Curriculum Vitae: Sylvester James Gates, Jr.

Personal Information

Date of Birth: December 15, 1950
Place of Birth: Tampa, FL, USA

Departmental Address:

Physics Department, Rm 4121
University of Maryland
College Park, MD. 20742 USA
Webpage: http://umdphysics.umd.edu/people/faculty/135-gates.html

Internet Addresses:

GATESS@WAM.UMD.EDU

Undergraduate Education:

Massachusetts Institute of Technology, 1969-1973,
B.Sc. in Mathematics, M.I.T., June 1, 1973,
B.Sc. in Physics, M.I.T., September 12, 1973.

Undergraduate Thesis:

(Physics) "On the Feasibility of Generating Electricity with a Rijke Tube." This thesis is an analysis of the acoustical, mechanical, and thermodynamical problems associated with using the Rijke phenomena to generate electricity.
Thesis Advisor: Professor K. U. Ingard

Graduate Education:

Massachusetts Institute of Technology, 1973-1977,
Ph.D. Physics, M.I.T., June 6, 1977.

Graduate Thesis:

"Symmetry Principles in Selected Problems of Field Theory" Doctoral thesis describes an investigation of the uses of symmetry principles in

unified models of the Weak and Electromagnetic Interactions and in supersymmetric models. First Ph.D. thesis at MIT on the topic of supersymmetry.
Thesis Advisor: Professor J. E. Young

Postdoctoral Experience:

Research Fellow, California Institute of Technology, 1980-1982,
Junior Fellow, Harvard Society of Fellows, Harvard Univ. 1977-1980.

Faculty Positions:

John S. Toll Professor of Physics, University of Maryland, Department of Physics, July, 1998-present,

Professor of Physics (tenured), Howard University, Department of Physics, 1991-1992, on leave from UMCP

Professor of Physics, (visiting), Howard University, Department of Physics and Astronomy, 1990-1991, on leave from UMCP

Professor of Physics, University of Maryland, Department of Physics, 1988-present,

Associate Professor of Physics (tenured), University of Maryland, Department of Physics and Astronomy, 1984-1988,

Assistant Professor of Applied Mathematics (untenured), M.I.T., Mathematics Department, 1982-1984.

Honorary Degrees:

Doctor of Science
University of Western Australia, March 17, 2010.

Doctor of Humane Letters
Loyola University Chicago, May 20, 2005.

Doctor of Humane Letters, honoris causa.
Georgetown University, May 25, 2001.

Honorary Faculty Positions:

Winthrop Professor in Physics, University of Western Australia, Physics Dept. Perth, Australia, 2010-.

Professor-at-Large, Institute for Advanced Studies, University of Western Australia, Perth, Australia, 2008-2009.

Fellow, Stellenbosch Institute for Advanced Studies, Stellenbosch, South Africa, 2005-.

Professor Extraordinary in Physics, Stellenbosch University, Physics Dept. Stellenbosch, South Africa, 2002-2005.

Administrative Positions:

Director, Office of Minority Education, Massachusetts Institute of Technology, 1983 - 1984.

Chair, Physics Department, Howard University, 1991-1993.

Director, Center for the Study of Terrestrial and Extraterrestrial Atmospheres, Howard Univ., 1992-1993.

Director, Center for String and Particle Theory, Univ. of Maryland, 2002-present.

Research, Scholarly and Creative Activities

(a.) **Books**

(i.) *Authored*

1. *Superspace or 1001 Lessons in Supersymmetry*, (with M. T. Grisaru, M. Roček, and W. Siegel), Benjamin-Cummings Publishing Company (1983), Reading, MA (On-line; http://aps.arXiv.org/pdf/hep-th/0108200).
2. *L'arte della Fisica: Stringhe, Superstringhe, Teoria Unificata dei Campi*, Di Renzo Editore, Roma, Italy (2006) pp. 1-96 (in Italian only), ISBN 8883231554.

(ii.) *Edited*

1. *Proceedings of the first International Workshop on Strings, Composite Structures, and Cosmology*, eds. S. J. Gates, Jr. and R. N. Mohapatra, World Scientific Pub. (1987) Singapore.

2. *Proceedings of the Strings '88 Workshop*, eds. S. J. Gates, Jr., C. R. Preitschopf and W. Siegel, World Scientific Pub. (1989) Singapore.

(iii.) *Chapters in Books*

Latest two such contributions only (see Appendix A for complete list).

1. "Revealing Some of the Hidden Representation Theory of Supersymmetry," in the *Proceedings of the International Workshop on Theoretical High Energy Physics* (IWTHEP 2007), Roorkee, UA, India, 15-20 Mar 2007, AIP Conf. Proc. 939 (2007) 147-155.

2. "Seeing the Mathematics Behind Supersymmetry Theories - Adinkras," National Institute for Theoretical Physics Inaugural Lecture Series presentation, Wallenberg Research Centre STIAS (Stellenbosch Institute for Advanced Studies), Stellenbosch, South Africa, 13 May 2008; Departmental Colloquium, University of Kwal-Zulu/Natal, Durbin, South Africa, 17 May 2008.

(iii.) *Non-scientific Essays*

1. "Equity Versus Excellence: A False Dichotomy in Science and Society", in the *'The Scientist'*, Vol 9, No. 14, (July 10, 1995); reprinted in *Physics and Society*, Vol. 25, No. 3, (July, 1996), (http://www.aps.org/units/fps/sjul96.html#a4) and (http://www.the-scientist.library.upenn.edu/yr1995/july/equity_950710.html).

2. "A Black Physicist's Thoughts on Affirmative Action," in the proceedings of the 25-th Annual Conference of of the National Organization for the Professional Advancement of Black Chemists and Chemical Engineers (NOBCChE), Apr. 17, 1998 at Dallas, TX (see excerpt at; http://pubs.acs.org/hotartcl/cenear/980720/res.html).

3. "Information Age Technology: An Opportunity for Enhanced Faculty Effectiveness," contribution to the QEM's monograph *Scholarly Guideposts for Junior Faculty* on Scholarly Productivity Project, September, 1999.

4. "Einsteins Lesson for the Third Millennium, plenary address to the AAAS Annual Meeting in Washington, DC, February 20, 2005 (see webpage at; http://www.aaas.org/news/releases/2005/0221einsteinText.shtml).

5. "On the Universality of Creativity in the Arts and Sciences," in the proceedings of the Fifth Annual Conversation on the Liberal Arts, *Beyond Two Cultures: The Sciences as Liberal Arts*, Feb 18 19, 2005, Institute for the Liberal Arts, Westmont College, Santa Barbara, California.

6. " Is String Theory Phenomenologically Viable?," Phys. Today 59N6 (2006) 54.

7. "Science, Irrationality, and Innovation," in The Kean Review, Vol. 1, Spring/ Summer 2008, 93-105.

8. "Prepare & Inspire," , E. Lander & S. J. Gates, Jr. Science 8 October 2010, Vol. 330. no. 6001, p. 151 (Editorial), DOI: 10.1126/science.1198062.

(a.1) **Hypertext Books**

1. *Superstring Theory: The DNA of Reality* (The Teaching Company) 24 lectures, 30 minutes/lecture in DvD format, (2006), ISBN-10:1598031619, ISBN-13: 9781598031614.

(b.) **Published Research Papers**

Only the latest two research papers (see Appendix B for complete list).

A Unified Spinorial Superfield Treatment of the Higher Superspin Superfield Formalism, S. J. Gates, Jr., and Konstantinos Koutrolikos, UMDEPP-10-008, Apr 2010, arXiv:1004.3572 [hep-th], submitted.

Automorphism Properties of Adinkras, B. L. Douglas, S. J. Gates, Jr., J. B. Wang, UMDEPP-10-014, Sep 2010, arXiv:1009.1449 [hep-th].

(c.) **Invited Review Articles, Monographs**

1. "Gauge Invariance in Nature: A Simple View", in *The Mathematical Analysis of Physical Systems*, ed. R. Mickens, Van Nostrand Co. (1985) New York, New York.

2. "Taking The Particle Out Of Particle Physics", (with W. Siegel) in *Quotient*, Vol. 12, # 4, Univ. of Md. (1986) College Park, Md.

3. "Superstring theory: To See the Entire Universe in the Pulsing of a String", in *Washington Technology*, Sept. 3, 1987, Vienna, Virginia.

4. "What Good is the SSC? An Introduction to the Physics of Elementary Particles," in the proceedings of the Prairie View Summer Summer Science Academy, AIP Conference Proceedings 291, AIP Press, NY (1994), ISBN 1-56396-133-4.

5. "Gauge Invariance: An Aspect of Real Magnetism and Beyond," in the proceedings of the Warren Henry Symposium, Sept. 19,1997, Berkeley, CA.

6. "Progress Toward a Classical (SUSY)^2 4D, N=1 Green-Schwarz Sigma Model Action," in the International Seminar on Supersymmetry and Quantum Field Theory (Dedicated to the Memory of Academician D. Volkov), Kharkov, Ukraine, 5-7 Jan 1997 (In *Kharkov 1997, Supersymmetry and quantum field theory* 130-135).

7. "The Fundamental Supersymmetry Challenge Remains," with W. D. Linch III, J. Phillips and L. Rana, Contribution to special edition of the Grav. and Cosmology journal devoted to 100-th anniversary of Tomsk State Pedagogical University, ed. S.D. Odintsov.

8. "Minimal Superspace Vector Fields for 5D Minimal Supersymmetry," with L. Rana, Univ.of Md. Preprint # UMDEPP 02-56, CALT-68-2389, Contribution to special edition of Russian Physics Journal, eds. I. L. Buchbinder and P. M. Lavrov.

(d.) **Book Reviews**

1. Review of "Introduction to Supersymmetry and Supergravity," by P. West, in *Physics Today*, Nov. 1987, Vol. 40, # 11 , p. 92.

2. Review of "Ideas and Methods of Supersymmetry and Supergravity," by I. Buchbinder and S. Kuzenko, in *Physics Today*, Feb. 1996, Vol. 49,# 2 , p. 64.

3. Review of "Harmonic Superspace," A. S. Galperin, E. A. Ivanov, V. I. Ogievetsky and E. S. Sokatchev, in *Physics Today*, Dec. 2002, Vol. 55, # 12 , p. 62.

(e.) **Talks**

(i) *Invited Scientific Talks at Conferences, Schools, etc.*

Only the three latest listed (see Appendix D for a complete listing).

1. "Cracking The Code: Progress Toward Establishing A Rigorous Mathematical Theory of Spacetime SUSY Representations," presentation at the first Biennial African Schoool on Fundamental Physics and Its Applications, Stellenbosch Institute for Advanced Study, Stellenbosch, S.A., 01 - 21 August 2010.

2. "Mathematical Foundation for Spacetime SUSY Representation Theory," presentation at the QCD and Strings Conference, Oberwoelz, Austria, 29 August - 04 September, 2010.

(ii) *Colloquia and Seminars*

Only the four latest listed below (see Appendix E for a complete listing).

1. "Seeing The Genome of Reality with Adinkras (II)," seminar, Institute for Advanced Studies, Univ. of Western Australia, Perth, Australia, Mar 23, 2010.

2. "Supergravity: The Quest for Unification," 9-th annual Elston Memorial Lecture, Embry-Riddle Aeronautical Univ., Daytona, FL, Apr 10, 2010. Item "Fundamental Representation of SUSY," colloquium African Institute for the Mathematical Sciences, Cape Town, South Africa, Oct 12, 2010.

3. "Demi-Hemi-Mini-Quasi-Semi-Seminar," series of informal lectures on the introduction to Adinkras in the MIT Math Department, Cambridge, MA, Nov., 2010.

(f.) **Non-Technical Lectures**

Only the five latest listed below (see Appendix F for a complete listing).

1. 'Prepare & Inspire: K-12 Education In Science, Technology, Engineering, and Mathematics For America's Future,' PCAST Report of recommendations to President Barack Obama, co-chair E. Lander & S. J. Gates, Jr. co-chair the working group that created this report.

2. 'Prepare & Inspire' PCAST STEM Ed Report briefing before the National Defense Industry Association/Aeronautical Industry Association STEM Committee, Univ. of MD Shady Grove, Shady Grove, MD, Oct 26, 2010.

3. 'Prepare & Inspire' PCAST STEM Ed Report briefing before the High School and College Physics Teachers Workshop, Bergen Community College, Paramus, NJ, Nov 13, 2010.

4. 'Prepare & Inspire' PCAST STEM Ed Report briefing before the National Science Board," NSF HQ, Arlington, VA, Dec 01, 2010.

5. "The Third STEM Crisis: Defending the American Dream in the New Millennium," keynote banquet presentation at the 27-th Army Science Conference, Orlando, FL, Dec 02, 2010.

6. "The Third STEM Crisis: Defending the American Dream in the New Millennium," breakfast presentation before the recipients of the U.S. President's Award for Excellence in Mathematics & Science Teaching, Williard Hotel, Washington, DC, Dec 17 2010.

7. "On the Universality of Creativity in the Arts and Science," colloquium before the Jefferson Literary and Debating Society, University of Virginia, Charlotte, VA, Nov. 11, 2010; Presidential Faculty Scholar Lecture, Rutgers Univ., Rutgers, NJ, Feb 17, 2011.

(f.1) **Media Appearances, Citations & Quotes**

Only the three latest listed below (see Appendix G for a complete listing).

Panel appearance on the topic "Beyond Einstein," World Science Festival, New York University, New York City, NY, 01 June 2008.

In August of 2010, Prof. Gates was in a delegation that met once more with the Prime Minister of the west African nation of Mali, scenes of him with P. M. Modibo Sidibe were carried on national television news programs.

http://www.nbclearn.com/portal/site/learn/nfl/cuecard/51076/
"Science of Football," NBC on-air commentator.

http://www.youtube.com/watch?v=i53kRJeGr0U "The Scholar's Chair"

http://www.youtube.com/watch?v=DbtgNTmNuIw&playnext=1&list=PL44F17678A5A5E028 "The Fine Art of Not Knowing"'

http://wn.com/Professor_Sylvester_Gates_talks_about_Science_and_Raceflv
'Science & Race'

(f.2) **Audio/Visual Presentations on Web**

All the following links are active and lead to audio or audio/visual presentations currently available on the web. To use some of the following webpage addresses it may be necessary to CUT-&-PASTE the URL onto a single line with no spaces in a browser window.

http://video.pbs.org/video/1328430146/

http://www.youtube.com/watch?v=Zxl9a6SPaMc&feature=related

http://www.q2cfestival.com/play.php?lecture_id=7737

http://www.youtube.com/watch?v=DbtgNTmNuIw

http://www.youtube.com/watch?v=7V2eP5BiFFY

(g.) **Contract and Grants**

Co-Principal Investigator, (with I. McArthur & S. Kuzenko) Australia Research Council Grant # DP0664698, 01/01/06 - 01/31/08, Project Title: Progress in Supersymmetry and Supergravity: Continuing Einstein's Legacy

Co-Principal Investigator, (with M. Becker, M. Luty & R. Mohapatra),

NSF Grant # PHY PHY-01-5-23911, 08/01/01 - 07/31/04, Project Title: Supersymmetry, Superstrings & Phenomenology

Co-Principal Investigator, (with M. Becker, M. Luty & R. Mohapatra), NSF Grant # PHY PHY-98-02551, 06/15/98 - 06/14/01, Project Title: Elementary Particle Theory and Quantum Field Theory.

Principal Investigator, NSF Grant # PHY PHY-96-43219, 01/01/94 - 12/31/97, Project Title: Supersymmetry, Supergravity, and Superstrings.

Co-principal Investigator (with S. V. Ketov), NATO Grant # SA.5-2 (CRG.930789) 1046/93/JARC-501, 6/01/95 - 6/30/96, Project Title: N = 2, 4 Superstrings, Self-Dual Supersymmetry and Integrable Models.

Co-Principal Investigator, (with S.Vashakidze and S.Ketov), Project Title: Project Title: Investigations on Realizations of Conformal Symmetry in Particle, Field and String Super-Theories, submitted to NSF.

Principal Investigator, NSF Grant # PHY 91-41926, 01/01/91 - 12/31/93, Project Title: Project Title: Supersymmetry, Supergravity, and Superstrings.

Co-principal Investigator (with S. V. Ketov), NATO Grant # SA.5-2 (CRG.930789) 1046/93/JARC-501 for 6/01/94 - 6/30/95, Project Title: N = 2, 4 Superstrings, Self-Dual Supersymmetry and Integrable Models.

Principal Investigator, NSF Grant # PHY 88-16001, 01/01/89 - 12/31/90, Project Title: Supersymmetry, Supergravity, and Superstrings.

Co-principal Investigator (with W. Siegel), NSF Grant # PHY-87-46846, 01/01/88 - 12/31/88, Project Title: Supersymmetry, Supergravity, and Superstrings.

Principal Investigator, NSF Grant # PHY 88-07373, 06/01/88 - 09/31/88, Project Title: Workshop on Strings.

Co-principal Investigator (with W. Siegel), NSF Grant # PHY-86-19077 for 01/01/86 - 12/31/86, Project Title: Supersymmetry, Supergravity, and Superstrings.

Co-principal Investigator (with W. Siegel), NSF Grant # PHY 87-01437, 03/01/87 - 06/30/87, Project Title: International Workshop on Strings, Composite Structures and Cosmology.

Co-principal Investigator (with W. Siegel), NSF Grant # PHY-84-16030-A01, 11/01/85 - 12/31/85, Project Title: Supersymmetry and Supergravity with Applications to Elementary Particle Physics.

Principal Investigator, NSF Grant # PHY-84-16030, 12/01/84 - 10/31/85, Project Title: Supersymmetry and Supergravity with Applications to Elementary Particle Physics.

Principal Investigator, NASA Grant # NAGW-2930, 1/01/92 - 8/31/93, Project Title: Establishment of the Center for the Study Terrestrial and Extraterrestrial Atmospheres at Howard University.

(h.) **Fellowships, Awards and Honors**

Only the latest three are listed (see Appendix I for complete listing).

Presentation of the Emma K. Malmstrom Lecture, "Modern Cosmology & Superstring Theory: Can They Co-Exist," Hamline University, St. Paul, MN, May 03, 2007.

"The Forty-Two Orders of Existence," a commencement address to the graduates of the Astronomy & Physics departments of the University of California, Berkeley, Zellerbach Auditorium, Berkeley, CA, May 18, 2007.

Presentation of the Rev. George V. Coyne, S. J. Lecture on Astronomy and Astrophysics "SUSY & The Lords of the Ring,' ' Marquette University, Feb 28, 2008; Distinguished 2008 Goldman Lecture, University of Central Florida, 17 Apr, 2008.

Visiting Professor:

Distinguished Visiting Professor, University of California at Davis, 6/1 - 30/86.
Martin King/ Cesar Chavez/ Rosa Park Visiting Professor, Wayne State University, 10/26/92 - 10/30/92.
Member, Mathematical Sciences Research Institute, Berkeley, CA, in residence 1/5/94- 2/1/94.
Visiting Professor, MIT, Physics Department, 2/1/94 - 5/30/94.
Visiting Professor, Caltech, Division of Astronomy, Mathematics and Physics, 8/30/02 - 6/30/03.
Rydell Visiting Professor, Gustavus Adolphus College, 01/Feb/2007 - 1/May/2007.
Professor-at-Large, University of Western Australia, Institute for Advanced Studies, 13/March/08 - 29/March/08.
MIT MLK Visiting Professor, Physics Department, 01/Sept/10 - 30/May/11

(i.) **Reviewer Activities for Journals**

Presently serving as a referee for:

Physical Review, Nuclear Physics, Annals of Physics, Classical and Quantum Gravity, Modern Physics Letters, Canadian Journal of Physics, Journal of Physics A (Singapore), Journal of Mathematical Physics, Physics Essays, and Fundamental Theories of Physics, Journal of High Energy Physics and Advances in Theoretical and Mathematical Physics.

Journal of Group Theory in Physics, Editorial Board Member, 1992-present.

(ii.) **Reviewer Activities for Funding Agencies**

Currently or have served as a proposal reviewer for:

National Science Foundation, Department of Energy, North Atlantic Treaty Organization and Stichting voor Fundamental Onderzoek der Materie, Australian Research Council. South African National Research Foundation.

Teaching and Advising

Teaching completed since 1985:

(a.) Courses Taught at University of MD.

(i) General

Fundamentals of Physics (PHYS 121), fall 1985 (enrollment approx. 110), fall of 1986 (enrollment approx. 100), and fall of 1987 (enrollment approx. 110). Electrodynamics (PHYS 606) fall of 1988 (enrollment 22), Electrodynamics (PHYS 606) fall of 1989 (enrollment 16), Electrodynamics (PHYS 606) fall of 1989 (enrollment 14), fall of 1990 (enrollment 15), Electrodynamics (PHYS 263) fall of 1993 (enrollment 10) Classical Mechanics (PHYS 410) fall of 1994 (enrollment 14), Electrodynamics (PHYS 411) spring of 1995 (enrollment 9), (PHYS 262, recitations) spring of 1995 (enrollment 20), Classical Mechanics (PHYS 410) fall of 1996 (enrollment 13), Electrodynamics (PHYS 411) spring of 1997 (enrollment 19), (PHYS 499B, readings Classical Mechanics) spring 1997 (enrollment 1), General Physics: Mechanics and Particle Dynamics (PHYS 161) fall 1997 (enrollment 127), Principles of Physics (PHYS 141) spring 1998 (enrollment 31), Advanced Quantum Theory (PHYS 624) fall 1998 (enrollment 22), Fundamentals of Physics (PHYS 121), spring 1999 (enrollment approx. 120), Theoretical Methods in Elementary Particle Physics: A Course on Supersymmetry, Supergravity and Superstrings, (PHYS 852) spring 2000 (enrollment 13), How Things Work (PHYS 104) spring 2001 (enrollment 40), Fundamentals of Physics (PHYS 121), fall 2002 (enrollment approx. 170), Introductory Physics: Fields. (PHYS 272), spring 2003 (enrollment 35), Introductory Physics: Waves.

(PHYS 273), fall 2003 (enrollment 12), Introductory Physics: Waves. (PHYS 273H), fall 2003 (enrollment 13), Introductory Physics: Fields. (PHYS 272), spring 2004 (enrollment 35), Introductory Physics: Waves. (PHYS 273), fall 2004 (enrollment 27), Introductory Physics: Waves. (PHYS 273H), fall 2004 (enrollment 7), Introductory Physics: Fields (PHYS 272) spring 2005 (enrollment 38), Classical Mechanics (PHYS 410) fall 2005 (enrollment 36), Special Topics: Tensors (PHYS 499G) Winter term (enrollment 14), Special Topics in Elem. Part. Phys. (PHYS 859) spring 2006 (enrollment 22), Superstring/M-Thoery (PHYS 299G) spring 2008 (enrollment 18), Spec Prob in Physics (PHYS 299), fall of 2008 (enrollment 1).

