogram Correction Methods Using Sinogram Decomposition**

A. A. Zamyatin, Bio-Imaging Research, Inc, USA; S. Nakanishi,

Toshiba Medical Systems, Japan

M14-429 A Method of Truncation Compensation for Pinhole Tomography

B. C. Yoder, D. S. Lalush

North Carolina State University, USA

M14-432 Fully 5D Reconstruction of Gated Dynamic Cardiac SPECT Images

M. Jin, Y. Yang, M. N. Wernick, ILLINOIS INSTITUTE OF

TECHNOLOGY, USA; M. A. King, University of Massachusetts Medical School, USA

M14-435 Theory for Image Reconstruction from Divergent-Beam Projections in SPECTF. Noo¹, J. D. Pack^{1,2}¹University of Utah, USA; ²GE, USA**M14-438 One-Step Backprojection Algorithm for Computed Tomography**

D. Hwang, L. Zeng, University of Utah, USA

M14-441 PET Reconstruction Using Generalized Natural Pixels and a Monte Carlo Generated System MatrixY. Chen¹, S. Vandenberghe², S. Staelens², S. J. Glick¹¹University of Massachusetts Medical School, USA; ²Ghent University, Belgium**M14-444 Fast Shear-like Divergent-Beam Backprojection Algorithms**

A. K. George, Y. Bresler

Univ. of Illinois at Urbana-Champaign, USA

M14-447 A New FBP-Type Algorithm on Improving FDK Reconstruction for Z-Axially Untruncated Data from a Circular Orbit

L. Li, K. Kang, Z. Chen, L. Zhang, Y. Xing

Tsinghua University, China

M14-450 Extension of Pack and Noo's Cone-Beam Inversion Formula to a Wide Class of Trajectories

H. Yang, M. Li, K. Koizumi, Uni-Hite System Corporation,

Japan; H. Kudo, University of Tsukuba, Japan

M14-453 A Generally Exact FBP-Type Algorithm on Synthesizing Stereogram from Cone-Beam Projections

L. Li, Z. Chen, Y. Xing, L. Zhang, K. Kang

Tsinghua University, China

M14-456 Closed Sinusoid Trajectory for C-Arm CT Imaging

H. Yang, M. Li, K. Koizumi, *Uni-Hite System Corporation, Japan*; H. Kudo, *University of Tsukuba, Japan*

M14-459 Monte Carlo Dosimetry in Cone-Beam Microtomography

A. Martinez-Davalos, M. Rodriguez-Villafuerte, J. M. Larraga-Gutierrez
Instituto de Fisica, UNAM, Mexico

M14-462 Exact Reconstruction for Dual Energy Computed Tomography Using an H-L Curve Method

G. Zhang, Z. Chen, L. Zhang, J. Chen
Tsinghua University, China

M15 Biological and Medical Applications

Saturday, Nov. 4 13:00-14:30, Golden Ballroom

Session Chairs: Aaron Brill, *Vanderbilt University*
Grant Gullberg, *LBNL*

M15-1 Ultra-Wideband Microwave-Induced Thermoacoustic Tomography of Human Tissues

T. Chunjing^{1,2}, S. Tao¹, Y. Wenhui¹, W. Shizeng¹
¹*Institute of Electrical Engineering, Chinese Academy of Sciences, China*;
²*Graduate School of the Chinese Academy of Sciences, China*

M15-2 Lung Nodule Detection in Screening Computed Tomography

A. Retico¹, P. Delogu^{1,2}, M. E. Fantacci^{1,2}, I. Gori³, P. Kasae⁴,
A. Preite Martinez⁵, A. Tata¹
¹*INFN Pisa, Italy*; ²*University of Pisa, Italy*; ³*Bracco Imaging S.p.A., Italy*; ⁴*INFN Cagliari, Italy*; ⁵*Centro Studi e Ricerche Enrico Fermi, Italy*

M15-3 Dosimetry in I131 Internal Emitter Therapy Using Voxel Dependent Integrated Time-Activities Derived from Multiple, Registered SPECT and CT Images

S. J. Wilderman, A. M. Avram, J. Kritzman, R. Ackerman,
Y. K. Dewaraja
University of Michigan, USA

M15-4 Study of 11C-Acetoacetate Uptake by Rat Heart and Brain Using Small Animal PET Imaging

M. Bentourkia, S. Tremblay, J. Rousseau, R. Lecomte, S. Cunnean
Université de Sherbrooke, Canada

M15-5 Non-Rigid Registration with Position Dependent Rigidity for Whole Body PET Follow-up Studies

K. De Moor, J. Nuyts, S. Stroobants, F. Maes, P. Dupont
K.U. Leuven, Belgium, Belgium

M15-6 Improved Clinical Parametric Imaging Using List-Mode Reconstruction via Resolution System Modeling

F. C. Sureau^{1,2}, C. Comtat¹, A. J. Reader³, C. Leroy⁴, M.-J. Santiago-Ribeiro¹, I. Buvat⁵, R. Trébossen¹
¹*CEA, France*; ²*Siemens Medical Solutions, France*; ³*University of Manchester, United Kingdom*; ⁴*INSERM-CEA, France*; ⁵*INSERM-UPMC, France*

M16 Imaging Techniques and Advances

Saturday, Nov. 4 15:00-17:00, Golden Ballroom

Session Chairs: Anna Celler, *Department of Radiology, University of British Columbia*

Timothy Turkington, *Duke University Medical Center*

M16-1 Modified MLEM Algorithm for Artifact Suppression in CT

M. Oehler, T. M. Buzug, *RheinAhrCampus Remagen, Germany*

M16-2 Investigation of Optimal Tc-99m Injected Activity in Dual-isotope Myocardial Perfusion SPECT Imaging using 3-class ROC Analysis

X. He¹, X. Wang¹, X. Song², E. C. Frey¹
¹*Johns Hopkins Medical Institutions, MD*; ²*Philips Medical Systems, CA*

M16-3 Constant-Activity-Rate Slow Bolus Infusions for Improved Quantification of Myocardial Blood Flow with ⁸²Rb and 3D PET

R. deKemp, R. Klein, M. Lortie, R. Beanlands
University of Ottawa Heart Institute, Canada

M16-4 Simulation Study of Scatter Components for a MicroPET II-like Scanner

S. L. Bowen, Y. Yang, *UC Davis, USA*; R. D. Badawi, *Department of Radiology, USA*

M16-5 Monte Carlo Modeling of Cascade Gamma Rays in PET

X. Zhu, G. El Fakhri
Harvard Medical School and Brigham & Women's Hospital, USA

M16-6 Rodent Brain Imaging with SPECT and CT

Y. Seo, D.-W. Gao, T. Hashimoto, B. L. Franc, M. W. Dae,
B. H. Hasegawa
University of California, San Francisco, USA

M16-7 Imaging Performance of An Integrative Ultra-High Resolution SPECT/CT System

L.-J. Meng¹, C.-M. Kao², D. Li¹, S. Cho³, C. Pelizzari², J. S. Souris²,
X. Pan², C.-T. Chen²
¹*University of Illinois at Urbana-Champaign, USA*; ²*The University of Chicago, USA*

M16-8 Application of Crosstalk Concept to Assessment of Multi-Pinhole Collimator Designs in Small Animal SPECT Imaging

Y. Wang, B. M. Tsui
Johns Hopkins Medical Institutions, USA

INTERNATIONAL WORKSHOP ON ROOM-TEMPERATURE SEMICONDUCTOR X- AND GAMMA-RAY DETECTORS (RTSD)

RTSD PROGRAM

It is our great pleasure to welcome you to the 15th International Workshop on Room-Temperature Semiconductor X-Ray and Gamma-Ray Detectors. This bi-annual conference represents the largest forum of scientists and engineers working to develop new solid-state radiation detectors and imaging arrays.

For those of you who have attended the past workshops, welcome back! As Chairs for the workshop, we are particularly delighted to make the acquaintance of new contributors, as there are many challenges that lie ahead, some of which will be solved by those who are now relatively new to the subject area.

It is our sincere hope that this conference will facilitate cross-fertilization of research and spawn creative ideas, and that these ideas will be incarnated into knowledge, leading to new directions and thrusts. We urge you to take time at this meeting to build on the commonality of your work with colleagues within the RTSD, NSS and MIC conferences, and to share your data, energy and experience, and explore ways to enhance cooperation and collaboration with others.

We have chosen to hold this meeting in conjunction with the IEEE NSS and MIC meetings for the purpose of encouraging information exchange between a much larger body of scientists and engineers who have an in-depth knowledge of detectors, instrumentation, nuclear science and technology, and medical imaging. A joint session with MIC is planned to help bring people together with common interests and offer the right environment for the creation of new and fruitful associations.

We would like to thank the speakers and attendees for their contributions, and express our gratitude to the session chairs and members of the Workshop Program Committee, who have offered their time to enlist the involvement of most researchers working in the field.



