

# Curriculum Vitae: Sylvester James Gates, Jr.

## Personal Information

***Date of Birth:*** December 15, 1950

***Place of Birth:*** Tampa, FL, USA

### ***Departmental Address:***

Brown University  
Brown Theoretical Physics Center  
Director's Office, Rm. 110  
340 Brook St.  
Providence, RI 02912  
Website: <https://sites.brown.edu/theoretical-physics/>

Brown University  
Department of Physics  
Box 1843  
Providence, RI 02912 USA  
Webpage: <https://sites.brown.edu/sjgates/>

### ***Email Address:***

[sylvester\\_gates@brown.edu](mailto:sylvester_gates@brown.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:***

Faculty Fellow, Watson Institute for International Studies & Public Affairs, Brown University, March 2019 – present

Ford Foundation Professor of Physics, Affiliate Professor of Mathematics, Department of Physics, Brown University, July 2017-present

John S. Toll Professor of Physics, University of Maryland, Department of Physics, July, 1998-2017

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, 1988-2017

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

Professor of Physics, University of Maryland, Department of Physics, 1988-2017

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:***

Master of Arts, ad eundem, Brown University, 2018

Doctor of Science, University of Pennsylvania, 2016

Doctor of Sciences, Memorial University of Newfoundland, 2015

Doctorate of Engineering, NYU-Poly, 2013

Doctorate of Science, Morgan State University, 2010

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:***

College Park Professor (Emeritus), University of Maryland, Physics Department, College Park, MD

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

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-present.

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

***Administrative Positions:***

Director, Brown Theoretical Physics Center, Brown University, January 2019 -- present.

Director, Center for String and Particle Theory, Univ. of Maryland, 2002 -- 2017.

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

Chair, Physics Department, Howard University, 1992 -- 1993.

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

## **Research, Scholarly and Creative Activities**

(a.) **Books**

(i.) ***Authored***

1. *Proving Einstein Right: The Daring Expeditions that Changed How We Look at the Universe, (with Cathie Pelletier)*, Publisher: PublicAffairs (September 24, 2019).

ISBN-10: 1541762258; ISBN-13: 978-1541762251.

2. *Reality in the Shadows (or) What the Heck's the Higgs?* (with F. Blitzer and S.J. Sekula) YBK Publishing (2018), New York. ISBN-10: 1936411393; ISBN-13: 978-1936411399.
3. *L'arte della Fisica: Stringhe, Superstringhe, Teoria Unificata dei Campi*, Di Renzo Editore, Roma, Italy (2006) pp. 1-96 (in Italian only), ISBN 8883231554.
4. *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>).

(ii.) ***Edited***

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

(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. "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.

(iv.) ***Non-scientific Essays***

1. "Prepare & Inspire," E. Lander & S. J. Gates, Jr., *Science*, 8 October 2010, Vol. 330. no. 6001, p. 151 (Editorial), DOI: 10.1126/science.1198062.
2. "Science, Irrationality, and Innovation," in *The Kean Review*, Vol. 1, Spring/ Summer 2008, 93-105.
3. "Is String Theory Phenomenologically Viable?" *Phys. Today* 59N6 (2006) 54.
4. "Einstein's 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/2005/0221einsteinTexts.html>).

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. "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.
7. "A Black Physicist's Thoughts on Affirmative Action," in the proceedings of the 25th Annual Conference of the National Organization for the Professional Advancement of Black Chemists and Chemical Engineers (NOBCCChE), Apr. 17, 1998 at Dallas, TX (see excerpt at: <http://pubs.acs.org/hotartcl/cenear/980720/res.html>).
8. "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](http://www.the-scientist.library.upenn.edu/yr1995/july/equity_950710.html)).

**(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 four research papers (see Appendix B for complete list).

1. Component Decompositions and Adynkra Libraries for Supermultiplets in Lower Dimensional Superspaces, S. James Gates (Brown U), Yangrui Hu (Brown U), S.-N. Hazel Mak (Brown U), (Jul 14, 2020), e-Print: 2007.07390 [hep-th]
2. Weyl Covariance, and Proposals for Superconformal Prepotentials in 10D Superspaces, S. James Gates (Brown U), Yangrui Hu (Brown U), S.-N. Hazel Mak (Brown U), (Jul 9, 2020), e-Print: 2007.05097 [hep-th]
3. Advening to Adynkrafields: Young Tableaux to Component Fields of the 10D,  $N = 1$  Scalar Superfield, S. James Gates (Brown U.), Yangrui Hu (Brown U.), S.-N Hazel Mak (Brown U.) June 5, 2020. e-Print: 2006.03609 [hep-th]
4. Adinkra Foundation of Component Decomposition and the Scan for Superconformal Multiplets in 11D,  $N = 1$  Superspace, S. James Gates (Brown U.), Yangrui Hu (Brown U.), S.-N Hazel Mak (Brown U.) Feb 21, 2020. e-Print: 2002.08502 [hep-th]

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

1. "The Fundamental Supersymmetry Challenge Remains", (with W. D. Linch, III, J. Phillips and L. Rana), *Grav. Cosmol.*, {8} (2002), pp. 96 - 100.
2. "Minimal Superspace Vector Fields for 5D Minimal Supersymmetry", S. James Gates, Jr. (with Lubna Rana), *Russ. Phys. Journal* Vol. 45, no. 7, *Izv. Vuz. Fiz.* 2002N7:35 (hep-th/0208105), (2002) pp 35.
3. "Gauge Invariance: An Aspect of Real Magnetism and Beyond," in the proceedings of the Warren Henry Symposium, Sept. 19, 1997, Berkeley, CA.
4. "Progress Toward a Classical (SUSY)<sup>2</sup> 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).
5. "Superstring theory: To See the Entire Universe in the Pulsing of a String", in Washington Technology, Sept. 3, 1987, Vienna, Virginia.
6. "Taking the Particle Out of Particle Physics", (with W. Siegel) in *Quotient*, Vol. 12, # 4, Univ. of Md. (1986) College Park, Md
7. "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.
8. "What Good is the SSC? An Introduction to the Physics of Elementary Particles," in the proceedings of the Prairie View Summer Science Academy, AIP Conference Proceedings 291, AIP Press, NY (1994), ISBN 1-56396-133-4.
9. "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 100th anniversary of Tomsk State Pedagogical University, ed. S.D. Odintsov.

**(d.) Book Reviews**

1. 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.
2. Review of "Introduction to Supersymmetry and Supergravity," by P. West, in *Physics Today*, Nov. 1987, Vol. 40, # 11, p. 92.
3. 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.

**(e.) Talks**

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

Only the most recent four listed. (see Appendix D for a complete listing).

1. "SyFy and Marvel Comics to Superstring Theory, Evolution, and the CMB", Invited talk at the Connections Lecture at the 2019 Field of Dreams Conference in St. Louis, MO. 15 November 2019.
2. "Impressions From The Front Lines of Policy Advising From A Theoretical Physicist", After Dinner Talk @ APS Div. on Nuclear Physics (DNP), Crystal City, Arlington, VA, 16 October 2019.
3. "Challenges of 'Anthropocenic' Policy-Making: A View From Inside A Policy-Formation Organization", Keynote Talk @ Duquesne University, 24 September 2019.
4. "Under Construction: A Progress Report On A Theory Of SUSY Representations", Invited talk at IAS, Princeton University, Princeton, NJ; 29 Jan 2019.

(ii) ***Colloquia and Seminars***

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

1. "SUSY RILLES: A Speculative Mechanism For Superstring Graffiti In The CMB", Joint Colloquium with Center for Astrophysics/Harvard & Smithsonian, 27 Feb 2020.
2. "From SyFy & Marvel to Superstring Theory, Evolution, & the CMB", Public Lecture for the STEMinar Series during Black History Month at California Institute of Technology, 4 February 2020.
3. "SUSY RILLES" California Institute of Technology Physics Seminar, 3 Feb 2020.
4. Panel Discussion: "Increasing African American Bachelor's Degrees in Physics and Astronomy: Results and Recommendations from the National TEAM-UP", Orlando, FL. 20 January 2020.

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

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

1. Plenary speaker (no title submitted) at AAPT Winter Meeting in Orlando, FL. 20 January 2020.
2. Keynote Address (no title submitted) at PressPlay Conference hosted by the Florida Interactive Entertainment Academy at UCF, in Orlando, FL. 11 January 2020.
3. Closing talk (no title submitted) at National Society of Black Physicists, Brown University, Providence, RI. 17 November 2019.
4. "Using Physics to Become Like Indiana Jones", Invited talk at AIP PhysCon 2019, Brown University, 2019.

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

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

1. Livestream interview with Stephen Wolfram as part of The Wolfram Physics Project. 4 May 2020.
2. Interview with Dr. Johanna Fernandez on her radio spot WBAI Morning Show in NYC. Baruch College, CUNY. 22 January 2020.
3. Interview w/Lex Fridman, as part of his radio series of conversations with leaders in science, technology, philosophy and public life, MIT, Cambridge, MA, 30 October 2019.
4. Pre-recorded interview w/BBC World News America, DC Studio, Washington, DC, 21 October 2019.

*(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.) Contracts and Grants*

Co-Principal Investigator, (with K. Agashe, Z. Chacko, and R. Mohapatra), NSF Grant – Fed Award ID # 1620074, 08/30/16 – 08/31/18, Project Title: Beyond the Standard Model in Particle Physics and Cosmology.

Co-Principal Investigator, (with K. Agashe, Z. Chacko, and R. Mohapatra), NSF Grant – Fed Award ID # 1315155, 09/13/13 - 08/30/16, Project Title: Physics Beyond the Standard Model.

Co-Principal Investigator, (with K. Agashe, Z. Chacko, and R. Mohapatra), NSF Grant – Fed Award ID # 0968854, 09/23/10 - 09/12/13, Project Title: Particle Physics and Cosmology Beyond the Standard Model.

Co-Principal Investigator, (with Z. Chacko, and R. Mohapatra), NSF Grant – Fed Award ID #0652363, 03/29/07 - 09/22/10, Project Title: Physics Beyond the Standard Model.

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, and R. Mohapatra), NSF Grant – Fed Award ID # 0354401, 05/18/04 - 03/28/07, Project Title: Supersymmetry, Superstrings and Phenomenology.

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.

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. 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.

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

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.

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

Principal Investigator, NSF Grant # PHY 88-16001, 01/01/89 - 12/31/90, 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-87-46846, 01/01/88 - 12/31/88, Project Title: Supersymmetry, Supergravity, and Superstrings.

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.

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

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

Honored as a "Maryland Research Excellence Honoree" @ the University of Maryland College Park on 26 February 2020.

Prof. Gates was elected to the Presidential line of the American Physical Society (APS) beginning January 2019.

Inducted into the Orange County Public Schools Hall of Fame, Orlando, Florida, on May 5, 2018.

Recipient of the 2014 Scientist of the Year Award from the Harvard Foundation.

On November 16, 2013, Prof. Gates was awarded the Mendel Medal by Villanova University "in recognition of his influential work in supersymmetry, supergravity and string theory, as well as his advocacy for science and science education in the United States and abroad."

In 2013, he was elected to the National Academy of Sciences, becoming the first African-American physicist so recognized in its 150-year history.

In 2013, President Obama awarded Prof. Gates the 2011 National Medal of Science, the highest recognition given by the U.S. to scientists with the citation, "For his contribution to the mathematics of supersymmetry in particle, field, and string theories and his extraordinary efforts to engage the public on the beauty and wonder of fundamental physics."

***Visiting Professor:***

Visiting Provostial Professor, Brown University, Providence, Rhode Island, 01 July 2016 – 30 June 2017.

Roth Distinguished Scholar, Dartmouth University, Hanover, New Hampshire, 01 July 2015 – 30 June 2016.

MLK Visiting Professor, Physics Department, Massachusetts Institute of Technology (MIT), 01 Sept 2010 – 30 May 2011.

Professor-at-Large, University of Western Australia, Institute for Advanced Studies, 13 March 2008 – 29 March 2008.

Rydell Visiting Professor, Gustavus Adolphus College, 01 Feb 2007 – 01 May 2007.

Visiting Professor, Caltech, Division of Astronomy, Mathematics and Physics, 30 Aug 2002 – 30 June 2003.

Visiting Professor, Massachusetts Institute of Technology (MIT), Physics Department, 1 Feb 1994 – 30 May 1994.

Member, Mathematical Sciences Research Institute, Berkeley, CA, in residence January 5, 1994 – February 1, 1994.

Martin King/ Cesar Chavez/ Rosa Park Visiting Professor, Wayne State University, 26 Oct 1992 – 30 Oct 1992.

Distinguished Visiting Professor, University of California at Davis, 01 Jun 1986 – 30 Jun 1986.

## **Reviewer Activities for Journals**

### ***Has served as a referee for:***

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

## **Public Policy**

Influence of Science on Policy, and of Policy on Science. (PHYS7891/PLCY689L). Co-taught with Prof. Rosina Bierbaum, School of Public Policy, Univ. of MD, Spring 2018, Spring 2019, Spring 2020.

DELTA PHY, a multi-agency group that hosted the Webinar "From Passion to Action: Levers & Tools for Making Physics Inclusive & Equitable" on June 24, 2020. Organizations/Agencies participating: American Physical Society, American Association of Physics Teachers, National Society of Black Physicists, American Institute of Physics, African American Women in Physics, and BSM PANDEMIC Seminar Series. The recorded webinar can be viewed on the [webinar page](#).

Member, U.S. President's Council of Advisors on Science and Technology (PCAST);  
Co-chair of the PCAST working groups for STEM Ed recommendations to President Obama via reports "Prepare & Inspire," and "Engage to Excel."

## **Teaching and Advising**

### ***Teaching completed since 1985:***

(a.) Courses Taught at Brown University, or “studio style” facilitator for conferences:

(i.) **General**

Flat Earth to Quantum Uncertainty: On the Nature and Meaning of Scientific Explanation (PHYS 0100) Fall of 2017, Fall of 2018, Fall of 2019.

Foundations of Electromagnetism and Modern Physics (PHYS 060) Spring of 2018, Spring of 2019, Spring of 2020.

(b.) Courses Taught at University of MD:

(On sabbatical in the fall of 2010 and the spring of 2011. Non-teaching in the spring of 2014, the fall of 2015, the spring of 2016, the fall of 2016, and the spring of 2017.)

(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-Theory (PHYS 299G) spring 2008 (enrollment 18), Spec Prob in Physics (PHYS 299), fall of 2008 (enrollment 1), Spec Prob in Physics (PHYS 299), spring 2009, Special Topics: Tensors (PHYS 499G) Spring of 2010, Intermediate Electricity and Magnetism (PHYS 411) Spring of 2012, Quantum Physics 1 (PHYS 401) Fall of 2012, Intermediate Electricity and Magnetism (PHYS 411) Spring of 2013, Quantum Physics 1 (PHYS 401) Fall of 2013.

(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 Physics (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), Spec Prob in Phys (PHYS 499a) Spring of 2009, Symmetry Prob in Physics (PHYS 711) Fall of 2009 and Fall of 2011 Symmetry Prob in Physics (PHYS 711) Spring of 2015.

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.

(c.) **Advising** (Non-research directed)

(i.) Brown graduate student advisor:

2019-2020: Gabriel Hannon (M.S.)  
Sze-Ning Mak (Hazel) (PhD)  
Yangrui Hu (PhD)  
Duo Wen (M.S.)

2018-2019: Sze-Ning Mak (Hazel) (PhD)  
Yangrui Hu (PhD)  
Louis Hamaide (M.S.)  
Duo Wen (M.S.)

2017-2018: Louis Hamaide (M.S.)

(ii.) Brown undergraduate student advisees:

2019-2020: (Freshmen)  
Magan Baloutch  
Daphne Maniastis  
Nolan Serbent  
Eric Sorge  
Tej Stead

(Sophomores)  
Alexander Brown  
Laurel McIntyre  
Ijeoma Meremikwu  
Francesco Serraino  
Miku Suga  
Daniel Yadegar

2018-2019: Alexander Brown  
Laurel McIntyre  
Ijeoma Meremikwu  
Francesco Serraino  
Miku Suga  
Daniel Yadegar

2017-2018: Anna Cohenuram  
Benjamin Hurd  
Thomas Jenkins  
Amy Li  
Sonny Mo

(iii.) Univ. of Maryland undergraduate physics student advisor 1986-1989; approximately 25 students per year.

UMD Undergraduate Advisee Students:  
2003 – Christee Chew, Adam Corbett, Michael Gill

(iv.) 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)  
(For details, see Appendix K: Advising (Research directed))

Since 2018, this activity moved with Prof. Gates to Brown University. The activity continued into 2019 and involved the placement of undergraduate students into some of the research activities formerly of the Center of String and Particle Theory (CSPT) in its period of closing out.

From the summer of 1999 to 2017, Prof. Gates, collaborators, and teaching assistants 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 at the University of Maryland.

During the summer of 2003, CSPT, the UMD College of Computer & Mathematical Sciences, Hampton University, Howard University and the Goddard Space Flight Center collaboratively held the first Gravity, Astrophysics & M-theory Session (GAMS). This was a five-week 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. This meant that several students from the UMD physics department also participated.

Lecturers:

Dr. Kory Stiffler, Brown Univ., Physics Dept.  
 Dr. Konstantinos Koutrolikos, Brown Univ., Physics Dept.  
 Dr. Stephon Alexander, Brown Univ., Physics Dept.  
 Dr. S. J. Gates, Jr., Brown University, 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 Presented Ph.D. Students Supervised***

<b>Completed and Presented PhD Students Supervised</b>	<b>Thesis Title, Year, Comments</b>
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.	"Two-Dimensional N = 2 Supergravity," Dec., 1988, Univ. of MD.



<b>Completed and Presented PhD Students Supervised</b>	<b>Thesis Title, Year, Comments</b>
Riyadh, Saudi Arabia	
James Carr CEO Carr Astronautics Corp., Washington, 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 Mikovic 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 Res. Assoc. Sci., Univ. of MD, Medical School Baltimore, MD	"Dimensional Reduction of Self-Dual Yang-Mills Integrable Systems and W-Algebras," June, 1991, Univ. of MD.
Ersin Dur Software Engineer& Mgr Kenan Technologies Cambridge, MA	"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. New York, 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., Bangkok, 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 Algebras," 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. Texas A&M University College Station, TX	"On Superspace Dimensional Reduction," Aug, 2005, Univ. of MD.
Willie Merrell Postdoc Res. Affil. Univ. of Kentucky Physics Dept.	"Applications of Superspace Techniques to Effective Actions, Complex Geometry & T-Duality in String Theory," June, 2007, Univ. of MD
Ram Sriharsha Principal Scientist Splunk San Francisco, CA	"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
Dr. Isaac Chappell II Research Staff Member Science & Technology Division Institute for Defense Analyses Alexandria, VA	"A Study of Equivalence of SUSY Theories Using Adinkras and Super Virasoro Algebras" June, 2011, Univ. of MD
Konstantinos Koutrolikos Post Doc Brown University Providence, RI	"On Lagrangian Formulation of Higher Superspin Irreducible Representations of the Super-Poincare Group" June, 2011, Univ. of MD

### ***Other Teaching Experience:***

Univ. of Maryland, Mathematics-Science Initiative Program (Upward Bound) June 28 - Aug. 3, 1991.

Calculus instructor, Physics instructor, Tutor (various capacities), BSU Tutorial Program, Concourse, and Departmental (8.01, Mechanics). M.I.T., Department of Mathematics, 1982-1984.

Project Interphase, at M.I.T. each summer 1971-1985.

### **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.) Organized DELTA PHY, a group of five organizations, whose goal it is to bring awareness to systemic barriers in academia, and share ideas and concrete actions towards this goal during this first webinar "From Passion to Action: Levers and Tools for Making Physics Inclusive and Equitable".
- (b.) Member, Strings 2020 Conference International Advisory Board, Strings 2021 Conference International Advisory Board.
- (c.) Member, Board of Trustees, Mathematical Sciences Research Institute (MSRI), Oakland, CA; March 2020 to present.
- (d.) Mentor for The School to Career Coordinator at North Providence High School; 2018-2019.
- (e.) Presidential line of the American Physical Society (APS); Jan 2019 to Present
- (f.) Maryland State Board of Education,
  - (f.1.) Member of the Maryland State Leadership Team for the Integration of State Practice with the Next Generation Science Standards,
  - (f.2.) Member of MD Representatives at the Building Capacity of States Science Education meeting Raleigh, VA 24,25 Feb 2012.
- (g.) U.S. President's Council of Advisors on Science and Technology,
  - (g.1.) Co-chair of the PCAST working groups for STEM Ed recommendations to President Obama via reports "Prepare & Inspire," and "Engage to Excel."
- (h.) Board of Directors for the Fermi Research Alliance,
- (i.) African-American Studies Department advisory committee (Univ. of Maryland),
- (j.) MaliWatch (an NGO concerned with development in the African country of Mali),
- (k.) Board of Directors of the Society for Science in the Public Interest,
- (l.) Provost Diversity Advisory Committee (2009-2010: Univ. of Maryland),
- (m.) Diversity Advisory Committee for the UMCP Graduate School, Member (2011-2017)
- (n.) UMCP Physics Dept., Ph.D. Qualifying Examination Committee Problem Contributor, (2011-2017)

## **Appendix A: Chapters in Books**

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. "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.
3. "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.
4. "4D, N = 1 Effective SUSY QCD", in the Proceedings of the Phenomenology 2001 Conference, Madison, WI (7 May - 9 May 2001).
5. "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).
6. "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.
7. "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.
8. "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>).
9. "Progress Toward A Classical (SUSY)<sup>2</sup> 4D, N = 1 Green-Schwarz  $\sigma$ -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).
10. "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.
11. "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.
12. "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.