(ii) Specialized

Advanced Quantum Field Theory (PHYS 851), fall of 1984 (enrollment 8), spring of 1987 (enrollment 11), spring of 1988 (enrollment 9), Symmetry Prob. in Physics (PHYS 711) spring of 1989 (enrollment 7), spring of 1990 (enrollment 9), spring of 1990 (enrollment 6), spring of 1991 (enrollment 16), Special Prob. in Adv. Phys. (PHYS 798) spring of 1985 (enrollment 3), spring of 1987 (enrollment 2) fall of 1987 (enrollment 3), fall of 1988 (enrollment 3), spring of 1989 (enrollment 2), spring of 1990 (enrollment 1), Special Prob. in Adv. Phys. (PHYS 798) spring of 1997 (enrollment 2), Sem in Part. Phys. (PHYS 759) spring of 1997 (enrollment 5), Advanced Quantum Mech. (PHYS 624), fall of 1999 (enrollment 44), Advanced Quantum Mech. (PHYS 624), fall of 2000 (enrollment 16), Spec Prob in Physcis (PHYS 299), fall of 2003 (enrollment 1), Adv. Quant Fld Thr (PHYS 851) fall of 2003 (enrollment 7), Spec Prob in Physics (PHYS 299), fall of 2004 (enrollment 1), Spec Prob in Adv Physics (PHYS 798), fall of 2008 (enrollment 1), Meth Math Phys. (PHYS 604) fall of 2008 (enrollment 43).

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Doc. Dissertation Res. (PHYS 899)
spring of 1986 (enrollment 3), fall of 1986 (enrollment 1),
spring of 1987 (enrollment 1), fall of 1987 (enrollment 6),
spring of 1987 (enrollment 0), fall of 1988 (enrollment 10),
spring of 1989 (enrollment 9), fall of 1989 (enrollment 4),
spring of 1990 (enrollment 4), fall of 1990 (enrollment 4),
spring of 1991 (enrollment 4), fall of 1991 (enrollment 4),
spring of 1992 (enrollment 2), fall of 1992 (enrollment 2),
spring of 1993 (enrollment 2), fall of 1993 (enrollment 2),
spring of 1994 (enrollment 2), fall of 1994 (enrollment 2),
spring of 1995 (enrollment 2), fall of 1995 (enrollment 2),

spring of 1996 (enrollment 2), fall of 1996 (enrollment 2),
spring of 1997 (enrollment 2), fall of 1997 (enrollment 2),
spring of 1998 (enrollment 2), fall of 1998 (enrollment 1).
spring of 2001 (enrollment 2), fall of 2001 (enrollment 2).
spring of 2002 (enrollment 2), fall of 2002 (enrollment 3).
spring of 2003 (enrollment 3), fall of 2003 (enrollment 3).
spring of 2004 (enrollment 3), fall of 2004 (enrollment 3),
spring of 2004 (enrollment 3), fall of 2004 (enrollment 5),
spring of 2005 (enrollment 2), fall of 2005 (enrollment 2),
spring of 2006 (enrollment 2), fall of 2006 (enrollment 2),
spring of 2007 (enrollment 3), fall of 2007 (enrollment 1),
spring of 2008 (enrollment 1)

(iii) General Honors

Indep. Studies Seminar 398A fall of 1987 and spring of 1988 (enrollment 7).

Indep. Studies Seminar 398 fall of 1987 (enrollment 1).

Honors 169Z, "Knowledge and its Human Implications," spring 2000, 2001 and 2003, 3-lecture series based on *The Making of the Atomic Bomb* by R. Rhodes. The course 169Z is part of the University Honors Program (enrollment 75). Spring 2004 3-lecture series on *Superstring/M-theory & The Culture of Physics*, Spring 2006 3-lecture series on *Superstring/M-theory & The Culture of Physics*. .

(b.) Advising (Non-research directed)

(i) Undergraduate physics student advisor 1986-1989
approximately 25 students per year.

UMD Undegraduate Advisee Students

Year	Student Name
2003	Christee Chew, Adam Corbett, Michael Gill

(ii) Graduate physics student advisor 1986-1989
approximately 25 students per year.

Courses taught at Howard University

(i) Undergraduate

Classical Mechanics (PHYS 014) fall of 1990 (enrollment 24) Electrodynamics (PHYS 178-216) spring of 1991 (enrollment 22), Electrodynamics (PHYS 178-216) fall of 1991 (enrollment 12), Electrodynamics (PHYS 178-216) spring of 1992 (enrollment 10),

Courses taught at California Institute of Technology
(i) Undergraduate

PHYS 1A fall of 2001 recitation (enrollment 39).

(d.) Advising (Research directed)

From the summer of 1998 to the present, Prof. Gates and collaborator, Prof. V. G. J. Rodgers, have supervised a group of undergraduate students in a summer research activity, the Student Summer Theoretical Physics Research Session (SSTPRS) held during the month of June. This activity involves the placement of undergraduate students into some of the research activities of the Center of String and Particle Theory (CSPT). Some of these students have by this means become co-authors of research papers published in refereed physics journals (see publication list, articles #[131], [145]).

Directed Undegraduate Research

Year	Student Name	Home Institution
1998	Carina Curto	Harvard University
1999	Carina Curto	Harvard University
	Dagny Kimberly	Brown University
2000	Dagny Kimberly	Brown University
	Willie Merrell	Florida A. & M. Univ.
2001	Antonio Boveia	Univ. of Iowa
	Bjorg Larson	Univ. of Iowa
	Willie Merrell	Florida A. & M. Univ.
2002	Daniel Chapman	Univ. of Maryland BC
	Micah Hawkins	Miami University of St. Louis

During the summer of 2003, CSPT, the UMD College of Computer & Mathematical Sciences, Hampton University, Howard University and the Goddard Space

Flight Center, in joint collaboration held the first Gravity, Astrophysics & M-theory Session (GAMS) This was a five week long intensive summer activity that was aimed at affording principally students at historically black colleges & universities the opportunity to have an introduction to the mathematical background required of this field. Introductory lectures were given on differential geometry, group theory, supersymmetry, cosmology and astrophysics and superstring/M-theory. The GAM Session concept was the brainchild of Prof. Paul Gueye who observed that there was no real infrastructural nor personnel at historically black colleges and universities to meet such a need for students. He approached Prof. Gates about having CSPT host this activity.

Since this area is one of much wider interest, it was suggested that it be open to students in the metropolitan DC area who were not members of minority groups. In actuality this meant that a number of students from the UMD physics department also participated.

Lecturers:

Dr. Stephon Alexander, Stanford Univ., Physics Dept.
Dr. S. J. Gates, Jr., Univ. of Maryland, Physics Dept.
Dr. Tristan Hubsch, Howard University, Physics Dept.
Dr. Khin Muang, Howard University, Physics Dept.,
Dr. Lubna Rana, Univ. of Maryland, Physics Dept.

Undergraduate Students:

Mr. Timothy Dulaney (UMCP)
Ms. Fabienne Bastien (UMCP)
Mr. Emmanuel Cephas (Frostburg State Univ.)
Ms. Mariamma Kambon (Alabama State Univ.)
Ms. Bianca Lane (Hampton University)
Mr. Michael Ney (Allegheny College)
Ms. Paulette Willis (Louisiana State Univ., N.O.)
Ms. Sonia Woolard (Hampton University)

I. **Completed and Present Ph. D. Students Supervised**

Student & Present position | Thesis Title, Year, Comments

Barton Zwiebach Assoc. Prof., M.I.T. Phys. Dept. Camb., MA	"Use of Superspace Geometry to find Supergravity Theories: Case of N=4 and SO(4) Symmetry," 1983, Caltech. (Off. Thesis advisor: M. Gell-Mann)
Stefano Bellucci Staff member, INFN, Rome Laboratori Nazionali de Frascati	"Supersymmetry in Anti-de Sitter Space," 1986, S.I.S.S.A., Italy.
Roger Brooks Dir. of Sci. Res. Luxxon Corp. Mountain View, CA	"Unidexterous World-Sheet Supersymmetry and the Heterotic String Theory," 1987, M.I.T. (Thesis co-supervisor: J. E. Young)
Fuad Muhammad Prof., Morehouse Coll. Phys. Dept. Atlanta, GA	"World-sheet Supersymmetry and Strings," 1987, M.I.T. (Off. Thesis advisor: J. Goldstone)
Aziz Alnowaiser Asst. Prof, King Saud Univ. Riyadh, Saudi Arabia	"Two-Dimensional N = 2 Supergravity," Dec., 1988, Univ. of MD.
James Carr CEO Carr Astronautics Corp., Wash., DC.	"Spin Structures and Superworldsheet Topology," June 1989. Univ. of MD.
Sungoo Cho Physics Dept. Sogang Univ. Seoul, Korea	"Superspace Geometry, Algebraic and Topological Definitions," June, 1989. Univ. of MD. (Thesis co-supervisor: P. Green)
Aleksandar Miković Postdoc assoc., Queen Mary College	"Covariant Formulations of Superstring Theories," June, 1990. (Thesis co-supervisor: W. Siegel)
Robert Oerter, Lecturer, George Mason Univ., Physics Dept. Fairfax, VA	"Superspace Technique for Superstring Theories", June 1989, Univ. of MD.
Didier Depireux	"Dimensional Reduction of Self-Dual

Res. Assoc. Sci., Univ. of MD, Medical School , Baltimore, MD	Yang-Mills Integrable Systems and W-Algebras," June, 1991, Univ. of MD.
Ersin Dur Software Engineer & Manager Kenan Technologies Cambridge, MA 02142	"Unconstrained BRST Superfield Theories," June, 1992, Univ. of MD.
Jeffrey Durachta IBM Laboratories, Kingston, NY	"D = 4, N = 4 Supergravity Coupled to Super-Yang-Mills and the D = 10, N = 1 Heterotic Green-Schwarz Superstring," Nov. 1989, Univ. of MD.
Branislav Radak Securities Analyst Prudential Sec. NY, NY	"Type-II Superstrings in Curved 10-D Spacetime-Dynamics of Their Massless Fields and Covariant Quantization", June, 1991, Univ. of MD.
Rujikorn Dhanawittayapol, Lecturer, Chulalongkorn Univ., Bankok, Thailand	"Investigation of the Mathematical Formulation of (4,0) Supergravity," July 1998, Univ. of MD.
Lubna Rana Fellow U. S. State Department	"New Ideas in Representations of N-Extended Supersymmetry and Super Virasoro Algerbas," Dec. 1998, Univ. of MD.
Joseph Phillips Postdoc Res. Fellow Harvard Medical School Cambridge, MA	"Formulation of Free Higher Spin Supersymmetric Theories in Superspace," Dec, 2004, Univ. of MD.
William Linch Asst. Prof. Universidad Andres Bello Santiago, Chile	"On Superspace Dimensional Reduction," Aug, 2005, Univ. of MD.
Willie Merrell Postdoc Res. Affil. Univ. of Kentucky	"Applications of Superspace Techniques to Effective Actions, Complex Geometry & T-Duality in String Theory,"

Physics Dept.	June, 2007, Univ. of MD
Ram Sriharsha	"On String Compactifications to Two (& Three) Dimensions: Critical & Noncritical," June, 2007, Univ. of MD
Daniel Chapman N. S. A. Ft. Meade, MD	"The Structure of Off-shell 3D Superspace with Arbitrary N, Coupled to a Yang-Mills Field," Dec, 2010, Univ. of MD
Isaac Chappell	June, 2011, Univ. of MD
Konstantinos Koutrolikos	June, 2011, Univ. of MD

Other Teaching Experience:

Project Interphase, at M.I.T. each summer 1971-1985,
Calculus instructor, Physics instructor, Tutor (various capacities), BSU Tutorial Program, Concourse, and Departmental (8.01, Mechanics).
M.I.T., Department of Mathematics, 1982-1984.
Univ. of Maryland, Mathematics-Science Initiative Program (Upward Bound) June 28 - Aug. 3, 1991.

Service

Prof. Gates has provided consistent service across a broad range of activities. A complete list can be seen in Appendix J. Some current examples include his service on the:

(a.) Maryland State Board of Education,
  (a1.) Member of the Maryland State Leadership Team for the Integration of State Practice with the Next Generation Science Standards,
  (a2.) Member of MD Representatives at the Building Capacity of States Science Education meeting Raleigh, VA 24,25 Feb 2012.

(b.) U.S. President's Council of Advisors on Science and Technology,
  (b1.) Co-chair of the PCAST working groups for STEM Ed recom-

mendations to President Obama via reports "Prepare & Inspire," and "Engage to Excel."

(c.) Board of Directors for the Fermi Research Alliance,

(d.) African-American Studies Department advisory committee (Univ. of Maryland),

(e.) MaliWatch (an NGO concerned with development in the African country of Mali),

(f.) Board of Directors of the Society for Science in the Public Interest, and

(g.) Provost Diversity Advisory Committee (2009-2010: Univ. of Maryland),.

(h.) Diversity Advisory Committee for the UMCP Graduate School Member (2011-)

(i.) UMCP Physics Dept., Ph.D. Qualifying Examination Committee Problem Contributor, (2011-)

Appendix A: Chapters In Books

1. "Superconformal Symmetry Breakdown as a Guide to Supergravity Constraints", in *Supergravity*, eds. van Nieuwenhuizen and Freedman, North-Holland, Amsterdam, pp. 215-219 (1979).

2. "Toward an Unextended Formulation of N = 2 Supergravity", in *Superspace and Supergravity*, eds., Hawking and Roček, Cambridge Univ. Press (1981), pp. 219-235.

3. "The Gauge Principle vs. The Equivalence Principle" in the *Proceedings of the XIII International Colloquium on Group Theoretical Methods in Physics*, W. W. Zachary ed., World Scientific (1984) Singapore.

4. "Using Superspace Techniques to Construct Effective Actions for Massless String States", in the *Proceedings of the "Quarks 86" Meeting* (Tbilisi, Georgia, USSR) pp. 151-164, VNU Science Press .

5. "New Properties of Unidexterous SUSY Theories", in the *Proceedings of the XXIII International Conf. on High Energy Phys.* at Berkeley, CA, USA.,*ed. S .A. Loken*, pp. 398-401, World Scientific Pub. Co., (Singapore, 1986).

6. "Unidexterous Superconformal Theories", in the *Proceedings of the First International Workshop on Strings, Cosmology, and Composite Structures* at the University of Maryland (March,1987), *eds. S. J. Gates, Jr. and W. Siegel*, pp. 207-222, World Scientific Pub. Co., (Singapore, 1987).

7. "More Four Dimensional (Super)String Theories?", in the *Proceedings of the CAP-NSERC Summer Institute in Theoretical Physics* at the University of Alberta (July,1987), *eds. G. Kunstatter, H. C. Lee, F. C. Khanna and H. Umezawa*, World Scientific Pub. Co. (1988) pp. 228-252.

8. "Off-shell Superspace and BRST Symmetry", in the *Proceedings of the NATO Workshop on Superstrings* at the University of Colorado at Boulder (July,1987), *eds. P. G. O. Freund and K. T. Mahanthappa*, Plenum Press (1988), pp. 17-25.

9. "Prepotentials: A Beltrami Parametrization of Super Riemann Surfaces", in the *Proceedings of the Strings '88 Workshop* at the University of Maryland *eds. S. J. Gates, Jr., C. Preitschopf and W. Siegel*, (May, 1988), World Scientific Press (1989) Singapore, pp. 335-348.

10. "Strings, Superstrings and Two-Dimensional Lagrangian Field Theory", in Functional Integration, Geometry and Strings, the *Proceedings of the XXV Winter School of Theoretical Physics* in Karpacz, Poland (Feb., 1989) Z.Haba and J.Sobczyk, Birkhauser-Verlag Press (1989) pp. 140-184.

11. "Toward a Complete Theory of Massless Effective Actions for D = 4, N = 1 Superstrings ", in the *Proceedings of the Strings '90 Conference* in College Station, TX (March, 1989), World Scientific, World Scientific Press (1990) Singapore, pp. 21-34.

12. "Progress Toward Covariant Formulations of All D = 4 GS-Type σ-model Actions", in Superstrings and Particle Physics *Proceedings of the Superstrings and Particle Theory Conference* in Tuscaloosa, AL (Nov, 1989), World Scientific Press (1990), Singapore, pp. 57-70.

13. "Unconstrained BRST: A New Prototype for String Field Theory?", in the *Proceedings of the Strings '90 Conference* at College Station, TX (March 12-17, 1990), World Scientific Press (1991), Singapore, pp. 244-258.

14. "What Good is the SSC? An Introduction to the Physics of Elementary Particles", in the *Proceedings of the Prairie View Summer Science Academy* at Prairie View, TX (June 9 - 13, 1992), AIP Conference Proceedings 291 (1993), NY , pp. 1 - 34.

15. "A New Proposed Description of the 4D, N = 1 Supersymmetric Effective Action for Scalar Multiplets", in the *Proceedings of the Second International Sakharov Conference on Physics*, (May 20-24, 1996, Moscow, Russia), eds. I. M. Dremin and A. M. Semikhatov, pp. 414-419 (World Scientific, 1997), Singapore.

16. "Progress Toward A Classical $(SUSY)^2$ 4D, N = 1 Green-Schwarz σ-model Action," in the *Proceedings; Supersymmetry and Quantum Field Theory*, eds. V.Akulov and J.Wess in the Lect. Notes in Physics Series, v.205, pp. 130-135 Springer-Verlag, (1998).

17. "N = 1 Supersymmetry and the Phenomenological Pion Physics Effective Action", in the *Proceedings of the 5th International Conference on Supersymmetries in Physics*, May 27-31, 1997, North-Holland (1998) , pp. 171 - 181 (http://dept.physics.upenn.edu/ susy97/proceedings.html).

18. "Basic Canon in 4D, N = 1 Superfield Theory: Five Primer Lectures", in the *Proceedings of the 1997 Theoretical Advanced Summer Institute (TASI)* "Supersymmetry, Supergravity and Supercolliders" at the Univ. of CO at Boulder, June 1 - 5, 1997, ed. J.Bagger, pp 153-258 (World Scientific, 1999), Singapore.

19. "Ectoplasm Has No Topology: The Prelude", in the *Proceedings of the first International Seminar on Supersymmetries and Quantum Symmetries*, Dubna, Russia, (22-26 July 1997), to appear.

20. "Can Pions 'Smell' 4D, N = 1 Supersymmetry?", in the *Proceedings of the 2nd International Conference on Quantum Field Theory and Gravity*, Tomsk, Russia, (28 July - 2 Aug 1997), eds. I. L. Buchbinder and K. E. Osetrin, pp. 79–92 (Tomsk State Pedagogical Univ. Press, 1998).

21. "4D, N = 1 Effective SUSY QCD", in the *Proceedings of the Phenomenology 2001 Conference*, Madison, WI (7 May - 9 May, 2001).

22. "A Journey Through Garden Algebras," in the *Proceedings of the Winter School on Modern Trends in Supersymmetric Mechanics* INFN-Laboratori Nazionali di Frascati, Via E. Fermi 40, Frascati, Italy, Mar 8-11, 2005, (Springer-Verlag), Lect. Notes Phys. 698:(2006) 1-47, arXiv:hep-th/0602259.

23. "Introductory and Fundamental Mathematical Aspect of Supersymmetry," in the *Proceedings of the Workshop on Contemporary Problems in Mathematical Physics* COPROMPAH-4, INFOSEC Center, Contonou, Benin, Nov 5-11,2005, (World Scientific Publishing Co.)120-169.

24. "Revealing Some of the Hidden Representation Theory of Supersymmetry," in the *Proceedings of the International Workshop on Theoretical High Energy Physics* (IWTHEP 2007), Roorkee, UA, India, 15-20 Mar 2007, AIP Conf. Proc. 939 (2007) 147-155.

25. "Seeing the Mathematics Behind Supersymmetry Theories - Adinkras," National Institute for Theoretical Physics Inaugural Lecture Series presentation, Wallenberg Research Centre STIAS (Stellenbosch Institute for Advanced Studies), Stellenbosch, South Africa, 13 May 2008; Departmental Colloquium, University of Kwal-Zulu/Natal, Durbin, South Africa, 17 May 2008.

Appendix B: Published Research Papers

[1] Gauging a Pseudosymmetry, Phys. Rev. D14 (1976) 1367.

[2] $\Delta I = 1/2$ Rule in the Weinberg-Salam Model, Phys. Rev. D14 (1976) 3227.

[3] Spinor Yang-Mills Superfield, Phys. Rev D16 (1977) 1727.

[4] Geometry of Superspace and Local Supersymmetry, Phys. Rev. D17 (1977) 3188.

[5] Local Supersymmetry in Superspace (with J. A. Shapiro), Phys. Rev. D18 (1978) 2768.

[6] Superfield Supergravity (with W. Siegel), Nucl. Phys. B147 (1979) 77.

[7] Superspace Bianchi Identities and the Supercovariant Derivative (with M. Brown), Annals of Physics, Vol. 122, No. 2 (1979) 443.

[8] A Comment on Superspace Bianchi Identities and Six-Dimensional Spacetime, Phys. Lett. 84B (1979) 205.

[9] Superconformal Transformations and Six-Dimensional Spacetime, Nucl. Phys. B162 (1980) 79.

[10] Understanding Constraints in Superspace Formulations of Supergravity (with W. Siegel), Nucl. Phys. B163 (1980) 519.

[11] (3/2,1) Superfield of 0(2) Supergravity (with W. Siegel), Nucl. Phys. B164 (1980) 484.

[12] Superspace Geometry and N = 1 Nonminimal Supergravity (with M. Brown), Nucl. Phys. B165 (1980) 445.

[13] Algebraic Origins of Superspace Constraints in Supergravity (with K. S. Stelle and P. C. West), Nucl. Phys. B169 (1980) 347.

[14] The Constraints for N = 2 Superspace From Extended Supergravity in Ordinary Superspace (with L. Castellani and P. van Nieuwenhuizen), Phys. Rev. D22 (1980) 2364.

[15] Supercovariant Derivatives, Super-Weyl Groups, and N = 2 Supergravity, Nucl. Phys. B176 (1980) 397.

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[18] Variant Superfield Representations (with W. Siegel), Nucl. Phys. B187 (1981) 389.

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[21] Solution to Constraints for n = 0 Supergravity (with M. Roček and W. Siegel), Nucl. Phys. B198 (1982) 113.

[22] Auxiliary Field Anomalies (with M. T. Grisaru and W. Siegel), Nucl. Phys. B203 (1982) 189.

[23] On-Shell and Conformal N = 4 Supergravity in Superspace, Nucl. Phys. B213 (1983) 409.

[24] Consequences of Conformally Covariant Constraints for N > 4 Superspace (with R. Grimm), Phys. Lett. 133B (1983) 192.

[25] Gauged N = 4 Supergravity Theory with a New Scalar Potential (with B. Zwiebach), Phys. Lett. 123B (1983) 200.

[26] Searching for all N = 4 Supergravities in Superspace (with B. Zwiebach), Nucl. Phys. B238 (1984) 99.

[27] N = 1 Superspace Components of Extended Supergravity, (with A. Karlhede, U. Lindstrom, and M. Roček), Class. Quantum Grav. Vol. 1 (1984) 221.

[28] Superspace Formulation of New Nonlinear Sigma Models, Nucl. Phys. B238 (1984) 349.

[29] N = 1 Superspace Geometry of Extended Supergravity, (with A. Karlhede, U. Lindstrom and M. Roček), Nucl. Phys. B243 (1984) 221.