Ralph B. James



Eugenio Perillo

RTSD Program Co-Chairs

R01 CZT I

Monday, Oct. 30 13:30-15:05, Hampton & Windsor Rooms
Session Chair: **Glenn Knoll**, *University of Michigan*

R01-1 (13:30, invited) Polaris II 3-D Position Sensitive CdZnTe Detector Array System

Z. He, F. Zhang, D. Xu, Y. Zhu
The University of Michigan, USA

R01-2 (13:55) A Comparison of X-Ray Spectroscopy and Charge Transport Properties in CdZnTe

M. C. Veale, A. Lohstroh, J. M. Parkin, A. W. Davies, P. J. Sellin,
University of Surrey, UK; P. Seller, *Rutherford Appleton Laboratory, UK*

R01-3 (14:10) Electron and Hole Charge Transport Studies of CdMnTe

J. M. Parkin, A. W. Davies, A. Lohstroh, M. C. Veale, P. J. Sellin,
University of Surrey, United Kingdom; A. Mycielski, *Institute of Physics, Poland*; M. Groza, A. Burger, *Fisk University, United States*

R01-4 (14:25, invited) Crystal Growth and Characterization of Detector Grade (Cd,Zn)Te Crystals

M. Fiederle, A. Fauler, A. Zwerger, J. Gregori
Albert-Ludwigs-Universität, Germany

R01-5 (14:50) High Temperature Properties of CdTe Crystals, Doped by Sb

P. Fochuk¹, R. Grill², Y. Nykonyuk³, Y. Krustok⁴, Z. Zakharuk¹,
O. Panchuk¹

¹*Chernivtsi National University, Ukraine*; ²*Charles University, Czech Republic*; ³*National University of Water Management and Nature Resources Use, Ukraine*; ⁴*Tallinn University of Technology, Estonia*

R02 CZT II

Monday, Oct. 30 15:30-17:20, Hampton & Windsor Rooms
Session Chair: **Arnold Burger**, *Fisk University*

R02-1 (15:30, invited) Material Science Challenges of CdZnTe Semiconductor Detectors

C. Szeles, *eV PRODUCTS a division of II-VI Incorporated, USA*

R02-2 (15:55) Micro-Characterization of CdZnTe Detectors

G. A. Carini, A. E. Bolotnikov, G. S. Camarda, Y. Cui, R. B. James
Brookhaven National Laboratory, US

R02-3 (16:10, invited) Proton Irradiation Effects on the Trapping Properties of Cd_{1-x}Zn_xTe Detectors

B. Fraboni, A. Castaldini, A. Cavallini, *University of Bologna, Italy*; N. Auricchio, M. Bianconi, *CNR, Italy*

R02-4 (16:35) Characterization of Low Defect Cd_{0.9}Zn_{0.1}Te and CdTe Crystals for High Performance Frisch Collar Detectors

K. C. Mandal, S. H. Kang, M. Choi, D. Rauh, *EIC Laboratories, Inc., U.S.A.*; A. Kargar, M. J. Harrison, D. S. McGregor, *Kansas State University, U.S.A.*; A. E. Bolotnikov, G. Carini, G. Camarda, R. B. James, *Brookhaven National Laboratory, U.S.A.*

R02-5 (16:50) The Nature of Polarization in Wide-Bandgap Semiconductor Detectors under High-Flux Irradiation: Application to CdZnTe

D. S. Bale, C. Szeles
eV PRODUCTS, a division of II-VI Incorporated, USA

R02-6 (17:05) Study of a Biparametric Method Using a Twin Shaping Filter Applied on CZT Detectors

E. Caroli¹, N. Auricchio^{1,2}, A. Cola³, A. Donati¹, A. Roggio⁴, G. Ventura¹

¹INAF/IASF-Bologna, Italy; ²Università di Ferrara, Italy; ³CNR, Italy;

⁴Università Cattolica, Italy

R03 Pixel Detectors

Tuesday, Oct. 31 08:30-10:00, Hampton & Windsor Rooms

Session Chair: **Larry Franks**

R03-1 (08:30) Three-Dimensional Readout of CZT Detectors with the RENA-3 ASIC

J. L. Matteson, R. T. Skelton, M. R. Pelling, S. Suchy, *University of California, San Diego, USA*; V. B. Cajipe, M. Clajus, S. Hayakawa, T. Tümer, *Nova R&D, USA*

R03-2 (08:45) Characterisation of PIXellated CdZnTe Detectors for Use in a Portable Gamma-Ray Spectrometer

S. V. Rigby, A. J. Boston, P. J. Nolan, M. Farahmand, A. N. Grint, H. C. Boston, *University of Liverpool, UK*; I. H. Lazarus, J. Simpson, S. C. Letts, V. F. Pucknell, *CCLRC Daresbury, UK*; P. Seller, *CCLRC Rutherford Appleton Laboratory, UK*; D. M. Cullen, *University of Manchester, UK*

R03-3 (09:00) Multi-Energy, Fast Counting Hybrid CZT Pixel Detector with Dedicated Readout Integrated Circuit

M. Clajus, V. Cajipe, S. Hayakawa, T. O. Tumer, *NOVA R&D, Inc., USA*; P. D. Willson, *US Army, USA*

R03-4 (09:15) Polaris II 3-D Position Sensitive HgI2 Detector Array System

Z. He, F. Zhang, D. Xu, B. W. Sturm, M. Rodrigues, Y. Zhu, S. Anderson, W. Wang, *The University of Michigan, USA*; L. van den Berg, L. Bastian, *Constellation Technology Corp., USA*

R03-5 (09:30) Performance of a Dual Layer Silicon Charge Detector (SCD) During CREAM Balloon Flights

S. Nam¹, H. S. Ahn², P. Allison³, M. G. Bagliesi⁴, L. Barbier⁵, J. J. Beatty³, G. Bigongiari⁴, T. J. Brandt³, J. A. Jeon¹, J. T. Childers⁶, N. B. Conklin⁷, S. Couto⁷, M. A. DuVernois⁶, O. Ganel², J. H. Han², K. C. Kim², M. H. Lee², L. Lutz², P. Maestro⁴, A. Malinine², P. S. Marrocchesi⁴, S. Minnick⁸, S. Y. Zinn², S. I. Mognet⁷, S. Nutter⁹, I. H. Park¹, N. H. Park¹, E. S. Seo², R. Sina², P. Walpole², J. Wu², J. Yang¹, Y. S. Yoon², R. Zei⁴

¹Ewha Womans University, Republic of Korea; ²University of Maryland, USA; ³Ohio State University, USA; ⁴University of Siena and INFN, Italy; ⁵Goddard Space Flight Center, USA; ⁶University of Minnesota, USA; ⁷Penn State University, USA; ⁸Kent State University Tuscarawas, USA; ⁹Northern Kentucky University, USA

R03-6 (09:45) Characterization of PILATUS II Detector Modules

P. Kraft, *Paul Scherrer Institut, Switzerland*

R04 Wide Band-gap Materials

Tuesday, Oct. 31 10:30-12:00, Hampton & Windsor Rooms

Session Chair: **Paul Siffert, E-MRS**

R04-1 (10:30, invited) Room-Temperature Replacement for Ge Detectors – Are We There Yet?

P. N. Luke, M. Amman, *Lawrence Berkeley National Laboratory, USA*

R04-2 (10:55, invited) (Cd,Mn)Te as a Material, Alternative to (Cd,Zn)Te, for X-Ray and γ -Ray Detectors

A. Mycielski¹, M. Witkowska-Baran¹, A. Burger², M. Groza², H. Jackson², Y. Cui², A. J. Szadkowski¹, B. Witkowska¹, W. Kaliszek¹, R. Jakiela¹

¹Institute of Physics, Polish Academy of Sciences, Poland; ²Fisk University, USA

R04-3 (11:20) Improvements in Bismuth Tri-Iodide Platelets for Room Temperature X-Ray Detection

L. Fornaro, I. Aguiar, A. Noguera, M. Perez, M. Rodriguez *Faculty of Chemistry, Uruguay*

R04-4 (11:35, invited) The State-of-Art in TlBr Detector Development

V. Y. Gostilo¹, A. Owens², M. Shorohov¹

¹Baltic Scientific Instruments, Latvia; ²European Space Agency, The Netherlands

R05 Detectors for Homeland Security

Tuesday, Oct. 31 13:30-15:05, Hampton & Windsor Rooms

Session Chair: **R. Leon Feinstein, DHS/DNDO**

R05-1 (13:30, invited) The Role of Detection Technology in Nuclear Counter-Terrorism for Homeland Security

R. L. Feinstein, *DHS/DNDO, USA*

R05-2 (14:00, invited) Performance-Limiting Defects in CdZnTe Detectors

A. E. Bolotnikov¹, G. S. Camarda¹, G. A. Carini¹, Y. Cui¹, L. Li², R. B. James¹

¹Brookhaven National Laboratory, USA; ²Yinnel Tech, Inc., USA

R05-3 (14:25, invited) High-Performance, Large-Volume THM CdZnTe Detectors for Medical Imaging and Homeland Security Applications

H. Chen, S. Awadalla, G. Bindley, *Redlen Technologies, Canada*; A. Bolotnikov, G. Camarda, G. Carini, R. B. James, *Brookhaven National Laboratory, USA*

R05-4 (14:50) Construction and Characterization of an Array of Large-Volume Coplanar Grid Cadmium Zinc Telluride (CZT) Detectors Utilizing ASIC Signal Processing

M. S. Wallace, R. M. Kippen, W. S. Murray *Los Alamos National Laboratory, USA*

R06 RTSD Poster Session

Tuesday, Oct. 31 15:30-17:30, Atlas Ballroom

Session Chair: **Aleksey Bolotnikov, Brookhaven National Laboratory**

R06-1 Characterization of CZT Crystals with Using of the Time-of-Flight Method

V. Ivanov, *RITEC Ltd., Latvia*

R06-2 A System for the Characterization and Testing of CdZnTe/CdTe Pixel Detectors for X-ray and Gamma-ray Imaging

A. Arodzero, W. C. Barber, M. Q. Damron, N. E. Hartsough, J. S. Iwanczyk, *DxRay, Inc., USA*; N. Malakhov, E. Nygard, *Interon AS, Norway*; D. Moraes, P. Weilhammer, P. Jarron, *CERN, Switzerland*

R06-3 Type Conversion of Polycrystalline CdZnTe Thick Films by Multiple Compensation