13. "Progress Toward Covariant Formulations of All  $D = 4$  GS-Type  $\sigma$ -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.
14. "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.
15. "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.
16. "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.
17. "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.
18. "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.
19. "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).
20. "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).
21. "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.
22. "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.
23. "Toward an Unextended Formulation of  $N = 2$  Supergravity", in Superspace and Supergravity, eds., Hawking and Rocek, Cambridge Univ. Press (1981), pp. 219-235.
24. "Superconformal Symmetry Breakdown as a Guide to Supergravity Constraints", in Supergravity, eds. van Nieuwenhuizen and Freedman, North-Holland, Amsterdam, pp. 215-219 (1979).

## Appendix B: Published Research Papers

1. Component Decompositions and Adinkra Libraries for Supermultiplets in Lower Dimensional Superspaces, S. James Gates (Brown U), Yangrui Hu (Brown U), S.-N. Hazel Mak (Brown U), (Jul 14, 2020), e-Print: 2007.07390 [hep-th]
2. Weyl Covariance, and Proposals for Superconformal Prepotentials in 10D Superspaces, S. James Gates (Brown U), Yangrui Hu (Brown U), S.-N. Hazel Mak (Brown U), (Jul 9, 2020), e-Print: 2007.05097 [hep-th]
3. Advancing to Adinkrafields: Young Tableaux to Component Fields of the 10D,  $N = 1$  Scalar Superfield, S. James Gates (Brown U.), Yangrui Hu (Brown U.), S.-N. Hazel Mak (Brown U.) June 5, 2020. e-Print: 2006.03609 [hep-th]
4. Adinkra Foundation of Component Decomposition and the Scan for Superconformal Multiplets in 11D,  $N = 1$  Superspace, S. James Gates (Brown U.), Yangrui Hu (Brown U.), S.-N. Hazel Mak (Brown U.) Feb 21, 2020. e-Print: 2002.08502 [hep-th]
5. "Superfield Component Decompositions and the Scan for Prepotential Supermultiplets in 10D Superspaces", S. James Gates, Yangrui Hu, S.-N. Hazel Mak (Brown U.). Nov 2, 2019. 58 pp., e-Print: arXiv:1911.00807 [hep-th] | PDF
6. "Higher Spin Supersymmetry at the Cosmological Collider: Sculpting SUSY Ripples in the CMB", Stephon Alexander, S. James Gates, Leah Jenks, K. Koutrolikos, Evan McDonough (Brown U.). Jul 12, 2019. 29 pp. e-Print: arXiv:1907.05829 [hep-th] | PDF
7. "On the Ubiquity Of Electromagnetic-Duality Rotations in 4D,  $N = 1$  Holonomy Tensors for On-Shell 4D Supermultiplets", S. James Gates et al.. Jun 7, 2019. 21 pp. Brown University Preprint HET-1789 e-Print: arXiv:1906.02971 [hep-th] | PDF
8. "Progress on cubic interactions of arbitrary superspin supermultiplets via gauge invariant supercurrents", S. James Gates (Brown U. & Brown U. (main)), K. Koutrolikos (Brown U.). Apr 30, 2019. 10 pp. e-Print: arXiv:1904.13336 [hep-th] | PDF
9. "On Linearized Nordström Supergravity in Eleven and Ten Dimensional Superspaces (2)" S. James Gates, Yangrui Hu (Brown U.), Hanzhi Jiang (Brown U. & Rutgers U., Piscataway), S.-N. Hazel Mak (Brown U.). Apr 3, 2019. 27 pp. Brown Univ. Physics Dept. Preprint # HET-1783, HET-1783 e-Print: arXiv:1904.02328 [hep-th] | PDF
10. "Adinkra Height Yielding Matrix Numbers: Eigenvalue Equivalence Classes for Minimal Four-Color Adinkras", S. James Gates, Kory Stiffler, Yangrui Hu. Apr 2, 2019. 38 pp. HET-1788 e-Print: arXiv:1904.01738 [hep-th] | PDF
11. "Superfield continuous spin equations of motion", I.L. Buchbinder (Tomsk Pedagogical Inst. & Tomsk State U.), S. James Gates, K. Koutrolikos (Brown U.). Mar 20, 2019. 13 pp. e-Print: arXiv:1903.08631 [hep-th] | PDF

12. "On Linearized Nordström Supergravity in Eleven and Ten Dimensional Superspaces" S. James Gates, Yangrui Hu (Brown U.), Hanzhi Jiang (Brown U. & Rutgers U., Piscataway), S.-N. Hazel Mak (Brown U.). Dec 13, 2018. 31 pp. Brown Univ. HET-1779 e-Print: arXiv:1812.05097 [hep-th] | PDF
13. "Exploring the Abelian 4D, N= 4 Vector-Tensor Supermultiplet and Its Off-Shell Central Charge Structure", S. James Gates, Kory Stiffler (Brown U.). Dec 11, 2018. Published in JHEP 1903 (2019) 129, Brown-HET-1780, DOI: 10.1007/JHEP03(2019)129 e-Print: arXiv:1812.04236 [hep-th] | PDF
14. Integer superspin supercurrents of matter supermultiplets, I.L. Buchbinder (Tomsk Pedagogical Inst. & Tomsk State U.), S. James Gates, K. Koutrolikos (Brown U.), e-Print: arXiv:1811.12858 [hep-th], PDF, Nov 30, 2018, 14 pp.
15. Examples of 4D, N = 2 Holonomy, S.J. Gates (Brown U.), S.N. Hazel Mak (Brown U.), e-Print: arXiv:1808.07946 [hep-th], PDF, Aug 23, 2018. 45 pp.
16. Conserved higher spin supercurrents for arbitrary spin massless supermultiplets and higher spin superfield cubic interactions, I.L. Buchbinder (Tomsk Pedagogical Inst. & Tomsk State U. & Juiz de Fora U.), S. James Gates (Brown U.), Konstantinos Koutrolikos (Masaryk U., Brno). Published in JHEP 1808 (2018) 055, DOI:10.1007/JHEP08(2018)055, e-Print: arXiv:1805.04413 [hep-th] | PDF, May 11, 2018. 11 pp.
17. Interaction of supersymmetric nonlinear sigma models with external higher spin superfields via higher spin supercurrents, I.L. Buchbinder (Tomsk Pedagogical Inst. & Tomsk State U. & Juiz de Fora U.), S. James Gates (Brown U.), Konstantinos Koutrolikos (Masaryk U., Brno) - e-Print: arXiv:1805.04413 [hep-th], May 11, 2018. 11 pp.
18. Interaction of supersymmetric nonlinear sigma models with external higher spin superfields via higher spin supercurrents, I.L. Buchbinder (Tomsk Pedagogical Inst. & Tomsk State U. & Juiz de Fora U.), S. James Gates (Brown U.), Konstantinos Koutrolikos (Masaryk U., Brno), - e-Print: arXiv:1804.08539 [hep-th], April 23, 2018, 24 pp.
19. Interaction of supersymmetric nonlinear sigma models with external higher spin superfields via higher spin supercurrents, I.L. Buchbinder (Tomsk Pedagogical Inst. & Tomsk State U. & Juiz de Fora U.), S. James Gates (Brown U.), Konstantinos Koutrolikos (Masaryk U., Brno), - e-Print: arXiv:1804.08539 [hep-th], April 23, 2018, JHEP 1805 (2018) 204, 24 pp.
20. Adinkras from ordered quartets of BC4 Coxeter group elements and regarding another Gadget's 1,358,954,496 matrix elements, S. James Gates, Lucas Kang (Brown U.), David S. Kessler (Massachusetts U., Amherst), Vadim Korotkikh (Maryland U.). - e-Print: arXiv:1802.02890 [hep-th], Feb. 5, 2018, Int.J.Mod.Phys. A33 (2018) no.12, 1850066. 21 pp.
21. Higher Spin Superfield interactions with the Chiral Supermultiplet: Conserved Supercurrents and Cubic Vertices, I.L. Buchbinder (Tomsk Pedagogical Inst. & Tomsk State U.), S. James Gates (Brown U.), Konstantinos Koutrolikos (Masaryk U., Brno). - e-Print: arXiv:1708.06262 [hep-th], Aug 21, 2017, Universe 4 (2018) no.1, 6, 23 pp.

22. From Diophantus to Supergravity and massless higher spin multiplets, S. James Gates (Brown U. & Maryland U.), Konstantinos Koutrolikos (Masaryk U., Brno). - e-Print: arXiv:1707.00194 [hep-th], JHEP 1711 (2017) 063, Jul 1, 2017. 29 pp.
23. On the Four-Dimensional Holonomy of the 4D,  $\mathcal{N} = 1$  Complex Linear Supermultiplet, W Caldwell, A Diaz, I Friend, S.J. Gates Jr, S Harmalkar... - arXiv preprint arXiv:1702.05453, Int.J.Mod.Phys. A33 (2018) no.12, 1850072, PP-017-020, HET-1711 Feb 17, 2017. 29 pp.
24. Adinkras from ordered quartets of BC4 Coxeter group elements and regarding 1,358,954,496 matrix elements of the Gadget, S. James Gates, Jr. (Maryland U. & Brown U.), Forrest Guyton (Rensselaer Polytech. Inst.), Siddhartha Harmalkar, David S. Kessler, Vadim Korotkikh, Victor A. Meszaros (Maryland U.). - e-Print: arXiv:1701.08102 [hep-th], JHEP 1706 (2017) 006, Jan 1, 2017. 58 pp.
25. A proposal on culling & filtering a coxeter group for 4D,  $N = 1$  spacetime SUSY representations: revised, D.E.A. Gates (Jefferson Lab), S. James Gates (Maryland U. & Dartmouth Coll.), Kory Stiffler (Indiana U. Northwest). - e-Print: arXiv:1601.00725 [hep-th], JHEP 1608 (2016) 076, Jan 4, 2016. 11 pp.
26. A Lorentz covariant holonomy-induced "gadget" from minimal off-shell 4D,  $N = 1$  supermultiplets, S. James Gates, Tyler Grover, Miles David Miller-Dickson, Benedict A. Mondal, Amir Oskoui, Shirash Regmi (Maryland U.), Ethan Ross (Maryland U. & Alberta U.), Rajath Shetty (Maryland U.) - e-Print: arXiv:1508.07546 [hep-th], JHEP 1511 (2015) 113, Aug 30, 2015. 17 pp.
27. An Extended Detailed Investigation of First and Second Order Supersymmetries for Off-Shell  $N = 2$  and  $N = 4$  Supermultiplets, Sylvester James Gates, Jr., James Parker (Maryland U.), Vincent G.J. Rodgers (Iowa U.), Leo Rodriguez (Worcester Poly.), Kory Stiffler (Indiana U. Northwest). - DOI: 10.3390/sym7021080, Symmetry 7 (2015) no.2, 1080-1121, 2015. 42 pp.
28. Think Different: Applying the Old Macintosh Mantra to the Computability of the SUSY Auxiliary Field Problem, Mathew Calkins, D.E.A. Gates, S. James Gates, William M. Golding (Maryland U.) - e-Print: arXiv:1502.04164 [hep-th], JHEP 1504 (2015) 056, Feb 13, 2015. 28 pp.
29. Adinkras, 0-branes, Holonomy and the SUSY QFT/QM Correspondence, Mathew Calkins, D.E.A. Gates, S. James Gates (Maryland U.), Kory Stiffler (Indiana U. Northwest). - e-Print: arXiv:1501.00101 [hep-th], Int.J.Mod.Phys. A30 (2015) no.11, 1550050, Dec. 31, 2014. 38 pp.
30. Superforms in Five-Dimensional,  $N = 1$  Superspace, S. James Gates Jr., William D. Linch III, Stephen Randall - arXiv:1412.4086, JHEP 1505 (2015) 049, Dec. 12, 2014. 32 pp.
31. On Clifford-Algebraic "Holonomy", Dimensional Extension, and SUSY Holography, S.J. Gates Jr., T. Hubsch, K. Stiffler - arXiv:1409.4445 [hep-th], Int.J.Mod.Phys. A30 (2015) no.09, 1550042, Sep 11, 2014. 56 pp.



32. Adinkra 'Color' Confinement in Exemplary Off-Shell Constructions Of 4D,  $N = 2$  Supersymmetry Representations, S. James Gates, Jr., Kory Stiffler - arXiv:1405.0048, JHEP 1407 (2014) 051, Apr 30, 2014. 32 pp.
33. Is it possible to embed a 4D,  $N=4$  supersymmetric vector multiplet within a completely off-shell adinkra hologram? Mathew Calkins, D.E.A. Gates, S. James Gates, Brian McPeak (Maryland U.), e-Print: arXiv:1402.5765 [hep-th], JHEP 1405 (2014) 057, Feb 24, 2014. 24 pp.
34. Reduction Redux of Adinkras, S. James Gates, Jr., Stephen Randall (Maryland U.), Kory Stiffler (Indiana U. Northwest), arXiv:1312.2000 [hep-th], Int.J.Mod.Phys. A29 (2014) no.13, 1450070, Dec 6, 2013. 15 pp.
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168. On  $D = 10$ ,  $N = 1$  Supersymmetry, Superspace Geometry, and Superstring Effects (II), (with H. Nishino), Nucl. Phys. B291 (1987) 205.
169.  $D = 10$ ,  $N = 2a$  Supergravity in Superspace, (with James Carr and Robert Oerter), Phys Lett. 189B (1987) 68.
170. Unidexterous  $D = 2$  Supersymmetry in Superspace (II): Quantization (with R. Brooks) Phys. Lett. 184B (1987) 217.
171.  $(1,0)$  Supergraphity, (with M.Grisaru, L.Mezincescu, and P. K. Townsend) Nucl. Phys. B286 (1987) 1.
172. On  $D = 10$ ,  $N = 1$  Supersymmetry, Superspace Geometry, and Superstring Effects (with S. Vashakidze), Nucl. Phys. B291 (1987) 172.
173. Superspace Spinning String Spectres (with R. Brooks), Nucl. Phys. B287 (1987) 699.
174. Euler Characteristic in New  $D = 10$ ,  $N = 1$  Superspace Supergravity (with H. Nishino), Nucl. Phys. B282 (1987) 1.
175. A Comment on The Electroweak Interaction in Gauged Hidden Symmetry Non- Linear  $\Sigma$ -Models, (with H. Stremnitzer), J. Phys. G: Nucl. Phys. 13 (1987) 11.
176. Manifestly Supersymmetric Extensions of  $(\text{Curvature})^2$ -Terms in Six-Dimensional  $N = 2$  Supergravity, (with H. Nishino), Phys. Lett. 173B (1986) 417.
177. Matter Coupled to Simple  $D = 2$  Unidexterous Supergravity, Local  $(\text{Supersymmetry})^2$ , and Superstrings, (with R. Brooks and F. Muhammad), Class. and Quant. Grav. 3 (1986) 745.
178. Manifestly Supersymmetric  $O(\text{at})$  Superstring Corrections in The New  $D = 10$ ,  $N = 1$  Supergravity-Yang-Mills Theory, (with H. Nishino), Phys. Lett. 173B (1986) 52.
179. New  $D = 10$ ,  $N = 1$  Superspace Supergravity and Local Symmetries of Super- strings, (with H. Nishino), Phys. Lett. 173B (1986) 46.
180. Unidexterous  $D = 2$  Supersymmetry in Superspace, (with R. Brooks and F. Muhammad), Nucl. Phys. B268 (1986) 599.
181.  $D = 2$  Superfield Supergravity, Local  $(\text{Supersymmetry})^2$ , and Nonlinear  $\Sigma$ -Models, (with H. Nishino), Class. and Quant. Grav. 3 (1986) 391.
182. Dual Versions of Higher Dimensional Supergravities and Anomaly Cancellations in Lower Dimensions, (with H. Nishino), Nucl. Phys. B268 (1986) 532.

183. Supersymmetry and Geometry in  $D < 4$  Nonlinear  $\Sigma$ -Models, (with G. Atkinson and U. Chattopadhyay), *Ann. of Phys.* 168 (1986) 387.
184. Supergravity in  $D = 9$  and Its Coupling to Non-Compact  $\sigma$ -Models, (with H. Nishino and E. Sezgin), *Class. and Quant. Grav.* 3 (1986) 21.
185. New  $D = 10$ ,  $N = 1$  Supergravity Coupled to Yang-Mills Super Multiplet and Anomaly Cancellations, (with H. Nishino), *Phys. Lett* 157B (1985) 157.
186. 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.
187. Nonminimal  $N = 1$  Supergravity and Broken Global Supersymmetry, (with B. B. Deo), *Phys. Lett.* 151B (1985) 195.
188. Twisted Multiplets and New Supersymmetric Non-Linear  $\sigma$ -Models, (with C. M. Hull and M. Rocek), *Nucl. Phys.* B248 (1984) 157.
189. Comments on Nonminimal  $N = 1$  Scalar Multiplets, (with B. B. Deo), *Nucl. Phys.* B254 (1984) 187.
190. Supersymmetric Matter Gravitino Multiplets, (with V. A. Kostelecky), *Nucl. Phys.* B248 (1984) 570.
191. The  $(3/2,1)$  Multiplet and Superspace Geometry, (with R. Grimm), *Z. Phys.* C26 (1985) 621.
192. Nonpolynomiality, Prepotentials, and Superspace Geometry, *Physica* D150 (1985) 270.
193.  $N = 1$  Superspace Geometry of Extended Supergravity, (with A. Karlhede, U. Lindstrom and M. Rocek), *Nucl. Phys.* B243 (1984) 221.
194. Superspace Formulation of New Nonlinear Sigma Models, *Nucl. Phys.* B238 (1984) 349.
195.  $N = 1$  Superspace Components of Extended Supergravity, (with A. Karlhede, U. Lindstrom, and M. Rocek), *Class. Quantum Grav.* Vol. 1 (1984) 221.
196. Searching for all  $N = 4$  Supergravities in Superspace (with B. Zwiebach), *Nucl. Phys.* B238 (1984) 99.
197. Gauged  $N = 4$  Supergravity Theory with a New Scalar Potential (with B. Zwiebach), *Phys. Lett.* 123B (1983) 200.
198. Consequences of Conformally Covariant Constraints for  $N > 4$  Superspace (with R. Grimm), *Phys. Lett.* 133B (1983) 192.
199. On-Shell and Conformal  $N = 4$  Supergravity in Superspace, *Nucl. Phys.* B213 (1983) 409.
200. Auxiliary Field Anomalies (with M. T. Grisaru and W. Siegel), *Nucl. Phys.* B203 (1982) 189.

201. Solution to Constraints for  $n = 0$  Supergravity (with M. Rocek and W. Siegel), Nucl. Phys. B198 (1982) 113.
202. Linearized  $N = 2$  Superfield Supergravity (with W. Siegel), Nucl. Phys. B195 (1982) 99.
203. Superprojectors (with W. Siegel), Nucl. Phys. B189 (1981) 295.
204. Variant Superfield Representations (with W. Siegel), Nucl. Phys. B187 (1981) 389.
205. Super P-Form Gauge Superfields, Nucl. Phys. B184 (1981) 381.
206. Another Solution for  $N = 2$  Superspace Bianchi Identities, Phys. Lett. 96B (1980) 305.
207. Supercovariant Derivatives, Super-Weyl Groups, and  $N = 2$  Supergravity, Nucl. Phys. B176 (1980) 397.
208. The Constraints for  $N = 2$  Superspace From Extended Supergravity in Ordinary Superspace (with L. Castellani and P. van Nieuwenhuizen), Phys. Rev. D22 (1980) 2364.
209. Algebraic Origins of Superspace Constraints in Supergravity (with K. S. Stelle and P. C. West), Nucl. Phys. B169 (1980) 347.
210. Superspace Geometry and  $N = 1$  Nonminimal Supergravity (with M. Brown), Nucl. Phys. B165 (1980) 445.
211.  $(3/2,1)$  Superfield of  $0(2)$  Supergravity (with W. Siegel), Nucl. Phys. B164 (1980) 484.
212. Understanding Constraints in Superspace Formulations of Supergravity (with W. Siegel), Nucl. Phys. B163 (1980) 519.
213. Superconformal Transformations and Six-Dimensional Spacetime, Nucl. Phys. B162 (1980) 79.
214. A Comment on Superspace Bianchi Identities and Six-Dimensional Spacetime, Phys. Lett. 84B (1979) 205.
215. Superspace Bianchi Identities and the Supercovariant Derivative (with M. Brown), Annals of Physics, Vol. 122, No. 2 (1979) 443.
216. Superfield Supergravity (with W. Siegel), Nucl. Phys. B147 (1979) 77.
217. Local Supersymmetry in Superspace (with J. A. Shapiro), Phys. Rev. D18 (1978) 2768.
218. Geometry of Superspace and Local Supersymmetry, Phys. Rev. D17 (1977) 3188.
219. Spinor Yang-Mills Superfield, Phys. Rev. D16 (1977) 1727.
220.  $\Delta I = 1/2$  Rule in the Weinberg-Salam Model, Phys. Rev. D14 (1976) 3227.