[30] Nonpolynomiality, Prepotentials, and Superspace Geometry, Physica D150 (1985) 270.

[31] The (3/2,1) Multiplet and Superspace Geometry, (with R. Grimm), Z. Phys. C26 (1985) 621.

[32] Supersymmetric Matter Gravitino Multiplets, (with V. A. Kostelecky), Nucl. Phys. B248 (1984) 570.

[33] Comments on Nonminimal N = 1 Scalar Multiplets, (with B. B. Deo), Nucl. Phys. B254 (1984) 187.

[34] Twisted Multiplets and New Supersymmetric Non-Linear σ-Models, (with C. M. Hull and M. Roček), Nucl. Phys. B248 (1984) 157.

[35] Nonminimal N = 1 Supergravity and Broken Global Supersymmetry, (with B. B. Deo), Phys. Lett. 151B (1985) 195.

[36] Supergravity in D = 9 and Its Coupling to Non-Compact σ-Models, (with H. Nishino and E. Sezgin), Class. and Quant. Grav. 3 (1986) 21.

[37] A Preon-Model With Family-Replication From A D = 6, N = 2 Supergravity Theory, (with H. Nishino and J. C. Pati) Phys. Lett. 154B (1985) 363.

[38] Supersymmetry and Geometry in D < 4 Nonlinear Σ-Models, (with G. Atkinson and U. Chattopadhyay), Ann. of Phys. 168 (1986) 387.

[39] A Comment on The Electroweak Interaction in Gauged Hidden Symmetry Non-Linear Σ-Models, (with H. Stremnitzer), J. Phys. G: Nucl. Phys. 13 (1987) 11.

[40] New D = 10, N = 1 Supergravity Coupled to Yang-Mills Super Multiplet and Anomaly Cancellations, (with H. Nishino), Phys. Lett 157B (1985) 157.

[41] Dual Versions of Higher Dimensional Supergravities and Anomaly Cancellations in Lower Dimensions, (with H. Nishino), Nucl. Phys. B268 (1986) 532.

[42] D = 2 Superfield Supergravity, Local (Supersymmetry)^2, and Nonlinear Σ-Models, (with H. Nishino), Class. and Quant. Grav. 3 (1986) 391.

[43] Unidexterous D = 2 Supersymmetry in Superspace, (with R. Brooks and F. Muhammad), Nucl. Phys. B268 (1986) 599.

[44] New D = 10, N = 1 Superspace Supergravity and Local Symmetries of Superstrings, (with H. Nishino), Phys. Lett. 173B (1986) 46.

[45] Manifestly Supersymmetric O(α') Superstring Corrections in The New D = 10, N = 1 Supergravity-Yang-Mills Theory, (with H. Nishino), Phys. Lett. 173B (1986) 52.

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[48] Euler Characteristic in New D = 10, N = 1 Superspace Supergravity (with H. Nishino), Nucl. Phys. B282 (1987) 1.

[49] Superspace Spinning String Spectres (with R. Brooks), Nucl. Phys. B287 (1987) 699.

[50] On D = 10, N = 1 Supersymmetry, Superspace Geometry, and Superstring Effects (with S. Vashakidze), Nucl. Phys. B291 (1987) 172.

[51] (1,0) Supergraphity, (with M.Grisaru, L.Mezincescu, and P. K. Townsend) Nucl. Phys. B286 (1987) 1.

[52] Unidexterous D = 2 Supersymmetry in Superspace (II): Quantization (with R. Brooks) Phys. Lett. 184B (1987) 217.

[53] D = 10, N = 2a Supergravity In Superspace, (with James Carr and Robert Oerter), Phys Lett. 189B (1987) 68.

[54] On D = 10, N = 1 Supersymmetry, Superspace Geometry, and Superstring Effects (II), (with H. Nishino), Nucl. Phys. B291 (1987) 205.

[55] Calabi-Yau Manifold Compactification in Heterotic String and N = 1 Supersymmetry in Four Dimensions, (with H. Nishino) Phys. Lett. 189B (1987) 45.

[56] Manifestly Supersymmetric Gauge Fixing In D = 2 Supergravity Theories, (with R. Brooks), Class. and Quant. Grav. 5 (1988) 367.

[57] Unidexterous Superspace: The Flax Of (Super)Strings, (with R. Brooks and F. Muhammad) Phys Lett. 193B (1987) 35.

[58] NSR BRST, (with R. Brooks), Nucl. Phys. B296 (1988) 290.

[59] Extended D = 2 Supergravity Theories And Their Lower Superspace Realizations (with R. Brooks and F. Muhammad), Class. and Quant. Grav. 5 (1988) 785.

[60] Leftons, Rightons, Nonlinear σ-models, and Superstrings, (with W. Siegel), Phys. Lett. 206B (1988) 631.

[61] D = 10, N = 1 Superspace Supergravity and the Lorentz Chern-Simons Form, (with S. Bellucci), Phys. Lett. 208B (1988) 456.

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[63] Simplified SU(2) Spinning String Superspace Supergravity, (with Liang Lu and R. Oerter), Phys. Lett. 218B (1989) 33.

[64] Auxiliary Fields for $d = 2$, $N = 4$ Supergravity, (with Y. Hassoun and P. van Nieuwenhuizen), Nucl. Phys. B317 (1989) 302.

[65] Equivalence of Four Dimensional Particle Models (Supersymmetry)^2, (with P. Majumdar), Modern Phys. Lett. A # 4 (1988) 339.

[66] Unidexterous Supergravity, Beltrami Parametrization, and BRST Quantization, (with F. Gieres), Nucl. Phys. B320 (1989) 310.

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[74] Violation of Lorentz Invariance in Type II Green-Schwarz Superstrings in Curved D = 10, N = 2 Superspace, (with P. Majumdar, B. Radak, and S. Vashakidze), Phys. Lett. 226B (1989) 237.

[75] Lorentz Covariant Quantization of the Heterotic Superstring, (with M. T. Grisaru, U. Lindström, M. Roček, W. Siegel, P. van Nieuwenhuizen, and A. E. van de Ven) Phys. Lett. 225B (1989) 44.

[76] Toward Covariantly Quantized Type-II Green-Schwarz σ-Models In Background Superspace, (with D. Depireux, P. Majumdar, B. Radak, and S. Vashakidze), Nucl. Phys. B344 (1990) 165.

[77] Yes, Leftons for Heterotic Superstrings, (with D.Depireux and B.Radak), Phys. Lett. 236B (1990) 408.

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[79] Calabi-Yau Heterotic Strings and Unidexterous σ-models, (with T.Hübsch), Nucl.

Phys. B343 (1990) 741.

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[81] Unconstrained BRST Superfield Theories, (with E.Dur), Nucl. Phys. B343 (1990) 622.

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[95] Supersymmetric Integrable Systems Embedded in Supersymmetric Self-Dual Yang-Mills Theory, (with H.Nishino), Phys. Lett. 299B (1993) 255, (hep-th/9210163).

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Appendix C: Unpublished Research Papers

[1] Supersymmetry and Yang-Mills Invariance in 1+1 Dimensions, M.I.T. Preprint CTP#605.

[2] On the Geometry of Superspace, M.I.T. preprint CTP#621 (taken from a doctoral thesis submitted to M.I.T. Physics Department), April 1977.

[3] A Note on the Geometry of Local Supersymmetry, Harvard preprint HUTP-78/A001.

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[8] The A B C's of the Green-Schwarz-Siegel String Action and its Coupling to Backgrounds, (with B. Radak), Univ.of Md.Preprint # UMDEPP 91-048.

[9] On the Logical Foundations of Remarks on the Supersymmetrization of the Lorentz Chern-Simons Form in D = 10, N = 1 Supergravity Theory, Univ.of Md.Preprint # UMDEPP 91-187.

[10] Eliminating "Cold Fusion" in Perturbative D = 10, N = 1 Superspace-Supergravity-Superstring Geometry, Univ.of Md.Preprint # UMDEPP 91-217.

[11] Teleparallelism Superspace for Superstrings, (with H.Nishino), Univ.of Md.Preprint # UMDEPP 91-218.

[12] Toward the Space of the SU(2) Thirring Models, (with O. Soloviev), Univ.of Md.Preprint # UMDEPP 93-081.

[13] Tuning the RADIO to the Off-Shell 2D Fayet Hypermultiplet Problem, (with L. Rana), Univ. of Md. Preprint # UMDEPP 96-64, submitted to Phys. Lett.

[14] On Extended Supersymmetric Quantum Mechanics, (with L. Rana), Univ.of Md. Preprint # UMDEPP 93-074, Univ.of Md. preprint.

Appendix D: Invited Scientific Talks at Conferences, Schools, etc.

1. "Superconformal Symmetry Breakdown as a Guide to Supergravity Constraints", at supergravity workshop at Stony Brook, Sept. 27 - 29, 1979, State University of New York, Stony Brook, Long Island, New York.

2. "Toward an Unextended Superfield Formulation of N = 2 Supergravity", at the Nuffield Workshop, University of Cambridge, June 16 - July 12, 1980, Cambridge, England.

3. "Superfield Supergravity of the Second Kind", at the Workshop on Supergravity at the International Centre for Theoretical Physics, May 4 - 6, 1981, Trieste, Italy.

4. "Ambiguities of Supersymmetric Gauge Theories", Summer Workshop in Particle Physics at the International Centre for Theoretical Physics, June 20 - July 31, 1983, Trieste, Italy.

5. "Nonpolynomiality, Prepotentials, and Superspace Geometry", at the "Supersymmetry in Physics" conference held Dec. 15 - 20, 1983 at Los Alamos National Laboratory and Jan. 18, 1984 at the University of California at Berkeley (LBL).

6. "Gauge Invariance vs. The Equivalence Principle", at the XIII International Colloquium on Group Theoretical Methods in Physics, May 24, 1984 at University of Maryland.

7. "Introduction to Superspace", Lecture series given at the International Centre for Theoretical Physics, June 12 - 27, 1984 at Trieste, Italy.

8. "Nonlinear Sigma-Models as String Simulators", at the Mini-workshop on "Superstrings and All That," June 17 - 21, 1985, Virginia Tech., Blacksburg, Va.

9. "Using Superspace Techniques To Construct Effective Actions For Massless String States", Apr. 21 - 23, 1986 at the Quarks-86 Seminar, Tbilisi, U.S.S.R.

10. "New Properties of Unidexterous SUSY Theories", July 16 - 23, 1986, at the XXIII International Conference on High Energy Physics, Berkeley, CA.

11. "Superspace and Superstrings", at the Triangle Seminar Meeting, Nov. 28, 1986, Univ. of Vienna, Vienna, Austria.

12. "Unidexterous Superconformal Theories", at the International Workshop on Strings, Composite Structures and Cosmology, March 11 - 18, 1987, Univ. of Maryland, College Park, Md.

13. "More Four Dimensional (Super)Strings", at the CAP-NSERC Summer Institute of Physics at the University of Alberta, July 10-24, 1987, Edmonton, Alberta, Canada.

14. "Off-Shell Superspace and BRST Symmetry", at the NATO Workshop on Superstrings at the University of Colorado, July 27 - Aug. 1, 1987, Boulder, Colorado.

15. "An Introduction to Supersymmetry and Superstrings", at the NSBP Conference, April 8, 1988, Lincoln University, Lincoln University, PA.

16. "Prepotentials in 2-d (super)gravity", at the Strings '88 Workshop, May 24 - 28, University of Maryland, College Park, MD.

17. "Lectures on Superspace and Superstrings", Lecture Series at the Karpacz Winter School on Theoretical Physics, Feb. 20 - Mar. 4, 1989, Karpacz, Poland.

18. "Toward a Complete Theory of Effective String Actions", at the Strings '89 Workshop at Texas A. & M. University, College Station, TX (Mar. 13 - 17, 1989).

19. "Why Our Universe Is (or may be) A Grand Piano", at Undergraduate Physics Conference, Univ. of Maryland, College Park, MD., April 8, 1989.

20. "Superstrings" at the Conference of Ford Foundation Doctoral and Postdoctoral Fellowship Program at the National Academy of Science, Wash.D.C., Nov. 3, 1989.

21. "Progress in Covariant Formulations of D = 4 Superstring Theory" at the Superstring and Particle Physics Conference at the Univ.of Alabama, (Nov. 8-11, 1989).

22. "Everything You Wanted to Know About Superstrings" at the Winter Joint APS/AAPT Conference in Atlanta, GA, (Jan. 20-26, 1990) and Departmental Colloquium at the Univ. of Iowa, Iowa City, IO, (Feb. 26, 1990).

23. "Getting at the Physics of Four Dimensional String Theory" at the Univ. of Wisconsin, Madison, WI (Feb. 23, 1990).

24. "Unconstrained BRST: A New Prototype for String Field Theory?" at the Strings '90 Workshop at Texas A. & M. University, College Station, TX (Mar. 12 - 17, 1990).

25. "Bosonic Sp(2) Field Theories", at the XVII Group Theoretical Methods in Physics Colloquium, Lebedev Institute, Moscow, USSR, (June 4-9, 1990).

26. "From Superspace to Superstrings", Lecture Series at the Summer School on Quantum Field Theory and Strings, Tomsk State University, Tomsk, USSR (June 18-27, 1990).

27. "Superstring Theory from One Physicist's Viewpoint", Lecture Series at the Hampton University Graduate Studies (HUGS) Program at CEBAF (Continuous Electron Beam Accelerator Facility), Newport News, VA, (June 4-7, 1991).

28. "What Good is the SSC: An Introductory Lecture to Particle Physics?", at the Prairie View Summer Science Academy held at Prairie View A.& M. Prairie View, Texas (June 9-12, 1992).

29. "Does More Mirror Symmetry Exist in N = 4 Superstrings" at the Summer School On Quantum Field Theories, held at Tomsk, Siberia, Russia, August 4-9, 1994.

30. "Why Einstein Would Love Spaghetti in Fundamental Physics?", Distinguished FGAMP Lecture and APS VML Prize Lecture at Florida A. & M. Univ., Tallahassee, Florida (Oct. 11, 1994).

31. "Particle Physics: The Antipasto of Superstrings" and "Superstrings: Why Einstein Would Love Spaghetti in Fundamental Physics", Phillips Distinguished Lecturer Series at Haverford College, Haverford, PA (Nov.10-11, 1994).

32. "Lagrangians, Bosonized Thirring Models and the SL_4 (2)/ U(1) Model", at the Workshop on Algebraic Approaches to Quantum Dynamics, The Fields Institute, Univ. of Toronto, Toronto, Canada, (May 7-12, 1996).

33. "A New Proposed Description of the 4D, N = 1 Supersymmetric Effective Action for Scalar Multiplets" at the Second International Sakharov Conference on Physics, Lebedev Physical Institute, Moscow, Russia (May 18-24, 1996).

34. "Developments in $\aleph_0$ Supersymmetric Integrable Systems" at the International Workshop on Integrable Models and Strings, Garbsen (Osterwald) Germany, (June 24-25, 1996).

35. "Superstrings: Why Einstein Would Love Spaghetti in Fundamental Physics?", presentation at the 20th annual meeting of the National Society of Black Physicist at Lawrence Berkeley Lab., March 28, 1997; Joint APS-AAPT Meeting, J.W.Marriot, Wash., DC, April 18, 1997.

36. "A Supersymmetrist Looks at the New Fundamental Physics A'Borning," at the American Physical Society Centennial Meeting, March 20-26, 1999, Atlanta, GA Session OA03 - Cent. Symposium: From Particles to Atoms and Galaxies: Physics in All Sizes and by All People. Invited session, March 24.

37. "Superstrings: Why Einstein Would Love Spaghetti in Fundamental Physics," Plenary Lecture, Fundamental and Applied Aspects of Modern Physics: Luderitz 2000 - Conference to honor South African scientist, Friedel Sellschop, Luderitz, Namibia, Nov. 13, 2000.

38. "3D, N = 1 Supergravity: An Introduction to Local Supergeometry," a lecture series presented at the Park City Mathematical Workshop, July 15-28, 2001, Park City, UT.

39. "Is String/Supersymmetry Quintessentially Challenged?" at the Supergravity @ 25 Conference, Dec. 1 - 2, 2001, Yang Institute for Theoretical Physics, SUNY@Stony Brook, Stony Brook, L. I. NY.

40. "Four Lectures on Aspects of Supersymmetry, Supergravity and Superstrings," at the Quantum Gravity, String Theory and Cosmology Workshop, Fourteenth Chris Engelbrecht Summer School in Theoretical Physics, Jan. 23 - Feb. 1, 2002, Stellenbosch, South Africa.

41. "Lagrangian Chiral Bosonization," at the Applications of Quantum Gravity Workshop, Stellenbosch Institute for Advanced Study, Stellenbosch, Feb. 4 - 22, 2002, South Africa.

42. "On the Possible Group Theoretic and Low-dimensional Origins of Spacetime Supersymmetry," at the Conformal Field Theory and Supersymmetry Workshop, April 15 - 26, 2002, Mathematical Sciences Research Institute, Berkeley, CA.

43. "Lectures on Supersymmetry, Supergravity and Superstring/M-theory," at the Prospects in Theoretical Physics school 'Introduction to String Theory," Institute for Advanced Study, July 1 - 12, 2002, Princeton, NJ.

44. "How Things Old Become New Again: From Formality to Phenomenology," at the *The International Conference 20 Years of SUGRA and Search for SUSY and Unification (SUGRA20)*, Mar. 17, 2003, Northeasten Univ., Boston, MA.

45. "Is KO-theory Holographically Related to Spacetime Supersymmetry?" at the *The International Conference: Renormalization Group and Anomalies in Gravity in Cosmology*, March, 21, 2003, Ouro Preto, MG, Brazil.

46. 'Introductory Lectures on Supersymmetry," African Summer Theoretical Institute, 12-30 January 2004, University of Cape Town, Cape Town, South Africa.

47. "An Introduction to Adinkras: Graphical Supersymmetry," presentation at the *Particles, Strings and Cosmology* PASCOS-04 meeting, Northeastern University, Aug 17, 2004, Boston, MA.

48. "A Possible Nexus of KO-theory, Clifford Algebras and Supersymmetric Representation Theory," at the *K-theory & Supersymmetry: mathematics & Physics Workshop* at the Univ. of Washington, Seattle, WA (Feb 10 - 13. 2005).

49. "Supergravity and Supersymmetric Mechanics," lectures series at the *Winter School on Modern Trends in Supersymmetric Mechanics* INFN-Laboratori Nazionali di Frascati, Via E. Fermi 40, Frascati, Italy (Mar 8-11, 2005).

50. "Adinkras: A Graphical Representation for Supersymmetry, Clifford Algebras & K-Theory?" 2 lectures at *Conference for African American Researchers in the Mathematical Sciences* (CAARMS11), at the Institute for Pure and Applied Mathematics (IPAM), UCLA, Los Angeles, CA, (Jun 21-24, 2005).

51. "Supersymmetry, Superstring/M-theory and Mathematics," Plenary Lectures at *Workshop on Contemporary Problems in Mathematical Physics* COPROMPAH-4, INFOSEC Center, Contonou, Benin, (Nov 4-11, 2005).

52. "1D Supersymmetry, Adinkras & Filtered Clifford Algebras," lecture at the "Affine Hecke algebras, the Langlands program, Conformal Field Theory and Matrix Models" meeting at the at the International Center for Mathematical Research (CIRM), Luminy, France, Jun 23, 2006; presentation to the International Workshop non-commutativity in Strings, Gravity and Field Theory, Tokyo Metropolitan University, Hachioji-shi, Tokyo, Japan, Nov 17, 2006.

53. "Revealing Some of the Hidden Representation Theory of Supersymmetry," talk given at the *Proceedings of the International Workshop on Theoretical High Energy Physics* (IWTHEP 2007), Roorkee, UA, India, Mar 17 2007.

54. "SUSY & The Lords of the Ring," plenary address to the 52-nd Annual Conference of the South African Institute of Physics, University of the Witswatersand, Johannnesburg, South Africa, Jul 6, 2007; Graduate College Presentation, Western Western Michigan University, Kalamazoo, MI ,11 Apr 2008; 28-th Annual Michelson Lecture, United State Naval Academy, Annapolis, MD, .21 Oct 2008.

55. "What Supergravity Teaches Us About Gravity As A Gauge Theory," lecture course at the "Sixth Venezuelan Meeting of Physics," Departamento de Fisica, Universidad Central de Venezuela, Caracas, Venezuela, Oct 20-26, 2007.

56. "Seeing the Genome of Reality with Adinkra," presentation at the annual joint meeting of the National Society of Black Physics/National Society of Hispanic Physicists, Convention Center, Nashville, TN, 13 Feb 2009.

57. "Does Reality Have a Genetic Basis?" Dean's Distinguished Lecture, Western Michigan University, Kalamazoo, MI, 16 Feb 2009.

58. "Is Physical Reality a Matrix?," Cairo Science Festival (live video presentation to audience), May 04, 2010.

59. "Mathematical Foundation for Spacetime SUSY Representation Theory," presentation at the QCD and Strings Conference, Oberwoelz, Austria, 29 August - Sep 04, 2010.

60. "Superstrings For Astronomers," Northern Virginia Astronomy Club (NOVAC), Enterprise Hall, George Mason University, Fairfax, VA, Dec 12, 2010.

61. "Is Reality A Matrix?," Invited talk at the "Celebrating 50 Years of the Laser" Meeting, Lanzerac, Hotel, Stellenbosch, S.A. Oct 11, 2010.

62. "SUSY and the Lords of the Ring," 2011 Vaden W. Miles Univ. Lect., Partrich Law School Auditorium Wayne State Univ., Detroit, MI, 03 Mar 2012.

63. "Qunicunx Point: An Overlap of Art, Mathematics, Music, Science & Perhaps Theology," 2011 IUPUI Research Day Univ. Lect. Indiana University-Purdue University Indianapolis Indianapolis, IN, 08 Apr 2011.

64. "Is Our Reality In 'The Matrix?' Norfolk State University Distinguished Lecturer, Norfolk State Center for Materials Research, Norfolk, VA, 18 Nov 2011; Annual Biomedical Research Conference for Minority Students (ABRCMS) Plenary Lecture, St. Louis Convention Center, St. Louis, MO, 11 Nov 2011.

65. "The Mathematical Melodies of Reality," Museum of the Rockies Public Lecture, Bozeman, MT, 08 Dec 2011.

Appendix E: Colloquia and Seminars

1. "Superspace Geometry and Supergravity", University of Toronto, March 5, 1979, Toronto, Canada.

2. "Rheonomic Symmetry and Superspace Supergravity", University of Turin, May 8, 1981, Turin, Italy.

3. "Unconstrained Prepotentials for N = 2 Supergravity", CERN, May, 15, 1981, Geneva, Switzerland.

4. "N = 4 Supergravity Theories: How Many?", Jan. 20, 1983, University of California at Berkeley (LBL).

5. "A New Gauged N = 4 Supergravity Theory", Jan. 22 1983, Los Alamos National Laboratory, and Jan. 25, 1983, University of Texas at Austin.