K. H. Kim, *Samil-Pharm., Korea*; J. H. Won, S. H. Cho, J. Suh, J. K. Hong, S. U. Kim, *Korea University, Korea*

R06-4 First Characterization Tests of CIEMAT Pixel CdZnTe Detectors

J. M. Perez, E. Aguayo, R. Gonzalez, O. Vela, *CIEMAT, Spain*

R06-5 Study of Charge Charing on CdTe/CZT Detectors with Segmented Electrodes

N. Auricchio^{1,2}, E. Caroli², G. Ventura², A. Cola³, A. Donati², W. Dusi², A. Raulo⁴, E. Perillo^{4,5}

¹*Universita' di Ferrara, Italy*; ²*INAF/IASF-Bologna, Italy*; ³*CNR/IMM, Italy*; ⁴*Univertia' Federico II, Italy*; ⁵*INFN, Italy*

R06-6 Study of Detection Efficiency of 3D Position-Sensitive Pixelated CdZnTe Detectors

D. Xu, Z. He, F. Zhang, *University of Michigan, USA*

R06-7 Characterization of a New ASIC Readout for Pixel CZT Detectors for Hard X-Ray Astronomy

E. Caroli¹, N. Auricchio^{1,2}, B. Giuseppe³, S. Caccia³, A. Donati¹, S. Del Sordo⁴, G. Ventura¹

¹*INAF/IASF-Bologna, Italy*; ²*Univerita' di Ferrara, Italy*; ³*Politecnico di Milano, Italy*; ⁴*INAF/IASF-Palermo, Italy*

R06-8 Electrical Properties and X-Ray Sensitivity of Semi-Insulating CdZnTe:Pb Crystals

J. H. Won¹, S. H. Cho¹, J. H. Seo¹, K. H. Kim², S. U. Kim¹

¹*Korea University, Korea*; ²*Samil-Pharm. Co., Korea*

R06-9 Study of Thermal Treatment on Schottkey and Ohmic Contacts of CdZnTe Detector

S.-H. Park, Y.-K. Kim, H.-S. Kim, Y.-H. Cho, J.-H. Ha

KAERI, Republic of Korea

R06-10 Analysis of Coplanar Grid CdZnTe Detector Properties

B. W. Sturm, Z. He, *University of Michigan, USA*

R06-11 Analysis of Action of Guard Ring on Monolithic CZT

I. M. Blevis, *General Electric Healthcare, Israel*

R06-12 A new architecture for pixelated solid-state gamma camera used in nuclear medicine

L. Guerin, L. Verger, V. Rebuffel, O. Monnet

CEA - Recherche Technologique (CEA/GRE), FRANCE

R06-13 Investigations of the Performance of CdZnTe Detectors for Radiation Monitoring

A. Fauler¹, J. Gregori¹, A. Zwerger¹, U. Stöhlker², M. Fiederle¹

¹*Freiburger Materialforschungszentrum FMF, Germany*; ²*Bundesamt für Strahlenschutz, Germany*

R06-14 A Compact Readout System for Frisch-Ring CdZnTe Detector Arrays

Y. Cui, A. E. Bolotnikov, G. A. Carini, G. S. Camarda,

G. De Geronimo, J. Fried, P. O'Connor, R. B. James, *Brookhaven National Laboratory, USA*; A. Kargar, M. J. Harrison,

D. S. McGregor, *Kansas State University, USA*

R06-15 Growth of Thick Films CdTe from the Vapor Phase

M. Fiederle, A. Ehler, R. Sorgenfrei, K.-H. Bachem

Albert-Ludwigs-Universität Freiburg, Germany

R06-16 Electrical properties of CdTe crystals, doped by Si

P. Fochuk¹, R. Grill², Y. Nykonyuk³, Z. Zakharuk¹, R. Ivanchuk¹,

O. Panchuk¹

¹*Chernivtsi National University, Ukraine*; ²*Charles University, Czech Republic*; ³*National University of Water Management and Nature Resources Use, Ukraine*

R06-17 Simulation of Photoelectric Transport in High Resistivity CdTe for X-Ray Detectors

J. Franc, R. Grill, J. Kubát, E. Belas, P. Moravec, P. Höschl

Institute of Physics, Charles University, Czech Republic

R06-18 Optimizing the Spectral Response of Coplanar-Grid Sensors

G. De Geronimo, G. Carini, J. Fried, *Brookhaven National*

Laboratory, USA; S. A. Soldner, *eV PRODUCTS, USA*

R06-19 CdTe Detector Characteristics Around 300C with Periodic Bias Reset Technique

T. Seino, I. Takahashi, *Hitachi, Ltd., Japan*

R06-20 CdTe Strip Detectors: a Numerical Study of Charge Collection Properties

A. Cola¹, I. Farella^{1,2}, G. Ventura³, E. Caroli², N. Auricchio^{3,4}, A. Raulo⁵, E. Perillo⁵

¹*Institute of Microelectronics and Microsystems (IMM/CNR), Unit of Lecce, Italy*; ²*Dept. of Innovation Engineering, University of Lecce, Italy*; ³*Institute of Space Astrophysics and Cosmic Physics, National Institute for Astrophysics (IASF/INAF), Italy*; ⁴*Dept. of Physics, University of Ferrara, Italy*; ⁵*Dept. of Physics, University Federico II, and INFN, Italy*

R06-21 Charge Collection Profile of Polycrystalline CdTe Detectors.

N. Baier, A. Brambilla, G. Feuillet, S. Renet

CEA - Recherche Technologique (CEA/GRE), FRANCE

R06-22 Composition Study of CdTe Charges Synthesized by the Travelling Heater Method

N. Audet, B. Levicharsky, *5N Plus Inc., Canada*; A. Zappettini, M. Zha, *IMEM-CNR, Italy*

R06-23 Quantitative Measurement of the Substance using the X-ray Color Scanner with Multiple Energy Discrimination Capability

Y. Tomita, S. Matsui, Y. Shirayanagi, *Hamamatsu Photonics K.K., Japan*; T. Aoki, *Shizuoka University, Japan*; Y. Hatanaka, *Aichi University of Technology, Japan*

R06-24 Analysis of Polarization Phenomenon and Deep Acceptor in CdTe Radiation Detector

H. Toyama¹, A. Higa¹, I. Owan¹, S. Yamanoha¹, M. Yamazato¹, T. Maehama¹, R. Ohno², M. Toguchi¹

¹*University of the Ryukyus, Japan*; ²*Acronad Co., Ltd., Japan*

R06-25 Semiinsulating CdTe:In prepared by post-grown annealing at Te overpressure

E. Belas, R. Grill, P. Horodský, R. Feš, J. Franc, P. Moravec, P. Höschl

Institute of Physics, Charles University, Czech Republic

R06-26 Electrophysical Characteristics of TlBr Crystals Grown in Various Mediums

N. B. Smirnov, I. S. Lisitsky, M. S. Kuznetsov, A. V. Govorkov, E. A. Kozhukhova

Institute of Rare Metals, Russia

R06-27 Improved Process for the Detector Grade TlBr Single Crystals

H. J. Sipila, *Oxford Instruments Analytical Oy, Finland*; V. Kozlov, M. Leslela, *University of Helsinki, Finland*

R06-28 Recent Progress in TlBr Radiation Detectors

Y. Dmitriev, H. Kim, W. Higgins, L. Cirignano, P. Dokhale, P. Wong,

K. Shah
RMD, USA

R06-29 Temperature Dependence of Spectroscopic Performance of Thallium Bromide X- and Gamma-Ray Detectors

T. Onodera, K. Hitomi, T. Shoji
Tohoku Institute of Technology, Japan

R06-30 Growth of Ce-Doped LSO Single Crystals by Stockbarger-Bridgman Modified Crystallization Method

N. Basharuli, *Moscow Engineering Physics Institute (State University), Russia*; M. Namtalishvili, A. Mikaberidze, P. Magalashvili, Z. Razmadze, M. Gabeskiria, T. Sanadze, *Physical Crystallography Scientific-Technological Centre, Georgia*

R06-31 Simulation Study on DOI-PET Module Design Using LSO and New SiPM

C. H. Lee, G. Cho, H. D. Kim, H. S. Jeon, *Korea advanced institute of science and technology, Korea*; B. S. Kang, *National Fusion Research Center, Korea*

R06-32 Position-Sensitive Detector for PET Based on Multi-Channel APD and Scintillation Crystals LSO

N. Basharuli¹, V. Belyaev¹, M. Namtalishvili², Z. Htet¹, Y. Myo Aung¹
¹*Moscow Engineering Physics Institute (State University), Russia*;
²*Scientific Technological Center of Physical Crystallography, Georgia*

R06-33 Factorial Analysis of ICP etching of GaAs substrates for Thin-Film-Coated Neutron Detectors

B. B. Rice, A. Streit, D. S. McGregor
Kansas State University, United States

R06-34 A Spintronic High Purity Germanium Gamma-Ray Spectrometer

G. S. Camarda¹, G. Tepper², S. Bandyopadhyay², A. E. Bolotnikov¹, G. A. Carini¹, Y. Cui¹, R. B. James¹
¹*Brookhaven National Lab, US*; ²*Virginia Commonwealth University, US*

R06-35 Fabrication of a Large Number of Silicon PIN Diode Array Sensors for Atomic Number Measurements

I. H. Park, J. A. Jeon, S. W. Nam, N. H. Park
Ewha Womans University, Korea

R06-36 Development of Real-Time Monitoring System for Nuclear Material in Transport

S. W. Kwak, H. S. Yoo, H. W. Shim, H. J. Lee, J. U. Lee, D. Yu, G. Min
National Nuclear Management and Control Agency, Korea

R06-37 Application of PILATUS II Detector Modules for High Resolution X-Ray Imaging Crystal Spectrometers on the Alcator C-Mod Tokamak

M. L. Bitter¹, C. Broennimann², E. F. Eikenberry², K. W. Hill¹, A. Ince-Cushman³, S. G. Lee⁴, J. E. Rice³, S. Scott¹
¹*Princeton University, USA*; ²*Paul Scherrer Institut, Switzerland*;
³*Massachusetts Institute of Technology, USA*; ⁴*Korea Basic Science Institute, Korea*