221. Gauging a Pseudosymmetry, Phys. Rev. D14 (1976) 1367.

## Appendix C: Unpublished Research Papers

1. Generating all 36,864 Four-Color Adinkras via Signed Permutations and Organizing into  $\ell$ - and  $\tilde{\ell}$ -Equivalence Classes, SJ Gates Jr, K Iga, L Kang, V Korotkikh, K Stiffler - arXiv preprint arXiv:1712.07826, Dec 21, 2017, 34 pp.
2. Spacetime Spin and Chirality Operators for 4D,  $N = 1$  Supermultiplets From BC  $_4$  Adinkra-Tessellation of Riemann Surfaces, SJ Gates Jr - arXiv preprint arXiv:1701.08102, Jan 27, 2017. 12 pp.
3.  $N = 4$  and  $N = 8$  SUSY Quantum Mechanics and Klein's Vierergruppe, SJ Gates, T Hübsch, K Iga, S Mendez-Diez - arXiv preprint arXiv:1608.07864, Aug 28, 2016. 16 pp.
4. On 4D,  $N = 1$  Massless Gauge Superfields of Higher Superspin: Integer Case, SJ Gates Jr, K Koutrolikos - arXiv preprint arXiv:1310.7385, Oct. 28, 2013. 31 pp.
5. On 4D,  $N = 1$  Massless Gauge Superfields of Higher Superspin: Half-Odd-Integer Case, S. James. Gates, Jr., Konstantinos Koutrolikos (Maryland U.), e-Print: arXiv:1310.7386 [hep-th], Oct 28, 2013. 31 pp.
6. Adinkra Isomorphisms and Seeing Shapes with Eigenvalues, K Burghardt, SJ Gates Jr - arXiv preprint arXiv:1212.2731, Dec 2012, 23 pp
7. A computer algorithm for engineering off-shell multiplets with four supercharges on the world sheet, K Burghardt, SJ Gates Jr - arXiv preprint arXiv:1209.5020, Sep 2012, 51 pp.
8. A Detailed Investigation of First and Second Order Supersymmetries for Off-Shell  $N = 2$  and  $N = 4$  Supermultiplets, S. J. Gates, Jr., J. Parker, V. G. J. Rodgers, L. Rodriguez, K. Stiffler, UMDEPP-11-009, arXiv:1106.5475 [hep-th], Jun 2011, 46 pp.
9. SUSY Equation Topology, Zonohedra, and the Search for Alternate Off-Shell Adinkras, K. Burghardt, S. J. Gates, Jr, Jan 2012. 29pp., arXiv:1201.0307 [math.RT], Jan 2012, 29 pp.
10. A Codicil To Massless Gauge Superfields of Higher Integer Superspines, S. James Gates, Jr., Konstantinos Koutrolikos (Maryland U.), e-Print: arXiv:1103.3565 [hep-th], Mar 2011, 25 pp.
11. A Codicil to Massless Gauge Superfields of Higher Half-Odd Integer Superspines., S. J. Gates, Jr., and K. Koutrolikos, UMDEPP-11-004, MIT-CTP-4221, arXiv:1103.3564 [hep-th], Mar 2011, 26 pp.
12. Automorphism Properties of Adinkras, B.L. Douglas (Western Australia U.), S. James Gates, Jr. (Maryland U.), Jingbo B. Wang (Western Australia U.), e-Print: arXiv:1009.1449 [hep-th], Sep 2010, 34 pp.
13. A Unified Spinorial Superfield Treatment of the Higher Superspin Superfield Formalism, S. James Gates, Jr, Konstantinos Koutrolikos (Maryland U.), e-Print: arXiv:1004.3572 [hep-th], Apr 2010, 15 pp.

14. Adinkras for Clifford Algebras, and Worldline Supermultiplets, (with C. F. Doran, M. G. Faux, T. Hubsch, K. M. Iga, G. D. Landweber, R. Miller), arXiv:0811.3410 [hep-th], Nov 2008, 54.
15. Relating Doubly-Even Error-Correcting Codes, Graphs, and Irreducible Representations of N-Extended Supersymmetry, (with C. F. Doran, M. G. Faux, T. Hubsch, K. M. Iga, G. D. Landweber, R. Miller), in "Discrete & Computational Math.," eds. F. Liu et al., pp 53-71, (Nova Science Pub., Inc., Hauppauge, 2008), Inc., arXiv:0806.0051 [hep-th]. May 2008, 18 pp.
16. Topology Types of Adinkras and the Corresponding Representations of N-Extended Supersymmetry, (with C. F. Doran, M. G. Faux, T. Hubsch, K. M. Iga, G. D. Landweber, R. Miller), Submitted for publication, arXiv:0806.0050 [hep-th], May 2008, 41 pp.
17. A Counter-example to a Putative Classification of 1-dimensional, N-extended Supermultiplets, (with C. F. Doran, M. G. Faux, S. J. Gates, Jr., T. Hubsch, K.M. Iga, G. D. Landweber), Adv. Studies in Theor. Phys. (2008) 99, [arXiv: hep-th/0611060], Nov 2006, 8 pp.
18. On Extended Supersymmetric Quantum Mechanics, (with L. Rana), Univ. of Md. Preprint # UMDEPP 93-074, Univ. of Md. preprint.
19. 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.
20. Toward the Space of the SU (2) Thirring Models, (with O. Soloviev), Univ. of Md. Preprint # UMDEPP 93-081.
21. Teleparallelism Superspace for Superstrings, (with H. Nishino), Univ. of Md. Preprint # UMDEPP 91-218.
22. Eliminating "Cold Fusion" in Perturbative  $D = 10$ ,  $N = 1$  Superspace-Supergravity-Superstring Geometry, Univ. of Md. Preprint # UMDEPP 91-217.
23. 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.
24. 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.
25. Leftons-Rightons Models and  $D = 4$ ,  $SO(N)$   $SO(M)$  Green-Schwarz Models, (with E. Dur and D. Depireux), Univ. of Md. Preprint # UMDEPP 89-170.
26. Quasi-Killing Vectors, WZW Terms, and  $N = 2$  Supersymmetric Nonlinear Sigma Models, Dept. of Phys. and Astro. Preprint (Aug 1985), Univ. of Md.
27. Gauged and Ungauged  $N = 4$  Supergravities in Superspace (with B. Zwiebach), Caltech preprint CALT-68-943.
28. Geometry of Superspace and Local Supersymmetry (II), Harvard preprint HUTP-78/A028.

29. A Note on the Geometry of Local Supersymmetry, Harvard preprint HUTP-78/A001.
30. 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.
31. Supersymmetry and Yang-Mills Invariance in 1+1 Dimensions, M.I.T. Preprint CTP#605.

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

1. "Einstein + Popper = Daubert: What is falsifiability & Why Does It Dominate Science", Tenth Annual Prescription For Criminal Justice & Forensic Science National Institute, Fordham University School of Law, New York, NY, 29 May 2019.
2. "Einstein v Robert", Invited Speaker at The College of Natural Sciences at Cal State San Bernardino, CA, 20 May 2019.
3. "SUSY May Be Necessary To Prevent Cosmic Apoptosis", Physics Colloquium at 5 Colleges, Physics Colloquium for 5 Colleges, Northampton, MA, 28 Mar 2019.
4. "A Mathematical Journey Thru SUSY, Error-Correcting Codes, Evolution, and a Sustainable Reality", Physics Colloquium at the University of Virginia, Charlottesville, VA, 22 Mar 2019.
5. "Why Tetrahedral Topology May Anchor Physical Reality", Invited Physics Lecture, Montana State University, Bozeman, MT; 11 Nov 2018.
6. "Exploring Mathematics, Energy, Matter, Space & Time in Contrast to Forensic Science", Invited scientific lecture at the NYC Forensic Conference for Public Defenders; New York, NY; 1 Nov 2018
7. "Will Evolution and Information Theory Provide The Fundamentals Of Physics?", Science and Society Lecture @ Weill Cornell Graduate School of Medicine, Manhattan, NYC, 31 Oct 2018.
8. "Uncovering SUSY Freudenthal Type Formulae Without Eigenvalues, or the Jordan-Chevalley Decomposition"; Workshop: Geometrical Aspects of Supersymmetry; Stony Brook Univ., NY; 22 Oct 2018.
9. Closing Keynote address at FermiLab Users Meeting in Batavia, IL, 21 Jun 2018.
10. Keynote speaker at Chicago State Univ's Honors Convocation, Chicago, IL, 19 Apr 2018.
11. Keynote address @ SUNY Old Westbury, NY, 17 Apr 2018.
12. Invited talk at the University of Maryland Science Policy Class, College Park, MD, 27 Mar 2018.
13. Invited talk at the University of Maryland Science Policy Class, College Park, MD, 13 Mar 2018.



14. Presentation at College of Science, Discover Science Lecture Series, University of Nevada, Reno, NV, 8 Mar 2018.
15. (2 talks) Afternoon presentation to student assembly & evening public lecture "What Does Math Have to Do with Reality?"; Berkshire Arts & Technology Charter Public School, Adams, MA, 5 Mar 2018.
16. Distinguished Lecture at GA Tech; Frontiers in Science Lecture: "Will Evolution and Information Theory Provide the Fundamentals Of Physics?", Georgia Tech, Atlanta, GA, 26 Feb 2018.
17. Elon Musk Public Lecture: "Will Evolution and Information Theory Provide the Fundamentals of Physics?", Univ. of Pennsylvania, Philadelphia, PA, 6 Feb 2018.
18. Talk @ Charles E. Smith Jewish Day School, Rockville. MD, 4 Jan 2018.
19. "Accessing My Innovation Creativity App", Presentation at 2017 Chemical and Biological Defense Science and Technology Conference (CBDS&T), Long Beach, CA, 29 Nov 2017.
20. STEM Discipline Workshop Panelist at 25th Annual Ron McNair Workshop at University of California Berkeley, 28 July 2017.
21. Physics & Astronomy Department Colloquium Talk, Baker Institute, Rice University, Houston, TX, 8 Feb 2017.
22. Physics Colloquium, "The 1,358,954,496 Matrix Elements to Get from SUSY Diff EQ's to Pictures, Codes, Card Games, Music, Computers, and Back Again", University of Colorado Boulder, 2 Feb 2017.
23. NAM Mtg Panel Discussion at Moorehouse College, Atlanta, GA, 7 Jan 2017.
24. Keynote speaker at (ICARS) Intelligence Community Academic Research Symposium, National Academies - Keck Center in Washington, D.C., 22 Sep 2016.
25. Keynote address; and panelist for Session 6: Advocating for Science: Applying science communication to policy and law, Cornell University's Communicating Science Workshop for Graduate Students (ComSciCon), Ithaca, NY, 23 Jul 2016.
26. "My Perspective on the Impact of Diversity," NSF/Education & Human Resources Directorate Distinguished Lecture, NSF Headquarters, Alexandria, VA, 18 May 2016.
27. "U.S. Climate Change Policy: A Report from the Front," Roth Distinguished Visiting Scholar Lecture, Brown University, Providence, RI, 11 May 2016.
28. "Will the Precision Hunters Be The First To Spot SUSY's Footprints," SPS Induction Ceremony Speech, Towson University, Towson, MD, 28 Apr 2016.

29. "Progress Report on Supergravity on Riemann Surface Without String/M-Theory," Invited talk at the Northeast Gravity Workshop, UMass, Amherst, MA, 23 Apr 2016.
30. Invited talk at the Combinatorics seminar, Dartmouth University, Hanover, NH, 7 Nov 2015.
31. "Is Susy the Guardian of our Reality from Oblivion?," Technical lecture, Lehigh University, Bethlehem, PA, 11 Sep 2015.
32. Panelist: MAA Committee on the Undergraduate Program in Mathematics Panel Discussion Mathematics and the sciences: Necessary dialogue., Joint Mathematics Meeting, San Antonio, TX, 12 Jan 2015.
33. "SUSY Holography: Dimensional Reduction, Information Conservation, & SUSY QM", Seminar at Energy and Power Division of, U.S. Army Research Laboratory, Adelphi, MD, 18 Dec 2014.
34. Participant in a Panel Presentation at the NCSSSMST November conference. The theme for the discussion was Issues Relevant to Expanding Specialized STEM Schools in the US., 8 Nov 2014.
35. "Tapping Potential: Science, Technology and Education in the development of Nations", High Level Round Table Discussion at CERN w/Tallberg Foundation/Geneva, 20 Oct 2014.
36. 2 public talks, Chrysalis & VA Science Museum, Richmond, VA, 26-27 Sep 2014.
37. Public talk, Smithsonian Associates, Washington, DC, 3 Sep 2014.
38. Talk to strictly the math teachers; talk about where middle school math should be, emphasis on should, Alice Deal Middle School, NW Washington, DC, 20 Aug 2014.
39. Talk on motivating people about the importance of STEM and STEM learning for all students at a high intellectual level, Plenary Session at International Baccalaureate Organization, 13 Jul 2014.
40. Presentation to students at KAUST Saudi Arabia Summer Camp, 30 Jun – 1 Jul 2014.
41. Public talk, Cheltenham Science Festival 2014, UK, 6 Jun 2014.
42. Public talk, Perimeter Institute, Toronto, 4 Jun 2014.
43. Public talk at UMD Maryland Day, 26 Apr 2014.
44. 2 talks; plenary and keynote address at STEM conference at Georgetown Day School, 14 Mar 2014.
45. "From the Mathematics of Supersymmetry to the Music of Arnold Schoenberg", talk at NIMH Innovations, 18 Feb 2014.
46. Presentation about US cooperation with other countries including Korea in science and technology at workshop in Seoul, Korea, 30 Dec 2013.

47. "Implications of PCAST Report on Undergraduate STEM Education", NAS -- BARRIERS AND OPPORTUNITIES IN COMPLETING 2- AND 4-YEAR STEM DEGREES, 12 Sep 2013.
48. Featured presenter: NGSS, NASBE 2013 Annual Conf, Pentagon City Ritz-Carlton, 28 Jul 2013.
49. Keynote speaker & Serve on the panel entitled "Minority Male Outcomes in Higher Education", (CADE) 2013 Summer Mtg Seattle, Wash., 25&26 Jul 2013.
50. "What Do Mathematical Ideas Look Like Before Mathematicians Get Hold of Them - The Case of Adinkras", Mathcamp 2013; Colby Coll., Waterville, ME, 2 Jul 2013.
51. "A Perspective on Leadership Faculty Entrepreneurship", UMS Board of Regents Mtg at UMES, 21 Jun 2013.
52. "Supporting systemic change in STEM higher education", AAAS, NY, 19 Jun 2013.
53. "Unpacking the 1M Goal & a Vision for a Successful Path Forward" BHEF's 2013 Summer Mtg Opening Program 10 Jun 2013.
54. Commencement address at Jones High School, 5 Jun 2013.
55. "Symmetry and the Quincunx Nexus", DC MIT Alumni talk, 28 May 2013.
56. "How Physics and Math intersect to create supersymmetry, supergravity, and superstring theory", Balticon 2013, Baltimore, MD 26 May 2013.
57. "The PCAST Perspective," NAS Workshop on Undergraduate Chem Ed, 22 May 2013.
58. "What I Have Seen from My Life In A STEM Field & What It Could Mean For You", talk for SPS Students, Notre Dame, 28 April 2013.
59. General talk to the Society of Physics Students (SPS) at the University of Maryland, 23 April 2013.
60. Talks at NASA from Minority Scientists, 16 Apr 2013.
61. An overview of supergravity, Grisarufest, Montreal, 19-20 Apr 2013.
62. PCAST Report: Transformation & Opportunity: The Future of the US Research Enterprise, APS April Mtg, 15 April 2013.
63. Public Lecture at the NITheP SAC meeting 2013, South Africa; 9 March 2013.
64. NITheP Seminar Series Research Seminar on the "Current status of supersymmetry from the LHC perspective"; NITheP SAC meeting 2013, South Africa; 8 March 2013.

65. Talk discussing research and career path, Emerging Researchers National (ERN) Conference, 2 March 2013.
66. STEM advice issued by PCAST, DC MIT Alumni Club, 19 Feb 2013.
67. Keynote address at 15th Annual Tx Nat'l McNair Scholars Res. Conf., 16 Feb 2013.
68. "Engage to Excel" and "Prepare and Inspire", AAPT Symposium on Physics Ed & Pub Policy, 8 Jan 2013.
69. BHU Conference [Banaras Hindu University], Varanasi, India; 23&24 Nov 2012.
70. "SUSY and the Lords of the Ring", FY 2013 NSF Distinguished Lecturer in the Mathematical and Physical Sciences; NSF, 19 Nov. 2012.
71. Public lecture at the Challenger Learning Center, Public Lecture at 2012 SESAPS, 14 Nov. 2012.
72. Presentation re Engage to Excel, GSEE/Chicago Summit, 1 Nov 2012.
73. "Compact for Faculty Diversity Institute on Teaching and Mentoring", JP Sloan Found directors; Tampa, 25-27 Oct 2012.
74. 3rd Annual AMNA Distinguished Lecture, Philander Smith College, Little Rock, AK, 23 Oct 2012.
75. Summary of the PCAST 2012 recommendations for more STEM graduates, Opportunity with STEM: Attract, Retain, and Diversify; Hart Office Bldg., 16 Oct 2012.
76. "Uncovering the Codes for Reality", Undergraduate Research Symp, Bayer School of Natural & Environmental Science, 26-27 July 2012.
77. "Becoming Engaged: Initiatives That Can Change", ICAM/Aspen Workshop, 22-25 July 2012.
78. Presentation on the "Blacks at MIT History Project", MIT, 10 July 2012.
79. NSTA Summer Leadership Inst., NGSS, Austin, TX, 27 Jun 2012.
80. Engineering and Natural Sciences Panel, Convocation to celebrate the 150th Anniversary of the Morrill Act, 26 June 2012.
81. Plenary talk: "An Overview of the Engage to Excel Report", APS Education & Diversity Workshop, 10 June 2012.
82. Keynote speaker, TITLE: "An Overview of the PCAST Engage to Excel Report"; National Physics Department Chairs Meeting, Greenbelt, 8 June 2012.
83. Keynote address, "Science and Mathematics Teacher Imperative"; Talk: Engage to Excel; APLU Conference, Alexandria, VA, 7 June 2012.

84. Talk on recent efforts improving the teaching of STEM fields and public presentation of science; Jlab User Group mtg, Newport News, 4-6 June 2012.
85. High level science policy conversation: "Science and Policy: Global Perspectives on Science Policy, Innovation and New Approaches to STEM Education"; World Science Festival in DC, 30 May 2012.
86. Prestigious STEM Teacher Panel: "America's Future STEMS on Great Teachers: Are We Ready?"; National Math and Science Initiative Hosts, UTeach Event in Washington, DC, 23 May 2012.
87. Panelist on AAU Wkshp on Improving Undergraduate STEM from the perspective of E2E, AAU Workshop, 21 May 2012.
88. Keynote presentation to the Korean Scientists & Engineers Association's (KSEA), 12 May 2012.
89. "Uncovering the Codes for Reality", Towson Annual Sigma Pi Sigma Induction Banquet, 4 May 2012.
90. Joint Policy Bd of Math (JPBM) meeting; Discussion of PCAST STEM report; Math Association of America; 30 April 2012.
91. The principal speaker at the 37th annual AAAS Forum on Science and Technology Policy; "Engage to Excel"; AAAS Forum; 26 April 2012.
92. Speak on PCAST Report "Engage to Excel: Producing One Million ..."; APS Leadership Talk, Greenbelt Marriott, 21 April 2012.
93. Bayer STEM Diversity & Higher Education Forum - Panel discussion; Washington, DC, 18 April 2012.
94. USA S&E Fest Nifty Fifty Presentation; Nifty Fifty -- Capitol Hill Montessori, 22 March 2012.
95. National Undergraduate and Research Conf talk re Dr Ron McNair; University of Maryland, 15 March 2012.
96. "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.
97. "Physics of NFL Football in Baltimore for STEM," Sankofa Community Development Corporation STEMcx Youth Fair, Baltimore, MD, 03 March 2012.
98. "The Mathematical Melodies of Reality," Museum of the Rockies Public Lecture, Bozeman, MT, 08 Dec 2011.
99. "Is Our Reality In 'The Matrix?'" Norfolk State University Distinguished Lecturer, Norfolk State Center for Materials Research, Norfolk, VA, 18 Nov 2011

100. "Is Our Reality In 'The Matrix?'" Annual Biomedical Research Conference for Minority Students (ABRCMS) Plenary Lecture, St. Louis Convention Center, St. Louis, MO, 11 Nov 2011.
101. "Quincunx 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.
102. "Is Reality A Matrix?" Invited talk at the "Celebrating 50 Years of the Laser" Meeting, Lanzerac, Hotel, Stellenbosch, S.A., 11 Oct 2010.
103. "Superstrings for Astronomers," Northern Virginia Astronomy Club (NOVAC), Enterprise Hall, George Mason University, Fairfax, VA, 12 Dec 2010.
104. "Mathematical Foundation for Spacetime SUSY Representation Theory," presentation at the QCD and Strings Conference, Oberwoelz, Austria, 29 August – 04 Sep 2010.
105. "Is Physical Reality a Matrix?" Cairo Science Festival (live video presentation to audience), 04 May 2010.
106. "Does Reality Have a Genetic Basis?" Dean's Distinguished Lecture, Western Michigan University, Kalamazoo, MI, 16 Feb 2009.
107. "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.
108. "SUSY & The Lords of the Ring," 28th Annual Michelson Lecture, United State Naval Academy, Annapolis, MD, 21 Oct 2008.
109. "SUSY & The Lords of the Ring," Graduate College Presentation, Western Michigan University, Kalamazoo, MI, 11 Apr 2008.
110. "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, 20-26 Oct 2007.
111. "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, Johannesburg, South Africa, Jul 6, 2007.
112. "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, 17 Mar 2007.
113. Presentation to the International Workshop non-commutativity in Strings, Gravity and Field Theory, Tokyo Metropolitan University, Hachioji-shi, Tokyo, Japan, 17 Nov 2006.