6. "Progress Toward the Use of Supergraphs in Extended Supergravity", CERN, Aug. 7, 1983, Geneva, Switzerland.

7. "Supersymmetry and Superfields", Lecture series given in Nov. 1983 at the University of Maryland at College Park.

8. "Pregeometry in Supersymmetric Fiber Bundles", Jan. 24, 1984 at the University of California at Berkeley (Mathematics Department).

9. "Scalar Multiplets and Superphenomenology", July 6, 1984 at CERN, Geneva, Switzerland.

10. "Gauge Theory of Gravity", July 10, 1984 at University of Turin, Turin, Italy.

11. "Is There a Dual Heterotic or Type-I Superstring", Oct. 8, 1985 at Yale University, New Haven, Oct. 16, 1985 at the University of Rochester, Rochester, New York, Oct. 24, 1985 at the University of North Carolina, Chapel Hill,Oct. 24, 1985 at Brookhaven National Laboratory, Upton, L.I., N.Y., Nov. 19, 1985 at Atlanta University.

12. "Introduction to Strings from a Field Theorist", Departmental Colloquium, May 26, 1986,Virginia Tech., Blacksburg, Va.

13. "What Are Relativistic Strings?", Departmental Colloquium, June 12, 1986 at the Univ. of Calif. at Davis, Davis, CA.

14. "Manifest Supersymmetry in the M = 0 String Effective Action", July 12, 1986 at the Univ. of Calif. at Berkeley (LBL), Berkeley, CA.

15. "Ghost Currents in D = 2 Supergravity", Seminar at the International School for Advanced Studies, Nov. 26, 1986, Trieste, Italy.

16. "Superspace, super-BRST, and super-Beltrami's", Invited talk at the Univ. Cal. Davis, Jan. 12, 1988.

17. "Spacetime SUSY in String Effective Actions", Invited talk at the Institute for Advanced Study, March 14, 1988, Princeton, NJ.

18. "Heterotic String Compactification", Invited talk at University of Berne, June 13, 1988, Berne, Switzerland.

19. "String Theory; 1988", Invited talk at the Nuclear Physics meeting of the Gordon Conference, July 7, 1988, Tilton, NH. and departmental colloquium at Univ. of Maryland Sept. 13, 1988.

20. "Superstrings: Tying up Particles and (especially) Theoreticians into Knots!", Departmental Colloquia, Sept. 28, 1988, Univ. of Delaware, Newark, DE, Nov. 3, 1988.

21. "Far out Physics", Departmental Colloquium, Oct. 5, 1988, Lincoln University, Lincoln University, PA.

22. "Left and Right Currents in σ-models of String Compactification", Seminar at the S.U.N.Y. at I.T.P. Stony Brook, Oct. 10, 1988, Stony Brook, L. I., N.Y.

23. "Supersymmetric 506 Compactification", at Texas A. & M., Oct. 24, College Station, TX.

24. "Will the Real D = 4, N = 1 Supergravity Limit of Heterotic Strings Please Stand Up", at the Univ. of Texas, Oct. 25, 1988, Austin, TX.

25. "Two Dimensional Field Theory and Four Dimensional Strings" New York Univ., Nov.2, 1988, New York, NY.

26. "What Are Superstrings?", Departmental Colloquium at New York University, Nov. 3, 1988, New York, NY.

27. "An Introduction to the Physics of Superstrings", at the Supercomputer Research Institute, Florida State Univ., Nov.21, 1988, Tallahassee, FL.

28. " Particle Physics, String Theories, Will the SSC Help? " at Florida A. & M. University, Nov.22, 1988, Tallahassee, FL.

29. "New Compactification via Bosonized Thirring Models" at the Univ. of Florida, Nov. 24, 1988, Gainesville, FL.

30. "Massless Bosonized Thirring Model" at SLAC, Stanford University, Jan. 23, 1989, Stanford, CA.

31. "The Physics of Particles from Superstrings", at INFN National Laboratory at Frascati, Feb. 14, 1989, Frascati, Rome, Italy.

32. "The Superstring from the Field Theory View", at Warsaw Univ., Feb. 16, 1989, Warsaw, Poland.

33. "Superstrings & Our Fundamental Physics" Dept. Colloquium at Howard Univ., Wash.D.C., Nov. 1, 1989.

34. "Introduction to String Theory" Departmental Colloquium at Clark-Atlanta Univ., Atlanta, GA, Jan. 24, 1990.

35. "Modern Four Dimensional Superstring Theory" at College of Charleston, First Annual Mobay Physics Lecturer, Charleston, SC Feb. 15, 1990.

36. "Everything You Wanted to Know About String Theory" Departmental Colloquium at the Univ. of Iowa, Iowa City, IO, Feb. 26, 1990.

37. "Massless Fields of D = 4 Heterotic Superstrings and Nonlinear Sigma Models", at the High-Current Electronics Institute of the USSR Academy of Science, Tomsk, Siberia, USSR (June 17, 1990).

38. "A Universal Probe for the D = 4 Heterotic String Effective Action" at the Laboratory of Theoretical Physics of the Joint Institute of Nuclear Research, Dubna, USSR (June 9, 1990).

39. "Some New Questions About BRST Symmetry" at the Laboratory of Theoretical Physics of the Joint Institute of Nuclear Research, Dubna, USSR (June 11, 1990).

40. "The Superstring View of Fundamental Physics", physics seminar at Morgan State University, Baltimore, MD (Oct. 19, 1990).

41. "The Superstring Hypothesis", physics colloquium Lincoln University, Lincoln, PA (Oct. 22, 1990).

42. "What Does 2-d Physics Have to do With Our World? Parts I & II" Departmental Colloquia, Department of Physics and Astronomy, Howard Univ. (Oct.26, 1990 and Nov.2, 1990).

43. "Geometry & Strings: One Physicist's Viewpoint" Departmental Colloquium, Department of Mathematics, Univ. of Maryland, (Nov. 2, 1990).

44. "Bending Superspace for the 0-Modes of Superstrings" at Caltech, (Nov. 19, 1990) Pasadena, CA.

45. "Thirring Models for Four Dimensional String Models" at UCLA, (Nov. 20, 1990).

46. "The Search for String Geometry and The Massless Effective Action" at John Hopkins Univ, (Dec. 7, 1990).

47. "Superstrings: A View of Particle Physics From the Frontier" at the Frontiers of Physics Lectures of the 1991 U.S. Team International Physics Olympiad Training Camp, Univ. of Md., (June 4, 1991).

48. "New Directions in Supersymmetry and Chern-Simons Theory" at Stanford Linear Accelerator Center, (Feb. 14, 1992) and Department of Physics, Univ. of CA, (Feb. 18, 1992).

49. "The N=2 Superstrings, Self-dual Yang-Mills Surprise" at the Department of Physics, Stanford Univ., (Feb. 20, 1992).

50. "Fun with Supersymmetry and Chern-Simons Theories" at the Department of Physics, M.I.T., (May 18, 1992).

51. "New Results for Supersymmetry and Vortices" at the Department of Physics, M.I.T., (March 14, 1992).

52. "String Games or How String Theory Was Discovered in 1834" Departmental Colloquium at Department of Physics, Wayne State Univ., (Oct. 29, 1992) and at Univ. of MD, Department of Physics, (Nov. 1, 1993), Laboratory Colloquium at the Princeton Plasma Physics Laboratory, (March 28, 1994).

53. "The Secret Role of Duality and Supersymmetry in Superstring and Heterotic String Theory" at the Institute for Advanced Studies, Princeton University (May 9, 1994).

54. "Discovering Integrable Systems, Strings and Supersymmetry in 1834" at the Department of Physics, Duke University (June 15, 1994).

55. "Supersymmetry, Topology and BF Theories" at the Institut für Theoretische Physik, Universität Hannover (August 5, 1994).

56. "Two Introductory Lectures on Batalin-Type Quantization Methods" at the Department of Physics, Univ. of MD, (Sept. 21 and 29, 1994).

57. "Three Lectures on the N = 2 SUSY YM Results of Witten and Seiberg" at the Department of Physics, Univ. of MD, (Jan. 25, Feb. 1 and 15).

58. "Superstrings: Why Einstein Would Love Spaghetti in Fundamental Physics?", Departmental Colloquium and APS VML Prize Lecture, Georgia Institute of Technology (Feb. 22, 1995), Univ. of Pittsburgh (March 17, 1995), Michigan State Univ. (April 25. 1995), George Washington Univ., Nov. 2, 1995; Villanova Univ., (Sept. 19, 1996), Univ. of Mich. (Jan. 20, 1997) Departmental Colloquium, Univ. of Kentucky (Feb. 7, 1997); Summer Undergraduate Research Fellowship (SURF) program at the National Institute of Standards and Technology (NIST) Frederick, MD, June 20, 1997; the D.C. Science Writers Club, AAAS Bldg, Wash.,DC, June 23, 1997; Colloquium, Goddard Space Flight Center, Greenbelt, MD, April 10, 1998; Colloquium, Naval Research Laboratory (NRL) April 30, 1998; The Philosophical Society of Washington, Cosmos

Club, Washington DC, Oct. 2, 1998; Depaul University, Centennial Celebration Presentation, Oct. 15, 1998, Chicago, IL; Departmental Colloquium, Syracuse Univ., Syracuse, NY Oct. 22, 1998, Sigma Xi Distinguished Lecture, Nuc. Rg. Comm., Rockville, MD, June 17, 1999, Sigma Xi Distinguished Lecture, NIST, Gaithersburg, MD, Sept. 23, 1999, Departmental Colloquium, Millersville Univ., Millersville, PA, Oct. 27, 1999, Departmental Colloquium, Gettysburg College, Gettysburg, PA , Oct. 28, 1999, Muskingum College Sigma Xi Chapter Distinguished Lecture, Muskingum College, New Concord, OH, Nov. 18, 1999, Hoffmann - LaRoche Sigma Xi Chapter Distinguished Lecture, Roche Tower, Hoffmann - LaRoche, Nutley, NJ, Feb. 9, 2000, Tenn. Tech. Univ. Sigma Xi Distinguished Lecture, Cookeville, TN, April 6, 2000, Villanova Univ. Sigma Xi Distinguished Lecture, Villanova, PA, April 23, 2000, DC Chapter Sigma Xi Distinguished Lecture, Washington DC, May 5, 2000; Sigma Xi Distinguished Lecture, Loyola-Marymount Univ, Oct 19, 2000, Los Angeles, CA, Nov. 8, 2000, Physics Dept. Colloquium, Univ. of Cape Town, South Africa; Nov. 9, 2000, Univ. of Witswaterand, Johnnesburg, South Africa, Fundamental & Applied Aspects of Modern Physics Conference Plenary Presentation, Nov. 13, 2000, Luderitz, Namibia, Physics Department Colloquium, Utah State University, Logan, UT, Nov. 28, 2000, Physics Department Colloquium, Georgetown University, Washington, DC, Nov. 30, 2000, Bethesda Rotary Club, Bethesda, MD, Mar. 6, 2001, SPS Chapter, UMCP, May 10, 2001, Physics Department Colloquium, University of Louisville, Columbia, SC, April 9, 2001; Sigma Xi Distinguished Lecture, Univ. of Northern Illinois, DeKalb, IL, April 19, 2001; Sigma Xi Distinguished Lecture, Univ. of South Dakota, Vermillion, SD, April 23, 2001; Sigma Xi Distinguished Lecture, Rennslaer Polytechnic Institute, Troy, NY, Apr. 26, 2001; Maryland Day Lecture, UMCP, College Park, Apr. 28, 2001; UMCP SPS Chapter Presentation, May 10, 2001; Distinguished Scholar Teacher Lecture, Univ. of Maryland, College Park, MD, Nov. 19, 2002; Army Research Laboratory Sigma Xi Chapter Presentation, Adelphi, MD, Nov. 26, 2002; Mount Saint Mary's College, Emmitsburg, MD (Mar. 12, 2003); Richard C. Schultz Distinguished Scholar Lecture, Rochester Museum & Science Center, Rochester, NY (May 7, 2003); Dean's Lecture Series, Univ. of Western , Perth, Australia (July 23, 2003); Klopsteg Memorial Lecture, American Association of Physics Teachers, Madison, WI, (Aug. 4, 2003); Fifth Annual Chemistry and Physics Colloquium, Central Missouri State University, Warrensburg, MO (Nov. 8, 2003); Physics Department Colloquium, Bryn Mawr University. Bryn Mawr, PA (April 5, 2004); Howard Astronomical League, Howard County Public Library, Columbia, MD (Sept. 19, 2004); Louisiana Stokes Alliance for Minority Participation, New Orleans Convention Center, New Orleans, LA (Oct 28, 2004); WYP public lecture, Auditorium, J. Pappajohn Bldg, Univ. of Iowa, (Mar 28, 2005).

59. "Kappa-like Symmetry in String-like Actions" seminar at Physics Dept., Texas A. & M. University, College Station, TX (Oct. 30, 1995).

60. "Superspace: Can we get there from here?" Laboratory Colloquium presented at

the Johns Hopkins University Applied Physics Laboratory, Laurel, MD (March 8, 1996).

61. "Symmetry" Graduate Seminar: Foundations and Frontiers of Physics, Univ. of Maryland, College Park, MD (Sept. 30, 1996).

62. "How I Learned to Love Holomorphic SUSY-Chiral Perturbation Theory" seminar presentation to the particle theory group at the Stanford Linear Accelerator Center. Jan. 17, 1997.

63. "The 4D, N = 1 Supergravity Limit of Heterotic String Theory: The Truth and Nothing But the Truth" seminar presentation to the particle theory group at the Lawrence Berkeley National Lab., Jan. 15, 1997.

64. "Can There Exist a Supersymmetric Theory of Pion Physics?" seminar presentation to the particle theory group at the Univ. of Michigan, Jan. 20, 1997.

65. "Supersymmetry and Low Energy QCD Phenomenological Lagrangians," seminar presentation to the particle theory group at the Univ. of Kentucky. Feb. 5, 1997.

66. "Superstrings: The Technical Reasons Why Einstein Would Love Spaghetti in Fundamental Physics?", seminar presentation to the condensed matter theory group of the Institute for Physical Science and Technology (IPST) at the Univ. of MD., March 19, 1997.

67. "Everything You Might Want to Know About 10D Superstring Symmetries from the World Sheet" at Caltech, (April 8, 1997) Pasadena, CA.

68. "Nature's Fundamental Forces from Symmetries," Dept. Colloquium, Physics Dept., Slippery Rock Univ., (Oct. 1, 1997) Slippery Rock, PA.

69. "Gravitation for Engineers," Dept. Colloquium, Physics Dept., Norfolk State Univ., (Feb. 19, 1998) Norfolk, VA.

70. "Supersymmetry and Pion Physics," seminar at Syracuse Univ. (Oct. 23, 1998).

71. "The Millennial Transition and Fundamental Physics," Dept. Colloquium at Brown Univ. (Nov. 16, 1999).

72. "The Kinematics of the Super-Virasoro Algebra," seminar at Physics Dept. of Brown Univ. (Nov. 17, 1999).

73. "The Kinematics and Geometry of the Super-Virasoro Algebra," seminar at Physics Dept., Caltech. (Jan. 21, 2000).

74. "A User's Guide to the 4D, $N = 1$ SUSY Consistent Anomalies," seminar at Physics Dept., Univ. of Iowa, (Jan. 27, 2000).

75. "Holomorphy, Homotopy and the Supersymmetric Bardeen-Gross-Jackiw Anomaly," seminar at Physics Dept., Univ. of Minnesota, (Jan. 28, 2000) and at the Physics Dept., UMCP (Feb. 22, 2000).

76. "Einstein's Dream at the End of the Millennium,"Laboratory Colloquium at the Princeton Plasma Physics Laboratory, (Feb. 10, 2000).

77. "The Universe May Have Funny Directions," Sigma Xi Distinguished Lecture Colloquium, Tennessee Tech. Univ., April 6, 2000, Cookeville, TN; Loyola-Marymount Univ, Oct 20, 2000, Los Angeles, CA.

78. "The Practical Superspace Bardeen-Gross-Jackiw Anomaly," seminar in the MIT CTP Camb., MA; May 1, 2000, Physics Department, Univ. of Wash., Sept. 15, 2000, Seattle, WA.

79. "Universal Geometrical Realization of Super-Virasoro Algebras," seminar, New York Univ. Physics Dept., Feb. 14, 2001, New York, NY,

80. "How Does M-theory Look From South Africa?," Dept. Colloquium at Howard Univ., Feb. 21, 2001, Wash.D.C.

81. "The String Theory Picture Book," Dept. Colloquium, Calfornia State University at Los Angeles, Los Angeles, CA, Nov. 1, 2001.

82. "On String Theory," Dept. Colloquium, Physics Dept. Cal. St. Univ. San Luis Obispo, Mar. 7, 2002

83. "A Perspective on Einstein's Dream of a Unified Field Theory," Lab. Dir. Colloquium, Los Alamos National Laboratory, Mar. 19, 2002.

84. "Superstring Pictures and the Observation of the Cosmological Constant," Physics Department Colloquium, Stanford Univ., Palo Alto, CA, May 21, 2002; ibid. Catholic Univ. of America, Washington, DC, April 9, 2003.

85. "A Real Y2K Challange: Einstein's Biggest Blunder vs. Superstring/M-theory," Lab. Dir. Colloquium, Argonne National Laboratory, Aug. 1, 2002, Dept. Colloquium, Physics Dept., Rennslaer Polytechnic Institute, Oct. 1, 2002.

86. "Space-Time Supersymmetry and the Clifford Algebra," seminar in the UMCP Mathematics Department graduate minicourse series, UMCP math. dept., Oct. 21, 2002.

87. "String Theory Frontiers," presentation at the UMCP Physics Dept. Open House, Oct. 19, 2002.

88. "Superstring/M-theory Confrontation with the Cosmology Constant," Physics Department Colloquium, Univ. of North Carolina, Chapel Hill, NC, Jan. 21, 2003.

89. "SuperNovae Data vs. Superstring Theory," Physics Department Colloquium, Virginia Polytechnic Institute & State University, Blacksburg, VA, April 18, 2003.

90. "Are Clifford Algebras the Basis for Supersymmetric Representation Theory?" seminar, Physics Department, Univ. of Western Australia, Perth, Australia, July 22, 2003.

91. "Superspace Deformation Theory and String Effective Actions," seminar, Physics Department, Univ. of Western Australia, Perth, Australia, July 24, 2003.

92. "Mathematics: The Third Eye of Science," Plenary & Inaugural Scientific Lecture at the African Institute for Mathematical Sciences, Muizenberg, South Africa, Sept. 18, 2003.

93. "Can M-Theory Dressage Really Control This Universe?" Physics Department Colloquium, Duke Univ., Durham, NC, Oct. 1, 2003; Physics Department Colloquium, Johns Hopkin Univ., Baltimore, MD, Apr. 22, 2004; Physics Department Colloquium, Univ. of Wisconsin- Whitewater, Whitewater, WI, Apr. 26, 2004; Brookhaven National Laboratory Physics Department Colloquium, Brookhaven, LI, NY, May 27, 2004.

94. "On the Mathematics Called Superstring/M-Theory," North Carolina A. & T. University, Greensboro, NC, Oct.2̇, 2003.

95. "Superspace Integration and Super P-forms Integration," seminar Duke Univ., Durham, NC, Oct. 3, 2003.

96. "Lectures on Supersymmetry," four lectures at the African Summer Theoretical Institute (ASTI), Univ. of Cape Town, South Africa, Jan. 17 - 29, 2004.

97. "Superstring/M-theory: The DNA of Existence?" 2004 Peyton Nalle Rhodes Physics Lecture, Rhodes College, Memphis, TN, Jan. 30, 2004; Dept, Colloquium, Physics Department, Washington University, St. Louis, MO, Mar. 31, 2004; Dept, Colloquium, Physics Department, University of Witswatersrand, Johannesburg, South Africa, Mar. 22, 2004; Dept, Colloquium, Physics Department, University of KwaZulu-Natal, Johannesburg, South Africa, Mar. 29, 2004; Physics Department Colloquium. University of Central Florida, Orlando, FL, May 14, 2004; WYP address in the *Explorers Series* of presentations of the Cleveland Museum of Natural History, Cleveland, OH, Mar 18, 2005.

98. "Review of the Special Theoretical Physics at STIAS," "Wine Cellar" Research Bldg., Stellenbosch Institute for Advanced Study (STIAS), Stellenbosch, South Africa, Mar. 2, 2004.

99. "The Mysterious Universe: String Theory for the Layman," Administrative Office of the U.S. Courts African-American Heritage Celebration, Marshall Federal Judiciary Bldg., Washington DC, Feb. 11, 2004.

100. "From the Physics of Atoms and Nuclei to Supersymmetry," Laboratory Colloquium, Schonland Institute, University of Witswatersrand, Johannesburg, South Africa, Mar. 23, 2004.

101. "Detailed Superstring/M-Theory Cosmology?" colloquium, Physics Department, Johns Hopkins Univ., Baltimore, MD, Apr 22, 2004.

102. "Superstring/M-theory & Cosmology," seminar, Physics Department, Univ. of Wisconsin-Whitewater, Whitewater, WI, Apr. 26, 2004.

103. "Strings and Things," seminar in the Foundation and Frontier series, Physics Dept., Univ. of MD, College Park, MD, May 11, 2004.

104. "Aspects of Cosmology & Superstrings," colloquium, Physics Department, Southern Univ., Baton Rouge, LA, Oct 1, 2004.

105. "Can Superstring/M-theory be Seen in the Sky?" colloquium, Physics Department, Lafayette College, Lafayette, PA, Nov. 10, 2004; colloquium, Physics Department, Frostburg State Univ., Frostburg, MD, Nov. 19, 2004; WYP address and departmental colloquium, Univ. of Iowa, Mar 28, 2005. Physics Department, Yale Univ., New Haven, CN, Nov. 11, 2004.

106. "Einstein's Legacy: Toward the Unified Field," colloquium, Physics Department, Rochester Institute of Technology, Rochester, NY, Jan. 11, 2005.

107. "Supergeometically Uniderstanding Higher Curvature in Heterotic Superstring Theory," seminar, Institute for Strings, Cosmology & Astroparticle Physics, Columbia Univ. NY, NY Jan 14, 2005.

108. "Can Superstring/M-theory be Seen in the Heavens?" colloquium, Physics Department, Univ. of Maryland Baltimore County, Caytonsville, MD Feb 2, 2005; colloquium, Physics & Astronomy Department, Univ., George Mason Univ. Fairfax, VA, Feb 25, 2005; colloquium Physics Department of Alabama A&M University, Huntsville, AL, Apr 6, 2005.

109. "1D Supersymmetric Quantum Mechanics & Genetic Supersymmetry Representations," seminar, Dipartimento di Fisica, Universita' di Milano-Bicocca, Milan, Italy, Mar 14, 2005; seminar, seminar at the Institute of Theoretical Physics, Technical University of Vienna, Vienna, Austria, Mar 16, 2005.

110. "String Theory," WYP address to the 15th Service Academy Student Mathematical Conference, Rickover Hall, U.S. Naval Academy, Annapolis, MD, Apr. 15, 2005.