R06-38 Normal Vector Based Method to Correct the Deformations of the Homogeneous Regions in Medical Images

X. Zhuang, L. Gu, *Shanghai Jiao Tong Univ., China*

R06-39 A New Method for the Fast Computation of the Gradient of the Entropy Based Registration Methods

X. Zhuang, L. Gu, *Shanghai Jiao Tong Univ., China*

R07 CZT III

Wednesday, Nov. 1 08:25-10:00, Hampton & Windsor Rooms
Session Chair: Michael Fiederle, *Freiburger Materialforschungszentrum*

R07-1 (08:25) Crystal Growth and Characterization of Cd(1-X)Zn(x)Te for Room Temperature

K. G. Lynn, G. Ciampi, K. A. Jones, C. E. Skrip
Washington State University, USA

R07-2 (08:40) Quantitative Measurements of Micro-Defects in CdZnTe Crystals

G. S. Camarda, A. E. Bolotnikov, G. A. Carini, Y. Cui, R. B. James
Brookhaven National Lab, US

R07-3 (08:55, invited) Te Precipitates in CdZnTe (Zn=10%) Radiation-Detector Materials

L. Li¹, M. Black¹, T. Orlova¹, A. Bolotnikov², G. Carini², A. Burger³, R. B. James²
¹*Yinnel Tech, Inc., USA*; ²*Brookhaven National Laboratory, USA*; ³*Fisk University, USA*

R07-4 (09:20, invited) Photocurrent and Surface Photo-Voltage Spectroscopy Investigations of CdTe-Based Compounds

A. Cavallini, A. Castaldini, D. Cavalcoli, B. Fraboni
University of Bologna, Italy

R07-5 (09:45) Electrical Compensation and Charge Trapping in Semi-Insulating CdZnTe: Experiment Versus Static Model

M. Prokesch, C. Szeles
eV PRODUCTS a division of II-VI Incorporated, USA

R08 Neutron Detectors

Wednesday, Nov. 1 10:25-11:05, Hampton & Windsor Rooms
Session Chair: Douglas McGregor, *Kansas State University*

R08-1 (10:25, invited) Polycrystalline Boron Nitride Based Alpha and Neutron Detectors

M. Schieber, M. Roth, A. Zuck, O. Khakhan, *The Hebrew University of Jerusalem, Israel*; Z. B. Alfassi, *Ben-Gurion University of the Negev, Israel*

R08-2 (10:50) Development of Perforated Si Diodes for Neutron Detection

W. J. McNeil, E. L. Patterson, B. B. Rice, T. C. Unruh, D. S. McGregor
Kansas State University, USA

R09 RTSD Lunch/Cruise in San Diego Harbor

Wednesday, Nov. 1 11:20-14:30

Buses depart from the Atlas Foyer at 11:20.

MR1 MIC RTSD Joint Session

Wednesday, Nov. 1 15:30-17:30, Hampton & Windsor Rooms
Session Chairs: Kanai Shah, *RMD*
Lars Furenlid, *University of Arizona*

MR1-1 (invited) MICROGAMI: A Versatile Gamma Camera Based on CdZnTe Detectors with an Orthogonal Capacitive Strip Technology

L. Verger, F. Mathy, O. Monnet, G. Montemont

CEA-Recherche Technologique, FRANCE

MR1-2 Evaluation of a Large Pixelated Cadmium Zinc Telluride Detector for Small Animal Radionuclide Imaging

E. W. Izaguirre¹, M. Sun¹, T. Vandehei², Y. Huang³, T. Funk¹, J. Li², K. Parnham², B. Patt², B. H. Hasegawa¹

¹University of California San Francisco, USA; ²Gamma Medica Ideas, USA; ³University of Shanghai for Science and Technology, P.R. China

MR1-3 Dual-Isotope SPECT Imaging of Mice with Semiconductor CZT

D. J. Wagenaar¹, J. Zhang¹, T. Kazules¹, T. VandeHei¹, M. Szawlowski¹, E. Bolle², B. E. Patt¹

¹Gamma Medica-Ideas, Inc., USA; ²Gamma Medica-Ideas, Inc., Norway

MR1-4 Design of a Small-Animal SPECT System with a Stationary CZT Detector Ring

J. W. Hugg, F. P. Jansen, J. Uribe, R. M. Manjeshwar, *GE Global Research, USA*; H. Lai, J. C. Pang, X. Guo, *GE Healthcare Biosciences, Canada*

MR1-5 CdTe Orthogonal Strip Detector for Small Animal PET

H. Kim¹, L. Cirignano¹, P. Dokhale¹, P. Bennett¹, J. R. Stickle², G. S. Mitchell², S. R. Cherry², M. Squillante¹, K. Shah¹

¹RMD, USA; ²University of California, USA

MR1-6 CZT Gamma Camera for Scintimammography

I. M. Blevis¹, M. K. O'Connor², E. Shai¹, Y. Malinovich¹

¹General Electric Healthcare, Israel; ²Mayo Clinic, USA

MR1-7 New Hand-Held Preoperative Gamma Camera Based on CZT Pixelized Detectors for Sentinel Node Observation

C. Scheiber, A. Zumbiehl, *Hôpital Cardiovasculaire Biophysique, France*; J. Chambron, M. Friedrich, M. Sowinska, P. Siffert, *EURORAD, France*

MR1-8 (invited) A CZT Pixelated Detector: Advantages, Drawbacks and Solutions

U. El-Hanany, *Orbotech Medical Solutions, Israel*

R11 Growth and Characterization

Thursday, Nov. 2 08:25-10:00, Hampton & Windsor Rooms

Session Chair: Kelvin Lynn, *Washington State University*

R11-1 (08:25) Structural Signatures for Identification of New Radiation Detection Materials

K. E. Ferris, B.-J. M. Webb-Robertson, J. F. Reyes Spindola, *Pacific NW National Laboratory, USA*; D. M. Jones, *Proximate Technologies, LLC., USA*

R11-2 (08:40) Effects of Different Orientation on CdZnTe Detectors

L. Zhang¹, Y. Li², Z. Deng², W. Zhu¹, J. Cai², L. Xue², L. Li³

¹NUCTECH COMPANY LIMITED, China; ²Tsinghua University, China; ³Yinnel Tech Inc., USA

R11-3 (08:55, invited) Boron Oxide Encapsulated Vertical Bridgman: a Method for Preventing Crystal-Crucible Contact in the CdZnTe Growth.

A. Zappettini, M. Zha, M. Pavesi, L. Zanotti, *IMEM, Italy*

R11-4 (09:20, invited) Search for a Correlation Between CdTe/CZT Detectors Performance and Materials Properties

M. Fiederle¹, A. Fauler¹, G. Hennard², L. Mengus², B. Schaub³, P. Siffert², M. Sowinska², A. Zwerger¹

¹EMF, *Albert-Ludwigs-Universität, Germany*; ²EURORAD, France; ³Technomics Consultants, Switzerland

R11-5 (09:45) Dynamic Lateral Polarization in CdZnTe under High Flux X-Ray Irradiation

S. A. Soldner, D. S. Bale, C. Szeles, *eV PRODUCTS, USA*

R12 CZT, CdTe and Mercury-Containing Compounds

Thursday, Nov. 2 10:30-12:00, Hampton & Windsor Rooms

Session Chair: Michael Schieber, *Hebrew University of Jerusalem, Israel*

R12-1 (10:30) Simulated Performance of CZT-Based Focal Plane Detectors for Gamma-Ray Lenses

A. Zoglauer¹, C. B. Wunderer¹, G. Weidenspointner², E. Caroli³, R. da Silva⁴, S. E. Boggs¹, P. von Ballmoos², J. Knödelseder²

¹University of California at Berkeley, USA; ²Centre d'Etudes Spatiales des Rayonnements, France; ³INFN/FIASF-Bologna, Italy; ⁴Universidade de Coimbra, Portugal

R12-2 (10:45) Performance of the HEXIS CZT Module with RENA-3 ASIC Readout

R. E. Rothschild, J. L. Matteson, M. R. Pelling, R. T. Skelton *University of California, San Diego, USA*

R12-3 (11:00) Time Resolved IBIC Studies of Inclusions in CdTe:Cl

A. W. Davies, F. Boroumand, A. Lohstroh, M. E. Ozsan, J. Parkin, P. J. Sellin, M. Veale *University of Surrey, UK*

R12-4 (11:15) Comparison of Mercuric Bromide and Lead Bromide Layers as Photoconductors for Direct X-Ray Imaging Applications

L. Fornaro, N. Sasen, M. Perez, A. Noguera, I. Aguiar *Faculty of Chemistry, Uruguay*

R12-5 (11:30) Isothermal Currents in Some Red Mercuric Iodide Single Crystals

S. L. Sharma *Indian Institute of Technology, Kharagpur, INDIA*

R12-6 (11:45) Optimization of Single-Sided Charge-Sharing Strip Detectors

L.-A. Hamel¹, M. Benoit¹, B. Dönmez², J. R. Macri², M. L. McConnell², T. Narita³, J. M. Ryan², M. Widholm²

¹Université de Montréal, Canada; ²University of New Hampshire, USA; ³College of the Holy Cross, USA

R13 Si, CZT and GaAs Detectors

Thursday, Nov. 2 13:30-14:55, Hampton & Windsor Rooms

Session Chair: Giuseppe Bertuccio, *Politecnico di Milano*

R13-1 (13:30, invited) 3D Silicon Radiation Sensors: Active Edges, Speed, Radiation Hardness

S. Parker, *Univ. of Hawaii, USA*

R13-2 (13:55) Simulation and Design of Orthogonal Capacitive Strip CdZnTe Detectors