114. "1D Supersymmetry, Adinkras & Filtered Clifford Algebras," lecture at the "Affine Hecke algebras, the Langlands program, Conformal Field Theory and Matrix Models" meeting at the International Center for Mathematical Research (CIRM), Luminy, France, 23 Jun 2006.
115. "Supersymmetry, Superstring/M-theory and Mathematics," Plenary Lectures at *Workshop on Contemporary Problems in Mathematical Physics* COPROMPAH- 4, INFOSEC Center, Contonou, Benin, 4-11 Nov 2005.
116. "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, 21-24 Jun 2005.
117. "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, 8-11 Mar 2005.
118. "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, 10-13 Feb 2005.
119. "An Introduction to Adinkras: Graphical Supersymmetry," presentation at the *Particles, Strings and Cosmology* PASCOS-04 meeting, Northeastern University, Boston, MA, 17 Aug 2004.
120. "Introductory Lectures on Supersymmetry," *African Summer Theoretical Institute*, University of Cape Town, Cape Town, South Africa, 12-30 January 2004.
121. "Is KO-theory Holographically Related to Spacetime Supersymmetry?" at *The International Conference: Renormalization Group and Anomalies in Gravity in Cosmology*, Ouro Preto, MG, Brazil, 21 March 2003.
122. "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), Northeastern Univ., Boston, MA, 17 Mar 2003.
123. "Lectures on Supersymmetry, Supergravity and Superstring/M-theory," at *The Prospects in Theoretical Physics School* "Introduction to String Theory," Institute for Advanced Study, Princeton, NJ, 1-12 July 2002.
124. "On the Possible Group Theoretic and Low-dimensional Origins of Spacetime Supersymmetry," at *The Conformal Field Theory and Supersymmetry Workshop*, Mathematical Sciences Research Institute, Berkeley, CA, 15-26 April 2002.
125. "Lagrangian Chiral Bosonization," at the *Applications of Quantum Gravity Workshop*, Stellenbosch Institute for Advanced Study, Stellenbosch, South Africa, 4-22 Feb 2002.

126. "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, Stellenbosch, South Africa, 23 Jan – 01 Feb 2002.
127. "Is String/Supersymmetry Quintessentially Challenged?" at the *Supergravity @ 25 Conference*, Yang Institute for Theoretical Physics, SUNY@Stony Brook, Stony Brook, L. I. NY, 1-2 Dec 2001.
128. "3D, N = 1 Supergravity: An Introduction to Local Supergeometry," a lecture series presented at the *Park City Mathematical Workshop*, Park City, UT, 15-28 July 2001.
129. "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, 13 Nov 2000.
130. "A Supersymmetrist Looks at the New Fundamental Physics A'Borning," at the *American Physical Society Centennial Meeting, 20-26 March 1999, Atlanta, GA Session OA03 - Cent. Symposium: From Particles to Atoms and Galaxies: Physics in All Sizes and by All People*. Invited session, 24 March 1999.
131. "Superstrings: Why Einstein Would Love Spaghetti in Fundamental Physics?," presentation at the *Joint APS-AAPT Meeting*, J.W.Marriot, Wash., DC, 18 April 1997.
132. "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., 28 March 1997.
133. "Developments in  $\mathcal{N} = 0$  Supersymmetric Integrable Systems" at the *International Workshop on Integrable Models and Strings*, Garbsen (Osterwald) Germany, 24-25 June 1996.
134. "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, 18-24 May 1996.
135. "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, 7-12 May 1996.
136. "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, 10-11 Nov 1994.
137. "Why Einstein Would Love Spaghetti in Fundamental Physics?," *Distinguished FGAMP Lecture and APS VML Prize Lecture* at Florida A. & M. Univ., Tallahassee, Florida, 11 Oct 1994.
138. "Does More Mirror Symmetry Exist in N = 4 Superstrings" at the *Summer School on Quantum Field Theories*, held at Tomsk, Siberia, Russia, 4-9 August 1994.



139. "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, 9-12 June 1992.
140. "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, 4-7 June 1991.
141. "From Superspace to Superstrings", *Lecture Series at the Summer School on Quantum Field Theory and Strings*, Tomsk State University, Tomsk, USSR, 18-27 June 1990.
142. "Bosonic Sp(2) Field Theories", at the *XVII Group Theoretical Methods in Physics Colloquium*, Lebedev Institute, Moscow, USSR, 4-9 June 1990.
143. "Unconstrained BRST: A New Prototype for String Field Theory?" at the *Strings '90 Workshop* at Texas A. & M. University, College Station, TX, 12-17 Mar 1990.
144. "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).
145. "Getting at the Physics of Four-Dimensional String Theory" at the Univ. of Wisconsin, Madison, WI, 23 Feb 1990.
146. "Everything You Wanted to Know About Superstrings" at the *Winter Joint APS/AAPT Conference* in Atlanta, GA, 20-26 Jan 1990.
147. "Progress in Covariant Formulations of D = 4 Superstring Theory" at the *Superstring and Particle Physics Conference* at the Univ. of Alabama, 8-11 Nov 1989.
148. "Superstrings" at the *Conference of Ford Foundation Doctoral and Postdoctoral Fellowship Program* at the National Academy of Science, Wash. D.C., 3 Nov 1989.
149. "Why Our Universe Is (or may be) A Grand Piano", at *Undergraduate Physics Conference*, Univ. of Maryland, College Park, MD., 8 April 1989.
150. "Toward a Complete Theory of Effective String Actions", at the *Strings '89 Workshop* at Texas A. & M. University, College Station, TX, 13-17 Mar 1989.
151. "Lectures on Superspace and Superstrings", *Lecture Series at the Karpacz Winter School on Theoretical Physics*, Karpacz, Poland, 20 Feb – 04 Mar 1989.
152. "Prepotentials in 2-d (super)gravity", at the *Strings '88 Workshop*, University of Maryland, College Park, MD, 24-28 May 1988.
153. "An Introduction to Supersymmetry and Superstrings", at the *NSBP Conference*, Lincoln University, Lincoln University, PA, 8 April 1988.
154. "Off-Shell Superspace and BRST Symmetry", at the *NATO Workshop on Superstrings* at the University of Colorado, Boulder, Colorado, 27 July – 01 Aug 1987.

155. "More Four Dimensional (Super)Strings", at the *CAP-NSERC Summer Institute of Physics* at the University of Alberta, Edmonton, Alberta, Canada, 10-24 July 1987.
156. "Unidexterous Superconformal Theories", at the *International Workshop on Strings, Composite Structures and Cosmology*, Univ. of Maryland, College Park, MD, 11-18 March 1987.
157. "Superspace and Superstrings", at the *Triangle Seminar Meeting*, Univ. of Vienna, Vienna, Austria, 28 Nov 1986.
158. "New Properties of Unidexterous SUSY Theories", at the *XXIII International Conference on High Energy Physics*, Berkeley, CA, 16-23 July 1986.
159. "Using Superspace Techniques to Construct Effective Actions For Massless String States", at the *Quarks-86 Seminar*, Tbilisi, U.S.S.R., 21-23 Apr 1986.
160. "Nonlinear Sigma-Models as String Simulators", at the *Mini-workshop on "Superstrings and All That,"* Virginia Tech., Blacksburg, VA, 17-21 June 1985.
161. "Introduction to Superspace", Lecture series given at the *International Centre for Theoretical Physics*, at Trieste, Italy, 12-27 June 1984.
162. "Gauge Invariance vs. The Equivalence Principle", at the *XIII International Colloquium on Group Theoretical Methods in Physics*, at University of Maryland, 24 May 1984.
163. "Nonpolynomiality, Prepotentials, and Superspace Geometry", University of California at Berkeley (LBL), 18 Jan 1984.
164. "Nonpolynomiality, Prepotentials, and Superspace Geometry", at the "*Supersymmetry in Physics*" conference at Los Alamos National Laboratory, held 15-20 Dec 1983.
165. "Ambiguities of Supersymmetric Gauge Theories", *Summer Workshop in Particle Physics* at the International Centre for Theoretical Physics, Trieste, Italy, 20 June – 31 July 1983.
166. "Superfield Supergravity of the Second Kind", at the *Workshop on Supergravity* at the International Centre for Theoretical Physics, Trieste, Italy, 4-6 May 1981.
167. "Toward an Unextended Superfield Formulation of  $N = 2$  Supergravity", at the *Nuffield Workshop*, University of Cambridge, Cambridge, England, 16 June – 12 July 1980.
168. "Superconformal Symmetry Breakdown as a Guide to Supergravity Constraints", at the *Supergravity Workshop* at Stony Brook, State University of New York, Stony Brook, Long Island, New York, 27-29 Sept 1979.

## **APPENDIX E: Colloquia and Seminars**

1. Autobiographical talk to Gordon School (middle school), Providence, RI. 14 January 2020.

2. "SUSY RILLES: A Speculation On Superstring Signatures In The Cosmic Microwave Background", standard departmental colloquium, Univ of Texas @ Arlington, 5 November 2019.
3. Opening keynote address @ Inclusive Graduate Education Network (IGEN) meeting in Orlando, FL, 25 October 2019.
4. "Einstein + Popper = Daubert: What is falsifiability & Why Does It Dominate Science", Tenth Annual Prescription For Criminal Justice & Forensic Science National Institute, Fordham University School of Law, New York, NY, 29 May 2019.
5. "Einstein v Robert", Invited Speaker at The College of Natural Sciences at Cal State San Bernardino, CA, 20 May 2019.
6. "Breitenlohner's M-Theory Magic Carpet", "Modern Trends in Particle Physics: A Conference in Honor of Pran Nath", Northeastern University, Boston, 17 May 2019.
7. "A Mathematical Journey Thru SUSY, Error-Correcting Codes, Evolution, and a Sustainable Reality", Featured Speaker at the Mathematical Association of American Metro NY Section, New York City College of Technology, Brooklyn, NY, 4 May 2019.
8. "SUSY Rilles: A Speculation on Superstring Signatures in the Cosmic Microwave Background", Joint MIT/Tufts Cosmology Seminar, MIT, Cambridge, MA, 29 Oct 2019.
9. Commencement address to the 2019 Class of the Illinois Mathematics and Science Academy (IMSA), Northern Illinois University, DeKalb, IL, 1 June 2019.
10. "Breitenlohner's M-Theory Magic Carpet", "Modern Trends in Particle Physics: A Conference in Honor of Pran Nath", Northeastern University, Boston, 17 May 2019.
11. "A Mathematical Journey Thru SUSY, Error-Correcting Codes, Evolution, and a Sustainable Reality", Featured Speaker at the Mathematical Association of American Metro NY Section, New York City College of Technology, Brooklyn, NY, 4 May 2019.
12. "SUSY May Be Necessary To Prevent Cosmic Apoptosis", Physics Colloquium at 5 Colleges, Physics Colloquium for 5 Colleges, Northampton, MA, 28 Mar 2019.
13. "A Mathematical Journey Thru SUSY, Error-Correcting Codes, Evolution, and a Sustainable Reality", Physics Colloquium at the University of Virginia, Charlottesville, VA, 22 Mar 2019.
14. "Why Tetrahedral Topology May Anchor Physical Reality", Physics Colloquium at Montana State University, Bozeman, MT, 8 Nov 2018.
15. Keynote address @ Thirteenth Annual City University of New York Black Male Initiative (CUNY BMI) conference at City Tech, CUNY "STEM As A Career", 5 Oct 2018.

16. Opening Remarks @ Joint Am/British Academy & UK Science and Innovation Network on Truth, Trust, and Expertise Mtg Session 2: Telling Stories: Creating Myths or Enabling Dialogue?, 4 Oct 2018.
17. "Thoughts On Cultural Embedding, Educationally-Enabled Creativity, Innovation, and Productivity", Workshop @ Scientific American & Macmillan Learning - 6th Annual STEM Executive Summit, 28 Sep 2018.
18. Are We Going to Mars? An Evening With Trailblazers @ RPI Panelist at event sponsored by the National Sciences and Technology Medals Foundation; 26 Sep 2018.
19. "Two 1,358,954,496 Pixel Set Going Among SUSY differential equations to Graphs, Codes, and Permutations", Colloquium at KSU, 10 Sep 2018.
20. "Group Theory In A Peculiar Research Problem", NAC-UVA, 25 July 2018.
21. Third in a series of lectures in the Orlando, FL area. "Why Am I A Theoretical Physicist?", 12 Apr 2018.
22. Two talks, "A Life in Physics: collaborations from Snoop Dogg to President Obama" on 29 Mar 2018; and on 30 Mar 2018, a Phys Dept Seminar on SUSY, Univ. of Wisconsin, LaCrosse, 29-30 Mar 2018.
23. Presentation at College of Science, Discover Science Lecture Series, University of Nevada, Reno, NV, 8 Mar 2018.
24. Keynote speaker at the 2017 Chemical and Biological Defense Science & Technology Conference, Long Beach, CA, 29 Nov 2017.
25. Banquet speaker at the Conference for Undergraduate Underrepresented Minorities in Physics (CU2MiP), University of Maryland and NIST, 7 Oct 2017.
26. "Einstein v. Roberts: Does Diversity Matter in Science?", presentation at the Celebration of Science and Math Week and Phase 2 New Science Building dedication ceremony, Eastern Kentucky University, Richmond, KY, 14 Sep 2017.
27. Keynote/Motivational talk at University of California Berkeley, distinguished speaker for the Twenty-Fifth Annual National Ronald E. McNair Scholars Symposium, Berkeley, CA, 27 Jul 2017.
28. Research talk during summer workshop, Brown University, Providence, RI, 13 Jul 2017.
29. Mott Foundation Trustee Meeting Panel Presentation to discuss how promising new research and practice in STEM afterschool learning are improving educational opportunity, Flint, Michigan, 7 Jun 2017.
30. Public Lecture: "Why diversity makes for excellent science", Oregon State University, College of Science, 27 Apr 2017.

31. Keynote address "Keynote: What did St. Augustine, Galileo & Einstein have to say about Faith vs. Science", Lipscomb Univ., Nashville, TN, 13 Apr 2017.
32. Invited Talk at New Jersey Institute of Technology, Newark, NJ, 29 Mar 2017.
33. Plenary Talk at Coe College, Cedar Rapids, IA, 20 Mar 2017.
34. Talk & panel discussion on the value of diversity in physics, APS March Meeting, New Orleans, LA, 16 Mar 2017.
35. Invited Talk w/physics students at Valencia College, Orlando, FL 3 Mar 2017.
36. Discussion with Potomac Institute for Policy Studies, Arlington, VA, 24 Feb 2017.
37. Plenary speaker at AAAS Annual Meeting, Boston, Massachusetts, 15 Feb 2017.
38. Diversity Lecture at North Carolina State University, Raleigh, North Carolina, 9 Feb 2017.
39. Jane Long Academy talk in the morning and an evening panel discussion, Baker Institute, Rice University, Houston, TX, 8 Feb 2017.
40. CU Café: (AM - Informal Career Talk; PM - Mentee Research Talk), Colorado 5 University, Boulder, 31 Jan 2017.
41. Participation in NAM Mtg Panel Discussion at Moorehouse College, Atlanta, GA 7-8 Jan 2017.
42. Adinkra Hangout/Research Discussions, Brown University, Providence, RI, 19-23 Dec 2016.
43. Plenary talk at Symposium on Parity Violation and Neutrino Physics, Shanghai Jiao Tong University, Shanghai, China, 28 Nov 2016.
44. Plenary talk at the 2016 Congress of Honor Society of AIP, San Francisco, CA, 5 Nov 2016.
45. Moderator of Gravitational Wave Celebration panel, University of Maryland, College Park, MD, 1 Nov 2016.
46. "Is SUSY the Guardian of Our Reality from Oblivion?", Plenary talk at Wisconsin APT, Oshkosh, Wisconsin, 28 Oct 2016.
47. Physics Colloquium and public lecture at City College of New York, NYC, NY, 19 Oct 2016.
48. "A Personal View on POTUS Managing Sustainability for the US Through Science and Technology", CEO Global Leaders Forum, Ritz Carlton, NYC, NY, 16 Oct 2016.
49. Keynote speaker and participant in panel discussion, Prince George's County STEM Physics Day, Upper Marlboro, MD, 14 Oct 2016.
50. Keynote speaker at Diversity Conference, University of Maryland, College Park, MD, 8 Oct 2016.

51. MASPG Talk (Mid-Atlantic Senior Physicists Group), American Center for Physics, College Park, MD, 21 Sep 2016.
52. Luncheon presentation to the Institute for Theory and Computation (ITC), Cambridge, MA, 2 Sep 2016.
53. Harvard-Smithsonian Center for Astrophysics Colloquium, 2 talks, Harvard Smithsonian Associates, Cambridge, MA, 1-2 Sep 2016.
54. NOAA Nat Sci & Ed Forum talk at Plenary Session, City College of New York, NYC, NY, 29 Aug 2016.
55. Main presenter at NSF-PIMS Undergrad Workshop on SUSY, University of British Columbia, Vancouver, 14-20 Aug 2016.
56. Keynote address @ Congress of Future Science & Technology Leaders, University of Massachusetts, Lowell, MA, 30 Jun 2016.
57. "Supersymmetry" Invited talk at Smithsonian Associates, Washington, DC, 14 Jun 2016.
58. Commencement Address, City University of New York, NYC, NY, 2 Jun 2016.
59. "Will the Precision Hunters Be the First to Spot SUSY's Footprints", Keynote Speech, U.S. Physics Olympic Team 30 Anniv. Celebration, Hilton Garden Inn Hotel, Washington, DC, 28 May 2016.
60. Talk on the importance of STEM, Cornerstone Christian Academy, Bowie, MD, 25 May 2016.
61. Panel Presentation at the "Bright Ideas & Inspiring Minds" session of the U.S. News STEM Solutions National Leadership Conference, Baltimore, MD, 18 May 2016.
62. Mtg with Representatives of the World Future Council on the Maryland state policy on environmental education, Univ. of Maryland, College Park, MD, 17 May 2016.
63. "String Theory in Review," U.S. Naval Research Laboratory (NRL) Colloquium, Washington, DC, 28 Apr 2016.
64. "Will the Precision Hunters Be the First to Spot SUSY's Footprints," Departmental colloquium, Notre Dame Univ., Notre Dame, IN, 13 Apr 2016.
65. Panel discussion: "STEM education in the 21st Century", Notre Dame Univ., Notre Dame, IN, 13 Apr 2016.
66. "The Birth of Sono-Astronomy When the Cosmos Does the Wave", Department of Physics and Astronomy Seminar Series, 8 Apr 2016.
67. "Will the Precision Hunters Be the First to Spot SUSY's Footprints", Inaugural Rayborn Lecture in Physics, University of Southern Mississippi, Hattiesburg, Mississippi, 7 Apr 2016.