111. "Can Cosmological Concordance Occur With Superstring/M-theory in the Heavens?," 2005 Yunker Physics Lecture & WYP address, Weniger Hall, Oregon State Univ., Corvallis, OR, May 23, 2005.

112. "Superstring/M-theory For Young Physicists," Summer Undergraduate Research Fellowship (SURF) program at the National Institute of Standards and Technology (NIST) Frederick, MD, Jul 25, 2005.

113. "Wrestling with the Mathematics-Gauge Theory to String Theory," seminar, Physics Department, Davidson College, Davidson, NC, Sep 7, 2005.

114. "Is Cosmic Concordance in Concommitance with Superstring/M-theory?," WYP address and colloquium, Physics Department, James Madison Univ. , Harrisonburg, VA, Sep 30, 2005; Morgan State Univ., Baltimore, MD, Oct 12, 2005; Norfolk State Univ., Norfolk, VA, Oct 20, 2005; Morehouse College, Atlanta, GA, Oct 26, 2005; Temple Univ., Philadelphia, PA, Nov 30, 2005; Mount St. Mary's College, Emmitsville, MD, Dec 7, 2005.

115. "Concerto-I & Opus by A. Einstein," MCTP Colloquium, University of Michigan, Ann Arbor, MI, Jan 17, 2006; University of Nevada, Reno in Nevada, Jun 20, 2009.

116. "Is Cosmic Concordance In Concomitance with Superstring/M-theory?" Departmental Colloquium, University of the Sciences, Philadelphia, PA, Feb. 23 2006.

117. "SUSY & The Lords of the Ring," School of Science & Computer Engineering Lecture Presentation, Bayou Theater, University of Houston-Clear Lake, Houston, TX, Mar 07, 2006; Departmental Colloquium, Departamento de Fisica, Universidad Central de Venezuela, Caracas, Venezuela, Mar 21, 2006; departmental colloquium, Carleton College, Northfield, MN, Apr 20, 2007; departmental colloquium, Olin Hall, Lewis & Clark College, Portland, OR, Apr 9, 2007; Physics department colloquium Penn State Univ., State College, Pennsylvania, Sep 13, 2007; presentation to the Philosophical Society of Washington, Cosmos Club, Washington, DC, Sep 28, 2007; Distinguished Professor-at-Large Lecture, University of Western Australia, Perth, Australia, 26 Mar 2008; Departmental Colloquium, Notre Dame University Physics Department, 27 Aug 2008.

118. "A New Mathematica Proposal for the Foundation of Supersymmetry," seminar, Departamento de Fisica, Universidad Central de Venezuela, Caracas, Venezuela, Mar 23, 2006.

119. "Adinkras: New Mathematical Objects in Supersymmetrical Representation Theory," plenary lecture to the Mathematics of String Theory 2006 conference, Australian National University, Jul 18, 2006.

120. "Mathematically Speaking, What is Supersymmetry?" physics department seminar, McGill University, Montreal, Canada, Oct 4, 2006.

121. "Modern Cosmology & Superstring Theory - Can They Co-exist?" seminar Howard University, Washington, DC, Jan 10, 2007.

122. "If You Knew Superstrings," technical seminar presentation, Ithaca College, Ithaca, NY, Feb 19, 2007.

123. "Supersymmetry, Adinkras & Clifford Algebras," mathematics department colloquium, Howard University, Washington, DC, Jan 25, 2008.

124. "Seeing the Mathematics Behind Supersymmetry Theories - Adinkras," technical seminar presentation (master class), Institute for Advanced Studies, University of Western Australia, Perth, Australia, 27 March 2008.

125. "Is Cosmological Concordance in Concommitance with Superstring/M-theory?" 2008 Interdisciplinary Seminar Series, Dansby Hall, Morehouse College, Atlanta, GA, 24 Apr 2008.

126. "Exploring The Group Theory of Spacetime Supersymmetry," Physics Department Colloquium. University of Central Florida, Orlando, FL, 18 May 2008.

127. "String Theory: What Is It. Why It Matters," One-Day-University presentation, Univ. of Maryland @ Shady Grove, Rockville, MD, 04 May 2008.

128. "Understanding Einstein's Genius-Relativity Theory Made Easy," One-Day-University presentation, Doral Arrowwood Conference Resort, Rye Brook, NY, 25 Jan 2009.

129. "Superstring/M-Theory As An Example Of The Theoretical Physics Development Process," Bard College, Annandale-on-Hudson, NY, 12 Mar 2009.

130. "On Solving an it Unsolvable Problem in Superstring/M-Theory," Distinguished Lecture Series, Bard College, Annandale-on-Hudson, NY, 12 Mar 2009.

131. "Superstring/M-Theory: DNA of Reality," presentation to the Cognizance 2009 meeting, IIT-Roorkee, Roorkee, India, 22 Mar 2009.

132. "Seeing the Mathematics Behind Supersymmetry Theories - Adinkras," physics department colloquium, Univ. of Florida, Gainesville, FL, 16 Apr 2009.

133. "The DNA of Reality and Its Genome," Memorial Rustgi Lecture, University of Buffalo, Buffalo, NY, 03 Apr 2009.

134. "From the Standard Model to Superstrings For Astronomers," Northern Virginia Astronomy Club (NOVAC), Enterprise Hall, George Mason University, Fairfax, VA, Jun 14, 2009.

135. "Technically Seeing the Mathematics Behind Supersymmetry Theories - Adinkras," colloquium, Physics Department, Johns Hopkins Univ., Baltimore, MD, Sep 24, 2009.

136. "On Solving an 'Unsolvable' Problem in Superstring/M-Theory," Phillips Distinguished Lecturer Series at Haverford College, Haverford, PA, Sep 17, 2009.

137. "Cracking The Code: Progress Toward Establishing A Rigorous Mathematical Theory of Spacetime SUSY Representations," presentation at the Supersymmetries & Quantum Symmetries 2009 Conference, Joint Institute for Nuclear Research, Bogoluibov Laboaratory of Theoretical Physics, Dubna, Russia, 29 July - 03 August 2009.

138. "Codes, Graphs, Decorated Cubical Cohomology and Spacetime SUSY Representations," colloquium, Physics Department, Univ. of Minnesota, Minneapolis, MN, Oct 09, 2009.

139. "Codes, Graphs, Decorated Cubical Cohomology and Spacetime SUSY Representations," seminar, Physics Department, State Univ. of New York, L.I., NY, Nov 11, 2009.

140. "Does Reality Have a Genetic Basis?," colloquium presentation, Perimeter Institute, Waterloo, Ontario, Canada, Dec 02, 2009.

141. "What Is The Universe Made Of?," panel discussion with Darnell Diggs, Larry Gladney, and Herman White (The Three Cosmic Tenors), public lecture, St. Louis Science Center, St. Louis, MO, Jan 15, 2010.

142. "Is Physical Reality A "Matrix?," dept. colloquium, Univ of Illinois, Urbana-Champaign, IL, Feb 4, 2010; dept. colloquium, Princeton Univ, Princeton, NJ, Feb 25, 2010: dept. colloquium, Univ of Maryland, College Park, MD Apr 6, 2010; dept. colloquium, MIT, Cambridge, MA Apr 6, 2010.

143. "Supergravity: The Quest for Unification," 9-th annual Elston Memorial Lecture, Embry-Riddle Aeronautical Univ., Daytona, FL, Apr 10, 2010.

144. "Seeing The Genome of Reality with Adinkras (II)," seminar, Institute for Advanced Studies, Univ. of Western Australia, Perth, Australia, Mar 23, 2010.

‘ 'Fundamental Representation of SUSY," colloquium African Institute for the Mathematical Sciences, Cape Town, South Africa, Oct 12, 2010.

‘ 'What Is Reality?," St. Louis Science Festival, St. Louis Science Center, St. Louis, MO, Oct 17, 2010.

‘ Mathematics & Reality‘," USA Science & Engineering Festival, National Museum of Health and Medicine, Walter Reed, Washington, DC, Nov. 08.

‘ 'Why Science Really Is Cool...& Very Relevant," USA Science & Engineering Festival/Nifty Fifty Program, Thomas Stone High School, Waldorf, MD, Oct 18, 2011.

145. "Demi-Hemi-Mini-Quasi-Semi-Seminar," series of informal lectures on the introduction to Adinkras in the MIT Math Department, Nov. 17 & 24, 2010.

146. "Does Reality Have a Genetic Basis?" Univ of Virginia Physics Department Colloquium, Charlottesville, VA, 22 Apr 2011.

147. "The Qunicunx Point," Simon Bolivar University Physics Department Colloquium, Caracas, Venezuela, 29 Nov 2011.

148. "Mathematical Surprises From Off-Shell SUSY Representation Theory," Invited Talk Southeastern Section of the American Physical Society, Hotel Roanoke and Conference Center Roanoke, Virginia, 20 Oct 2011; Distinguished College Lecture, University of Venezuela-Caracas, Caracas, Venezuela, 01 Dec 2011; Physics Department Seminar, Seoul National University, 19 Dec 2011; Korean Institute of Advanced Studies, 21 Dec 2011.

149. "Drilling Where The Wood Is Thick," Departmental Lecture, University of Montana, Physics Department, 09 Dec 2011.

Appendix F: Non-Technical Lectures

1. "Perspectives of a Young Black Physicist", invited lecture at the Professional Development Program delivered March 31, 1984 at the University of Calif., Berkeley, CA.

2. "A Unifying View of Our World", Public lecture June 12, 1986 delivered at Univ. of Calif. at Davis, Davis, CA.

3. "Superstrings" Invited talk at the University of Maryland department of physics open house (Super Physics Day) June 19, 1987, UMCP.

4. "Symmetry: The Balance of Nature", Invited talk at the AAPT meeting, June 23, 1988 Cornell University, Ithaca, NY.

5. "Everything You Want to Know about String Theory or Why Our Universe May be a Grand Piano", Invited talk at the Joint AAPT/APS Winter Meeting, Jan. 25, 1990, Atlanta, GA.

6. "On Matters of Race and the Mathematical Sciences", keynote address at the Second Annual Baltimore Mathematics Education Conference, sponsored by Morgan State Univ. and the Baltimore City Public Schools, Morgan State Univ., March 31, 1990, Baltimore, MD.

7. "Two Models for Successful Minority Graduate Programs In Physics", address to faculty, administrators and the office of the the Dean of the Graduate School of UCLA, Nov. 16, 1990, Los Angeles, CA.

8. "Perspectives of a Middle-Aged Black Physicist", address at the National Conference of Black Physics Students meeting held at Hampton University, Feb. 16, 1991, Hampton, VA.

9. "Einstein, Shockley and Physics", keynote address at the National Conference of Black Physics Students meeting held at Stanford University, Feb. 14, 1992 Stanford, CA.

10. "What Does a University Professor Think About a Public High School System", address to the Science Teachers of the Detroit Public Middle Schools at the University of Detroit Mercy, Oct. 28, 1992, Detroit, MI.

11. "Issues Facing Black Scientists", address at the National Conference of Black Physics Students meeting held at Michigan State University, Feb. 13, 1993, East Lansing, MI.

12. "Can We All Be Different And Still Do Excellent Science?", address to the Science and Technology Assembly on Research at the SSC meeting held at George Washington University, September 13, 1993 sponsored by the American Physical Society, Division of Particle and Fields, Wash., D.C.

13. "Educating African-American Students in Science From K-12, University And Beyond", address at the Successful Strategies For Educating Minority Students in Science meeting at Michigan State University, September 24, 1993 sponsored by Michigan Department of Education, the Michigan College/ University Program, MSU Physics Dept., J. Samora Research Institute and LCC Science Dept., East Lansing, MI.

14. "Preparation of African-American Undergraduate Physics Students For Graduate Studies", address at the National Conference of Black Physics Students Annual Meeting, Feb. 9 - 12, 1995 hosted by AIP and the Univ. of MD, UMCP.

15. "Why Equity and Excellence Must Be Complementary in Physics and the Nation", address to the first African-American History Month Dinner at the Continuous Electron Beam Accelerator Facility (CEBAF), Feb. 25, 1995 held at the Kiln Creek Inn, Newport News, VA.

16. "Why Diversity in Physics and the Nation", panel address at the 1995 Sigma-Xi Forum, Mar. 2-3, 1995 at the Sheraton Convention Center, Research Triangle, VA.

17. "What One Theoretical Physicist Thinks About Diversity and Excellence", address at the Frick Fine Arts Center, Univ. of Pittsburgh, Mar. 16, 1995, Pittsburgh, PA.

18. "Diversity and Excellence: Challenges for a Minority Scientist", address to the College Park Scholars Program in Science, Technology and Science, Apr. 10, 1995, Cumberland Hall, UMCP.

19. "Science, Diversity and Excellence Confront the Challenges of the End of the Second Reconstruction", address at the annual meeting of the National Society of Black Physicists, Apr. 14, 1995 hosted by Clark Atlanta Univ., Morehouse Univ. and Georgia Tech, Atlanta, GA.

20. "What is Science?", presentations at the Oakland Terrace Elementary School, Apr. 27, 1995, Silver Springs, MD.

21. "Minorities and Women in Physics–Current Status and Issues" A Panel and Audience Discussion, Session G'4, APS March Meeting, St. Louis, MO (March 19, 1996).

22. "Challenges for a Minority Scientist", address to the College Park Scholars Program in Science, Technology and Science, Apr. 5, 1996, Cumberland Hall, UMCP.

23. "Effective Use of Physics in the Elementary School Science Class", keynote address at the Detroit Public Schools Science Teacher Summer Institute, Urban Systemic Initiative Program, June 17, 1996, Detroit, MI.

24. "Superstrings: Why Einstein Would Love Spaghetti in Fundamental Physics?", presentation before the MIT Alumni Club of Washington, Feb. 18, 1997 at the Adult Education Center, College Park, MD and at the Junior Science and Humanities Symposium annual banquet, Wayne State Univ., March 6, 1997, Detroit, MI.

25. "The Real Y2K Problem: Career Issues and Challenges for Young Physicists," presentation at the 1997 annual meeting of the National Conference of Black Physics Students, Feb. 27, 1997 at the Boston Marriot at Cambridge Center.

26. "Constructivism, Science and Teaching in the Elementary School Class," keynote address at the Detroit Public Schools Science Teacher Summer Institute, Urban Systemic Initiative Program, June 7, 1997, Detroit, MI.

27. "Constructivism, Science and Teaching in the Middle School Class", keynote address at the Detroit Public Schools Science Teacher Summer Institute, Urban Systemic Initiative Program, June 14, 1997, Detroit, MI.

28. "Gauge invariance: An Aspect of Real Magnetism and Beyond", a presentation at the W.E. Henry Symposium, 'The Importance of Magnetism in Physics and Material Science,' at the LBNL, Sept. 19, 1997, Berkeley, CA.

29. "Unification as a Philosophical Paradigm of Post-Modern Physics," presentation to the PHIL 858U course, Dept. of Philosophy, UMCP, Skinner Bldg., Sept. 16, 1997.

30. "Where Has Einstein's Unified Field Concept Taken Us?", presentation at Slippery Rock Univ., Oct. 1, 1997 Slippery Rock, PA.

31. "The Rock and Roll Effect: The Natural Law of the Efficacy of Diversity," address to the College Park Scholars Program in Science, Technology and Science, Oct. 7, 1997, Cumberland Hall, UMCP.

32. "Survival After the End of the Second Reconstruction," address to the N.I.S.T. Association for African-American Staff (NAAS), Feb. 12, 1998, National Institute of Standards and Technology (N.I.S.T.), Gaitherburg, MD.

33. "What Did Dreaming of Electrons Do?", keynote address at the Hampton University Third Annual Student Research Symposium, Hampton Univ., Feb. 13, 1998, Hampton, VA.

34. "Frontiers in Physics," presentation at the 1998 joint annual meeting of the National Society of Black Physicists and National Conference of Black Physics Students, Mar. 6, 1998 at the University of Kentucky, Lexington, KY.

35. "Impact of Changes on Affirmative Action," member of panel presentation at the 1998 annual meeting of the National Organization for the Professional Advancement of Black Chemists and Chemical Engineers (NOBCChE), Apr. 17, 1998 at Dallas, TX.

36. "One Physicist Views on Affirmative Action," member of panel presentation at the "Diversity and Science" panel at 1998 Student Pugwash USA Conference, Nov. 13, 1998, National 4-H Center, Chevy Chase, MD.

37. "On the Universality of Creativity in the Arts and Sciences" address to the 1999 Junior Science and Humanities Symposium, Greater Washington Metropolitan Area at Georgetown Univ., Jan. 7, 1999, Jan. 3, 2003 and the inargural presentation in the Potomac School Distinguished Speakers Series, May 25, 1999, McLean, VA.

38. "A Black Physicist's View of 'Reality' in the Second Millennium," opening keynote address to the "Physics at the frontier: From Nanostructure to the Chaos," the 14th annual meeting of the National Conference of Black Physics Students, Berkeley Univ., March 11 - 14, 1999.

39. "Diversity, Science and Research" keynote address to the "Research, Discovery and Communication," 4th annual meeting of the Chicago Alliance for Minority Participation 1999 Conference April 9 - 10, 1999.

40. "Super Partners: New Forms of Matter and Energy for the New Millennium," presentation at the 1999 Tennessee Technology Summit, Annual Corridor Summit and the 26th Annual WATTEC Technology Conference, Knoxville, TN, June 2, 1999.

41. "Speaking the White-Man's Magic" address to 12th annual Conference for African Americans in Higher Education, "African Americans at he Crossroads of Change: Where Do We Go From Here?" Univ. of Maryland, College Park, June 7, 1999.

42. "Can we Get From Physics to Starships?" address to the Nat. Soc. of Black Eng. chapter of the University of Central Florida, Orlando, Oct. 15, 1999.

43. "On the Universality of Creativity" address to the Florida-Georgia Alliance for Minority Participation (FGAMP) program, Bethune Cookman College, Daytona, Oct. 18, 1999.

44. "What Does Climbing a Small Mountain in Iceland Have to Do With Physics?" Luncheon address to "Physics: The Science That Shapes the Future," the 15th annual meeting of the National Conference of Black Physics Students, North Carolina A. & T. Univ., Greensboro, NC, March 15 - 19, 2000.

45. "Speaking the White-Man's Magic" address to "Sharing Our Success on Urban Science Teaching" conference hosted by the NYU Science Education Depart., Math, Science, Technology Enhancement Project (MSTEP) in association with the State Education Department, Dwight D. Eisenhower Program and the New York Biology Teacher Association (NYBTA) at New York University, NY, NY, May 24, 2000.

46. "The Law of Efficacy of Diversity," keynote address at the Social Science Research Council Minority Fellowship Conference Rice University, Houston, TX, June 15-18, 2000.

47. "The Theory of Everything," Member, First Annual Isaac Asimov Memorial Panel Debate, Hayden Planetarium, American Museum of Natural History, New York, Feb. 13, 2001.

48. "Choosing a Career in Academe & Travelling the World," address at the McNair 2001: Achieving Scholarship, Leadership, and Excellence in the 21st Century, a National Undergraduate Research Conference, Univ. of Maryland, College Park, MD, March 7, 2001.

49. "A Perspective of an African-American Physicist," Lyceum Series Lecture, Johnson C. Smith University, Charlotte, NC, March 14, 2001.

50. "Facing the SMET Dilemma", keynote address at the Detroit Public Schools Science Teacher Summer Institute, Urban Systemic Initiative Program, Detroit, MI, August 2, 2001.

51. "Shall There Be African-American Scientists in the New Millennium?," keynote address to the 16th annual meeting of the National Conference of Black Physics Students, Stanford Univ., April 1, 1999.

52. "Seeking a Career in Science, Engineering and Technology," the keynote address at the Science and Technology Week Program at Benedict College, Columbia, SC, April 10, 2001.

53. "Superstrings: Einstein's Theory at the New Millenium," Public Lecture at Stellenbosch University, Stellenbosch, South Africa, Feb. 27, 2002.

54. "New Millennial Comments to Young African-American Engineers," keynote speech of the Faculty/Graduate Student Reception at the 28th Annual National Convention of the National Society of Black Engineers, Orlando, FL, March 30, 2002.

55. "Science, Family, Community and Education," dinner speech at Family Weekend at University of Maryland, Sept. 27, 2002, Rossborough Inn, College Park, MD.

56. "A Theoretical Physics Frontier at UMCP," luncheon speech to University of Maryland Foundation, Oct. 4, 2002, Adult Education Conference Center, College Park, MD.

57. "International Science and Under Represented Americans in the Sciences" in "*Science, Engineering and Technology Across Borders*" Plenary Panel Presentation (televideo) of the "*Changing the Face of Science and Engineering*" Sigma Xi Conference, Galveston, TX, Nov. 14 - 15, 2002.

58. "Investing in UMCP Research: An Example," presentation to the freshman class of the Maryland State Legislature, Clarrise Smith Performing Arts Center, Dec. 10, 2002.

59. "Your Education, Your Future," presentation at the Ron McNair Symposium on Science and Technology Frontiers; the Role of HBCUs in 21st Century Higher Education, NC A & T State University, Greensboro, January 27-28, 2003.

60. "Fundamental Science for Lawyers," Feb. 11, 2004, presentation made to attorneys and staff of the Administrative Office of the U.S. Courts, Washington, DC.

61. "Fundamental Science for Elementary School Students," Feb. 13, 2004, presentation made to second, third and fourth grade classes at St. Mark's School, Hyattsville, MD.

62. "NTFUP Report on What Works for a Vital Undergraduate Physics Program," National Society of Black Physicists (NSBP) annual conference, Feb. 20, 2004, Washington, DC.

63. "Comments at the Opening of the Mostertsdrift "Wine Cellar" Research Bldg., Mar. 1, 2004, Stellenbosch Institute for Advanced Study (STIAS), Stellenbosch, South Africa.

64. "A Parramore District Scientist," Phillips Cinedome , May 13, 2004, Orlando Science Center, Orlando, FL.

65. "Fundamental Science for High School Students," ; May 1, 2004, Dept. of Energy, Science Bowl, 4-H Cub, Bethesda, MD; presentation made May. 14, 2004 to senior and junior classes at University High School, Orlando, FL.

66. "Brown v. Board of Education & Me: From Parramore District to Einstein's Universe," May 17, 2004 , presentation to the Jones High School ROTC, Science and Math Honors Students; Members of the Mayors office, City of Orlando, faculty and staff of the University of Central Florida, and Orange County Public School staff members.

67. "On Being a Minority in the Mathematical Sciences," presentation to members of the MATH SPIRAL PROGRAM, June 3, 2004, Mathematics Dept., University of MD, College Park, MD.

68. "Superstring/M-Theory: The DNA of Existence?" (non-technical version for general public), June 18, 2004, at the Arts & Ideas Festival, New Haven, Connecticut.

69. "Einstein's Dream at the End of the Millennium," (non-technical version for general public), June 27, 2004, Conference on Mathematics, Science and Technology at Phillips Exeter Academy, Exeter, NH,

70. "On Wealth, Globalization, Education & Research," presentation at *International Cooperation in Education, Research and Health Care Untapped Opportunities for Georgia* meeting Jun 30 - Jul 4, 2004, Tblilisi State Univ., Tbilisi, Georgia

71. "Comments on a Life of Science & the Mind," address to the CMPS Summer Bridge Program for Scientists and Engineers, Jul 28, 2004, Univ. of Maryland, College Park.