G. Montémont, M.-C. Gentet, O. Monnet, J. Rustique, L. Verger *CEA-LETI, France*

R13-3 (14:10) Three-Dimensional Position Sensitive CdZnTe Detector Array for PNNL

F. Zhang, Z. He, Y. Zhu, *The University of Michigan, USA*

R13-4 (14:25) Dynamics of Carriers in Coplanar Grid Detectors

A. G. Kozorezov¹, A. Owens², K. Wigmore¹, A. Peacock² ¹Lancaster University, UK; ²European Space Agency, ESTEC, The

Netherlands

R13-5 (14:40) Medipix 2: Measurements and Comparison of GaAs with Si Pixel Detectors

A. Zwerger, A. Fauler, M. Fiederle, *Universität Freiburg, Germany*

R14 CdTe

Thursday, Nov. 2 15:30-17:40, Hampton & Windsor Rooms

Session Chair: **Anna Cavallini**, *University of Bologna, Dept. Physics*

R14-1 (15:30) Electric Field Properties of CdTe Schottky Detectors

A. Cola¹, I. Farella^{1,2}, A. M. Mancini², A. Donati³

¹*Institute of Microelectronics and Microsystems (IMM/CNR), Unit of Lecce, Italy;* ²*University of Lecce, Italy;* ³*Institute of Space Astrophysics and Cosmic Physics (IASF/INAF), Italy*

R14-2 (15:45) Bi Doped and Bi:Yb Co-Doped CdTe

E. Saucedo¹, M. Fiederle², D. Greiffenberg², M. Dambacher²,

C. M. Ruiz¹, N. V. Sochinskii³, E. Diéguez¹

¹*Universidad Autónoma de Madrid, Spain;* ²*Albert-Ludwigs-Universität Freiburg, Germany;* ³*CNM-CSIC, Spain*

R14-3 (16:00) Semi Insulating CdTe Crystals and Large Area Layers Co-Doped with Rare Elements

N. V. Sochinskii¹, E. Saucedo², C. M. Ruiz², V. Bermúdez²,

M. Abellan¹, E. Diéguez²

¹*Instituto de Microelectrónica de Madrid, Spain;* ²*Universidad Autónoma de Madrid, Spain*

R14-4 (16:15) Dynamics of Point Defects in Tellurium-Enriched CdTe

R. Grill¹, P. Fochuk², J. Franc¹, E. Belas¹, P. Höschl¹, Y. Verzhak²,

O. Panchuk², B. Nahlovskyy¹, P. Moravec¹

¹*Charles University, Institute of Physics, Czech Republic;* ²*Chernivtsi National University, Ukraine*

R14-5 (16:30) Characterization of Sensitive Layer in CdTe Diode Detector for High Energy X-Ray Imaging

T. Nakashima, M. Okazaki, T. Aoki

Shizuoka University, Japan

R14-6 (16:45) Charge Sharing in Microstrip CdTe Detectors: Dependence on the Interaction Position

A. Raulo^{1,2}, N. Auricchio³, E. Caroli³, A. Cola⁴, A. Donati³,

W. Dusi^{3,2}, I. Farella⁴, V. Gostilo⁵, G. Landini³, E. Perillo^{1,2}, P. Siffert⁶, M. Sowinska⁷, G. Ventura³

¹*University Federico II, Italy;* ²*INFN, Italy;* ³*INAF/IASF, Italy;* ⁴*CNR/IMM, Italy;* ⁵*Baltic Scientific Instruments, Latvia;* ⁶*EMRS, France;* ⁷*EURORAD, France*

R14-7 (17:00) Pulse Deficit Correction Trigger for Planar CdTe Based Gamma-Ray Spectrometer

D. Eames, *XRF Corporation, USA*

R14-8 (17:15, invited) Characterization of CdTe/n-Si Heterojunction Diodes for Nuclear Radiation Imaging Detectors

M. Niraula, K. Yasuda, K. Noda, K. Nakamura, I. Shingu,

M. Yokota, M. Omura, S. Minoura, H. Ohashi, R. Tanaka, Y. Agata

Nagoya Institute of Technology, Japan

R15 Low-Noise Electronics

Friday, Nov. 3 08:35-10:00, Hampton & Windsor Rooms

Session Chair: **Zhong He**, *The University of Michigan*

Thursday

R15-1 (08:35) Nucam: a 128 Channel Integrated Circuit with Pulse-Height and Rise-Time Measurement on Each Channel Including on-Chip 12bit ADC for High-Z X-Ray Detectors.

P. Seller, A. L. Hardie, L. L. Jones, *CCLRC, Rutherford Appleton Laboratory, UK;* A. J. Boston, S. V. Rigby, *University of Liverpool, UK*

R15-2 (08:50, invited) Front-End Integrated Circuits for Low Noise Semiconductor Radiation Detectors. A Turnover ?

G. Bertuccio, S. Caccia, *Politecnico di Milano, Italy*

R15-3 (09:15) Very Large Area Silicon Drift Detector Spectroscopic Performances

A. G. Vacchi, A. Rashevsky, G. Zampa, V. Bonvicini

INFN - Trieste Italy, Italy

R15-4 (09:30) Design and Performance of the X-123 Compact X-Ray and Gamma-Ray Spectroscopy System

R. H. Redus, A. Huber, J. Pantazis, T. Pantazis, D. Sperry

Amptek, Inc., USA

R15-5 (09:45) Pixel CdZnTe Detectors Based on New Designed ASIC

L. Zhang¹, Y. Li², Z. Deng², W. Zhu¹, J. Cai², L. XU²

¹*NUCTECH COMPANY LIMITED, China;* ²*Tsinghua University, China*

R16 Detectors and Spectrometer Systems

Friday, Nov. 3 10:30-11:30, Hampton & Windsor Rooms

Session Chair: **James Matteson**, *Center for Astrophysics and Space Sciences, University of California, San Diego*

R16-1 (10:30) Development and Characterisation of Large La-Halide Gamma-Ray Scintillators for Future Planetary Missions

S. Kraft, E.-J. Buis, E. Maddox, *cosine Research BV, The Netherlands;* A. Owens, F. Quarati, *European Space Agency, The Netherlands;* D. Pieter, A. Bos, J. De Haas, H. Brouwer, *Delft University of Technology, The Netherlands;* C. Dathy, V. Ouspenski, *Saint-Gobain Crystals, France;* S. Brandenburg, R. Ostendorf, *Kernfysische Versneller Instituut, The Netherlands*

R16-2 (10:45) X-Ray Detection with Conjugated Polymer Devices

F. Boroumand, J. L. Keddie, P. J. Sellin, M. Zhu, *University of Surrey, UK*

R16-3 (11:00) Applications of Monte Carlo Method to Simulate Gamma-Ray Interaction in Si and Ge

F. Gao, L. W. Campbell, R. Devanathan, Y. Xie, A. J. Peurrung, W. J. Weber

Pacific Northwest National Laboratory, USA

R16-4 (11:15) Gamma Ray Spectroscopy with THM CdZnTe Detectors

H. Chen, S. Awadalla, G. Bindley, *Redlen Technologies,*

Canada; A. Copete, J. Hong, J. Grindlay, *Harvard University, USA;* M. Amman, J. S. Lee, P. Luke, *Lawrence Berkeley National Laboratory, USA*

Friday

SPECIAL FOCUS WORKSHOPS

Micro-Pattern Gas Detectors: High Energy Physics and Beyond

Sunday October 29, 09:00 - 18:35, Garden Salon 1

Organizers: Paul Colas, *SACLAY*
Archana Sharma, *CERN*
Maxim Titov, *Freiburg University/ITEP Moscow*

The recent experience in the field of Micro-Pattern Gas Detectors (GEM, Micromegas and Capillary Plate Detectors) - for fast and precision tracking at current and future generation of particle accelerators, astrophysics research and medical applications, with a focus on design principles, performance, reliability and limitations - will be discussed. A special session with talks related to the pixel readout structures of Micro-Pattern Gas Detectors is organized.

The goal of the symposium is to provide a forum for interested experimentalists to review the progress in the field of Micro-Pattern Gas Detectors and to exchange recent experiences. Emphasis will be given to a critical discussions of problems and possible solutions.

MP1 Plenary Session

October 29, 2006 09:00-10:30

Session Chair: Maxim Titov, *Freiburg University/DESY/ITEP*

MP1-1: Micromegas detector, recent advances and prospects

I. Giomataris, *SACLAY, France*

MP1-2: Recent Advances in GEM Detectors

F. Sauli, *INFN-Trieste and CERN, Switzerland*

MP2 MICROMEGAS detectors in current/future experiments

October 29, 2006 10:50-12:10

Session Chair: Paul Colas, *SACLAY, France*

MP2-1: Micromegas Type Neutron Detector for ADS System

J. Pancin¹, S. Andriamonje¹, S. Aunes¹, A. Giganon¹, Y. Giomataris¹, J. F. Lecolley², M. Riallot¹, R. Rosa³

¹CEA Saclay, France; ²CNRS/IN2P3, France; ³ENEA, Italy

MP2-2: Micromegas in CAST and prospects

T. Geralis, *Institute of Nuclear Physics, NCSR, France*

MP2-3: Micromegas: Large-Size High-Rate Trackers in COMPASS

F. Kunne, P. Abbon, J. Ball, Y. Bedfer, C. Bernet, E. Burtin, T. Dafni, E. Delagnes, A. Giganon, N. d'Hose, J.-M. Le Goff, A. Magnon, C. Marchand, J. Marroncle, D. Neyret, S. Panebianco, S. Platchkov, S. Procureur, F. Robinet, P. Rebourgeard

CEA Saclay, France

MP2-4: Large "bulk" Micromegas Detectors for TPC and Other HEP Applications

A. Delbart, J. Bouchez, D. Burke, C. Cavata, P. Colas, X. De La Broise, A. Giganon, Y. Giomataris, P. Graffin, J.-P. Mols, F. Pierre, J.-L. Ritou, A. Sarrat, E. Virique, M. Zito, *CEA-Saclay, France*; J. Dumarchez, *Université Paris-VI-VII, France*; R. de Oliveira, *CERN, Switzerland*