68. "The Birth of Sono-Astronomy; When the Cosmos Does the Wave", Invited Talk, City University of New York, New York City, NY, 4 Apr 2016.
69. "Math is Key" Invited lecture, Purdue Univ., Lafayette, IN, 29 Mar 2016.
70. "Gravitational Wave Talk", NIST, Gaithersburg, MD, 11 Mar 2016.
71. Two talks, "Could SUSY Be A Sign of An Evolutionary Legacy in The Fundamental Laws Of Nature?", Physics Colloquium; and a Special Theory Seminar, Brown University, Providence, RI, 1-2 Feb 2016.
72. Master of Ceremonies at the Shirley Jackson 15th Anniversary Event at the Ritz-Carlton, Washington, DC, 21 Jan 2016.
73. "Today's Forensic Science and the Struggle to Build a Scientific Bulwark for Criminal Investigation", NSF Talk, Arlington, VA, 13 Jan 2016.
74. Invited talk at the Law and Governance Panel session at the Big History Anthropocene Conference, Macquarie University, Australia, 11 Dec 2015.
75. Panel session at the Big History Anthropocene Conference, Macquarie University, Australia, 10 Dec 2015.
76. Invited talk at the Big History Anthropocene Conference, climate change session, Macquarie University, Australia, 9 Dec 2015.
77. Plenary speaker @ APS Mtg, Dartmouth University, Hanover, NH, 7 Nov. 2015.
78. Invited talk at the Geometry & Topology Seminar, Dartmouth Univ., Hanover, NH, 3 Nov. 2015.
79. "Special Diversity Seminar: Equity Versus Excellence: A False Dichotomy in Science and Society", Goddard Space Flight Center, Greenbelt, MD, 30 Oct 2015.
80. "NOVA's Secret Life"; AIFF - Homage to Science and Technology, Kendall Square Cinema, Cambridge, MA, 15 Oct 2015.
81. Featured speaker at AIP Noblest Watch, American Center for Physics, College Park, MD, 5 Oct 2015.
82. "Science Counts Strategy Session" at Howard Hughes Medical Institute, Chevy Chase, MD, 1 Oct 2015.
83. "The National Imperative for Big Science: Is there still one?" Invited talk at Lehigh University, Bethlehem, PA, 10 Sep 2015.
84. Keynote Address at Science Professionals Study Day, Sollers Point Technical High School, Dundalk, MD, 19 Aug 2015.

85. Keynote Speaker & Guest of Honor at Banneker Institute Symposium, Harvard University, Cambridge, MA, 14 Aug 2015.
86. Panelist on Panel Session for Science Policy, Mathfest, Washington, DC, 5 Aug 2015.
87. Invited talk at Hitachi Lecture, AAAS, Washington, DC, 7 Jul 2015.
88. Invited talk at the Perimeter Institute Convergence Workshop, at the Perimeter Institute for Theoretical Physics, 21 Jun 2015.
89. NSF talk on the NCFS Scientific Inquiry and Research Subcommittee, at the NSF Forensic Science Workshop, Washington, DC, 26 May 2015.
90. Commencement Address at CNMS commencement ceremony, University of Maryland, 22 May 2015.
91. Keynote address at Chesapeake College, MSDE Science Spring Briefing, 21 May 2015.
92. "NGSS and the impact on our Economy", Keynote address at 2015 Delaware Next Generation Science Leader Teacher Program, Delaware DoEd, Modern Maturity Center, Dover, DE, 14 May 2015.
93. "Love of Science: From the Inclined Plane to Beyond the Higgs", Northern Va Comm College SPS Students, Annandale, VA, 24 Apr 2015.
94. Invited Talk w. UMCP SPS Chapter, Univ. of Maryland, College Park, MD, 23 Apr 2015.
95. "Strategies for STEM Retention from a PCAST Perspective", Texas A&M Univ., College Station, TX, 9 Apr 2015.
96. "What guards our reality against oblivion?", Thinking Out Loud Series, Brown Univ., Providence, RI, 18 Mar 2015.
97. (2 Lectures) "Stem Education, Economic Empowerment, and the American Dream: A Policy Review"; "At the Boundary of Modern Science:1 Where I Find Myself", Colorado State Univ., Pueblo, Colorado, 11-13 Mar 2015.
98. Round Table Discussion attended by approximately 12-15 senior leaders of the Abu Dhabi government and industry community, as well as NYUAD leadership at New York University Abu Dhabi, 26 Feb – 3 Mar 2015.
99. Talk at Triple Helix Student Event, JHU; Johns Hopkins Homewood Campus, 21 Feb 2015.
100. "Foundations and Frontiers of Physics", Graduate Student Seminar, Univ of MD, College Park, MD, 11 Feb 2015.
101. Talk at BASIS, Washington, DC, 10 Feb 2015.



102. CAMS Distinguished Lecture, Univ. of Southern California, Los Angeles, CA, 26 Jan 2015.
103. Math Colloquium at the University of Southern California Berkeley, 22 Jan 2015.
104. "Next Generation Science Standards: A Key to the Next Generation of American Jobs", Clinton School of Public Service Speaker Series, Univ. of Arkansas, Fayetteville, AK, 10 Dec 2014.
105. "Strategies for STEM Retention from a PCAST report", Colloquium -- Physics & Astronomy Department, Texas A&M, 4 Dec 2014.
106. Lecture to TAMU community with Q&A, Texas A&M, College Station, TX, 4 Dec 2014.
107. Talk to students & faculty re STEM career opportunities, Comm College of Baltimore Co., Catonsville Campus, 20 Nov 2014.
108. Talk at Kean University's Office of Africana Studies program called: Celebration of Africana Studies, Kean Univ., Union, NJ, 18 Nov. 2014.
109. "When the Cosmos Does the Wave It Does Wave Gravity", EEJust talk at Dartmouth Univ. 31 Oct 2014.
110. (2 talks) one public lecture and one research talk, 2014 String-Math Conference, University of Alberta, Edmonton, AB, Canada, 11-13 Jun 2014.
111. In addition to Adinkra lectures at the SUSY undergraduate event at UBC, there was 1 research talk + 1 public lecture, Univ. of British Columbia, Vancouver, BC, 25-30 May 2014.
112. NYU to visit CUSP & talk at NY Polytechnic Inst., Student and Dr. Sreeni alternate questions, 24 Apr 2014.
113. "Did An 'Evolutionary' Process Lead to Supersymmetry in Our Universe?" talk at McDaniel College, Westminster, MD, 16 Apr 2014.
114. "How I Ended up on One Webpage with Snoop Lion and another with President Obama", Physics Colloquium @ Fisk Univ., 31 Mar 2014.
115. "From the Mathematics of Supersymmetry to the Music of Arnold Schoenberg", 2 talks, Keynote address for Opening Ceremony and Plenary Session, Tennessee State, 31 Mar 2014.
116. Oppenheimer Lecture @ Berkeley, 17 Mar 2014.
117. "STEM & The All-American Dream in the New Millennium", Colloquium at Drexel Univ. in Philly, 6 Feb 2014.
118. "On the Surprises and Origins of SUSY", Distinguished University Lecture, Stony Brook Univ., 5 Dec 2013.
119. 2 talks -- Scientific lecture; Public seminar at Delaware State, 7 Nov 2013.

120. "Power of STEM", keynote address at Peach State LSAMP Conference, University of Georgia, Atlanta, GA, 11 Oct 2013.
121. "Broadening Participation in STEM", Keynote address at SUNY 2013 STEM Conference, 10 Oct. 2013.
122. "The ABEGHHK'tH Revolution" keynote address at EE Just, Dartmouth, 4 Oct 2013.
123. "The Audience of Nature" closing lecture at Gustavus Adolphus College, St. Peter, Minnesota, 2 Oct 2013.
124. "Rings of Reality" lecture at Gustavus Adolphus College, St. Peter, Minnesota, 28 Sep 2013.
125. St. Peter High School, St. Peter, Minnesota - Scott McClinock's AP physics class, 21 Sep 2013.
126. "Symmetry and the Quincunx Nexus" lecture at Gustavus Adolphus College, St. Peter, Minnesota, 20 Sep 2013.
127. Public Lecture at Montana Tech., 5 Sep 2013.
128. Talk at the Governor's School of Engineering and Technology (GSET) and the Educational Opportunity Fund (EOF), Rutgers, 22 Jul 2013.
129. "Symmetry and the Quincunx Nexus", Howard University, 17 April 2013.
130. "SUSY and the Lords of the Ring," U of Central Florida, 12-13 April 2013.
131. High Energy Physics Seminar talk at NYU's Ctr for Cosmology & Particle Physics, 10 April 2013.
132. Celebrating Einstein event; public talk at Montana State University, 3 April 2013.
133. Keynote speaker for Northern New Jersey Junior Science and Humanities Symposium (JSHS), Rutgers JSHS 2013 @ Rutgers University, 25 March 2013.
134. Colloquium at NIST, 22 March 2013.
135. STEM talk: "The PCAST Reports & The Re-ignition of the American Dream", NC A&T State University, 28 Feb 2013.
136. Slack Lecture at Vanderbilt University, 27 Feb 2013.
137. "Symmetry and the Quincunx Nexus", Colloquium talk at Wesleyan Univ., 21 Feb 2013.
138. "Adinkras as Mathematical Metaphorical Form for Reality," presentation in the "Year of Ghana" Program; Kennesaw St U, GA, 8 Nov 2012.

139. Findings from the PCAST report, Engage to Excel; Stakeholder's Summit: Regional Solutions to the National Crisis in K-16 STEM Education Conference; Rockland Community College, 12 October 2012.
140. Opening Keynote at Inaugural Symposium, Dartmouth E.E. Just Symposium, 27-29 Sept 2012.
141. "Uncovering the Codes for Reality", Rutgers-RiSE (Research in Science & Engineering), 31 July and 1 August 2012.
142. Colloquium, "The Third STEM Crisis: Defending the American Dream in the New Millennium", ARL Adelphi, 11 July 2012.
143. "Uncovering the Codes for Reality", Umass, Lowell Campus, 3 May 2012.
144. "On the Universality of Creativity in the Liberal Arts and Sciences", Iona College, New Rochelle, NY, 3 April 2012.
145. USA S&E Fest Nifty Fifty Presentation, Nifty Fifty -- Capitol Hill Montessori, 22 Mar 2012.
146. National Undergraduate and Research Conf talk re Dr Ron McNair, University of Maryland, 17 Mar 2012.
147. "Drilling Where the Wood Is Thick," Departmental Lecture, University of Montana, Physics Department, 09 Dec 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. "The Qunicunx Point," Simon Bolivar University Physics Department Colloquium, Caracas, Venezuela, 29 Nov 2011.
150. "Does Reality Have a Genetic Basis?" Univ of Virginia Physics Department Colloquium, Charlottesville, VA, 22 Apr 2011.
151. "Demi-Hemi-Mini-Quasi-Semi-Seminar," series of informal lectures on the introduction to Adinkras in the MIT Math Department, Nov. 17 & 24, 2010.
152. "Why Science Really Is Cool...& Very Relevant," USA Science & Engineering Festival/Nifty Fifty Program, Thomas Stone High School, Waldorf, MD, Oct 18, 2011.
153. "Mathematics & Reality" USA Science & Engineering Festival, National Museum of Health and Medicine, Walter Reed, Washington, DC, Nov. 08.
154. "What Is Reality?" St. Louis Science Festival, St. Louis Science Center, St. Louis, MO, Oct 17, 2010.

155. "Fundamental Representation of SUSY," colloquium African Institute for the Mathematical Sciences, Cape Town, South Africa, Oct 12, 2010.
156. "Seeing the Genome of Reality with Adinkras (II)," seminar, Institute for Advanced Studies, Univ. of Western Australia, Perth, Australia, Mar 23, 2010.
157. "Supergravity: The Quest for Unification," 9th Annual Elston Memorial Lecture, Embry-Riddle Aeronautical Univ., Daytona, FL, Apr 10, 2010.
158. "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.
159. "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.
160. "Does Reality Have a Genetic Basis?" colloquium presentation, Perimeter Institute, Waterloo, Ontario, Canada, Dec 02, 2009.
161. "Codes, Graphs, Decorated Cubical Cohomology and Spacetime SUSY Representations," seminar, Physics Department, State Univ. of New York, L.I., NY, Nov 11, 2009.
162. "Codes, Graphs, Decorated Cubical Cohomology and Spacetime SUSY Representations," colloquium, Physics Department, Univ. of Minnesota, Minneapolis, MN, Oct 09, 2009.
163. "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 Laboratory of Theoretical Physics, Dubna, Russia, 29 July - 03 August 2009.
164. "On Solving an 'Unsolvable' Problem in Superstring/M-Theory," Phillips Distinguished Lecturer Series at Haverford College, Haverford, PA, Sep 17, 2009.
165. "Technically Seeing the Mathematics Behind Supersymmetry Theories - Adinkras," colloquium, Physics Department, Johns Hopkins Univ., Baltimore, MD, Sep 24, 2009.
166. "From the Standard Model to Superstrings for Astronomers," Northern Virginia Astronomy Club (NOVAC), Enterprise Hall, George Mason University, Fairfax, VA, Jun 14, 2009.
167. "The DNA of Reality and Its Genome," Memorial Rustgi Lecture, University of Buffalo, Buffalo, NY, 03 Apr 2009.
168. "Seeing the Mathematics Behind Supersymmetry Theories - Adinkras," physics department colloquium, Univ. of Florida, Gainesville, FL, 16 Apr 2009.

169. "Superstring/M-Theory: DNA of Reality," presentation to the Cognizance 2009 meeting, IIT-Roorkee, Roorkee, India, 22 Mar 2009.
170. "On Solving an Unsolvable Problem in Superstring/M-Theory," Distinguished Lecture Series, Bard College, Annandale-on-Hudson, NY, 12 Mar 2009.
171. "Superstring/M-Theory as An Example of The Theoretical Physics Development Process," Bard College, Annandale-on-Hudson, NY, 12 Mar 2009.
172. "Understanding Einstein's Genius-Relativity Theory Made Easy," One-Day- University presentation, Doral Arrowwood Conference Resort, Rye Brook, NY, 25 Jan 2009.
173. "String Theory: What Is It. Why It Matters," One-Day-University presentation, Univ. of Maryland @ Shady Grove, Rockville, MD, 04 May 2008.
174. "Exploring the Group Theory of Spacetime Supersymmetry," Physics Department Colloquium. University of Central Florida, Orlando, FL, 18 May 2008.
175. "Is Cosmological Concordance in Concomitance with Superstring/M-theory?" 2008 Interdisciplinary Seminar Series, Dansby Hall, Morehouse College, Atlanta, GA, 24 Apr 2008.
176. "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.
177. "Supersymmetry, Adinkras & Clifford Algebras," mathematics department colloquium, Howard University, Washington, DC, Jan 25, 2008.
178. "If You Knew Superstrings," technical seminar presentation, Ithaca College, Ithaca, NY, Feb 19, 2007.
179. "Modern Cosmology & Superstring Theory - Can They Co-exist?" seminar Howard University, Washington, DC, Jan 10, 2007.
180. "Mathematically Speaking, what is Supersymmetry?" physics department seminar, McGill University, Montreal, Canada, Oct 4, 2006.
181. "Adinkras: New Mathematical Objects in Supersymmetrical Representation Theory," plenary lecture to the Mathematics of String Theory 2006 conference, Australian National University, Jul 18, 2006.
182. "A New Mathematica Proposal for the Foundation of Supersymmetry," seminar, Departamento de Fisica, Universidad Central de Venezuela, Caracas, Venezuela, Mar 23, 2006.
183. "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.

184. "Is Cosmic Concordance in Concomitance with Superstring/M-theory?" Departmental Colloquium, University of the Sciences, Philadelphia, PA, Feb. 23, 2006.
185. "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.
186. "Is Cosmic Concordance in Concomitance 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.
187. "Wrestling with the Mathematics-Gauge Theory to String Theory," seminar, Physics Department, Davidson College, Davidson, NC, Sep 7, 2005.
188. "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.
189. "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.
190. "String Theory," WYP address to the 15th Service Academy Student Mathematical Conference, Rickover Hall, U.S. Naval Academy, Annapolis, MD, Apr. 15, 2005.
191. "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.
192. "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.
193. "Supergeometrically Understanding Higher Curvature in Heterotic Superstring Theory," seminar, Institute for Strings, Cosmology & Astroparticle Physics, Columbia Univ. NY, NY Jan 14, 2005.
194. "Einstein's Legacy: Toward the Unified Field," colloquium, Physics Department, Rochester Institute of Technology, Rochester, NY, Jan. 11, 2005.

195. "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.
196. "Aspects of Cosmology & Superstrings," colloquium, Physics Department, Southern Univ., Baton Rouge, LA, Oct 1, 2004.
197. "Strings and Things," seminar in the Foundation and Frontier series, Physics Dept., Univ. of MD, College Park, MD, May 11, 2004.
198. "Superstring/M-theory & Cosmology," seminar, Physics Department, Univ. of Wisconsin-Whitewater, Whitewater, WI, Apr. 26, 2004.
199. "Detailed Superstring/M-Theory Cosmology?" colloquium, Physics Department, Johns Hopkins Univ., Baltimore, MD, Apr 22, 2004.
200. "From the Physics of Atoms and Nuclei to Supersymmetry," Laboratory Colloquium, Schonland Institute, University of Witswatersrand, Johannesburg, South Africa, Mar. 23, 2004.
201. "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.
202. "Review of the Special Theoretical Physics at STIAS," "Wine Cellar" Research Bldg., Stellenbosch Institute for Advanced Study (STIAS), Stellenbosch, South Africa, Mar. 2, 2004.
203. "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.
204. "Lectures on Supersymmetry," four lectures at the African Summer Theoretical Institute (ASTI), Univ. of Cape Town, South Africa, Jan. 17 - 29, 2004.
205. "Superspace Integration and Super P-forms Integration," seminar Duke Univ., Durham, NC, Oct. 3, 2003.
206. "On the Mathematics Called Superstring/M-Theory," North Carolina A. & T. University, Greensboro, NC, Oct. 2, 2003.
207. "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.

208. "Mathematics: The Third Eye of Science," Plenary & Inaugural Scientific Lecture at the African Institute for Mathematical Sciences, Muizenberg, South Africa, Sept. 18, 2003.
209. "Superspace Deformation Theory and String Effective Actions," seminar, Physics Department, Univ. of Western Australia, Perth, Australia, July 24, 2003.
210. "Are Clifford Algebras the Basis for Supersymmetric Representation Theory?" seminar, Physics Department, Univ. of Western Australia, Perth, Australia, July 22, 2003.
211. "SuperNovae Data vs. Superstring Theory," Physics Department Colloquium, Virginia Polytechnic Institute & State University, Blacksburg, VA, April 18, 2003.
212. "Superstring/M-theory Confrontation with the Cosmology Constant," Physics Department Colloquium, Univ. of North Carolina, Chapel Hill, NC, Jan. 21, 2003.
213. "String Theory Frontiers," presentation at the UMCP Physics Dept. Open House, Oct. 19, 2002.
214. "Space-Time Supersymmetry and the Clifford Algebra," seminar in the UMCP Mathematics Department graduate minicourse series, UMCP math. dept., Oct. 21, 2002.
215. "A Real Y2K Challenge: Einstein's Biggest Blunder vs. Superstring/M-theory," Lab. Dir. Colloquium, Argonne National Laboratory, Aug. 1, 2002, Dept. Colloquium, Physics Dept., Rensselaer Polytechnic Institute, Oct. 1, 2002.
216. "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.
217. "A Perspective on Einstein's Dream of a Unified Field Theory," Lab. Dir. Colloquium, Los Alamos National Laboratory, Mar. 19, 2002.
218. "On String Theory," Dept. Colloquium, Physics Dept. Cal. St. Univ. San Luis Obispo, Mar. 7, 2002.
219. "The String Theory Picture Book," Dept. Colloquium, California State University at Los Angeles, Los Angeles, CA, Nov. 1, 2001.
220. "How Does M-theory Look from South Africa?" Dept. Colloquium at Howard Univ., Feb. 21, 2001, Wash., D.C.
221. "Universal Geometrical Realization of Super-Virasoro Algebras," seminar, New York Univ. Physics Dept., Feb. 14, 2001, New York, NY.



222. "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.
223. "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.
224. "Einstein's Dream at the End of the Millennium," Laboratory Colloquium at the Princeton Plasma Physics Laboratory, (Feb. 10, 2000).
225. "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).
226. "A User's Guide to the 4D,  $N = 1$  SUSY Consistent Anomalies," seminar at Physics Dept., Univ. of Iowa, (Jan. 27, 2000).
227. "The Kinematics and Geometry of the Super-Virasoro Algebra," seminar at Physics Dept., Caltech. (Jan. 21, 2000).
228. "The Kinematics and Geometry of the Super-Virasoro Algebra," seminar at Physics Dept., Caltech. (Jan. 21, 2000).
229. "The Kinematics of the Super-Virasoro Algebra," seminar at Physics Dept. of Brown Univ. (Nov. 17, 1999).
230. "The Millennial Transition and Fundamental Physics," Dept. Colloquium at Brown Univ. (Nov. 16, 1999).
231. "Supersymmetry and Pion Physics," seminar at Syracuse Univ. (Oct. 23, 1998).
232. "Gravitation for Engineers," Dept. Colloquium, Physics Dept., Norfolk State Univ., (Feb. 19, 1998) Norfolk, VA.
233. "Nature's Fundamental Forces from Symmetries," Dept. Colloquium, Physics Dept., Slippery Rock Univ., (Oct. 1, 1997) Slippery Rock, PA.
234. "Everything You Might Want to Know About 10D Superstring Symmetries from the World Sheet" at Caltech, (April 8, 1997) Pasadena, CA.
235. "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.
236. "Supersymmetry and Low Energy QCD Phenomenological Lagrangians," seminar presentation to the particle theory group at the Univ. of Kentucky. Feb. 5, 1997.
237. "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.