72. "Introduction to Einstein's Frontier: Superstring/M-theory," (non-technical version for general public) at the *Mali Symposium on Applied Sciences 2004* (MSAS 2004), Aug 3, 2004, Bamako, Mali.

73. "Einstein: A Celebration,'a A convocation honoring the work, genius, and impact of Albert Einstein Aspen, Colorado - August 8-11, 2004, SJG on five panel presentations; (a.) "Einstein's Unfinished Symphony," (b.) Science and Technology; Science and Moral Responsibility, (c.) Einsteins Morality and Character, (d.) Einstein & Race and (e.) The Quest for a Unified Theory.

74. "Einstein's Quest," College of Science Colloquium, World Year of Physics (WYP) address, Rochester Institute of Technology, Jan 10, 2005, Rochester, NY.

75. "Reflections on MIT's Project Interphase and the Development of the African-American Community," presentation to the Black Alumni Association of MIT meeting, Oct 8, 2004, M.I.T., Cambridge, MA.

76. "What Should Globalization Mean to Maryland's African-American Community?" address to the Annual Legislative Weekend of the Maryland Black Caucus Foundation, Oct 16, 2004, R. F. Lewis Museum, Baltimore, MD.

77. "Who Is Going to Make Mathematical Physics 'Flow?' ," Pleanry address, Louisiana Stokes Alliance for Minority Participation, New Orleans Convention Center, New Orleans, LA, Oct 29, 2004.

78. "A Commentary on 'The Elegant Universe' Video," Lafayette College, Lafayette, PA, Nov. 9, 2004.

79. "Can Superstring/M-theory Be Seen In The Skies?" (popular level version), S. Krasner Memorial Lecture, Dimick Hall, Coast Guard Academy, New London, CN, Nov 11, 2004.

80. "Superstrings As Einstein's Legacy," Einstein Centennary Lecture & WYP address, Compton Sci. Cntr., Frostburg State Univ., Frostburg, MD, Nov. 18, 2004.

81. "Superstring/M-theory: A Lathe for Physics?" Distinguished Brookhaven Science Associate Lecture & WYP address, Brookhaven National Laboratory, Brookhaven, LI, NY, Jan 25, 2005.

82. "Recalling R. McNair: Astronaut, Physicist & Friend," address to the Ron McNair Commemorative Meeting, North Carolina A & T Univ., Greensboro, NC, Jan 28, 2005.

83. "The Science of Diversity," Annual Distinguished Faculty Colloquy Lecture, sponsored by the College of Mathematical and Physical Sciences, College of Biological Sciences and the Office of Minority Affairs, Drake Union, Ohio St. Univ., Columbus, OH, Feb 3, 2005.

84. "Einstein, Race and Science," annual *Blacks in Science Lecture* and WYP address, Quinlan Auditorium, LSC, Loyola Univ., Chicago, IL, Feb 16, 2005; Illinois, WYP address to the Louis Stokes Alliance for Minority Participation Symposium, Oakbrook, IL, Mar 19, 2005.

85. "Superstrings on Einstein's Frontier," Public Science Day Lecture, AAAS Auditorium, AAAS Bldg, Washington, DC, Feb 17, 2005.

86. "On the Universality of Creativity in the Arts and Sciences," address to the annual conversation on the Liberal Arts, *Beyond Two Cultures: The Sciences as Liberal Arts*, Institute for the Liberal Arts, Westmont College, Santa Barbara, CA, Feb 19, 2005.

87. "Einstein's Lesson for the Third Millennium," closing plenary address to the 2005 annual AAAS meeting, Marriott Wardman Park Hotel, Washington, DC, Feb 20, 2005; Convocation and WYP address, McArthur Court, Univ. of Oregon, Eugene, OR, Sep 25, 2005 .

88. "Einstein's Physics & Philosophy in the Third Millennium," & WYP address to the *Einstein's Legacy* program at Hobart & William Smith Colleges, Geneva, NY, Feb 22, 2005.

89. "Uncle Al: Use the Dark Energy, Luke!" WYP address to the *Eyes on the Sky* series at the Goddard Space Flight Center, Greenbelt, MD, Feb 24, 2005.

90. "The Quest for Ultimate Reality," WYP address in the *Physics from Einstein to the Ends of Time* lecture series of the Resident Program, Smithsonian Institution, Washington, DC, Mar 7, 2005.

91. "Peeking at String Theory," WYP address and Director's Colloquium at the NASA-Glenn Facility, Cleveland, OH, Mar 18, 2005.

92. "Einstein on Diversity," WYP address to CSWP/COM Symposium for 2005 APS March Meeting, Los Angeles, CA, Mar 21, 2005.

93. "String Theory for Chemist & Chemical Engineers," WYP presentation and plenary session of the annual meeting of the Conference of National Organization of Black Chemists and Chemical Engineers (NOBCChE), Orlando Convention Cntr, Orlando, FL, Mar 24, 2005

94. "Toward Space-time Technology for the Third Millennium," WYP presentation and plenary session of the *Physics for the Third Millennium:II* meeting, sponsored by NASA-Marshall Space Flight Center , Von Braun Civic Center, Huntsville, AL, Apr 5-7, 2005.

95. "Thoughts for a Third Millennial United States," WYP address and annual Garnett Baltimore Lecture, Cntr for Biotechnology & Interdisciplinary Studies, Rensselaer Polytechnic Institute, Troy, NY, Apr 18, 2005.

96. "What Education and Globalization Have to Do with Central Florida's Future," address to the Central Florida Education Summit, Rosen Centre Hotel, Orlando, FL, Apr 21, 2005.

97. "Einstein in Everyday Life," WYP address, Orlando Science Center, Orlando, FL, Apr 22, 2005.

98. "Einstein's Message for the Young," WYP address to the Townview Magnet School, Dallas, TX, Apr 27, 2005.

99. "Futures, Careers, Mathematics & Science," WYP address to students of the Chicago Public School system at the Museum of Science & Industry, Chicago, IL, May 19, 2005.

100. "Become The Next Greatest Generation," commencement speech to the Bachelor of Science graduation ceremony, Lake Shore Campus, Loyola Univ., Chicago, IL, May 20. 2005.

101. "Why Diversity Likely Matters in the Mathematical Sciences," WYP address to *Shifting the Geography of Reason II: Gender, Science, and Religion* annual meeting of the Caribbean Philosophical Association, Centro de Estudios Avanzados de Puerto Rico y el Caribe, Old San Juan, Puerto Rico, Jun 3, 2005.

102. Panelist for "The Nature of the Cosmos," presentation of the symposium to recognize the 125-th Anniversary Founding of *Nature*, AAAS Auditorium, AAAS Bldg, Washington, DC, Jul 7, 2005.

103. "Mathematical Science, Success & You," WYP address to the Mathematics Spiral Program, UMCP Math. Dept., UMCP, College Park, MD, Jul 9, 2005.

104. "Science, Minorities & Einstein," WYP address and Keynote Banquet Address, Iowa AGEP Summer Research Symposium, Univ. of Iowa, Iowa City, IA, Jul 27, 2005.

105. "Taking Student to the Edge of Science with Strings," Opening Keynote address to the Orange County Public Schools' annual Science Preplanning Conference, Colonial High School, Orlando, FL, Aug 2, 2005.

106. "Using Strings to Understand the Mathematics/Science Connection," UMCP Physics Quarknet Teachers Group, Physics Dept., UMCP, College Park, MD, Aug 18, 2005.

107. "Einstein's Big Idea-A Preview," Physics Dept., UMCP, College Park, MD, Sep 21, 2005; Princeton Historical Society/Princeton University Princeton, NJ, Oct 6, 2005.

108. "Can Concordance Occur in Superstrings?," Smith Lecture and WYP address, Duke Family Performance Hall, Davidson College, Davidson, NC, Sep 8, 2005.

109. "Is Cosmic Concordance in Concommitance with Superstring/M-theory," Nobel Conference, Adolphus Gustavus College, St. Peter, MN, Sep 28, 2005; Society of Physics Students Zone 1 Meeting, Southern Connecticut State University, Apr 08, 2006.

110. "Why Superstring/M-Theory Needs a Young Einstein," WYP address to the *Celebrating Einstein and Science: Past, Present, and Future* conference at the Francis W. Parker School, Chicago, IL, Dec 2, 2005.

111. Panelist, WYP program of the *Celebrating Einstein and Science: Past, Present, and Future* conference at the Francis W. Parker School, Chicago, IL, Dec 3, 2005.

112. "Fundamental Physics at the Current Frontier ," WYP 2005 Physics Young Ambassador Symposium presentation, Tamkang University, Teipei, Taiwan, Dec 31 2005 - Jan 4 2006.

113. "Why Diversity Is An Imperative for the STEM Fields," College of Engineering MKL Symposium Keynote Address, Duderstadt Center, Univ. of Michigan, Ann Arbor, MI, Jan. 16, 2006.

114. "Legacies of Einstein's Concerti & Opus," assembly presentation, Illinois Mathematics and Science Academy, Aurora, IL, Jan. 18, 2006; PROMISE Research Symposium of the Maryland's Alliance for Graduate Education and the Professoriate (AGEP), Stamp Union, University of Maryland, College Park, MD, Jan 23, 2006.

115. "Legacies of Einstein's Concerti & Opus," assembly presentation, Illinois Mathematics and Science Academy, Aurora, IL, Jan. 18, 2006.

116. "SUSY & The Lords of the Ring," National Society of Black Physicist annual conference plenary address, Fairmont Hotel, San Jose, CA, Feb 17, 2006; presentation at the Beijing Institute of Modern Physics, Peking University, Beijing, China, Jun 12, 2007.

117. "Comment on Einstein," Einstein's 127 Birthday Party, Einstein on Race & Racism Book Party, Library of the General Society of Mechanics & Tradesman, New York City, New York, Mar 14, 2006.

118. "What Do We Believe About the Cosmos," popular-level presentation, Departamento de Fisica, Universidad Central de Venezuela, Caracas, Venezuela, Mar 24, 2006.

119. "How to Hear a Universe Sing," Departmental colloquium, Longwood Auditorium, Delaware State University, Dover, DE, Apr 28, 2006.

120. "Superstrings To Rule Fundamental Theories All?," Symposium on Diverse Frontiers in Science celebrating the 75-th Anniversary of the AIP, Cosmos Club, Washington, DC, May 3, 2006.

121. "Modern Cosmology & Superstring Theory - Can They Co-exist?" presentation in the Dean's Lecture Series, University of Western Australia, Perth, Australia, Jul 12, 2006; presentation to the Science College Public Lecture series of Concordia University, Montreal, Canada, Oct 5, 2006.

122. "If You Knew SUSY," a popular level presentation to the lecture series of the Australian Institute of Physics, Rennie Lecture Hall, University of Adelaide, Adelaide, Australia, Jul 21 2006; presentation in the Capital .Science Evenings lecture series of the Carnegie Institution of Washington, Washington, DC, Sep 28, 2006; APS Mid-Atlantic Senior Physicists Group, AIP, College Park, MD, Jan 24.

123. "Modern Cosmology Challenges to Superstring/M-Theory," Goddard Space Flight Center, Jul 25, 2006.

124. Welcoming Science Address, Jul 31, 2006, and presentation, "What Modern Science Has to Say About the Universe," plenary address to the 4th Mali Symposium on Applied Sciences meeting, Bamako, Mali, Aug 1, 2006.

125. "Exploring the Frontiers of Matter, Energy, Space and Time,' a presentation by the Three Cosmic Tenors at the Field Museum, Chicago, IL, Sep 24, 2006.

126. "Effective Techniques in Higher Education for Scientific & Engineering Programs," a presentation made to the second annual Congress of Malians in North America, Malian Embassy, Washington, DC, Nov 25, 2006.

127. "Superstring Theory: The DNA of Reality," initial public presentation of the DvD lecture series collection produced by The Teaching Company (TTC), Hyattsville Branch of the Prince Georges County Memorial Library System, Hyattsville, MD, Nov 30, 2006; Physics Cafe presentation, Ithaca College, Ithaca, NY, Feb 19, 2007; Miller Hall, Lewis & Clark College, Portland, OR, Apr 9, 2007.

128. "Einstein & Race," a presentation in the Du Bois Center lecture series, Harvard University, Cambridge, MA, April 07, 2007; Deans Lecture Series presentation, College of Natural Sciences & Mathematics, University of Houston, Sep 21, 2007.

129. "Conversations on Diversity in the Sciences," dean's workshop, Albany Hall, Lewis & Clark College, Portland, OR, Apr 9, 2007

130. "Breaking the String," Origin of the Cosmos Symposium, a program with Peter Woit, University of Central Florida, Apr 7, 2007.

131. "String Theories fir Dummies," a presentation in the Science & Arts series events, City College of New York, CUNY Graduate Center, New York, NY, May 22, 2007.

132. "I'd Like to See a Cosmos Sing in Perfect Harmony," a presentation to the Riderwood Village speakers series, Silver Spring, MD, Sep 6, 2007; a presentation in the speakers series of the Capital One Corp, Falls Church, VA, Nov 7, 2007.

133. "Remarks on *Shaping the Future of Physics in South Africa* on the Occasion of the Opening of the Wallenberg Research Centre @ STIAS," Stellenbosch, South Africa, Nov 15, 2007.

134. "Einstein's Religious & Ethical Views," presentation to the 33-rd Annual Perspectives in Dialogue series of the Beth El Congregation of Montgomery County, Dec 23, 2007.

135. "The Irrationality of Science," a presentation to the Junior Science & Humanities Symposium (JSHS) of the Greater Washington Metropolitan Area, Georgetown University, Jan 3, 2008.

136. "Einstein, Maxwell & Religion," Sage Chapel Vesper's Presentation, Cornell University, Ithaca, NY, Mar 2, 2008.

137. "Einstein Speaks About Race & Racism," (panel presentation with Fred Jerome & Rodger Taylor) Administrative Office of the U.S. Courts, Marshall Federal Judiciary Bldg., Washington DC, 09 Apr Feb, 2008.

138. "How Diversity Can Energize Innovation is STEM Fields," presentation to 2008 NASA Programs Symposium , Hilton BWI, Linthicum, MD, 25 July 2008.

139. "A Current Topic In String Theory: Adinkras - Combining African Ethos and Modern Mathematics," (at the *Mali Symposium on Applied Sciences 2008* (MSAS 2008), Aug 2, 2008, Bamako, Mali.

140. "Is There a Way to Use Research Science to Teach Science" at the spring MI-AAPT (Michigan American Association of Physics Teachers) Conference, Western Michigan University, Kalamazoo, MI ,12 Apr 2008.

141. "Einstein's New Millennium Legacy," presentation in the President's Lecture Series at Rice University, McNair Hall, Rice University, Houston, TX, 15 Oct 2008.

142. "Einstein & the American Civil Rights Struggle," MLK Commemoration at the U.S. National Science Foundation, Ballston, VA, 15 Jan 2009.

143. "Maxwell's Equations & Darwin's Finches," Beggs Distinguished Lecture, Sage Chapel, Cornell University, Ithaca, NY, 08 Feb 2009.

144. "Evolution & Race," panelist participant, Goldwin Smith Hall, Cornell University, Ithaca, NY, 08 Feb 2009.

145. "Maxwell's Equations & Darwin's Finches," RUMI Forum of Georgetown Univ., Washington, DC, 16 Mar 2009.

146. "Transforming Discrete Diversity Initiatives int a Plan for Educational Excellence for All," Yale University, New Haven, CN, 27 Mar 2009.

147. "Navigating the Cosmos," panel presentation with Evalyn Gates, Lawrence Krauss and Neil Tyson, Hayden Planetarium, American Museum of Natural History, New York, NY, Jun 11, 2009.

148. "Does Reality Have a Genetic Basis?," plenary presentation at the 'St. Louis Science Festival,' St. Louis Science Center, St. Louis, MO, Oct 10, 2009; plenary presentation at the 'Quarks to Cosmos Festival', Perimeter Institute, Waterloo, Ontario, Canada, Oct 18, 2009.

149. "Supersymmetry-What's THAT All About?," International Year of ASTRONOMY 2009 Lecture, Bergen Community College, Paramus, NJ, Nov 05, 2009.

150. "Adinkras: Borrowing From African Symbols For Theoretical Physics," Dean Lecture, University of the District of Columbia, Washington, DC, Nov 09, 2009.

151. "The Third STEM Crisis," presentation to the 2010 recipients of the Presidential Award for Excellence in Mathematics & Science Teaching, Willard Hotel, Washington, DC, Jan 06, 2010; presentation at the AAAS annual meeting, San Diego, CA, Feb 20, 2010.

152. "Is Physical Reality a 'Matrix?'," non-technical public lecture, University of Western Australia, Perth, Australia, Mar 16, 2010.

153. "Race & Science: From Darwin to Einstein," a presentation to the 'Racism Revisited: Anti-racism Leadership & Practice National Symposium, Murdoch Univ, Perth, Australia, Mar 19, 2010.

154. "Remarks On Science & It's Benefits," on the occasion of the opening of the Oceans Institute, University of Western Australia, Perth, Australia, Mar 24, 2010.

155. "Achieving In Academia," keynote address to the Leadership Alliance National Symposium, East Brunswick, NJ, Jul 31, 2010.

156. "Briefing on the 'Prepare & Inspire' PCAST STEM Ed Report before the sixth Mali Symposium on Applied Sciences, University of Bamako, Bamako, Mali, August 1-6, 2010.

157. "Briefing on the 'Prepare & Inspire' PCAST STEM Ed Report before the National Technical Association meeting at Howard University, Washington, DC, Sep 09, 2010.

158. "Briefing on the 'Prepare & Inspire' PCAST STEM Ed Report before the National Academy of Engineering," Keck Center, Washington, DC, Oct 02, 2010.

159. "Briefing on the 'Prepare & Inspire' PCAST STEM Ed Report before the National Defense Industry Association/Aeronautical Industry Association STEM Committee, Univ. of MD Shady Grove, Shady Grove, MD, Oct 26, 2010.

160. "Briefing on the 'Prepare & Inspire' PCAST STEM Ed Report before the High School and College Physics Teachers Workshop, Bergen Community College, Paramus, NJ, Nov 13, 2010.

161. "On the Universality of Creativity in the Arts and Science," colloquium before the Jefferson Literary and Debating Society, University of Virginia, Charlotte, VA, Nov. 11, 2010; Presidential Faculty Scholar Lecture, Rutgers Univ., Rutgers, NJ, Feb 17, 2011.

162. "Briefing on the 'Prepare & Inspire' PCAST STEM Ed Report before the National Science Board," NSF HQ, Arlington, VA, Dec 01, 2010.

163. "The Third STEM Crisis: Defending the American Dream in the New Millennium," keynote banquet presentation at the 27-th Army Science Conference, Orlando, FL, Dec 02, 2010; Robert Noyce Teacher Scholarship Program Conference Plenary Lect., Renaissance Hotel, Washington DC, 07 Jul 2011.

164. "Introduction to Strings & Beyond to Adinkras," A Cosmic Cafe Public Lect., Washington, DC, 21 July 2011.

165. "At the Qunicunx of Education, Economy, Policy, Science, & Security," Korean Scientists & Engineers Association US-Korea Plenary Lect., Waldorf Astoria Hotel. Park City, Utah Aug 10-14, 2011.

166. "STEM Education & the Minority Physicist," Joint Nat. Soc. of Black Phys.& Nat. Soc. of Hispanic Phys. Plenary Lect., Renaissance Austin Hotel, Austin, TX. 22 Sep 2011.

167. "Prepare & Inspire," Featured Presentation, St. Louis SciFest 2011, St. Louis Science Center, 22 Oct 2011.

168. "From a Non-Mathematicians Perspective on the Math Prep Crisis," presentation to American Mathematical Society Committee on Education, Embassy Suites Hotel, Washington, DC, 28 Oct 2011.

169. "Enabling The All-American Dream By STEM Investment In Americans, Presidential Award of Excellence in Science, Math and Engineering Mentor- ing (PAESMEM) Lecture, St. Regis Hotel, Washington, DC, 11 Dec 2011.

170. "Living A Life In Science," Lecture to the Woman and Minorities in Science Program, Anne Arundel Community College, Arnold, MD, 22 Nov 2011; National Association of Counties Black History Month Commemoration, Republic Square, Washington, DC, 08 Feb 2012.

171. "Physics of NFL Football in Baltimore for STEM," Sankofa Community Development Corporation STEMcx Youth Fair, Baltimore, MD, 03 March 2012.

Appendix G: Media Appearances, Citations & Quotes

A featured scientist on "The Path of Most Resistance" program, part I of the six-hour PBS series entitled "Breakthrough: The Changing Face of Science in America", produced by Blackside Production, Inc. (Boston, MA). Initial national broadcast of program held on April 8, 1996.

"Jim Gates and the Quest for Ultimate Reality" a profile by Boyce Rensberger featured in the Washington Post, Horizon Section of Dec. 11, 1996 edition, also in the Miami Herald, Jan. 4, 1997 edition.

Consultant for "A Short Course in String Theory (With No Equations)" by Boyce Rensberger, a feature article in the Washington Post, Horizon Section of Dec. 11, 1996 edition.

Profile featured on Brazilian National Television Program "Scientia," episode title, "Theory of Strings' produced by Idea Productions, Inc. (Washington, DC). Initial national broadcast in Brazil of program held on February 1, 1997.

Name cited as one of the leading African-American scientists in "Ebony" magazine, Feb. 1997 edition.

Profile on classroom teaching featured on local television WUSA channel 9 news program broadcast on April 4, 1997 in the Washington, D.C. metropolitan area.

Moderator of the "Electron Birthday Celebration" at Central Michigan University, April 8, 1997. Program was satellite broadcast to over one hundred high schools around the U.S.

A featured scientist on "Mysteries of the Universe" program, part II of the PBS mini-series entitled "A Science Odyssey", produced by The Documentary Guild, Inc. (Boston, MA). Initial national broadcast of program held on Jan. 12, 1998.

Quoted in "What's New" the electronic newsletter of the American Physical Society, in regard to the proposed interpretation of the observation of type IA supernovae implying the existence of a non-vanishing cosmological constant, Feb. 27, 1998.

Scientific commentator at the Second Millennium Lecture given by Prof. Stephen Hawking, March 6, 1998, East Room, White House. Simultaneous broadcast on the World Wide Web, the C-Span Cable Network and the BBC.

Quoted in "Reshaping Affirmative Action" an article appearing in Chemical & Engineering News, Vol. 67, # 29, (July 20, 1998) pp. 17 - 31.

Featured guest on "Science-Science," hosted & produced by Mr. Kenneth Fox, Bowie Cable TV, (Sept. 9, 1999).

"Physicist Has Been There, Done That" an article by Mike Berry featured in the Orlando Sentinel, Orange Extra "K" Section of Oct. 17, 1999 edition.

"TTU Speaker tackling 'universal questions" an article featured on the front page of the Herald-Citizen, Cookeville, TN, April 5, 2000 edition.