MP3 GEM detectors in current/future experiments

October 29, 2006 13:30-14:50

Session Chair: Archana Sharma, *CERN*

MP3-1: Development and Use of a Radial TPC Using Cylindrical GEMs

H. C. Fenker, *Jefferson Lab, U.S.A.*

On behalf of the BoNuS Collaboration

MP3-2: Performance of the LEGS TPC

C. E. Thorn, B. Yu, G. De Geronimo, J. Fried, A. Kandasamy, D. S. Makowiecki, G. C. Smith, V. Radeka, K. Ardashev, S. Hoblit, A. M. Sandorfi, *Brookhaven National Laboratory, USA*; B. E. Norum, K. Wang, *University of Virginia, USA*; J. C. Mahon, *Ohio University, USA*

MP3-3: Detailed Performance Studies of a Large GEM-TPC Prototype

E. Radicioni, *INFN, Italy*

MP3-4: A Study of Gain Stability and Charging Effects in GEM Foils

C. Woody, B. Azmoun, *Brookhaven National Lab, USA*; B. Surrow, F. Simon, *Massachusetts Institute of Technology, USA*; R. Majka, N. Smirnov, *Yale University, USA*; F. Sauli, *CERN, Switzerland*; D. Crary, K. Kearney, G. Keeler, *Tech Etch, USA*; G. Karagorgia, *Florida Institute of Technology, USA*; P. Lynch, *Bucknell University, USA*

MP4 GEM/Capillary Plate Detectors in current/future experiments

October 29, 2006 15:15-16:15

Session Chair: Craig Woody, *Brookhaven National Lab*

MP4-1: A Novel Idea for an Ultra-Light Cylindric GEM Based Vertex Detector

G. Bencivenni, F. Anulli, D. Domenici, E. Iacuesa, F. Murtas

laboratori nazionali di Frascati - INFN - Italy, Italy

MP4-2: A New Spark Protected Gas Amplifier Imaging Detector

A. Di Mauro¹, P. Martinengo¹, E. Nappi^{1,2}, V. Peskov¹, L. Periale^{1,2}, P. Picchi^{1,2}, F. Pietropaolo^{1,2}

¹CERN, Switzerland; ²INFN, Italy

MP4-3: Optical Readout of Glass Capillary Plate Gas Detector

F. Tokanai, H. Sakurai, S. Gunji, M. Kaneko, *Yamagata University, Japan*; T. Sumiyoshi, *Tokyo Metropolitan University, Japan*; T. Endo, Y. Fujita, T. Okada, T. Atsumi, H. Sugiyama, *Hamamatsu Photonics K.K., Japan*

MP5 Pixel Readout for Micro-Pattern Gas Detectors

October 29, 2006 16:30-18:35

Session Chair: Klaus Desch, *Bonn University*

MP5-1: Simulated Performance of 3-DTI Gamma-Ray Telescope Concepts

P. F. Blosser¹, A. R. Centa², S. D. Hunter², G. A. de Nolfo², J. F. Krizmanic², S. Son², M. L. McConnell¹, J. M. Ryan¹

¹University of New Hampshire, USA; ²NASA/Goddard Space Flight Center, USA

MP5-2: The Performance of the Micro Time Projection Chamber Based on μ -PIC

H. Nishimura¹, K. Hattori¹, K. Tsuchiya¹, S. Kabuki¹, H. Kubo¹,

K. Miuchi¹, T. Nagayoshi², Y. Okada¹, R. Orito³, H. Sekiya⁴,
A. Takada¹, T. Tanimori¹, K. Ueno¹
¹Kyoto University, Japan; ²Waseda University, Japan; ³Kobe University,
Japan; ⁴University of Tokyo, Japan

MP5-3: Photoelectron Tracking with a Virtual Pixel TPC for Astronomical X-Ray Polarimetry

J. K. Black¹, R. G. Baker², P. Deines-Jones², J. E. Hill³, K. Jahoda²
¹Forbin Scientific, USA; ²NASA/Goddard Space Flight Center, USA;
³Universities Space Research Association, USA

MP5-4: Direct Reading of Charge Multipliers with a Self-Triggering CMOS Analog Chip with 105k Pixels at 50 Micron Pitch

R. Bellazzini, INFN Pisa, Italy

MP5-5: Discharge Protection and Ageing of Micromegas Pixel Detectors

H. V. D. Graaf, NIKHEF, Netherlands

MP5-6: An Integrated Micromegas Made by Means of Wafer Post Processing and a Prototype CMOS Pixel Readout Chip

M. Chefdeville, NIKHEF, Netherlands

MP5-7: Triple GEM setup with highly pixelated readout using MediPix2 chip

A. Bamberger, K. Desch, U. Renz, M. Titov, N. Vlasov,
P. Wienemann, A. Zwerger
Freiburg University, Germany

Innovative Techniques for Hadron Therapy

Thursday, November. 2, 08:00-12:30, Sheffield Room

Organizers: Patrick Le Dû (ledu@hep.saclay.cea.fr), CEA Saclay
Anatoly Rozenfeld, University of Wollongong
Stephen Peggs, Brookhaven National Laboratory

The treatment of non-operable and radio-resistant cancer tumors using particle beams like protons and light ions is becoming a medical reality. The number of clinical facilities is growing very rapidly around the world. After the first successful workshop organized during the 2003 IEEE NSS/MIC/RTSD conference in Portland, we propose this year to review the evolution of technological ideas and instrumentation around this emerging topic. This is a perfect illustration of a merging nuclear and detectors experts with the medical imaging community. The goal of the workshop is to provide a forum for interested participants to discuss in a convivial way the progress in the field and to exchange recent experiences. The format of the workshop will consist of invited speakers, oral and posters presentations. The agenda will include:

- Hadrontherapy: a clinical introduction
- Survey of new facilities and projects around the world
- New machine concepts (FFAG, portable proton linac)
- Instrumentation for beam control and realtime dose monitoring
- In-beam PET systems
- Proton CT imaging
- Advanced dosimetry (micro and nano dosimetry)
- Modelling of the space radiation environment using ions
- Simulation using GEANT
- New ideas using antiprotons and neutrons.

Compton Scatter Imaging for Medicine, Astronomy and Industry

Thursday, November 2, 13:30 - 17:30, Sheffield Room

Organizers: Gary Royle, University College London
Tumay Tumer, Nova R&D

CS1 Compton Scatter Imaging 1

Thursday, Nov. 2 13:30-15:00

Session Chairs: Gary Royle, University College London
Tumay Tumer, NOVA R&D, Inc.

CS1-1 Advanced Compton Camera with the Ability in Electron Tracking Based on Micro Pixel Gas Detector for Medical Imaging

T. Tanimori¹, K. Hattori¹, E. Kunieda², A. Kubo², H. Kubo²,
K. Miuchi¹, T. Nakahara², H. Nishimura¹, Y. Okada¹, R. Orito³,
H. Sekiya⁴, T. Shirahata⁵, A. Takada¹, K. Tsuchiya¹, K. Ueno¹
¹Kyoto University, Japan; ²Keio University, Japan; ³Kobe University,
Japan; ⁴Institute of Cosmic Ray Research, University of Tokyo, Japan;
⁵Hitaichi Medical Corporation, Japan

CS1-2 Compton Electrons' Tracking Within a Single Silicon Layer with Controlled-Drift Detectors

A. Castoldi^{1,2}, A. Galimberti¹, C. Guazzoni^{1,2}, R. Hartmann³,
L. Strüder⁴
¹Politecnico di Milano, Italy; ²INFN, Italy; ³PNSensor GmbH,
Germany; ⁴Max Planck Institut, Germany

CS1-3 Recent Achievements of Si/CdTe Semiconductor Compton Cameras

S. Watanabe¹, S. Takeda^{1,2}, M. Ushio^{1,2}, H. Odaka^{1,2}, S. Ishikawa^{1,2},
T. Tanaka^{1,2}, K. Nakazawa¹, T. Takahashi^{1,2}, H. Tajima³, Y. Fukazawa⁴,
M. Nomachi⁵, M. Onishi⁶, Y. Kuroda⁶
¹Japan Aerospace Exploration Agency, Japan; ²University of Tokyo, Japan;
³Stanford Linear Accelerator Center, USA; ⁴Hiroshima University, Japan;
⁵Osaka University, Japan; ⁶Mitsubishi Heavy Industries Ltd., Japan

CS1-4 3D Mapping of Radioactive Gamma-Ray Sources with a Compton Camera

L. Mihailescu, D. Chivers, K. Vetter
Lawrence Livermore National Laboratory, USA

CS1-5 Image Reconstruction for Advanced Compton Telescopes

A. Zoglauer, C. B. Wunderer, S. E. Boggs, University of California at
Berkeley, USA; R. Andritschke, G. Kanbach, Max-Planck-Institut für
Extraterrestrische Physik, Germany

CS1-6 Detective Quantum Efficiency and Deadtime Losses in Compton Imaging Systems

K. Nurdan, T. Conka Nurdan, A. H. Walenta, University of Siegen,
Germany; A. B. Brill, Vanderbilt University, USA

CS2 Compton Scatter Imaging 2

Thursday, Nov. 2 15:30-17:30

Session Chairs: Gary Royle, University College London
Tumay Tumer, NOVA R&D, Inc.