238. "Symmetry" Graduate Seminar: Foundations and Frontiers of Physics, Univ. of Maryland, College Park, MD (Sept. 30, 1996).
239. "Superspace: Can we get there from here?" Laboratory Colloquium presented at the Johns Hopkins University Applied Physics Laboratory, Laurel, MD (March 8, 1996).
240. "Kappa-like Symmetry in String-like Actions" seminar at Physics Dept., Texas A & M University, College Station, TX (Oct. 30, 1995).
241. "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 Witwatersrand, Johannesburg, 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, Rensselaer 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).

242. "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).
243. "Two Introductory Lectures on Batalin-Type Quantization Methods" at the Department of Physics, Univ. of MD, (Sept. 21 and 29, 1994).
244. "Supersymmetry, Topology and BF Theories" at the Institut für Theoretische Physik, Universität Hannover (August 5, 1994).
245. "Discovering Integrable Systems, Strings and Supersymmetry in 1834" at the Department of Physics, Duke University (June 15, 1994).
246. "The Secret Role of Duality and Supersymmetry in Superstring and Heterotic String Theory" at the Institute for Advanced Studies, Princeton University (May 9, 1994).
247. "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).
248. "New Results for Supersymmetry and Vortices" at the Department of Physics, M.I.T., (March 14, 1992).
249. "Fun with Supersymmetry and Chern-Simons Theories" at the Department of Physics, M.I.T., (May 18, 1992).
250. "The  $N=2$  Superstrings, Self-dual Yang-Mills Surprise" at the Department of Physics, Stanford Univ., (Feb. 20, 1992).
251. "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).
252. "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).
253. "The Search for String Geometry and The Massless Effective Action" at John Hopkins Univ, (Dec. 7, 1990).
254. "Thirring Models for Four-Dimensional String Models" at UCLA, (Nov. 20, 1990).
255. "Bending Superspace for the 0-Modes of Superstrings" at Caltech, (Nov. 19, 1990) Pasadena, CA.

256. "Geometry & Strings: One Physicist's Viewpoint" Departmental Colloquium, Department of Mathematics, Univ. of Maryland, (Nov. 2, 1990).
257. "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).
258. "The Superstring Hypothesis", physics colloquium Lincoln University, Lincoln, PA (Oct. 22, 1990).
259. "The Superstring View of Fundamental Physics", physics seminar at Morgan State University, Baltimore, MD (Oct. 19, 1990).
260. "Some New Questions About BRST Symmetry" at the Laboratory of Theoretical Physics of the Joint Institute of Nuclear Research, Dubna, USSR (June 11, 1990).
261. "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).
262. "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).
263. "Everything You Wanted to Know About String Theory" Departmental Colloquium at the Univ. of Iowa, Iowa City, IO, Feb. 26, 1990.
264. "Modern Four-Dimensional Superstring Theory" at College of Charleston, First Annual Mobay Physics Lecturer, Charleston, SC Feb. 15, 1990.
265. "Introduction to String Theory" Departmental Colloquium at Clark-Atlanta Univ., Atlanta, GA, Jan. 24, 1990.
266. "Superstrings & Our Fundamental Physics" Dept. Colloquium at Howard Univ., Washington, D.C., Nov. 1, 1989.
267. "The Superstring from the Field Theory View", at Warsaw Univ., Feb. 16, 1989, Warsaw, Poland.
268. "The Physics of Particles from Superstrings", at INFN National Laboratory at Frascati, Feb. 14, 1989, Frascati, Rome, Italy.
269. "Massless Bosonized Thirring Model" at SLAC, Stanford University, Jan. 23, 1989, Stanford, CA.
270. "New Compactification via Bosonized Thirring Models" at the Univ. of Florida, Nov. 24, 1988, Gainesville, FL.
271. "Particle Physics, String Theories, Will the SSC Help?" at Florida A. & M. University, Nov. 22, 1988, Tallahassee, FL.

272. "An Introduction to the Physics of Superstrings", at the Supercomputer Research Institute, Florida State Univ., Nov.21, 1988, Tallahassee, FL.
273. "What Are Superstrings?", Departmental Colloquium at New York University, Nov. 3, 1988, New York, NY.
274. "Two-Dimensional Field Theory and Four-Dimensional Strings" New York Univ., Nov.2, 1988, New York, NY.
275. "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.
276. "Supersymmetric 506 Compactification", at Texas A. & M., Oct. 24, College Station, TX.
277. "Left and Right Currents in  $\sigma$ -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.
278. "Far out Physics", Departmental Colloquium, Oct. 5, 1988, Lincoln University, Lincoln University, PA.
279. "Superstrings: Tying up Particles and (especially) Theoreticians into Knots!", Departmental Colloquia, Sept. 28, 1988, Univ. of Delaware, Newark, DE, Nov. 3, 1988.
280. "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.
281. "Heterotic String Compactification", Invited talk at University of Berne, June 13, 1988, Berne, Switzerland.
282. "Spacetime SUSY in String Effective Actions", Invited talk at the Institute for Advanced Study, March 14, 1988, Princeton, NJ.
283. "Superspace, super-BRST, and super-Beltrami's", Invited talk at the Univ. Cal. Davis, Jan. 12, 1988.
284. "Ghost Currents in  $D = 2$  Supergravity", Seminar at the International School for Advanced Studies, Nov. 26, 1986, Trieste, Italy.
285. "Manifest Supersymmetry in the  $M = 0$  String Effective Action", July 12, 1986 at the Univ. of Calif. at Berkeley (LBL), Berkeley, CA.
286. "What Are Relativistic Strings?", Departmental Colloquium, June 12, 1986 at the Univ. of Calif. at Davis, Davis, CA.
287. "Introduction to Strings from a Field Theorist", Departmental Colloquium, May 26, 1986, Virginia Tech., Blacksburg, VA.

288. "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.
289. "Gauge Theory of Gravity", July 10, 1984 at University of Turin, Turin, Italy.
290. "Scalar Multiplets and Superphenomenology", July 6, 1984 at CERN, Geneva, Switzerland.
291. "Pregeometry in Supersymmetric Fiber Bundles", Jan. 24, 1984 at the University of California at Berkeley (Mathematics Department).
292. "Supersymmetry and Superfields", Lecture series given in Nov. 1983 at the University of Maryland at College Park.
293. "Progress Toward the Use of Supergraphs in Extended Supergravity", CERN, Aug. 7, 1983, Geneva, Switzerland.
294. "A New Gauged  $N = 4$  Supergravity Theory", Jan. 22, 1983, Los Alamos National Laboratory, and Jan. 25, 1983, University of Texas at Austin.
295. " $N = 4$  Supergravity Theories: How Many?", Jan. 20, 1983, University of California at Berkeley (LBL).
296. "Unconstrained Prepotentials for  $N = 2$  Supergravity", CERN, May 15, 1981, Geneva, Switzerland.
297. "Rheonomic Symmetry and Superspace Supergravity", University of Turin, May 8, 1981, Turin, Italy.
298. "Superspace Geometry and Supergravity", University of Toronto, March 5, 1979, Toronto, Canada.

## **Appendix F: Non-Technical Lectures**

1. "From SyFy and Marvel Comics to Superstring Theory, Evolution, and the CMB", public lecture, University of Texas @ Arlington, 5 November 2019.
2. "What to do with a STEM degree", keynote at Rutgers Engineering Honors Council Seminar, Rutgers, NJ, 4 November 2019.
3. "Does Diversity Matter in Science?", Personal View Lecture – Open to Public, Duquesne University, 24 September 2019.
4. "The Final Frontier: Is Physics Getting There?", Duquesne Physics Dept. talk with physicists & students, Duquesne Univ., Pittsburgh, PA, 23 September 2019.
5. Commencement address to the 2019 Class of the Illinois Mathematics and Science Academy (IMSA), Northern Illinois University, DeKalb, IL, 1 June 2019.

6. "A Life in Physics: Spanning from Snoop Dogg to President Obama", The 34th Annual Brossman Foundation & Ronald E. Fristie Sr., Science Lectureship at Millersville University, Millersville, PA, 15 Nov 2018.
7. "SUSY May Be Necessary To Prevent Cosmic Apoptosis", Public Popular Level Presentation, Montana State University, Bozeman, MT, 9 Nov 2018.
8. "Exploring Mathematics, Energy, Matter, Space & Time In Contrast To Forensic Science", NYC Forensic Conf for Public Defenders, New York, NY, 1 Nov 2018.
9. "How a Scientist Came to Be", Lecture given 5 times to Ocean Discovery Institute students, San Diego, CA, July 2019.
10. "Using Physics: Leaving it for Public Policy Work and Back Again", Lecture given to Ocean Discovery Institute, San Diego, CA, July, 2019.
11. "From SyFy and Marvel Comics to Superstring Theory, Evolution, and the CMB", Connections Lecture @ Field of Dreams Conference at Purdue, St. Louis, MO, 15 Nov 2019.
12. "From SyFy and Marvel Comics to Superstring Theory, Evolution, and the CMB", public lecture at the Univ of Texas @ Arlington College of Science Black Students Assoc. Mtg., 5 Nov 2019.
13. "What to do With a STEM Degree", Keynote address @ Rutgers Engineering Honors Council Seminar, Rutgers University, New Brunswick, NJ, 4 Nov 2019.
14. "From SyFy and Marvel Comics to Superstring Theory, Evolution, and the CMB"; Plenary Talk at the Inclusive Graduate Education Network (IGEN) 2019 National Meeting, Orlando FL, 25 Oct 2019.
15. "Impressions from the Front Lines of Policy Advising from a Theoretical Physicist", after dinner talk at APS Division on Nuclear Physics (DNP), Arlington, VA, 16 Oct 2019.
16. "Challenges of 'Anthropocenic' Policy-Making: A View from Inside a Policy-Formation Organization"; Keynote Address at Duquesne University Integrity of Creation Conference Public Lecture; Duquesne Union, Pittsburgh, PA, 24 Sept 2019.
17. "Does Diversity Matter in Science?"; Duquesne University Integrity of Creation Conference Public Lecture; Duquesne Union, Pittsburgh, PA, 24 Sept 2019.
18. "The Final Frontier: Is Physics Getting There?"; Duquesne Physics Dept. Physics & Math students; Duquesne Union, Pittsburgh, PA, 23 Sept 2019.
19. "If diversity makes music richer, why not STEM?"; NSF Broadening Participation: 2019 MPS Workshop for New Investigators; NSF HQ, Alexandria, VA, 9 Sept 2019.

20. K – 12 STEM Education Outreach, Continuous rotating talks w/students in AM & PM on STEM; one talk to staff; one to college students and alumnae; one to student's parents. Ocean Discovery Institute, San Diego, CA, Events took place from 9-13 July 2019.
21. "Einstein v. Roberts – An Arc About Diversity, Supreme Court & A Perspective", Presenter @ Brown All-Class Black Reunion, 22 Sep 2018.
22. "Understanding Our Universe", Presenter at WaterFire event in Providence, RI, 22 Sep 2018.
23. "What Abdus Salam Taught Me About Jazz", Annual Neff Lecture at KSU, 11 Sep 2018.
24. College Board, the American Council on Education (ACE), and Education Counsel, Discussant @ 40th anniversary of the Supreme Court's Bakke decision, 1 Aug 2018.
25. "The Mystery of Our Mathematical Universe", Panelist for Conversations on the Nature of Reality, New York Academy of Sciences, NYC, 10 Oct. 2018;  
<https://livestream.com/newyorkacademyofsciences/reality2018-/videos/181587723>
26. Keynote address @ Thirteenth Annual City University of New York Black Male Initiative (CUNY BMI) conference at City Tech, CUNY "STEM As A Career", 5 Oct 2018.
27. Opening Remarks @ Joint AAAS/British Academy & UK Science and Innovation Network on Truth, Trust, and Expertise Mtg Session 2: Telling Stories: Creating Myths or Enabling Dialogue?, 4 Oct 2018.
28. "Thoughts On Cultural Embedding, Educationally-Enabled Creativity, Innovation, and Productivity", Workshop @ Scientific American & Macmillan Learning - 6th Annual STEM Executive Summit, 28 Sep 2018.
29. Are We Going to Mars? An Evening With Trailblazers @ RPI Panelist at event sponsored by the National Sciences and Technology Medals Foundation; 26 Sep 2018.
30. "Einstein v. Roberts – An Arc About Diversity, Supreme Court & A Perspective", Presenter @ Brown All-Class Black Reunion, 22 Sep 2018.
31. "What Abdus Salam Taught Me About Jazz", Annual Neff Lecture at KSU, 11 Sep 2018.
32. College Board, the American Council on Education (ACE), and Education Counsel, Discussant @ 40th anniversary of the Supreme Court's Bakke decision, 1 Aug 2018.
33. "A Life In Science & Beyond", NAC Speaker Series; Charlottesville, VA, 25 July 2018.
34. Third in the series of three talks in the Orlando, FL, area was "Why Am I A Theoretical Physicist?" at Rollins College in Winter Park, FL, 12 Apr 2018.
35. First of three talks in the Orlando, FL, area, talk at UCF was an Invited Short talk at Induction Ceremony, University of Central Florida, Orlando, FL, 10 Apr 2018.



36. First of two talks at BART, an afternoon presentation to student assembly, Berkshire Arts & Technology Charter Public School, Adams, MA, 5 Mar 2018.
37. Panelist for 50th anniversary celebration of the founding of MIT's Black Students Union, MIT, Cambridge, MA, 24 Feb 2018.
38. Invited talk at Fred Kavli Keynote Plenary Session: Quarks to the Cosmos, APS April Meeting, Washington, DC, 30 Jan 2017.
39. Invited talk at Beth El, Bethesda, MD, 22 Jan 2017.
40. 3 Person Science Summit Panel at Historic Paramount Theatre, Austin, TX, 1 Dec 2016.
41. "Experiences with Ron McNair" keynote speaker at Ron McNair Conference dinner, Marquette Univ., Delavan, Wisconsin, 29 Oct 2016.
42. Visit to the Perimeter Institute, in Waterloo, Ontario, Canada. Multiple lectures take place during this weeklong visit. 6-14 Aug 2016.
43. Annual Award Ceremony of SJG Award at Jones High School, Orlando, FL, 13 May 2016.
44. "How I Ended Up on One Webpage with Snoop Lion & Another with President Obama", Research Day Keynote at Grove School of Engineering, NYC, NY, 9 May 2016.
45. Keynote speaker at MIT Black Graduates Celebration, MIT, Cambridge, MA, 15 Apr 2016.
46. Featured speaker @ 10th anniversary opening night event for the Cambridge Science Festival, Big Ideas for Busy People, Cambridge, MA, 15 Apr 2016.
47. "Is the Universe A Simulation?" Isaac Asimov Annual Panel Debate, American Museum of Natural History, Hayden Planetarium, New York, NY, 5 Apr 2016.
48. Represented Einstein at a show at the Jewish Museum of New York dedicated to telling the story of the life of Einstein, NYC, 3 Mar 2016.
49. Communicating Science seminar, the first panel, "Scientists Engaging in Policy", Invited speaker, 2016 AAAS Annual Meeting, Washington, DC, 11 Feb 2016.
50. "Think Different: Allowing STEM Precociousness to Bloom", keynote address, NAS Convocation in DC, 11 May 2015.
51. "Research on the Theory of Everything", Invited talk at National Organization of Research Development Professionals' 2015 annual conference (NORDP conference); Bethesda, MD, 29 Apr 2015.
52. AERA Panelist -- 2015 Nat'l Conf in Chicago, AERA, Chicago, 17 Apr 2015.
53. Keynote Speaker at NGSS Network Conf., San Francisco, CA, 18 Feb 2015.

54. "The Future of Graduate Education in STEM: Thinking Beyond Disciplines", AAAS, San Jose, 14 Feb 2015.
55. Morning Mtg Talk; 9-12th grade, TED type talk followed by Q&A, Taft Boarding School, Watertown, CT, 15 Jan 2015.
56. Talk at Presidential Innovation Fellows Conference at NAS, 14 Nov 2014.
57. "Following SUSY Representation Theory from Adinkra Graphs to Riemann Surfaces", closing talk at the "Aspects of Supergravity" Workshop, Peter van Nieuwenhuizen event, Stony Brook Univ., 10 Jan 2014.
58. "How I Ended Up on A Webpage with Snoop", Nifty fifty talk in Bowie, MD, 19 Nov 2013.
59. UMD presentation on my role in PCAST, and in federal and state research policy. Discussion of what faculty should be doing to protect research funding in "this crazy funding/political environment", 14 Nov 2013.
60. Fireside Forum talk, Leisure World, Olney, MD, 6 Oct 2013.
61. National Association of Counties Black History Month Commemoration, Republic Square, Washington, DC, 08 Feb 2012.
62. "Living A Life in Science," Lecture to the Woman and Minorities in Science Program, Anne Arundel Community College, Arnold, MD, 22 Nov 2011.
63. "Enabling The All-American Dream By STEM Investment In Americans", Presidential Award of Excellence in Science, Math and Engineering Mentoring (PAESMEM) Lecture, St. Regis Hotel, Washington, DC, 11 Dec 2011.
64. "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.
65. "Prepare & Inspire," Featured Presentation, St. Louis SciFest 2011, St. Louis Science Center, 22 Oct 2011.
66. "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.
67. "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.
68. "Introduction to Strings & Beyond to Adinkras," A Cosmic Cafe Public Lect., Washington, DC, 21 July 2011.
69. "The Third STEM Crisis: Defending the American Dream in the New Millennium," keynote banquet presentation at the 27th Army Science Conference, Orlando, FL, Dec 02, 2010;

Robert Noyce Teacher Scholarship Program Conference Plenary Lect., Renaissance Hotel, Washington DC, 07 Jul 2011.

70. "Briefing on the 'Prepare & Inspire' PCAST STEM Ed Report before the National Science Board," NSF HQ, Arlington, VA, Dec 01, 2010.
71. "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.
72. "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.
73. "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.
74. "Briefing on the 'Prepare & Inspire' PCAST STEM Ed Report before the National Academy of Engineering," Keck Center, Washington, DC, Oct 02, 2010.
75. "Briefing on the 'Prepare & Inspire' PCAST STEM Ed Report" before the National Technical Association meeting at Howard University, Washington, DC, Sep 09, 2010.
76. "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.
77. "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.
78. "Achieving in Academia," keynote address to the Leadership Alliance National Symposium, East Brunswick, NJ, Jul 31, 2010.
79. "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.
80. "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.
81. "Is Physical Reality a 'Matrix?'," non-technical public lecture, University of Western Australia, Perth, Australia, Mar 16, 2010.
82. "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.
83. "Adinkras: Borrowing from African Symbols for Theoretical Physics," Dean Lecture, University of the District of Columbia, Washington, DC, Nov 09, 2009.

84. "Supersymmetry-What's THAT All About?" International Year of ASTRON- OMY 2009 Lecture, Bergen Community College, Paramus, NJ, Nov 05, 2009.
85. "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.
86. "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.
87. "Transforming Discrete Diversity Initiatives into a Plan for Educational Excellence for All," Yale University, New Haven, CN, 27 Mar 2009.
88. "Maxwell's Equations & Darwin's Finches," RUMI Forum of Georgetown Univ., Washington, DC, 16 Mar 2009.
89. "Evolution & Race," panelist participant, Goldwin Smith Hall, Cornell University, Ithaca, NY, 08 Feb 2009.
90. "Maxwell's Equations & Darwin's Finches," Beggs Distinguished Lecture, Sage Chapel, Cornell University, Ithaca, NY, 08 Feb 2009.
91. "Einstein & the American Civil Rights Struggle," MLK Commemoration at the U.S. National Science Foundation, Ballston, VA, 15 Jan 2009.
92. "Einstein's New Millennium Legacy," presentation in the President's Lecture Series at Rice University, McNair Hall, Rice University, Houston, TX, 15 Oct 2008.
93. "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.
94. "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.
95. "How Diversity Can Energize Innovation in STEM Fields," presentation to 2008 NASA Programs Symposium, Hilton BWI, Linthicum, MD, 25 July 2008.
96. "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 2008.
97. "Einstein, Maxwell & Religion," Sage Chapel Vesper's Presentation, Cornell University, Ithaca, NY, Mar 2, 2008.