Panelist, First Annual Isaac Asimov Memorial Panel Debate, "The Theory of Everything," Panel: S. J. Gates, B. Greene, S. Glashow, L. Krauss and L. Randall, (moderator: N. Tyson) Hayden Planetarium and American Museum of Natural History, New York, NY, Feb. 13, 2001.

Profile on physics and education featured on local television WTTG channel 5 news program broadcast on Mar. 05 , 2001 in the Washington, D.C. metropolitan area.

Profile in article "Einstein's Footsteps" in Orlando Magazine, p.17, August, Edition, 2001.

Cover of Black Issues in Higher Education and profile in article "Born to be a Physicist," p.30, Sept. 12, 2001.

Featured article on-line "From Brat to Prof." Military Lifestyle.Com http://www.militarylifestyle.com/home/1,1210,S:1050:1:1447,00.html Jan. 20, 2001.

Quoted in the "Pretoria's Physics Potential is Africa's Hope," The Cape Argus, Cape Town, South Africa, January 31, 2002 and in "SA Has to in Invest in the Sciences," Die Burger (in Afrikaans) Cape Town, South Africa, Feb. 21, 2002.

Featured article on-line "Martin's List: 20th Century Black Inventors," Tech T.V.Com
http://www.techtv.com/screensavers/twistedlist/jump/
0,24331,3373803,00.html, Feb. 27, 2002.

Panelist on the Celebration of Space presentation "Einstein's Relativity:

Past, Present & Future," Panel: L. S. Fein, S. J. Gates, R. J. Gott, J. H. Taylor, (moderator: N. Tyson), Hayden Planetarium and American Museum of Natural History, New York, NY, Nov. 18, 2002.

Appearances in the legacy films in the"Einstein Exhibition," at the American Museum of Natural History, Nov. 13, 2002 exhibition opening date to continue through Aug. 2003, presently at the Boston Museum of Science.

Participation as patron of the African Institute of Mathematical Science described in article, "The brains behind SA's new hothouse for budding genius," The Cape Argus, Cape Town, South Africa, January 21, 2003.

Guest on "1370 Connection,"hosted by Bob Smith on NPR station WXXI 1370 AM, Rochester, NY, May 7. 2003.

Guest on "Delta SEE Connection,' ' hosted by Dr. Dhyana Ziegler, on radio station WOL-AM 1450 AM, Wash, DC, June 28. 2003.

Guest on the radio show, Australia Broadcasting Company "North West, WA," Hosted by Ted Bull, Perth, Australia, July 16, 2003

Guest on the radio show, "Lunch with Verity James," Hosted by Verity James & Russell Wollf, Perth, Australia, July 22, 2003.

Guest on the radio show, "Morning," Hosted by Tim McMillan, Perth, Australia, July 23, 2003.

Announcement for public lecture described in article, "Einstein Was Getting Warm," The Subiaco Post, Perth, Australia, July 7, 2003.

Announcement of appearance in 'The Elegant Universe," series in Oct. Ed. 'Ebony' magazine (p. 128) and Oct. Ed. 'Black Issues in Higher Education (p. 15).

A featured scientist on "The Elegant Universe," series NOVA adaptation of from book by same title, Series host Brian Greene, produced by WGBH, Inc. (Boston, MA). Initial national broadcast of program held on Oct. 28 & Nov. 4, 2003.

Quoted in "Eek! It's physics! But it's good," Arkansas Democrat, story by Celia Storey, Oct. 26, 2003.

Quoted in "You Call This Mind Candy," Times-Picayune, story by Dave Walker, Oct. 27, 2003.

Quoted in "You Call This Mind Candy," Times-Picayune, story by Dave Walker, Oct. 27, 2003.

Quoted in "Science Tugs on Strings of Fascination," Orlando Sentinel story by Hal Boedeker, Oct. 28, 2003.

Quoted in "The Universe of String, Where the Cool Scientists Are," New York Times story by Virginia Heffernan, Oct. 28, 2003.

Feature story in "Scientist to Explain 'Theory of Everthing' on New 'NOVA' TV Series," in U.S. Black Engineer & Information Technology magazine in story by Bruce Phillips, Oct. 22, 2003 Edition.

Feature story in "University of Maryland Physicist Inhabits Elegant Universe," in NSBE Bridge magazine in story by Lynnette Locke, Fall 2003 Edition.

Featured story in "The Physics Teacher," Vol. 42, p. 8 magazine of the AAPT announcement of receipt of the Klopsteg Award of 2003.

Quoted in "Colo. Scientists Form New Type of Matter," Baltimore Sun story by Dennis O'Brian, Jan. 28, 2004.

Featured story "The Theorists," in 'Weekend Today' magazine (Sunday Supplement to USA Today) by Brenda Zook, Feb. 8, 2004.

Featured story "String Theory Tries to Tie It All: How Matter Gets Act Together," in The Memphis Commercial Appeal, by Mary Powers, Memphis, TN, Mar. 31, 2004.

Television feature story interview broadcast on Mar. 17 & 18, 2004 on WREG-TV, NEWS Channel 3, Memphis, TN with reporter Pam Mckelvy.

Featured story "Web Access a Choke-Point for South African Scientists," in 'Engineering News' Vol. 24, # 7, South African magazine article by Keith Campbell, May 7-13, 2004.

Featured story "Do Schools Teach Physics of Success?" in the Orlando Sentinel," article by Tammy Carter, May 13, 2004.

Interviewed for story "We're Doing Just Fine," in 'ScienceCareer.org.' article by Clinton Parks, Feb 11, 2005.

Participant on the WYP broadcast of the Austrian Broadcasting Corporation (ORF) program, "Leidenschaftlich neugierig. Albert Einsteins Suche nach dem Geheimnis hinter," ("Passionately curious. Albert Einstein's search for the secret behind all things"),Vienna, Austria, Mar 15, 2005.

Guest on "Talk of Iowa," show WSUI Radio, Mar 28, 2005.

Panelist for the presentation of "Einstein's Big Idea" press conference at 2005 SUMMER PRESS TOUR, WGBH/NOVA, Beverly Hilton Hotel, Beverly Hills, CA, Jul 13, 2005.

A featured scientist on "Einstein's Big Idea," program NOVA adaptation of book "E = m c-squared", by David Bodanis, produced by WGBH, Inc. (Boston, MA). Initial national broadcast of program Oct. 11, 2005.

"James Gates: Theoretical Physicist" interview on *Wired Science*, PBS television journal program produced by KQED, Inc (Hollywood, CA), initial broadcast 10 October, 2007.

Host, "From Africa -The Next Einstein," program, African Institute for the Mathematical Sciences & TED , Cape Town, South Africa, 12 May 2008.

Moth Tales, story presentation,Symphony Space, World Science Festival, New York City, NY, 29 May 2008. NYT story - http://www.nytimes.com/2008/06/03/science/03fest.html?ref=science

Narrator to the ballet, "The Elegant Universe," Guggenheim Museum, World Science Festival, New York City, NY, 29 May 2008. http://www.nyas.org/snc/podcastdetail.asp?id=1787

Panel appearance on the topics "What Does It Mean To Be Human," World Science Festival, New York University, New York City, NY, 31 May 2008.

Panel appearance on the topic "Beyond Einstein," World Science Festival, New York University, New York City, NY, 01 June 2008.

In the period of 208 winter, Prof. Gates appeared in a regularly broadcasted Science Channel commercial.

In August of 2008, Prof. Gates was in a delegation that met with the Prime Minister of the west African nation of Mali, scenes of him with P. M. Modibo Sidibe were carried on national television news programs.

Panel appearance on the topic "Beyond Einstein," World Science Festival, New York University, New York City, NY, 01 June 2008.

In August of 2010, Prof. Gates was in a delegation that met once more with the Prime Minister of the west African nation of Mali, scenes of him with P. M. Modibo Sidibe were carried on national television news programs.

Panelist at the 'Power of Idea: Stephen Hawking Tribute' Perimeter Institute, 15 Sep 2011, http://www.youtube.com/watch?v=2jW6wdG0XPU

Scientist/Presenter "The Science of NHL Hockey" http://www.nbclearn.com/portal/site/learn/science-of-nhl-hockey

Scientist/Presenter on Brian Greene's NOVA/PBS Science Documentary "The Fabric of the Cosmos: What Is Space?"
http://www.pbs.org/wgbh/nova/physics/fabric-of-cosmos.html
http://video.pbs.org/video/2163057527/

Featured in Washington Post Story "Mysteries of space are discussed by theoretical physicist S. James Gates Jr." 07 Nov 2011
http://www.washingtonpost.com/national/health-science/mysteries-of-space-are-discussed-by-theoretical-physicist-s-james-gates-jr/2011/11/03/gIQAhEkBvM_story.html

UMCP Diamondback & Blog

http://campusdrivedbk.wordpress.com/2011/11/02/jim-gates-is-smart-explains-physics-on-television-frequently-tonight/

http://www.diamondbackonline.com/news/tackling-science-1.2674797#.TrTGxXHytcx

Panelist on the WGBH Select Audience Presentation "The Fabric of the Cosmos: What Is Space?" WGBH Studios, 1 Guest St. Watertown, MA, 16 Nov 2011.

Scientist/Presenter on Jim Al-Khalil's BBC Horizon documentary, "The Hunt For The Higgs" http://www.bbc.co.uk/programmes/p00n2vvj http://www.youtube.com/watch?v=BJ-V4xz_sZQ

Scientist/Presenter on Korea Education Broadcasting System Science documentary "The Milestone of Scientific Civilization."

Featured in national MK TV and Newspaper stories in Korea
http://news.mk.co.kr/newsRead.php?year=2011&no=832083
http://mbn.mk.co.kr/pages/news/newsView.php?news_seq_no=1138903

Featured Focus on the NPR national radio series "On Being" hosted by Krista Tippett on segment entitled "Uncovering the Codes for Reality" 01-17 Mar 2012 http://onbeing.org

Appendix H: Audio/Visual Presentations on Web

Not all the following links are active and lead to audio or audio/visual presentations currently available on the web. To use some of the following webpage addresses it may be necessary to CUT-&-PASTE the URL onto a single line with no spaces in a browser window.

http://www.nbclearn.com/portal/site/learn/nfl/cuecard/51076/
"Science of Football," NBC on-air commentator.

http://www.youtube.com/watch?v=Nwl0Os4moWg

http://www.youtube.com/watch?v=sZL7PilYgo8&feature=related

http://www.pbs.org/kcet/wiredscience/video/185-
james_gates_extended_interview.html

http://banyancollege.org/scriblerus/index.php? option=com_content&task=
view&id=108&Itemid=38

http://www.ciw.edu/events/lectures/archive/2006- 2007+-+Seventeenth+Season

http://speakingoffaith.publicradio.org/programs/ einsteinsethics/unheardcuts.shtml

http://speakingoffaith.publicradio.org/programs/ einstein/index.shtml

http://deimos3.apple.com/WebObjects/Core.woa/Browse/ americanpublicmedia.org.
1365278885?i=1265282297

(f.2) **Other Websites**

A number of activities as well as biographical data related to Prof. Gates can be found at the following URL's on the World Wide Web.

http://www.bamit.org/gates01.htm

http://nsbp.org/cgi-bin/nsbp.cgi?page=jgates

http://www.physics.umd.edu/announcements/gates.html

http://www.loc.gov/loc/cyberlc/
http://www.loc.gov/rr/scitech/events/gates.html
(requires Real Player)

http://www.nsf.gov/od/lpa/lecture/stringtheory.htm
(requires Real Player)

http://www.physicscentral.com/people/people-01-3.html

http://www.orlandomag.com./features/story.cfm?ID=100

http://www.physics.umd.edu/ep/gates/gates.html

http://www.africanpubs.com/Apps/bios/
0543GatesSylvester.asp?pic=none

http://www.math.buffalo.edu/mad/physics/
gates_sylvester.html

http://www.aaas.org/communications/newsnotes/page2jan.htm

http://www.aps.org/praw/bouchet/94winner.html

http://www.cmps.umd.edu/john_toll.htm

http://www.breakthrough.org/series/note/Path/path3.htm

http://insti.physics.sunysb.edu/~siegel/quo.html

http://www.pbs.org/wgbh/aso/databank/entries/bpgate.html

http://www.inform.umd.edu/CPMAG/summer98/
explorations.html

http://superstringtheory.com/people.html

http://pubs.acs.org/hotartcl/cenear/980720/res.html

http://pubs.acs.org/hotartcl/cenear/980720/perc.html
http://pubs.acs.org/hotartcl/cenear/980720/assess.html

http://www.apscenttalks.org/pres_masterpage.cfm?nameID=129
(requires Real Player)

http://web.gc.cuny.edu/ashp/nml/artsci/gates.html

http://www.nsbe.org/convention/speaker/bios/gates.htm

http://www.sun.ac.za/summerschool/2002.html

http://www.sun.ac.za/news/NewsItem.asp?ItemID=1690&Zone=E05

http://allafrica.com/stories/200201310295.html

http://www.physicstoday.org/pt/vol-55/iss-5/p48.html

http://http://www.lanl.gov/orgs/pa/newsbulletin/
2002/03/20/text03.shtml

http://outlook.collegepublisher.com/main.cfm?include=
detail&storyid=226268

http://http://www.ias.edu/pitp

http://www.amnh.org/programs/hayden/#einstein

http://www.aaas.org/news/releases/2003/0701deltasee.shtml

http://www.deltasee.org/radio/radio_106-110.htm

http://www.pbs.org/wgbh/nova/elegant/view-gates.html

http://www.abc.net.au/wa/stories/s904350.htm
(requires Real Player)

http://www.cmsu.edu/x2728.xml

http://www.blackengineer.com/artman/publish/article_169.shtml

http://www.washingtonpost.com/wp-dyn/articles/
A2570-2003Oct22.html

http://www.gomemphis.com/mca/local_news/article/ 0,1426,
MCA_437_2613028,00.html

http://www.gomemphis.com/mca/centralcity_appeal/ article/
0,1426,MCA_15698_2608897,00.html

http://www.rhodes.edu/Calendars/SylvesterJamesGates.cfm?
RenderForPrint=1

http://www.gustavus.edu/events/nobel/2005/

http://www.aaas.org/meetings/Annual_Meeting/02_PE/
PE_01_PlenLec.shtml

http://www.ncat.edu/ remcnair/schedule_of_events.html

http://www.rit.edu/ 930www/NewsEvents/2004/Dec01/COS.html

http://qd.typepad.com/5/2005/01/sylvester_james.html

http://www.westmont.edu/institute/pages/2005_program/

http://www.hws.edu/academics/hwsday/

http://residentassociates.org/com/physics.asp

http://cuyahogalibrary.org/Businesscontacts/
CMNH/explorer_series_superstring.htm

http://66.102.7.104/search?q=cache:9TyfrpZRl14J:
www.nasa.gov/centers/glenn/pdf/
114551main_af-may05.pdf+physics+
nasa+glenn+peet+duff+%22james+gates%22&hl
=en&start=1

http://www.nobcche.org/index.cfm?PageID=
46B51B9E-3592-4EBD-AB41F4AAD2FE0233&
PageObjectID=122

http://www.physics.uiowa.edu/lecture_series/
lecture_series_details.html

http://www.nature.com/news/2005/050321/pf/050321-7_pf.html

http://www.wyp-ptm.org

http://news.rpi.edu/update.do?artcenterkey=704&setappvar=page(1)

http://64.233.167.104/search?q=cache:JdfSDObQQzMJ:www.usna.edu/
MathDept/website/mathnews/volume4/mathnews4-5.pdf+

physics+%22james+gates%22&hl=en&start=75

http://www.orlando.org/index.php?submenu=RegionalBoard
&src=gendocs&link=RBA%20Forums&category=RBA

http://www.orlando.org/index.php?src=news&prid=756&category=Headlines

http://www.washingtonpost.com/wp-dyn/content/discussion/
2005/10/07/DI2005100701282.html

http://www.luc.edu/commencement/speakers.shtml

http://www.temple.edu/ISRST/Events/CPAMeeting/

http://www.physics.orst.edu/PhysicsWeb_2001/Seminars/
Yunker_Lecture/Archives_Yunker_Lecture/yunker_
lecture_2005.html

http://cfp.english.upenn.edu/archive/Theory/0291.html

http://www.mona.uwi.edu/government/cct/conferences/phil_assoc.htm

http://www.dailyemerald.com/vnews/display.v/ART/2005/05/31/
429c13d2d6f5b?template=pda

http://sciencecareers.sciencemag.org/career_development/
issue/articles/3430/we_re_doing_just_fine

http://www.youtube.com/watch?v=4r-em4dJalM

http://www.youtube.com/watch?v=yVDHKKTC4tA

http://www.cornell.edu/video/?videoID=464

http://www.youtube.com/watch?v=i53kRJeGr0U

http://video.pbs.org/video/1328430146/

http://www.youtube.com/watch?v=Zxl9a6SPaMc&feature=related

http://www.q2cfestival.com/play.php?lecture_id=7737

http://www.youtube.com/watch?v=DbtgNTmNuIw

http://www.youtube.com/watch?v=7V2eP5BiFFY

Appendix H: Other Websites

A number of activities as well as biographical data related to Prof. Gates can be found at the following URL's on the World Wide Web.

http://www.bamit.org/gates01.htm

http://nsbp.org/cgi-bin/nsbp.cgi?page=jgates

http://www.physics.umd.edu/announcements/gates.html

http://www.loc.gov/loc/cyberlc/
http://www.loc.gov/rr/scitech/events/gates.html
(requires Real Player)

http://www.nsf.gov/od/lpa/lecture/stringtheory.htm
(requires Real Player)

http://www.physicscentral.com/people/people-01-3.html

http://www.orlandomag.com./features/story.cfm?ID=100

http://www.physics.umd.edu/ep/gates/gates.html

http://www.africanpubs.com/Apps/bios/
0543GatesSylvester.asp?pic=none

http://www.math.buffalo.edu/mad/physics/
gates_sylvester.html

http://www.aaas.org/communications/newsnotes/page2jan.htm

http://www.aps.org/praw/bouchet/94winner.html

http://www.cmps.umd.edu/john_toll.htm

http://www.breakthrough.org/series/note/Path/path3.htm

http://insti.physics.sunysb.edu/~siegel/quo.html

http://www.pbs.org/wgbh/aso/databank/entries/bpgate.html

http://www.inform.umd.edu/CPMAG/summer98/
explorations.html

http://superstringtheory.com/people.html

http://pubs.acs.org/hotartcl/cenear/980720/res.html

http://pubs.acs.org/hotartcl/cenear/980720/perc.html
http://pubs.acs.org/hotartcl/cenear/980720/assess.html

http://www.apscenttalks.org/pres_masterpage.cfm?nameID=129
(requires Real Player)

http://web.gc.cuny.edu/ashp/nml/artsci/gates.html

http://www.nsbe.org/convention/speaker/bios/gates.htm

http://www.sun.ac.za/summerschool/2002.html

http://www.sun.ac.za/news/NewsItem.asp?ItemID=1690&Zone=E05

http://allafrica.com/stories/200201310295.html

http://www.physicstoday.org/pt/vol-55/iss-5/p48.html

http://http://www.lanl.gov/orgs/pa/newsbulletin/
2002/03/20/text03.shtml

http://outlook.collegepublisher.com/main.cfm?include=
detail&storyid=226268

http://http://www.ias.edu/pitp

http://www.amnh.org/programs/hayden/#einstein

http://www.aaas.org/news/releases/2003/0701deltasee.shtml

http://www.deltasee.org/radio/radio_106-110.htm

http://www.pbs.org/wgbh/nova/elegant/view-gates.html

http://www.abc.net.au/wa/stories/s904350.htm
(requires Real Player)

http://www.cmsu.edu/x2728.xml

http://www.blackengineer.com/artman/publish/article_169.shtml

http://www.washingtonpost.com/wp-dyn/articles/
A2570-2003Oct22.html

http://www.gomemphis.com/mca/local_news/article/ 0,1426,
MCA_437_2613028,00.html

http://www.gomemphis.com/mca/centralcity_appeal/ article/
0,1426,MCA_15698_2608897,00.html

http://www.rhodes.edu/Calendars/SylvesterJamesGates.cfm?
RenderForPrint=1

http://www.gustavus.edu/events/nobel/2005/

http://www.aaas.org/meetings/Annual_Meeting/02_PE/
PE_01_PlenLec.shtml

http://www.ncat.edu/ remcnair/schedule_of_events.html

http://www.rit.edu/ 930www/NewsEvents/2004/Dec01/COS.html

http://qd.typepad.com/5/2005/01/sylvester_james.html

http://www.westmont.edu/institute/pages/2005_program/

http://www.hws.edu/academics/hwsday/

http://residentassociates.org/com/physics.asp

http://cuyahogalibrary.org/Businesscontacts/
CMNH/explorer_series_superstring.htm

http://66.102.7.104/search?q=cache:9TyfrpZRl14J:
www.nasa.gov/centers/glenn/pdf/
114551main_af-may05.pdf+physics+
nasa+glenn+peet+duff+%22james+gates%22&hl
=en&start=1

http://www.nobcche.org/index.cfm?PageID=
46B51B9E-3592-4EBD-AB41F4AAD2FE0233&
PageObjectID=122

http://www.physics.uiowa.edu/lecture_series/
lecture_series_details.html

http://www.nature.com/news/2005/050321/pf/050321-7_pf.html

http://www.wyp-ptm.org

http://news.rpi.edu/update.do?artcenterkey=704&setappvar=page(1)

http://64.233.167.104/search?q=cache:JdfSDObQQzMJ:www.usna.edu/
MathDept/website/mathnews/volume4/mathnews4-5.pdf+

physics+%22james+gates%22&hl=en&start=75

http://www.orlando.org/index.php?submenu=RegionalBoard
&src=gendocs&link=RBA%20Forums&category=RBA

http://www.orlando.org/index.php?src=news&prid=756&category=Headlines

http://www.washingtonpost.com/wp-dyn/content/discussion/
2005/10/07/DI2005100701282.html

http://www.luc.edu/commencement/speakers.shtml

http://www.temple.edu/ISRST/Events/CPAMeeting/

http://www.physics.orst.edu/PhysicsWeb_2001/Seminars/
Yunker_Lecture/Archives_Yunker_Lecture/yunker_
lecture_2005.html

http://cfp.english.upenn.edu/archive/Theory/0291.html

http://www.mona.uwi.edu/government/cct/conferences/phil_assoc.htm

http://www.dailyemerald.com/vnews/display.v/ART/2005/05/31/
429c13d2d6f5b?template=pda

http://sciencecareers.sciencemag.org/career_development/
issue/articles/3430/we_re_doing_just_fine

Appendix I: Fellowships, Awards and Honors

National Merit Scholarship, sponsored by General Dynamics Corporation. 1969-1973.

William L. Stewart, Jr. Service Award, M.I.T., May 10, 1973.

Graduate Fellowship from National Fellowship Fund, sponsored by the Ford Foundation, 1973-1977.

Teaching Award from the Office of Minority Education, M.I.T.,1981.

National Science Foundation Postdoctoral Fellowship, 1981-1982.

M. L. King Award, M.I.T., May 1985. Award was given in recognition for contributions to the education of minority students at M.I.T.