CS2-1 Effects of Energy Resolution and Camera Geometry on Compton Camera Images

W. Ghoggali, R. D. Speller, G. J. Royle, J. Gabathuse, University
College London, United Kingdom; I. H. Lazarus, CCLRC, Daresbury
Laboratory, United Kingdom

CS2-2 Compton Camera Test Bench

N. Clinthorne¹, D. Burdette², E. Ches³, L. Han¹, K. Honscheid², S. Huh¹, H. Kagan², C. Lacasta⁴, G. Llosa⁴, M. Mikuz⁵, W. L. Rogers¹, S. Smith², A. Studen¹, P. Weilhammer^{3,6}

¹University of Michigan, USA; ²Ohio State University, USA; ³CERN, Switzerland; ⁴IFIC/CNIC University of Valencia, Spain; ⁵Jozef Stefan Institute, University of Ljubljana, Slovenia; ⁶University of Perugia, INFN, Italy

CS2-3 Orthogonal Strip HPGe Planar SmartPET Detectors in Compton Camera Configuration

H. C. Boston¹, J. Gillam², A. J. Boston¹, R. C. Cooper¹, J. R. Creswell¹, A. N. Grint¹, A. R. Mather¹, P. J. Nolan¹, D. P. Scraggs¹, G. Turk¹, C. J. Hall³, I. H. Lazarus³, A. Berry², T. Beveridge², R. A. Lewis²

¹University of Liverpool, UK; ²Monash University, Australia; ³CCLRC, UK

CS2-4 Coincident Compton Imaging for Nuclear Medicine

J. D. Kurfess, E. I. Novikova, B. F. Philips, E. A. Wulf
Naval Research Laboratory, USA

CS2-5 An Electronically-Collimated Gamma-Ray Detector for Localization of Radiation Sources

K. L. Matthews II, B. M. Smith, W. Hill, A. W. Lackie, W.-H. Wang, M. L. Cherry
Louisiana State University, USA

Bi-modality PET and MRI Workshop.

Thursday, Nov. 2, 19:00 - 21:00, Sheffield Room

Organiser: Paul Vaska (vaska@bnl.gov). *BNL*

Interest in truly simultaneous PET and MRI imaging has increased particularly as the technology of solid state detectors and photo-detectors for PET has matured. This short workshop will include invited speakers detailing the potential benefits of PET-MR imaging for medicine (covering both sequential and simultaneous approaches), as well as the particular challenges posed by the MRI environment for simultaneous imaging. The workshop is not intended to present the status of the various efforts underway (which will be covered in the regular conference sessions), but will be more issue-focused.

GATE Workshop

Saturday, November. 4, 17:30-20:00, Sunset Room

Organizers: Irene Buvat (buvat@imed.jussieu.fr),
Sébastien Jan (jan@shfj.cea.fr)
The OpenGATE collaboration
(<http://www.opengatecollaboration.org>)

Monte Carlo simulations play an increasing role in emission tomography, for the optimization of imaging system design, for tuning acquisition and processing protocols and assessing their performance, and even as part of the image formation process when involved in the reconstruction step or in corrections. The goal of this workshop is to gather current and future users and developers of GATE, the public-domain Monte Carlo simulation tool dedicated to emission tomography, and to allow them

to meet the members of the OpenGATE collaboration in charge of the development and the distribution of the code.

The agenda of the workshop will include:

- A general presentation of GATE and of the OpenGATE collaboration for newcomers
- Presentations of the latest developments in GATE
- Presentations of upcoming developments in GATE
- A discussion about the future of GATE
- A question and answer session with a panel of OpenGATE members

Third Workshop on the Nuclear Radiology of Breast Cancer (NRBC)

Saturday, November 4 (pm), and Sun. Nov. 5, Pacific Salon 1 &2

Organizers: Raymond Raylman, rraylman@wvu.edu,
304-293-1973, Chief Organizer
Craig Levin, cslevin@stanford.edu, 650-736-7211
Martin Tornai, martin.tornai@duke.edu, 919-684-7940

The goal of this one and a half day workshop is to present an update on the technology and applications of dedicated nuclear radiology breast imaging systems. Specifically, the program will cover topics such as breast cancer biology, clinical state-of-the-art in radiology, potential diagnostic and treatment roles of nuclear medicine, existing and promising breast cancer radiotracers, clinical trial results with commercial nuclear emission cameras dedicated to breast imaging, international research groups working on improving nuclear breast cancer imaging, long term industrial outlook of dedicated breast imaging modalities, and research funding opportunities. The format of the workshop consists of a mix of invited speakers and presentations (oral and poster) selected from submitted abstracts.

Overview of the Workshop Schedule.

- The workshop will begin on the afternoon of November 4 after most of the MIC sessions have concluded and continue on November 5 for the whole day until approximately 5:00pm.
- There will be several oral presentations, as well as a poster session.
- A group dinner is to be held on the evening of November 4.

ACKNOWLEDGEMENTS

The process of organizing a conference of this nature begins several years in advance, and requires untold hours of volunteer time from dedicated individuals. The conference committee for the 2006 IEEE NSS/MIC/RTSD has worked extremely hard during those untold hours, and the committee members have been truly a delight to interact with. I acknowledge the efforts of the program chairs of the three main conferences, the special focus workshop organizers, and the short course chairs, who have assembled a vibrant scientific and technical program. A very large complement of reviewers has worked carefully over the summer to ensure a high quality of paper selection.

We are grateful for both institutional and commercial support that has been received, a key element that helps us to provide support for students and younger scientists to attend the conference.

I extend appreciation to the conference coordinator, the webmaster and the assistant to the general chair, all just a stone's throw away from my office at BNL — they have kept a strong focus to our weekly planning meetings.

Finally, we also acknowledge you, the attendees, for supporting this conference every year and allowing it to grow in scope and international extent.

Graham C. Smith

General Chair

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Conference Time Table (Sunday, October 29 through Wednesday, November 1)

Sunday	Sheffield	Hampton	Windsor	Garden 1
08:30-10:00	SC1: Interaction of Radiation with Matter: Theory and Practice	SC2: Nuclear Science for Homeland Security	SC3: Integrated Circuit Front Ends for Nuclear Pulse Processing	09:00-10:30 MP1: Plenary Session
10:30-12:00				10:50-12:10 MP2: MICROMEAS Detectors
13:30-15:00				13:30-14:50 MP3: GEM Detectors
15:30-17:00				15:15-16:15 MP4: GEM/Capillary Plate Detectors 16:30-18:35 MP5: Pixel Readout for Micro-Pattern Gas Detectors

All NSS & RTSD posters can be set up after 10:00 on Monday, and must be removed by 20:00 on Wednesday.

All MIC posters can be set up after 20:00 on Wednesday, and must be removed by 13:00 on Saturday.

Monday	Golden Ballroom	Pacific 1	Pacific 2	Pacific 3	California	Hampton & Windsor	Garden 1	Garden 2
09:00-11:50	N01: NSS Plenary						SC4: Molecular Biology for Imaging Scientists (08:30-17:00)	SC5: Detectors for PET and SPECT (08:30-17:00)
12:00-14:00					NSS Luncheon			
14:00-15:30	N02: Computing in HEP Experiments	N03: Detectors and Electronics for the SNS	N04: Gas Detectors I	N05: Photodetectors & Radiation Imaging I		R01: CZT I (13:30-15:05)		
16:00-18:00	N06: Instrumentation for Homeland Security	N07: Core Software Tools	N08: Data Acquisition & Analysis Systems I	N09: Radiation Damage Effects		R02: CZT II		

Tuesday	Golden Ballroom	Pacific 1	Pacific 2	Pacific 3	California	Hampton & Windsor	Atlas Ballroom	Garden 1	Garden 2
08:30-10:00	N10: HEP & NP Instrumentation I: Calorimetry	N11: Neutron Imaging and Radiography		N12: Nuclear Measurements and Monitoring Techniques I	N13: Analog and Digital Circuits I	R03: Pixel Detectors		SC6: Small Animal Imaging: Detectors and Technical Aspects (08:30-17:00)	SC7: Image Quality (08:30-17:00)
10:30-12:00						R04: Wide Band-gap Materials	N14: NSS Poster 1		
13:30-15:00	NM1: NSS MIC Joint Session 1	N15: HEP & NP Instrumentation II: Pixel Detectors		N16: Gas Detectors II	N17: Analog and Digital Circuits II	R05: Detectors for Homeland Security			
15:30-17:30	NM2: NSS MIC Joint Session 2	N18: HEP & NP Instrumentation III: Silicon and Diamond Detectors	N19: Synchrotron Radiation Instrumentation	N20: Data Acquisition and Analysis Systems II	N21: Astrophysics and Space Instrumentation I		R06: RTSD Posters		
19:00-21:00							Exhibitors Reception		

Wednesday	Golden Ballroom	Pacific 1	Pacific 2	Pacific 3	California	Hampton & Windsor	Atlas Ballroom
08:30-10:00	M01: X-Ray and CT (08:00-10:00)	N22: Software for Radiobiology and Hadrontherapy	N23: HEP & NP Instrumentation IV: New Detection Techniques	N24: Gas Detectors III	N25: Analog and Digital Circuits III	R07: CZT III (08:25-10:00)	
10:30-12:00	M02: MIC Plenary (10:30-12:20)	N26: Data Analysis and Grid	N27: HEP & NP Instrumentation V: Detector Commissioning and Engineering Aspects	N28: Nuclear Measurements and Monitoring Techniques II	N29: Scintillators I - Plastics & other scintillators	R08: Neutron Detectors (10:30-11:05)	
11:20-14:30						R09: RTSD Lunch/Cruise	
13:30-15:00	M03: Observer Analysis and Modelling						N30: NSS Poster 2
15:30-17:30	M04: PET Reconstruction	N31: Software for Radiation Protection and Nuclear Medicine	N32: HEP & NP Instrumentation VI: Muon Detectors	N33: Trigger and Front End Systems	N34: Solid State Tracking Detectors	MR1: MIC RTSD Joint Session	
18:30-21:00	Conference Reception at the Terrace Pavilion						

Conference Time Table (Thursday, November 2 through Sunday, November 5)