98. "The Irrationality of Science," a presentation to the Junior Science & Humanities Symposium (JSHS) of the Greater Washington Metropolitan Area, Georgetown University, Jan 3, 2008.
99. "Einstein's Religious & Ethical Views," presentation to the 33rd Annual Perspectives in Dialogue series of the Beth El Congregation of Montgomery County, Dec 23, 2007.
100. "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.
101. "I'd Like to See a Cosmos Sing in Perfect Harmony," a presentation to the Riderwood Village speaker series, Silver Spring, MD, Sep 6, 2007; a presentation in the speaker series of the Capital One Corp, Falls Church, VA, Nov 7, 2007.
102. "String Theories for Dummies," a presentation in the Science & Arts series events, City College of New York, CUNY Graduate Center, New York, NY, May 22, 2007.
103. "Breaking the String," Origin of the Cosmos Symposium, a program with Peter Woit, University of Central Florida, Apr 7, 2007.
104. "Conversations on Diversity in the Sciences," Dean's Workshop, Albany Hall, Lewis & Clark College, Portland, OR, Apr 9, 2007.
105. Deans Lecture Series presentation, College of Natural Sciences & Mathematics, University of Houston, Sep 21, 2007.
106. "Einstein & Race," a presentation in the Du Bois Center lecture series, Harvard University, Cambridge, MA, April 07, 2007.
107. "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.
108. "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.
109. "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.
110. 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.
111. "Modern Cosmology Challenges to Superstring/M-Theory," Goddard Space Flight Center, Jul 25, 2006.

112. "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.
113. "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.
114. "Superstrings To Rule Fundamental Theories All?" Symposium on Diverse Frontiers in Science celebrating the 75th Anniversary of the AIP, Cosmos Club, Washington, DC, May 3, 2006.
115. "How to Hear a Universe Sing," Departmental colloquium, Longwood Auditorium, Delaware State University, Dover, DE, Apr 28, 2006.
116. "What Do We Believe About the Cosmos," popular-level presentation, Departamento de Fisica, Universidad Central de Venezuela, Caracas, Venezuela, Mar 24, 2006.
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. "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.
119. "Legacies of Einstein's Concerti & Opus," assembly presentation, Illinois Mathematics and Science Academy, Aurora, IL, Jan. 18, 2006.
120. "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.
121. "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.
122. "Fundamental Physics at the Current Frontier," WYP 2005 Physics Young Ambassador Symposium presentation, Tamkang University, Teipei, Taiwan, Dec 31, 2005 - Jan 4, 2006.
123. 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.

124. "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.
125. "Is Cosmic Concordance in Concomitance 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.
126. "Can Concordance Occur in Superstrings?" Smith Lecture and WYP address, Duke Family Performance Hall, Davidson College, Davidson, NC, Sep 8, 2005.
127. "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.
128. "Using Strings to Understand the Mathematics/Science Connection," UMCP Physics Quarknet Teachers Group, Physics Dept., UMCP, College Park, MD, Aug 18, 2005.
129. "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.
130. "Science, Minorities & Einstein," WYP address and Keynote Banquet Address, Iowa AGEP Summer Research Symposium, Univ. of Iowa, Iowa City, IA, Jul 27, 2005.
131. "Mathematical Science, Success & You," WYP address to the Mathematics Spiral Program, UMCP Math. Dept., UMCP, College Park, MD, Jul 9, 2005.
132. Panelist for "The Nature of the Cosmos," presentation of the symposium to recognize the 125th Anniversary Founding of Nature, AAAS Auditorium, AAAS Bldg, Washington, DC, Jul 7, 2005.
133. "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.
134. "Become the Next Greatest Generation," commencement speech to the Bachelor of Science graduation ceremony, Lake Shore Campus, Loyola Univ., Chicago, IL, May 20, 2005.
135. "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.
136. "Einstein's Message for the Young," WYP address to the Townview Magnet School, Dallas, TX, Apr 27, 2005.
137. "Einstein in Everyday Life," WYP address, Orlando Science Center, Orlando, FL, Apr 22, 2005.

138. "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.
139. "Thoughts for a Third Millennium United States," WYP address and annual Garnett Baltimore Lecture, Center for Biotechnology & Interdisciplinary Studies, Rensselaer Polytechnic Institute, Troy, NY, Apr 18, 2005.
140. "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.
141. "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 Center, Orlando, FL, Mar 24, 2005.
142. "Einstein on Diversity," WYP address to CSWP/COM Symposium for 2005 APS March Meeting, Los Angeles, CA, Mar 21, 2005.
143. "Peeking at String Theory," WYP address and Director's Colloquium at the NASA-Glenn Facility, Cleveland, OH, Mar 18, 2005.
144. "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.
145. "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.
146. "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.
147. "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.
148. "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.
149. "Superstrings on Einstein's Frontier," Public Science Day Lecture, AAAS Auditorium, AAAS Bldg, Washington, DC, Feb 17, 2005.
150. "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.
151. "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.



152. "Recalling R. McNair: Astronaut, Physicist & Friend," address to the Ron McNair Commemorative Meeting, North Carolina A & T Univ., Greensboro, NC, Jan 28, 2005.
153. "Superstring/M-theory: A Lathe for Physics?" Distinguished Brookhaven Science Associate Lecture & WYP address, Brookhaven National Laboratory, Brookhaven, LI, NY, Jan 25, 2005.
154. "Superstrings as Einstein's Legacy," Einstein Centenary Lecture & WYP address, Compton Science Center, Frostburg State Univ., Frostburg, MD, Nov. 18, 2004.
155. "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.
156. "A Commentary on 'The Elegant Universe' Video," Lafayette College, Lafayette, PA, Nov. 9, 2004.
157. "Who Is Going to Make Mathematical Physics 'Flow?'" Plenary address, Louisiana Stokes Alliance for Minority Participation, New Orleans Convention Center, New Orleans, LA, Oct 29, 2004.
158. "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.
159. "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.
160. "Einstein's Quest," College of Science Colloquium, World Year of Physics (WYP) address, Rochester Institute of Technology, Jan 10, 2005, Rochester, NY.
161. "Einstein: A Celebration", 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.) Einstein's Morality and Character, (d.) Einstein & Race and (e.) The Quest for a Unified Theory.
162. "Introduction to Einstein's Frontier: Superstring/M-theory," (non-technical version for public) at the Mali Symposium on Applied Sciences 2004 (MSAS 2004), Aug 3, 2004, Bamako, Mali.
163. "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.
164. "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, Tbilisi State Univ., Tbilisi, Georgia.

165. "Einstein's Dream at the End of the Millennium," (non-technical version for the public), June 27, 2004, Conference on Mathematics, Science and Technology at Phillips Exeter Academy, Exeter, NH.
166. "Superstring/M-Theory: The DNA of Existence?" (non-technical version for the public), June 18, 2004, at the Arts & Ideas Festival, New Haven, Connecticut.
167. "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.
168. "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 Mayor's office, City of Orlando, faculty and staff of the University of Central Florida, and Orange County Public School staff members.
169. "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.
170. "A Parramore District Scientist," Phillips Cinedome, May 13, 2004, Orlando Science Center, Orlando, FL.
171. "Comments at the Opening of the Mostertsdrift "Wine Cellar" Research Bldg., Mar. 1, 2004, Stellenbosch Institute for Advanced Study (STIAS), Stellenbosch, South Africa.
172. "NTFUP Report on What Works for a Vital Undergraduate Physics Program," National Society of Black Physicists (NSBP) annual conference, Feb. 20, 2004, Washington, DC.
173. "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.
174. "Fundamental Science for Lawyers," Feb. 11, 2004, presentation made to attorneys and staff of the Administrative Office of the U.S. Courts, Washington, DC.
175. "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.
176. "Investing in UMCP Research: An Example," presentation to the freshman class of the Maryland State Legislature, Clarrise Smith Performing Arts Center, Dec. 10, 2002.
177. "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.
178. "A Theoretical Physics Frontier at UMCP," luncheon speech to University of Maryland Foundation, Oct. 4, 2002, Adult Education Conference Center, College Park, MD.

179. "Science, Family, Community and Education," dinner speech at Family Weekend at University of Maryland, Sept. 27, 2002, Rossborough Inn, College Park, MD.
180. "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.
181. "Superstrings: Einstein's Theory at the New Millennium," Public Lecture at Stellenbosch University, Stellenbosch, South Africa, Feb. 27, 2002.
182. "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.
183. "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.
184. "Facing the SMET Dilemma", keynote address at the Detroit Public Schools Science Teacher Summer Institute, Urban Systemic Initiative Program, Detroit, MI, August 2, 2001.
185. "A Perspective of an African-American Physicist," Lyceum Series Lecture, Johnson C. Smith University, Charlotte, NC, March 14, 2001.
186. "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.
187. "The Theory of Everything," Member, First Annual Isaac Asimov Memorial Panel Debate, Hayden Planetarium, American Museum of Natural History, New York, Feb. 13, 2001.
188. "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.
189. "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.
190. "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.
191. "On the Universality of Creativity" address to the Florida-Georgia Alliance for Minority Participation (FGAMP) program, Bethune Cookman College, Daytona, Oct. 18, 1999.
192. "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.

193. "Speaking the White-Man's Magic" address to 12th annual Conference for African Americans in Higher Education, "African Americans at the Crossroads of Change: Where Do We Go from Here?" Univ. of Maryland, College Park, June 7, 1999.
194. "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.
195. "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.
196. "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.
197. "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 inaugural presentation in the Potomac School Distinguished Speakers Series, May 25, 1999, McLean, VA.
198. "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.
199. "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.
200. "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.
201. "What Did Dreaming of Electrons Do?," keynote address at the Hampton University Third Annual Student Research Symposium, Hampton Univ., Feb. 13, 1998, Hampton, VA.
202. "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.), Gaithersburg, MD.
203. "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.
204. "Where Has Einstein's Unified Field Concept Taken Us?," presentation at Slippery Rock Univ., Oct. 1, 1997 Slippery Rock, PA.

205. "Unification as a Philosophical Paradigm of Post-Modern Physics," presentation to the PHIL 858U course, Dept. of Philosophy, UMCP, Skinner Bldg., Sept. 16, 1997.
206. "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.
207. "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.
208. "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.
209. "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.
210. "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.
211. "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.
212. "Challenges for a Minority Scientist", address to the College Park Scholars Program in Science, Technology and Science, Apr. 5, 1996, Cumberland Hall, UMCP.
213. "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).
214. "What is Science?", presentations at the Oakland Terrace Elementary School, Apr. 27, 1995, Silver Springs, MD.
215. "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.
216. "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.
217. "What One Theoretical Physicist Thinks About Diversity and Excellence", address at the Frick Fine Arts Center, Univ. of Pittsburgh, Mar. 16, 1995, Pittsburgh, PA.

218. "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.
219. "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.
220. "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.
221. "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.
222. "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.
223. "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.
224. "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.
225. "Einstein, Shockley and Physics", keynote address at the National Conference of Black Physics Students meeting held at Stanford University, Feb. 14, 1992 Stanford, CA.
226. "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.
227. "Two Models for Successful Minority Graduate Programs in Physics", address to faculty, administrators and the office of the Dean of the Graduate School of UCLA, Nov. 16, 1990, Los Angeles, CA.
228. "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.
229. "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.
230. "Symmetry: The Balance of Nature", Invited talk at the AAPT meeting, June 23, 1988 Cornell University, Ithaca, NY.

231. "Superstrings" Invited talk at the University of Maryland department of physics open house (Super Physics Day) June 19, 1987, UMCP.
232. "A Unifying View of Our World", Public lecture June 12, 1986 delivered at Univ. of Calif. at Davis, Davis, CA.
233. "Perspectives of a Young Black Physicist", invited lecture at the Professional Development Program delivered March 31, 1984 at the University of Calif., Berkeley, CA.

## **Appendix G: Media Appearances, Citations & Quotes**

Livestream interview with Stephen Wolfram as part of The Wolfram Physics Project. 4 May 2020.  
<https://www.youtube.com/watch?v=go9XxI1Igsk&list=PLxn-kpJHbPx3NLp4dlriOVAk7GRQ8byVb&index=21&t=0s>

Interview with Dr. Johanna Fernandez on her radio spot WBAI Morning Show in NYC. Baruch College, CUNY. 22 January 2020. (no link available)

Interview w/Lex Fridman, as part of his radio series of conversations with leaders in science, technology, philosophy and public life, MIT, Cambridge, MA, 30 October 2019.  
<https://www.youtube.com/watch?v=IUHkhB366tE>

Pre-recorded interview w/BBC World News America, DC Studio, Washington, DC, 21 October 2019. (no link available)

Commencement address to the 2019 Class of the Illinois Mathematics and Science Academy (IMSA), Northern Illinois University, DeKalb, IL, 1 June 2019.  
[https://www.youtube.com/watch?v=D\\_JbgEyBXD8](https://www.youtube.com/watch?v=D_JbgEyBXD8)

Featured in the 23 May 2019 episode of NASA's Unexplained Files: Discovery Science on the Science Channel of Discovery.com. (link currently unavailable)

Featured in the 10 March 2019 episode of "Einstein and Hawking: Unlocking the Universe" on the Science Channel of Discovery.com.  
<https://corporate.discovery.com/discovery-newsroom/science-channel-goes-inside-the-minds-of-geniuses-for-two-hour-special-einstein-and-hawking-unlocking-the-universe/>

Featured in the 10 Oct 2018 Episode of "The Mystery of our Mathematical Universe"/The Nour Foundation, Conversations on the Nature of Reality  
<https://www.youtube.com/watch?v=M2YvRWZCmo0&feature=youtu.be>

Interview with Walter Isaacson, Amanpour & Co., PBS, New York, New York, 18 Nov 2019.  
<https://www.pbssocal.org/programs/amanpour-co/prof-s-james-gates-how-scientists-proved-einstein-right-hxin/>

BBC World News America Interview with Leonard Lopate at Large in their DC studio, 21 Oct 2019.

Podcast Interview w/John Martellaro; The first half of the show is about the guest's career: early life, inspirations, passions, mentors, challenges, key events. In the second half, explain the latest

developments and his work in supersymmetry, supergravity, and superstring theory. Skype interview, 9 July 2019.

Commencement address to the 2019 Class of the Illinois Mathematics and Science Academy (IMSA), Northern Illinois University, DeKalb, IL, 1 June 2019.  
[https://www.youtube.com/watch?v=D\\_JbgEyBXD8](https://www.youtube.com/watch?v=D_JbgEyBXD8)

Featured in the 23 May 2019 episode of NASA's Unexplained Files: Discovery Science on the Science Channel of Discovery.com. (link currently unavailable)

Featured in the 10 March 2019 episode of "Einstein and Hawking: Unlocking the Universe" on the Science Channel of Discovery.com.  
<https://corporate.discovery.com/discovery-newsroom/science-channel-goes-inside-the-minds-of-geniuses-for-two-hour-special-einstein-and-hawking-unlocking-the-universe/>

Featured in the 10 Oct 2018 Episode of "The Mystery of our Mathematical Universe"/The Nour Foundation, Conversations on the Nature of Reality  
<https://www.youtube.com/watch?v=M2YvRWZCmo0&feature=youtu.be>

Contributed to Magic Numbers: Hannah Fry's Mysterious World of Maths (TV Mini-Series) Episode 1. Aired 10 Oct 2018. BBC 4 Production. (I do not believe this is currently available)  
<https://www.bbc.co.uk/programmes/b0bn6wtp>

Present Award to Dr. Shirley Jackson @ Capstone Gala held at MIT, Cambridge, MA, 2 Nov 2018.

Expert commentator on "Mysterious World of Maths" Series, Prog. #1 "Numbers as Gods" Series host: Dr. Hannah Frye, BBC 4, U.K., 10 Oct 2018.

Induction into the OCPS Hall of Fame, Orlando, FL, 1 Apr 2018. Expert commentator on "Mysterious World of Maths" Series, Prog. #1 "Numbers as Gods", Series host: Dr. Hannah Frye, BBC 4, U.K., 10 Oct 2018. <https://www.bbc.co.uk/programmes/b0bn6wtp>

Featured in the 10 Oct 2018 Episode of "The Mystery of our Mathematical Universe"/The Nour Foundation, Conversations on the Nature of Reality.  
<https://www.youtube.com/watch?v=M2YvRWZCmo0&feature=youtu.be>

Featured in the 23 May 2019 episode of NASA's Unexplained Files: Discovery Science on the Science Channel of Discovery.com. (link currently unavailable)

Induction into the OCPS Hall of Fame, Orlando, FL, 1 Apr 2018.

Critical review of the movie Black Panther and it's possible affect. Brown University at MacMillan, 22 Mar 2018.

Interview with Canadian Public Radio, on Brown Campus, re Stephen Hawking, 15 Mar 2018.

Interview at BBC-America, Washington, DC, re Stephen Hawking, 14 Mar 2018.



Featured in the 10 March 2019 episode of "Einstein and Hawking: Unlocking the Universe" on the Science Channel of Discovery.com.

<https://corporate.discovery.com/discovery-newsroom/science-channel-goes-inside-the-minds-of-geniuses-for-two-hour-special-einstein-and-hawking-unlocking-the-universe/>

Video production in Cambridge for Gustavus Adolphus, 16 Nov 2017.

Interview with Sarah Svoboda, BBC North America, Washington, DC studio, 16 Oct 2017.

Interview with BBC America, New York City, NY, 14 Jun 2017.

Release Event at the National Press Club for a publication tentatively titled, "Inspiring the STEM Generation: Preparing Learners Everywhere to Innovate and Succeed", National Press Club, Washington, DC, 1 Mar 2017.

Presentation of the Physical Sciences award to Smithsonian American Ingenuity Award winners, Smithsonian American Art Museum, Washington, DC, 8 Dec 2016.

Facebook Live with the Washington Post; "We could create an alternate universe with a computer simulation", Washington, DC, 25 Aug 2016.

Filming session at Dartmouth with the BBC Horizon series crew, Director, Serena Davis, 4-5 Jun 2016.

Interview with BBC America News, DC office, "China's Daya Neutrino Detector," journalist Katty Kay, 25 May 2016.

Filming for Carnegie Institution for Science Aspen/Carnegie/NOVA Event, In celebration of the 100th anniversary of Einstein's discovery of General Relativity, 23 Nov 2015.

Participate in filming of a TurboTax Commercial in New York/New Jersey, 19-21 Oct 2015.

Interview with CBC Ideas at Perimeter Institute Visit for Convergence Conference on what is and what is not observable and how that affects our reality, 22 Jun 2015.

Participate in a commercial filmed on campus for the University of Maryland by the University of Maryland, 17 & 18 Aug 2015.

Participation in BBC/NOVA General Relativity Centennial Documentary Film Production by Windfall Films, 6 Apr 2015.

Participation in the filming of Committee Films production of Einstein's Brain for the H2 Network, Twin Cities, MN, 27 Oct 2014.

Filming at the College Park MMA for an episode of Through the Wormhole with Morgan Freeman, 10 Sep 2014.

Radio Interview w/Jeff Goodes; Host of Tapestry Show (Science and Spirituality based show) at CBC Studio, Vancouver, 26 May 2014.

Filming of Verizon Commercial on Long Island, NY, 4-5 May 2014.

TedX Presentation at the Marriott on campus. Presentation Title: TRUTH vs. ACCURACY: The Difference Below Faith-Based and Evidence-Based Ways of Knowing, 3 May 2014.

Interview with Jamal Watson for Diversity in Education magazine, regarding your background, 12 Mar 2014.

Interview with Michelle Chavez, WNEW, a local radio station. She spoke with you about your research and recent nominations, 6 Mar 2014.

Huffington Post Interview conducted by Claire Walla re the Higgs Boson, 28 Feb 2014.

"The Science Behind the Science Behind the News", an attempt to demystify basic science in a variety of disciplines, NPR Interview for Smithsonian Program, 7 Feb 2014.

Interview with Angela Rae at District Cable TV, 21 Jan 2014.

Interview with Krista Tippett at National Public Radio Studios in Washington, DC, 12 Dec 2013.

The History Makers Interview, History Channel, MCFP Conference Room, 30 August 2012.

History Channel Interview at Creative Lofts, Brooklyn; History Channel, 23 March 2012.

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>

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>

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/>

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>

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>

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.

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

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

UMCP Diamondback & Blog

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

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

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.

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

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.

In the period of winter 2008, Prof. Gates appeared in a regularly broadcasted Science Channel commercial.

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

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.

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>

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>

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

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

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.

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.

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

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

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

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.

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

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.

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

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

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

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

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 "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.

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

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

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

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

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

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

Announcement for public lecture described in article, "Einstein Was Getting Warm," The Subiaco Post, Perth, Australia, July 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 "1370 Connection" hosted by Bob Smith on NPR station WXXI 1370 AM, Rochester, NY, May 7, 2003.

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.

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.

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.

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 Invest in the Sciences," Die Burger (in Afrikaans) Cape Town, South Africa, Feb. 21, 2002.

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.

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

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

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

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

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

"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.

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

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

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

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 programs held on Jan. 12, 1998.

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.

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

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

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.

"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.

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.

## **Appendix H: Audio/Visual Presentations on Web**

NOTE: 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.

Commencement address to the 2019 Class of the Illinois Mathematics and Science Academy (IMSA), Northern Illinois University, DeKalb, IL, 1 June 2019.