21st Century Initiative Award, Howard University, 1992.

Charter Fellow, National Society of Black Physicists, 1992.

1993 National Technical Achiever of the Year and 1993 Physicist of the Year, National Technical Association, Sept. 11, 1993.

First Recipient of the American Physical Society Visiting Minority Lectureship Award (Bouchet Prize), April 21, 1994.

President, National Society of Black Physicists, 1994 - 1996.

Fellow of the American Physical Society, Division of Particles and Fields, April 20, 1995.

Co-recipient of the University of Maryland's Presidential Commission on Ethnic Minority Issue's Outstanding Minority Faculty Award, May 8, 1996.

Co-recipient of the University of Maryland's Celebrating Teachers Program's Outstanding Teacher Award (Physics) , May 15, 1996.

General Councillor, American Physical Society, 1997-2001.

M. L. King Leadership Award, M.I.T., February 6, 1997.

Participant on the program of the Second Millennium Lecture given by

Prof. Stephen Hawking, March 6, 1998, East Room, White House.

Member, Sigma Xi 62nd College of Distinguished Lecturers, (1999 - 2001).

John S. Toll Professor of Physics, Appointed July 1, 1998.

"Giants of Science" Award, QEM Network, Feb., 1999, Washington, DC.

College Science Teacher of the Year, Washington Academy of Sciences, May 20, 1999.

Member, Board of Director QEM Network, Jan., 2000, Washington, DC.

Fellow of the Stellenbosch Institute for Advanced Study (STIAS), Stellenbosch, South Africa, Feb. 2002.

Inaugural Delmos Jones Visiting Scholar, City University of New York, New York, NY, April 3 - 5, 2002.

Woodrow Wilson Teacher-as-Scholar Fellow, Univ. of Maryland, 2002 - 2003.

Distinguished Scholar-Teacher, Univ. of Maryland, 2002 - 2003.

Distinguished Black Marylander Award, Towson University, Feb. 2003.

Recipient, Faculty Minority Achievement Award, President's Commission on Ethnic Minority Issues, University of Maryland, May. 14, 2003.

Recipient, 2003 Klopsteg Award, American Association of Physics Teachers, Aug. 5, 2003,

Fellow of the American Association for the Advancement of Science, November 1, 2003.

Recipient, 2004 University of Maryland Regents Award for Mentoring, March 1, 2004.

Recipient of "The Key to the City" of Orlando and a mayoral proclamation declaring April 22, 2005 as "Sylvester James Gates, Jr. Day," April 22, 2005.

Recognized Faculty Mentor for Philip Merrill Presidential Scholar, Timothy Dulaney, UMCP, Nov 4, 2005. (T. Dulaney also named recipient of Goldwater Scholarship.)

Recipient of the Public Understanding of Science & Technology Award, American Association for the Advancement of Science, Feb 14, 2007.

Presentation of the Robert H. Karplus Lecture "Can String Theory Be An Educational Force Multiplier?" to the annual meeting of the National Science Teacher's Association, America's Center Conference Facility, St. Louis, MO, Mar 31, 2007; presentation to the Minnesota Association of American Physics Teachers, Bethany Lutheran, Mankato, MN Apr 28, 2007.

Presentation of the Emma K. Malmstrom Lecture, "Modern Cosmology & Superstring Theory: Can They Co-Exist," Hamline University, St. Paul, MN, May 03, 2007.

"The Forty-Two Orders of Existence," a commencement address to the graduates of the Astronomy & Physics departments of the University of California, Berkeley, Zellerbach Auditorium, Berkeley, CA, May 18, 2007.

Presentation of the Rev. George V. Coyne, S. J. Lecture on Astronomy and Astrophysics "SUSY & The Lords of the Ring,' ' Marquette University, Feb 28, 2008; Distinguished 2008 Goldman Lecture, University of Central Florida, 17 Apr, 2008.

Member, Ameriican Academy of Arts & Science, (inducted in Oct 2011) 2011 -.

Appendix J: Service

(a.) Professional

Proposal Reviewer for: NSF and DOE.

Advisory and Consulting Positions:

Curriculum Consultant, Boston School Committee, 1982-1983. Prof. Gates was responsible for designing curriculum objectives in high school physics courses (grades 11-12) for city-wide system.

Acting Director, Office of Minority Education, M.I.T., 1985. Prof. Gates had executive administrative responsibility for operation of programs of academic support of minority students at M.I.T.

External Consultant, Howard University, University Advisory Evaluation Committee 1986. Prof. Gates was charged to review, critique, and prepare a written evaluation of the Howard University graduate program in physics.

Member, National Science Foundation Advisory Committee for Physics, Oct. 1, 1988 - Oct. 15, 1992.

NSF Fellowships Panel Evaluator, Jan., 1990, Jan., 1991.

Hampton University Physics Department Visiting Evaluation Committee, Chairman, 1989 - 1992.

Technical Executive Officer, National Society of Black Physicists, 1990 - 1993.

Consultant, Time-Life Book Series, *Voyage Through The Universe*, "Workings of the Universe" (1991) technical advisor for chapter on superstring theory.

Consultant, Educational Testing Service (ETS), GRE Physics Examination, 1991 - 1992.

Consultant, Institute for Defense Analysis,1992-1993.

Member, Advisory Committee for the Particle Detector Research Center at Prairie View A.& M. University, April 1, 1992 - 1993.

NSF Physics REU Site Panel, Nov.13, 1992.

Consultant, Educational Testing Service (ETS), GRE Quantitative Reasoning Examination, 1993 - 1994.

NSF Physics REU Site Panel (chair), Nov.18, 1993.

Member, Physics Advisory Committee for the Nuclear and High Energy Particle Center at Hampton University, 1992 - 1997.

Member, Meeting on The National Forum on Science & Technology Goals, Harvard University, December 10, 1993.

Member of the American Physical Society, Committee on Minorities, 1993 - 1996.

Member, Naval Studies Board, Center for Naval Analysis, June 4 - 9, 1994. (http://bob.nap.edu/readingroom/books/regional_ conflict/#board) (http://books.nap.edu/books/NI000140/html/R1.html)

Consultant, Elementary Particle Program of the Physics Division of the Directorate of Mathematical and Physical Sciences of the National Science Foundation, June, 1994.

Member, Committee of Visitors for the Physics Division of the Directorate of Mathematical and Physical Sciences of the National Science Foundation, July 1994.

Member, High Energy Physics Advisory Panel (HEPAP), Department of Energy, 1994-1997

NSF Physics NYI Panel (member), Feb. 8, 1995.

American Physical Society, Executive Board Member, 1997-2000.

Member, Physics Education Program Initiation Mtg., National Research Council, May 13, 1997.

Scientific consultant for the production of the PBS documentary "Race for the SUPERBOMB" partially based on the book, "Dark Sun," by Richard Rhodes (a history of the development of thermonuclear weapons) produced by 51 Pegasi Prod., Inc. (Belmont, MA) broadcast as part of the "American Experience" series with initial national broadcast on Jan. 11, 1999 (http://www.pbs.org/wgbh/amex/bomb/filmmore/filmcredits.html).

Member, Search Committee for Director of the Fermi National Accel-

erator Laboratory, Mar. - Oct., 1998.

Member, Review Committee of the Professional Opportunity for Women in Research and Education Program of the National Science Foundation, Mar. 30 - Apr. 1, 1998.

Member, Theoretical Physics/Formal Theory Special Emphasis Panel, Physics Division of the Directorate of Mathematical and Physical Sciences of the National Science Foundation, April 12-13, 1998.

American Physical Society, Executive Committee Member, 1998-2000.

Member, External Review Committee of Department of Physics and Astronomy, Univ. of South Carolina, Apr. 22-23, 1999.

Participant, NSF Summit Meeting: Promoting National Leadership in Science and Engineering, Rice University, Oct.19, 1999.

Consultant to faculty physics search committee, Virginia Tech, Blacksburg, VA, Oct. 5, 1999 - May 1, 2000.

Member of the American Physical Society, Committee on Minorities, 1999 - 2001.

Quality Education for Minorities (QEM) Network, Member of the Board of Directors, January, 2000.

Member, NSF Site Review of the Institute for Theoretical Physics at the Univ. of Calif. Santa Barbara, Jan. 23-25, 2000.

Member, Physics Panel of the Committee on Programs for Advanced Study of Mathematics and Science in American High Schools, National Academy of Sciences, May 6,7 & July 8,9 2000, (NTFUP@aapt.org).

Member, Institute for Theoretical Physics, UCSB - Advisory Board, September, 2000 - August, 2003.

Member, NSF Directorate of Mathematical and Physical Sciences Advisory Board, October, 2000 - September, 2003.

Member, LIGO Operations and Scientific Research Sub-Panel and NSF Review Committee, LIGO Hanford Observatory, Hanford, WA, Feb. 26-Mar. 1, 2001.

Fellow, African Science Institute, Oakland, CA, Nov. 10, 2001.

Patron, African Institute of Mathematical Sciences, Cape Town, South Africa, Feb., 2002 - present.

Member, Review Committee for the Argonne National Laboratory Theory Group, Argonne National Laboratory, Argonne , IL, May 31 - June 1, 2002.

Member, National Task Force on Undergraduate Physics, Nov. 2000 - 2005.

Member, Selection Comm. for the AAAS Sci. Journ. Award, AAAS Building, Wash., DC, Sept. 12, 2002.

Member, AAAS Committee On Opportunities in Science, 2002 - 2004.

Member, National Advisory Comm., System-wide Change for All Learners and Educators (SCALE) NSF-MSP, University of Wisconsin-Madison and University of Pittsburgh, Dec. 2002.

Member, United States Linear Collider Steering Group, Dec. 2002 - present

Member, Committee of Visitors for the Physics Division of the Directorate of Mathematical and Physical Sciences of the National Science Foundation, Feb. 2003.

Member, Advisory committee for the Special Program in Theoretical Physics, Stellenbosch Institute for Advanced Studies (STIAS), Stellenbosch, South Africa, Mar. 2003 - present.

Member, National Task Force on Graduate Physics Education, 2003 - 2005.

Member, Advisory Committee for GPRA Performance Assessment of National Science Foundation, June 24-26, 2003

Member, Advisory committee for the African Summer Theoretical Institute (ASTI), Univ. of Cape Town, Cape Town, South Africa, Aug. 2003 - present.

Member, American Physical Society Task Force on Research Collaboration with Africa, (ATFRCA), Aug. 2003 - 2005.

Member, International Panel of the "Shaping the Future of Physics in South Africa" assessment of national physics infrastructure and and re-

cemmendation panel advisor to the South African Department of Science & Technology, the South African National Research Foundation and the South African Institute of Physics, Mar, 2004.

"Report on Opportunities to Support African Mathematical Development," Presentation to the National Committee on Mathematics, NAS Building, Washington DC, Apr 17, 2004

Member, Site Visit Team of the National Task Force on Undergraduate Physics to Yale Univ., Yale Univ., New Haven, CN, Nov. 12, 2004.

Member, DoE Fermi Prize Selection Recommendation Panel, Forrestal Bldg, Washington, DC, Nov. 18, 2005.

Member, LIGO Director's Physics Advisory Committee, Nov. 18, 2006-.

Member, System-wide Change for All Learners and Educators (SCALE) National Advisory Board, an NSF-sponsored educational reform project administer by the University of Wisconsin-Madison, 2004-2006.

Member, Board of Trustees of the Society for Science & the Public (formerly the Science Service), 2007-2013.

Member, DoE Fermi Prize Selection Recommendation Panel, Forrestal Bldg, Washington, DC, 2008-2010. (2008-chairperson).

Member, Maryland State Board of Education, Annapolis, MD, 2009-2013.

Member, (U.S.) Presidential Council of Advisors on Science & Technolgy, Office of Science & Technology Policy, White House. 2009-2013.

Member, Fermi Research Alliance, Board of Directors, 2010-2014.

Member, National Association of State Boards of Education, 'Structure of Schools Learning Community' Working Group, 2010-2011.

Member, AAU Undergraduate STEM Education Initiative Technical Advisory Committee Member 2011-

Panel Participant, National Academies workshop on DoD and STEM, Waterview Conference Center, Rosslyn, VA, 02 Aug 2011.

Appointed advisor to KSEA President, Hosin "David" Lee, Nov 2011 - June 2012.

Conference Organization Positions:

Committee member, local organization committee for the "Workshop on Superstrings, Cosmology, and Composite structures", at Univ. of MD., March, 11 - 18, 1987.

Co-chairman, local organization committee for the "Strings '88 Workshop", at Univ. of MD., May, 24 - 28, 1988.

International advisory committee member for the String '89 workshop held at Texas A.& M. University at College Station, TX March, 13 - 17, 1989.

Advisory Committee member for the Superstring and Particle Physics Workshop, held at the Univ. of Alabama, Tuscaloosa, AL Nov. 8 - 11, 1989.

International advisory committee member for the String '90 workshop held at Texas A.& M. University at College Station, TX March, 12 - 17, 1990.

International advisory committee member for the Summer School On Quantum Field Theories, held at Tomsk, Siberia, Russia, August, 1994.

Steering committee member for the Topical Conference, Recruitment and Retention of Minorities in Physics Nov. 5-7, 1993 sponsored by the AAS/AAPT.

Steering committee member for the Sigma Xi 1995 Forum, 1994-1995.

Committee member, local organization committee for the "Supersymmetry '96 Conference", at Univ. of MD., May 29 - June 1, 1996.

International advisory committee member for the International Seminar "Supersymmetries and Quantum Symmetries", held at the Joint Institute for Nuclear Research (JINR) Dubna, Russia, July 22-26, 1997.

International advisory committee member for the International Conference on "Quantum Field Theory & Gravity" in Tomsk, Russia, July 28-Aug. 2, 1997.

International advisory committee member for the International Conference on "Problems of Quantum Field Theory," held at the Joint Institute for Nuclear Research (JINR) Dubna, Russia, July 13-17, 1998.

International advisory committee member for the International Conference on "Supersymmetries and Quantum Symmetries," held at the Joint Institute for Nuclear Research (JINR) Dubna, Russia, July 27-31, 1999.

International advisory committee member for the International Seminar "Supersymmetries and Quantum Symmetries" (SQS'03), held at the Joint Institute for Nuclear Research (JINR) Dubna, Russia, July 24-29, 2003.

Advisory committee member for the "Symposium on Quantum Theory and Symmetries, (QTS3)," University of Cincinnati, Cincinnati, OH, USA, September 10-14, 2003.

Session Co-organizer, "Strings and Branes" session of the AMS Eastern Sectional meeting at Rider University 4/17-4/18/04.

Advisory committee member for the "Symposium on Quantum Theory and Symmetries, (QTS3)," University of Cincinnati, Cincinnati, OH, USA, September 10-14, 2003.

International advisory committee member for the International Seminar "Supersymmetries and Quantum Symmetries" (SQS'03), held at the Joint Institute for Nuclear Research (JINR) Dubna, Russia, July 2007.

International advisory committee member for the International Conference on "Quantum Field Theory & Gravity" in Tomsk, Russia, July, 2007

(b.) University, College & Department

I. *Academic Year 1987- .*

MAPL Review Comm. (1986)
Qualifying Comm. (1986)
Chanc. Comm. on Eth. Min. Issues (1985-1988)
Exec. Coun. Comm. (1985 -1987)
High Ener. Vax. Main. Comm. (1988-1995)
Ph.D. thesis defense comm. member (J. Tuminaro) Apr 23, 2004

I. *Academic Year 1987-Present*

Extended Qualifying Exam Comm.
College APT Comm. (1995-1997)

I. *Academic Year 1988-Present*

Physic Council
High Ener. Vax. Main. Comm.
College APT Comm.
Dept. Fac. Salary Adv. Comm.
Qualifying Exam Comm.
Undergrad. Stud. Adv. Comm.
Grad. Stud. Adv. Comm.

I. *Academic Year 1989-Present*

Physics Council
High Ener. Vax. Main. Comm.
Dept. Fac. Salary Adv. Comm.
Qualifying Exam Comm.
Undergrad. Stud. Adv. Comm.
Grad. Stud. Adv. Comm.
UMCP Banneker Scholars Selection Comm.
UMCP Black Scholars Fund Raising Comm.
UMCP Comm. on Excellence & Diversity, Chairman
UMCP Instructor/Lecturer Review Comm.
UMCP Endowment Comm.
Departmental Education Review Comm.

I. *Academic Year 1994-Present*

UMCP Banneker Scholars Selection Comm.
Departmental Education Review Comm.
Departmental APT Comm. (chair) 1994 - 1996
Departmental Grad. Lab. Review Comm. (chair)
CMPS College APT Comm. (1996-1997)
CMPS College APT Comm. (chair,1997-1998)
CMPS Dean Search Comm. (1998)
Departmental Chair Search Comm. (1998)
UMCP Strategic Planning Comm. (1999-2000)
Phys. Dept. Fac. Salary Comm. (2000)
Member, University Senate. (2002-2007)
Member, Executive Comm,. of the University Senate (2004-2007)
Departmental Priority Comm. 2004
Program, Curr. Changes Comm. (chair) 2004-2005
Univ. Res. Council Adv. Comm. (member) 2004-2005
Maryland 150 Anniversary Planning Comm. member (2004)
Fac. Senate 'Hybrid' Comm. member (2004)

"Maryland Day" faculty presenter (Apr 24, 2004)
Chair-Elect University Senate (2005-2006)
Chair University Senate (2006-2007)
Past-Chair Faculty Senate (2007-2008)
Member of Search Math. Dept. Chair (2006-2007)
Member of Search Comm. for Exec. Dir. of UMCP Senate (2007-2008)
Chair-Search Comm. for Dean of College of Education (2007-2008)
Member of Athletic Council (2007-2008)
Member of AMSC Graduate Comm. (2006-2008)
Member of University Honors Selection Comm. (2007-2008)

(c.) Community

I. *Academic Year 1989-Present*

NAACP Science Fair Judge (Feb.1989)
Suitland H.S. Presentation for Chemistry Class (Mar. 1991)
Suitland H.S. Science Fair Judge (Mar.1991)
Whitney Young Middle School, Detroit, MI (Oct. 1992)
Tubman Elementary School, Wash.,D.C. (Mar. 19, 1993)
Oakland Terrace Elementary School, Silver Springs, MD
(Apr. 28, 1995)
Gwynn Park H.S. Science Fair Judge, Brandywine, MD
(Feb. 10, 1996)
(Feb. 8, 1997)
(May 20, 1997)
(Feb. 23, 1998)
University Park Elem., Science Fair Judge, Univ. Park, MD
(Mar. 19, 1997)
(Feb. 10, 1998)
Gwynn Park H.S., Brandywine, MD, Presentation (May 23,
1997)
De Matha Catholic H.S., Hyattsville, MD, Presentation
(Oct. 29, 1997)
Dunbar H.S., Washington, DC, Presentation
(Sept. 16, 1997)
Suitland H.S. Presentation for Physics Class (Nov. 13, 1997)
Member of the Parents and Councilor Advisors on Science &
Technology, C. H. Flowers High School (Nov. 2003) &
Roberto Clemente Middle School, Career Day, Germantown, MD &
(May 23. 2003)

(d.) Community

I. *Academic Year 1990-Present*

Crossland H.S. Presentation for SECME Program, Temple Hills, MD (Feb. 15, 2000)
L.C.Jones H.S., "Who Owns the Magic of Science?" Presentation to the Science, Engineering, Communication, Mathematics Enrichment (SECME) program, (Oct. 12, 1999), Orlando, FL
Thomas Jefferson H.S. Presentation to Student Body, Alexandria, VA (Feb. 13, 2000)
Troy H.S., "A Career in Science?" Presentation to biology class, (Apr. 20, 2001), Troy, NY
E. Lawrence H. S. "A New Era in Physics: Superstrings" Chatsworth, CA, Mar. 21, 2002.
St. Marks School "Science = Fun" presentation to grades 2-6 Feb. 13, 2004.
Duval High School, "Physics First" presentation, Greenbelt, MD, Nov. 15, 2004.
Highland Park High School, Houston, TX, 09 Mar 2006
Webpage moderator, Davidson Institute for Talent Development Feb. 13 - 18, 2007
Montgomery County Public Schools Summer Institute presentation, UM/Rockville, Jun 27, 2007,
Washington Mathematics, Science & Technology Charter School, Washington, DC, 01 Mar 2008
Menomonee Falls High School, Menomonee Falls, WI, 07 Mar 2008
SPICE (Science Partnership In Collaborative Education) Centre, University of Western Australia,"Superstring Theory: The DNA of Reality," 28 Mar 2008
ATFSG (Advanced Theoretical Fundamental Scientific Group) presentation, Thomas Jefferson High School, Fairfax, VA, 015 Feb 2008
ATFSG (Advanced Theoretical Fundamental Scientific Group) presentation, Blake High School, Silver Spring, MD, 08 Apr 2008
ATFSG (Advanced Theoretical Fundamental Scientific Group) presentation, Eleanor Roosevelt High School, Greenbelt, MD, 28 Apr 2008
Jones High School, Orlando, FL,"Science & Mathematics Careers," 12 Apr 2008
Ithaca Montessori School,"Fun with Physics Science," 08 Feb 2009
Western Michigan Univ, Kalamazoo, MI,"Fun at the Frontiers of Physics Careers," 16 Feb 2009
St. Louis Science Center, St. Louis, MO,"What is Science?"

15 Jan 2010
Math, Science & Technology Night presentation, Woodlin Elementary School
2 Feb 2010
West Morris Regional High School,"Understanding The Genius of Einstein" panel discussion and teacher professional development day, West Morris, NJ, 15 Feb 2010
Presentation to the Secondary Teacher's Enrichment Program, SPICE Program, Center for Learning Technology, teacher professional development day/student enrichment , Univ of Western Australia, Perth, Australia, 22 Mar 2010

(e.) Campus Presentations

CMPS welcoming event, Williams Bldg, Apr 12, 2007.

Presentation to the U.S. Physics Olympiad Team, Toll Phys. Bldg., May 31, 2007.

CMPS presentation to visiting students from Morehouse and Spelman Colleges, Rossborough Inn, Apr 13, 2007.

CMPS Spiral Program presentation, Stamp Union, Jul 14, 2007

Quarknet Presentation, Toll Phys. Bldg., Jul 27, 2007.

Presentation before the House Economic Matters Committee, Toll Bldg. Oct 9, 2007.

Presentation to Merrill Scholars Teachers, Riggs Alumni Center, Nov 9, 2007.

"Superstrings & Education?" Quarknet Presentation, Toll Phys. Bldg., 30 Jul 2008.

"Mathematical Foundation of the Physical Sciences," presentation to the MATH SPIRAL program of the UMCP Mathematics Department, Calvert House Inn, College Park, MD, 11 Jul 2008.

"What College Professors Really Look Like," panel presentation with Professor Sandy Mack to the ACE (Achieving College Excellence) program, Plant Sci. Bldg, 22 Sep 2008.

"What Is the Challenge of an R-1 University?" presentation to the Academically Talented Students program, Stamp Union, 27 Sep 2008.

"Highlighting Theoretical Physics Research at UMCP - Great Expectations,"

Reckford Armory, UMCP, College Park, MD, 23 Oct 2008.