Thursday	Golden Ballroom	Pacific 1	Pacific 2	Pacific 3	Sheffield	Hampton & Windsor	Atlas Ballroom
08:30-10:00	M05: Modeling and Image Analysis (08:00-10:00)	N35: Detector Software	N36: HEP & NP Instrumentation VII: Tracking Detectors and Neutrino Experiments Devices	N37: Scintillators II - Energy resolution - Radiation damage	Innovative Techniques for Hadron Therapy (08:00-12:30)	R11: Growth and Characterization (08:25-10:00)	
10:30-12:00		N38: Simulation: Physics Models and Validation	N39: Instrumentation for Medical and Biological Research I	N40: Scintillators III - Composites - ZnO		R12: CZT, CdTe and Mercury-Containing Compounds	M06: MIC Poster 1
13:30-15:00	M07: Small Animal Imaging	N41: HEP & NP Instrumentation VIII: Particle ID Systems	N42: Photodetectors and Radiation Imaging II	N43: Scintillators IV - Lanthanide scintillators - Light yield - Time response	CS1: Compton Scatter Imaging 1	R13: Si, CZT and GaAs Detectors	
15:30-17:30	M08: Multimodality Imaging	N44: Astrophysics and Space Instrumentation II	N45: New Solid State Detectors	N46: HEP Software Systems	CS2: Compton Scatter Imaging 2	R14: CdTe	
19:00-21:00					PET/MRI Workshop		

Friday	Golden Ballroom	Hampton & Windsor	Atlas Ballroom
08:00-10:00	M09: PET and PET/CT	R15: Low-Noise Electronics (08:30-10:00)	
10:30-12:00	M10: MIC Awards	R16: Detectors and Spectrometer Systems	
13:30-15:00			M11: MIC Poster 2
15:30-17:30	M12: CT and SPECT Reconstruction		
18:00-22:00	MIC Dinner @ SeaWorld		

Saturday	Golden Ballroom	Pacific 1 & 2	Atlas Ballroom	Sunset
08:00-10:00	M13: SPECT and SPECT/CT			
10:30-12:00			M14: MIC Poster 3	
13:00-14:30	M15: Biological and Medical Applications	Nuclear Radiology of Breast Cancer		
15:00-17:00	M16: Imaging Techniques and Advances			
17:30-20:00				Gate Workshop

Sunday Nov. 5	Pacific 1 & 2
08:30-17:30	Nuclear Radiology of Breast Cancer



**2006 IEEE NUCLEAR SCIENCE SYMPOSIUM & MEDICAL IMAGING CONFERENCE
& 15th INTERNATIONAL WORKSHOP ON ROOM-TEMPERATURE SEMICONDUCTOR DETECTORS**

Continuing Education Program • Special Interest Workshops • Tours & Companion Program
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REGISTRANT INFORMATION (please type or print legibly):

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Primary Interest: NSS MIC RTSD
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DEADLINE:

Friday, October 13, 2006 (After this date, you will have to register on-site at the meeting.)

CANCELLATION & REFUND POLICY

You are not officially registered until we receive your completed registration form and payment. If your payment is not received by the October 13th deadline, your registration will be cancelled. In order to process refunds, cancellations must be received in writing by October 20, 2006 (less \$25 cancellation fee). No refunds will be issued thereafter.

FEE SUMMARY:

Please indicate appropriate fees below, using fee schedule opposite:

1. Registration	\$ _____
2. Luncheon/Dinner	\$ _____
3. NRBC Workshop	\$ _____
4. Continuing Education Program	\$ _____
5. Tours and Companion Program	\$ _____
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FEE SCHEDULE:

1. REGISTRATION

<input type="checkbox"/> IEEE Member (IEEE member number required)		By Oct. 13	On-Site
<input type="checkbox"/> non-IEEE Member		\$490	\$640
<input type="checkbox"/> IEEE Student (proof of student status required)		\$615	\$765
<input type="checkbox"/> non-IEEE Student		\$200	\$300
<input type="checkbox"/> Retired/Unemployed (IEEE only)		\$300	\$400
<input type="checkbox"/> One Day Only (specify day:)	_____	\$100	\$150
<input type="checkbox"/> NRBC Workshop (Nov. 4-5)		\$200	\$200
<input type="checkbox"/> Continuing Education Program Only		\$125	\$125
		see Continuing Education fees below	

2. BANQUETS

	By Oct. 13	On-Site	Qty.	Total
NSS Luncheon (Mon., Oct. 30)	\$35	\$40	_____	\$ _____
RTSD Luncheon (Wed., Nov. 1)	\$42	\$47	_____	\$ _____
MIC Dinner (Fri., Nov. 3)	\$65	\$70	_____	\$ _____

3. CONTINUING EDUCATION PROGRAM

Course fees are valid for registrations received by Oct. 13

	Date	IEEE Member	Non-Member
<input type="checkbox"/> Interaction of Radiation w/ Matter: Theory & Practice (1 day)	Sun. Oct. 29	\$250	\$275
<input type="checkbox"/> Nuclear Science for Homeland Security (1 day)	Sun. Oct. 29	\$250	\$275
<input type="checkbox"/> Integrated Circuit Front Ends for Nuclear Pulse Proc. (1 day)	Sun. Oct. 29	\$250	\$275
<input type="checkbox"/> Molecular Biology for Imaging Scientists (1 day)	Mon. Oct. 30	\$250	\$275
<input type="checkbox"/> Detectors for PET and SPECT (1 day)	Mon. Oct. 30	\$250	\$275
<input type="checkbox"/> Small Animal Imaging: Detectors and Technical Aspects (1 day)	Tues. Oct. 31	\$250	\$275
<input type="checkbox"/> Image Quality (1 day)	Tues. Oct. 31	\$325	\$350

Note: Add \$50 per course for on-site registration.

Lunch and refreshments provided at all courses.

4. TOURS & COMPANION PROGRAM

Tour fees are valid for registrations received by Oct. 13.

	Cost/Person	Date	No. of People	Total Cost
1. Sightseeing in Old San Diego	\$40	Sun., Oct. 29	_____	\$ _____
2. South of the Border Adventure	\$70	Mon., Oct. 30	_____	\$ _____
3. San Diego City Tour	\$70	Tues., Oct. 31	_____	\$ _____
4. Sailing aboard the Aolani Catamaran	\$60	Tues., Oct. 31	_____	\$ _____
5. Jewels by the Sea	\$70	Wed., Nov. 1	_____	\$ _____
6. SeaWorld Splash	\$60	Thurs., Nov. 2	_____	\$ _____
7. Palomar Observatory	\$50	Thurs., Nov. 2	_____	\$ _____
8. VIP Zoo Venture	\$60	Fri., Nov. 3	_____	\$ _____
9. Palomar Observatory	\$50	Fri., Nov. 3	_____	\$ _____
10. Orfila Vineyards & Winery	\$60	Sat., Nov. 4	_____	\$ _____
11. Palomar Observatory	\$50	Sat., Nov. 4	_____	\$ _____

Note: A \$10/tour added charge for all on-site reservations

If you are bringing companions, list their name(s) and a contact email address:

Companion Name(s): _____

Any Dietary Restrictions? _____

MAIL form & payment to: IEEE 2006 NSS/MIC * c/o TDMG Meetings Dept.
 110 Painters Mill Road, Suite 36 * Owings Mills, MD 21117 USA
FAX form & payment (registration by credit card **only**): 410-559-0160 (Attn: IEEE 2006 NSS/MIC)
PHONE: 410-363-1300 (8:30-17:30 ET) * 800-437-4589 (US/Canada only)
EMAIL: IEEE@traveldest.com (Attn: IEEE 2006 NSS/MIC) **WEBSITE:** <http://www.nss-mic.org/2006>

ANNOUNCEMENT OF THE 2007 IEEE NSS-MIC

Aloha, Colleagues,

The 2007 IEEE Nuclear Science Symposium (NSS) and Medical Imaging Conference (MIC) will be held in Honolulu, Hawaii October 28 to November 3. The venue is the Hilton Hawaiian Beach Resort & Spa that is situated on 22 oceanfront acres at the west end of Waikiki beach. It provides an ideal setting for our annual meeting with a great mix of ample conference space, first class accommodations, over 20 restaurants and lounges, several shopping arcades with over 90 shops, exotic wildlife and botanical gardens and classic Hawaiian hospitality. A trolley conveniently connects the hotel to other locations in Waikiki.

The Organizing Committee is planning on a joint conference that offers state-of-the-art and up-to-date scientific information through the regular oral and poster presentations. There will be a number of topical short courses before and refresher courses during the joint conference to review current topics of special interest. A commercial exhibition featuring the state-of-art products and services from a wide range of vendors will take place during the main part of the meeting.

A companion program will provide daily tours to the many attractions and activities in and around Honolulu and on Oahu island during the joint conference. The main attractions include Pearl Harbor, the Arizona Memorial, Diamond Head State Park, Hanauma Bay Marine Preserve, Iolani Palace, the Bishop Museum and the National Memorial Cemetery of the Pacific (Punchbowl). Also, pre- and post-conference tours of the other Hawaiian islands, including the Big Island of Hawaii, Kauai and Maui are being planned.

We would like to extend a special invitation to our colleagues in the Asia-Pacific region to attend the joint conference. The meeting offers a great opportunity to connect with old friends and colleagues and to make new ones from different parts of the world and to exchange new knowledge and ideas in nuclear science and medical imaging.

On behalf of the organizing committee, I encourage you to make plans now to attend this exciting joint conference of the IEEE Nuclear and Plasma Sciences Society. I look forward to welcoming you to beautiful Honolulu, Hawaii.

Benjamin M. W. Tsui, General Chair
Johns Hopkins University

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Graham C. Smith

General Chair, 2006 IEEE NSS/MIC/RTSD

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