[https://www.youtube.com/watch?v=D\\_JbgEyBXD8](https://www.youtube.com/watch?v=D_JbgEyBXD8)

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

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

<http://speakingoffaith.publicradio.org/programs/einsteinethics/unheardcuts.shtml>

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

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

<http://www.pbs.org/kcet/wiredscience/video/185-jamesgatesextendedinterview.html>

<http://www.youtube.com/watch?v=sZL7PiYgo8&feature=related>

<http://www.youtube.com/watch?v=NwI0Os4moWg>

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

## **Appendix H: Other Websites**

<http://sciencecareers.sciencemag.org/career-development/ssue/articles/3430/we-re-doing-just-fine>

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

<http://www.mona.uwi.edu/government/cct/conferences/phil-assoc.html>

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

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

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

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

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

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

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

<http://www.wyp-ptm.org>

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

<http://www.physics.uiowa.edu/lecture-series/lecture-series-details.html>

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[www.nasa.gov/centers/glenn/pdf/114551main-af-may05.pdf+physics+nasa+glenn+peet+duff+%22james+gates%22&hl=en&start=1](http://www.nasa.gov/centers/glenn/pdf/114551main-af-may05.pdf+physics+nasa+glenn+peet+duff+%22james+gates%22&hl=en&start=1)

<http://66.102.7.104/search?q=cache:9TyfrpZRI14J:>

<http://cuyahogalibrary.org/Businesscontacts/CMNH/explorer-series-superstring.html>

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<http://www.ncat.edu/remcnair/schedule-of-events.html>

<http://www.aaas.org/meetings/Annual-Meeting/02-PE/PE-01-PlenLec.shtml>



<http://www.rhodes.edu/Calendars/SylvesterJamesGates.cfm?RenderForPrint=1>  
<http://www.gustavus.edu/events/nobel/2005/>

<http://www.gomemphis.com/mca/centralcityappeal/article/0,1426,MCA156982608897,00.html>

<http://www.gomemphis.com/mca/localnews/article/0,1426,MCA4372613028,00.html>

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<http://www.blackengineer.com/artman/publish/article-169.shtml>

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

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

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

<http://www.deltasee.org/radio/radio-106-110.htm>

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

<http://superstringtheory.com/people.html>

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

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

<http://insti.physics.sunysb.edu/siegel/quo.html>

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

<http://www.cmps.umd.edu/johntoll.htm>

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

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

<http://www.math.buffalo.edu/mad/physics/gatessylvester.html>

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

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

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

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

(requires Real Player)

<http://www.loc.gov/rr/scitech/events/gates.html>

(requires Real Player)

<http://www.loc.gov/loc/cyberlc/>

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

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

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

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

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

<http://www.q2cfestival.com/play.php?lecture-id=7737>

<http://www.youtube.com/watch?v=ZxI9a6SPaMc&feature=related>

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

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

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

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

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

<http://sciencecareers.sciencemag.org/career-development/issue/articles/3430/we-re-doing-just-fine>

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

<http://www.mona.uwi.edu/government/cct/conferences/phil-assoc.htm>

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

<http://www.physics.orst.edu/PhysicsWeb-2001/Seminars/Yunker-Lecture/Archives-Yunker-Lecture/yunker-lecture-2005.html>

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

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

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

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

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

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

<http://www.wyp-ptm.org>

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

<http://www.physics.uiowa.edu/lecture-series/lecture-series-details.html>

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

[www.nasa.gov/centers/glenn/pdf/114551main-af-may05.pdf+physics+nasa+glenn+peet+duff+%22james+gates%22&hl=en&start=1](http://www.nasa.gov/centers/glenn/pdf/114551main-af-may05.pdf+physics+nasa+glenn+peet+duff+%22james+gates%22&hl=en&start=1)

<http://66.102.7.104/search?q=cache:9TyfrpZRI14J:>

<http://cuyahogalibrary.org/Businesscontacts/CMNH/explorer-series-superstring.htm>

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<http://qd.typepad.com/5/2005/01/sylvester-james.html>

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

<http://www.ncat.edu/remcnair/schedule-of-events.html>

<http://www.aaas.org/meetings/Annual-Meeting/02-PE/PE-01-PlenLec.shtml>

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<http://www.gomemphis.com/mca/centralcityappeal/article/0,1426,MCA156982608897,00.html>

<http://www.gomemphis.com/mca/localnews/article/0,1426,MCA4372613028,00.html>

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

<http://www.blackengineer.com/artman/publish/article-169.shtml>

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

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

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

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

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

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

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

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

<http://www.apscenttalks.org/presmasterpage.cfm?nameID=129>  
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<http://pubs.acs.org/hotartcl/cenear/980720/perc.html>

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

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

<http://superstringtheory.com/people.html>

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[http://www.cmps.umd.edu/john\\_toll.htm](http://www.cmps.umd.edu/john_toll.htm)

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

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

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

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

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

<http://www.loc.gov/loc/cyberlc/>

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

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

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

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

## **Appendix I: Fellowships, Awards and Honors**

In July 2018 Prof. Gates was elected to the Presidential Line of the American Physical Society (APS).

Inducted into the Orange County Public Schools Hall of Fame, Orlando, Florida, on May 5, 2018.

Recipient of the 2014 Scientist of the Year Award from the Harvard Foundation.

On November 16, 2013, Prof. Gates was awarded the Mendel Medal by Villanova University "in recognition of his influential work in supersymmetry, supergravity and string theory, as well as his advocacy for science and science education in the United States and abroad."

In 2013, he was elected to the National Academy of Sciences, becoming the first African-American physicist so recognized in its 150-year history.

In 2013, President Obama awarded Prof. Gates the National Medal of Science, the highest recognition given by the U.S. to scientists, with the citation, "For his contribution to the mathematics of supersymmetry in particle, field, and string theories and his extraordinary efforts to engage the public on the beauty and wonder of fundamental physics."

In 2012, he was named a University System of Maryland Regents Professor, only the sixth person to be so recognized since 1992.

Recipient of "2012 Outstanding Community Service Award", KSEA UKC 2012, 11 Aug 2012.

Presidential Awards for Excellence in Mathematics and Science Teaching (PAEMST), White House; EEOB; 29 Jun 2012.

Member, American Academy of Arts & Science, (inducted in Oct 2011).

Distinguished 2008 Goldman Lecture, University of Central Florida, 17 Apr 2008.

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.

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

Presentation to the Minnesota Association of American Physics Teachers, Bethany Lutheran, Mankato, MN Apr 28, 2007.

Presentation of the Robert H. Karplus Lecture "Can String Theory Be an Educational Force Multiplier?" to the annual meeting of the National Science Teachers Association, America's Center Conference Facility, St. Louis, MO, Mar 31, 2007.

Recipient of the Public Understanding of Science & Technology Award, American Association for the Advancement of Science, Feb 14, 2007.

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 Key to the City" of Orlando and a mayoral proclamation declaring April 22, 2005 as "Sylvester James Gates, Jr. Day," April 22, 2005.

Recipient, 2004 University of Maryland Regents Award for Mentoring, March 1, 2004.

Fellow of the American Association for the Advancement of Science, November 1, 2003.

Recipient, 2003 Klopsteg Award, American Association of Physics Teachers, Aug. 5, 2003.

Recipient, Faculty Minority Achievement Award, President's Commission on Ethnic Minority Issues, University of Maryland, May. 14, 2003.

Distinguished Black Marylander Award, Towson University, Feb. 2003.

Distinguished Scholar-Teacher, Univ. of Maryland, 2002 - 2003.

Woodrow Wilson Teacher-as-Scholar Fellow, Univ. of Maryland, 2002 - 2003.

Inaugural Delmos Jones Visiting Scholar, City University of New York, New York, NY, April 3 - 5, 2002.

Fellow of the Stellenbosch Institute for Advanced Study (STIAS), Stellenbosch, South Africa, Feb. 2002.

Member, Board of Director QEM Network, Jan., 2000, Washington, DC.

College Science Teacher of the Year, Washington Academy of Sciences, May 20, 1999.

"Giants of Science" Award, QEM Network, Feb. 1999, Washington, DC.

John S. Toll Professor of Physics, Appointed July 1, 1998.

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).

M. L. King Leadership Award, M.I.T., February 6, 1997.

General Councilor, American Physical Society, 1997-2001.

Co-recipient of the University of Maryland's Celebrating Teachers Program's Outstanding Teacher Award (Physics), May 15, 1996.

Co-recipient of the University of Maryland's Presidential Commission on Ethnic Minority Issue's Outstanding Minority Faculty Award, May 8, 1996.

Fellow of the American Physical Society, Division of Particles and Fields, April 20, 1995.

President, National Society of Black Physicists, 1994 - 1996.

First Recipient of the American Physical Society Visiting Minority Lectureship Award (Bouchet Prize), April 21, 1994.

1993 National Technical Achiever of the Year and 1993 Physicist of the Year, National Technical Association, Sept. 11, 1993.

21st Century Initiative Award, Howard University, 1992. Charter Fellow, National Society of Black Physicists, 1992.

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.

National Science Foundation Postdoctoral Fellowship, 1981-1982.

Teaching Award from the Office of Minority Education, M.I.T., 1981.

Graduate Fellowship from National Fellowship Fund, sponsored by the Ford Foundation, 1973-1977.

National Merit Scholarship sponsored by General Dynamics Corporation. 1969-1973.

William L. Stewart, Jr. Service Award, M.I.T., May 10, 1973.

## **Appendix J: Service**

### **(a.) Professional**

In March, 2020, Prof. Gates was elected to the Board of Trustees of Mathematical Sciences Research Institute (MSRI), Berkeley, CA.



Member, American Bar Association Steering Committee for the Annual Prescription For Criminal Justice And Forensic Science (2019-present)

Co-Director, Brown University Presidential Scholars (2017-2018; resigned 2018)

Member, National Academy of Sciences Council (August 2018 to present)

Member, NAS Council Com. on Budget and Internal Affairs (Aug. 2018 to present)

Member, NAS Council Com. on Membership Affairs (August 2018 to present)

American Institute of Physics (AIP) TEAM\_UP (Diversity Task Force) (2017-present).

The Forensic Science Standards Board (FSSB) serves as the Organization of Scientific Area Committees (OSAC) governing board. (2016-2017; resigned 2017).

Member, National Academy of Sciences Committee on Science and Literacy (2015-2017)

Member, Public Face of Science Steering Committee (2015-present)

Member, Transforming Post-Secondary Education in Mathematics (TPSE Math) (2015-present)

Member, Board of Governors (2015-present)

Member, Am. Assoc. for the Advancement of Science (AAAS)

Member, Board of Directors (2015-present)

Member, SciLine Advisory Board (2017-present)

Member, American Physical Society (APS) 1999-present

Elected to the American Physical Society Presidential line in July 2018. (2019-2023)

Member, American Philosophical Society (2013-present)

Member, American Academy of Arts & Sciences (AMACAD) (2013-present)

Appointed advisor to KSEA President, Hosin "David" Lee, Nov 2011- June 2012.

Member, AAU Undergraduate STEM Education Initiative Technical Advisory Committee Member (2011-2017).

Member, National Association of State Boards of Education, 'Structure of Schools Learning Community' Working Group, (2010-2011).

Member, Fermi Research Alliance, Board of Directors, (2010-2014).

Member, (U.S.) Presidential Council of Advisors on Science & Technology, Office of Science & Technology Policy, (PCAST) White House. (2009-2016).

Member, Maryland State Board of Education, Annapolis, MD, (2009-2014).

Vice-President, (2012-2014; resigned 2014).

Member, DoE Fermi Prize Selection Recommendation Panel, Forrestal Bldg, Washington, DC, 2008-2010. (2008-chairperson).

Member, Board of Trustees of the Society for Science & the Public (formerly the Science Service), (2007-2013).

Member, System-wide Change for All Learners and Educators (SCALE) National Advisory Board, an NSF-sponsored educational reform project administered by the University of Wisconsin-Madison, (2004-2006).

Member, LIGO Director's Physics Advisory Committee, (Nov. 18, 2006-2009).

Member, DoE Fermi Prize Selection Recommendation Panel, Forrestal Bldg, Washington, DC, Nov. 18, 2005.

Member, Site Visit Team of the National Task Force on Undergraduate Physics to Yale Univ., Yale Univ., New Haven, CN, Nov. 12, 2004.

"Report on Opportunities to Support African Mathematical Development," Presentation to the National Committee on Mathematics, NAS Building, Washington DC, Apr 17, 2004.

Member, International Panel of the "Shaping the Future of Physics in South Africa" assessment of national physics infrastructure and recommendation 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.

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, Advisory Committee for GPRA Performance Assessment of National Science Foundation, (June 24-26, 2003).

Member, National Task Force on Graduate Physics Education, (2003 – 2005).

Member, Advisory committee for the Special Program in Theoretical Physics, Stellenbosch Institute for Advanced Studies (STIAS), Stellenbosch, South Africa, Mar. (2003 – 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, United States Linear Collider Steering Group, Dec. (2002 – present).

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, AAAS Committee On Opportunities in Science, (2002 – 2004).

Member, Selection Comm. for the AAAS Sci. Journ. Award, AAAS Building, Wash., DC, Sept. 12, 2002.

Member, National Task Force on Undergraduate Physics, (Nov. 2000 – 2005).

Member, Review Committee for the Argonne National Laboratory Theory Group, Argonne National Laboratory, Argonne, IL, (May 31 - June 1, 2002).

Patron, African Institute of Mathematical Sciences, Cape Town, South Africa, (Feb., 2002 – present).

Fellow, African Science Institute, Oakland, CA, Nov. 10, 2001.

Member, LIGO Operations and Scientific Research Sub-Panel and NSF Review Committee, LIGO Hanford Observatory, Hanford, WA, Feb. 26- Mar. 1, 2001.

Member, NSF Directorate of Mathematical and Physical Sciences Advisory Board, October, 2000 - September, 2003.

Member, Institute for Theoretical Physics, UCSB - Advisory Board, September, 2000 - August, 2003.

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, NSF Site Review of the Institute for Theoretical Physics at the Univ. of Calif. Santa Barbara, Jan. 23-25, 2000.

Quality Education for Minorities (QEM) Network, Member of the Board of Directors, January, 2000.

Member of the American Physical Society, Committee on Minorities, 1999- 2001.

Consultant to faculty physics search committee, Virginia Tech, Blacksburg, VA, Oct. 5, 1999 - May 1, 2000.

Participant, NSF Summit Meeting: Promoting National Leadership in Science and Engineering, Rice University, Oct.19, 1999.

Member, External Review Committee of Department of Physics and Astronomy, Univ. of South Carolina, Apr. 22-23, 1999.

Scientific consultant to produce 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>

American Physical Society, Executive Committee Member, 1998-2000.

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.

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, Search Committee for Director of the Fermi National Accelerator Laboratory, Mar. - Oct., 1998.

Member, Physics Education Program Initiation Mtg., National Research Council, May 13, 1997.

American Physical Society, Executive Board Member, 1997-2000.

NSF Physics NYI Panel (member), Feb. 8, 1995.

Member, High Energy Physics Advisory Panel (HEPAP), Department of Energy, 1994-1997.

Member, Committee of Visitors for the Physics Division of the Directorate of Mathematical and Physical Sciences of the National Science Foundation, July 1994.

Consultant, Elementary Particle Program of the Physics Division of the Directorate of Mathematical and Physical Sciences of the National Science Foundation, June, 1994.

Member, Naval Studies Board, Center for Naval Analysis, June 4 - 9, 1994.

[http://bob.nap.edu/readingroom/books/regional\\_conflict/#board](http://bob.nap.edu/readingroom/books/regional_conflict/#board)  
<http://books.nap.edu/books/NI000140/html/R1.html>

Member of the American Physical Society, Committee on Minorities, 1993 - 1996.

Member, Meeting on The National Forum on Science & Technology Goals, Harvard University, December 10, 1993.

Member, Physics Advisory Committee for the Nuclear and High Energy Particle Center at Hampton University, 1992 - 1997.

NSF Physics REU Site Panel (chair), Nov.18, 1993.

Consultant, Educational Testing Service (ETS), GRE Quantitative Reasoning Examination, 1993 - 1994.

NSF Physics REU Site Panel, Nov.13, 1992.

Member, Advisory Committee for the Particle Detector Research Center at Prairie View A.& M. University, April 1, 1992 - 1993.

Consultant, Institute for Defense Analysis, 1992-1993.

Consultant, Educational Testing Service (ETS), GRE Physics Examination, 1991 - 1992.

Consultant, Time-Life Book Series, Voyage Through the Universe, "Workings of the Universe" (1991) technical advisor for chapter on superstring theory.

Technical Executive Officer, National Society of Black Physicists, 1990 - 1993.

Hampton University Physics Department Visiting Evaluation Committee, Chairman, 1989 - 1992.

NSF Fellowships Panel Evaluator, Jan. 1990, Jan. 1991.

Member, National Science Foundation Advisory Committee for Physics, Oct. 1, 1988 - Oct. 15, 1992.

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.

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.

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.

### ***Conference Organization Positions:***

International advisory committee member for the International Conference on "Quantum Field Theory & Gravity" in Tomsk, Russia, July, 2007

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.

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 24-29, 2003.

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 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 "Quantum Field Theory & Gravity" in Tomsk, Russia, July 28- Aug. 2, 1997.

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.

Committee member, local organization committee for the "Supersymmetry '96 Conference", at Univ. of MD., May 29 - June 1, 1996.

Steering committee member for the Sigma Xi 1995 Forum, 1994-1995.

Steering committee member for the Topical Conference, Recruitment and Retention of Minorities in Physics Nov. 5-7, 1993 sponsored by the AAS/AAPT.

International advisory committee member for the Summer School on Quantum Field Theories, held at Tomsk, Siberia, Russia, August 1994.

International advisory committee member for the String '90 workshop held at Texas A.& M. University at College Station, TX, March 12 - 17, 1990.

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 '89 workshop held at Texas A.& M. University at College Station, TX, March 13 - 17, 1989.

Co-chairman, local organization committee for the "Strings '88 Workshop", at Univ. of MD., May 24 - 28, 1988.

Committee member, local organization committee for the "Workshop on Superstrings, Cosmology, and Composite structures", at Univ. of MD., March 11 - 18, 1987.

## **(b.) University, College & Department**

### *I. Brown University, Academic Years 2017-Present:*

Member of Task Force on Climate Change and Business and Investment Practices (2017-2018)  
Co-Director Presidential Scholars Program (2017-2018)

### *I. University of Maryland, Academic Years 1994-2017*

Member of University Honors Selection Comm. (2007-2008)  
Member of AMSC Graduate Comm. (2006-2008)

Member of Athletic Council (2007-2008)  
Chair-Search Comm. for Dean of College of Education (2007-2008)  
Member of Search Comm. for Exec. Dir. of UMCP Senate (2007-2008)  
Member of Search Math. Dept. Chair (2006-2007)  
Past-Chair Faculty Senate (2007-2008)  
Chair University Senate (2006-2007)  
Chair-Elect University Senate (2005-2006)  
"Maryland Day" faculty presenter (Apr 24, 2004)  
Fac. Senate 'Hybrid' Comm. member (2004)  
Maryland 150 Anniversary Planning Comm. member (2004)  
Univ. Res. Council Adv. Comm. (member) 2004-2005  
Program, Curr. Changes Comm. (chair) 2004-2005  
Departmental Priority Comm. 2004  
Member, Executive Comm., of the University Senate (2004-2007)  
Member, University Senate. (2002-2007)  
Phys. Dept. Fac. Salary Comm. (2000)  
UMCP Strategic Planning Comm. (1999-2000)  
Departmental Chair Search Comm. (1998)  
CMPS Dean Search Comm. (1998)  
CMPS College APT Comm. (chair, 1997-1998)  
CMPS College APT Comm. (1996-1997)  
Departmental Grad. Lab. Review Comm. (chair)  
Departmental APT Comm. (chair) 1994 - 1996  
UMCP Banneker Scholars Selection Comm. Departmental Education Review Comm.

### *I. Academic Years 1989-2017*

UMCP Endowment Comm. Departmental Education Review Com  
UMCP Comm. on Excellence & Diversity, Chairman UMCP Instructor/Lecturer Review Comm.  
UMCP Banneker Scholars Selection Comm. UMCP Black Scholars Fund Raising Comm.  
Undergrad. Stud. Adv. Comm. Grad. Stud. Adv. Comm.  
High Ener. Vax. Main. Comm. Dept. Fac. Salary Adv. Comm. Qualifying Exam Comm.  
Physics Council

### *I. Academic Years 1988-2017*

Undergrad. Stud. Adv. Comm. Grad. Stud. Adv. Comm.  
Dept. Fac. Salary Adv. Comm. Qualifying Exam Comm.  
High Ener. Vax. Main. Comm. College APT Comm.  
Physic Council

### *I. Academic Years 1987-2017*

Ph.D. thesis defense comm. member (J. Tuminaro) Apr 23, 2004  
High Ener. Vax. Main. Comm. (1988-1995)  
Chanc. Comm. on Eth. Min. Issues (1985-1988) Exec. Coun. Comm. (1985 -1987)  
MAPL Review Comm. (1986) Qualifying Comm. (1986)  
Extended Qualifying Exam Comm. College APT Comm. (1995-1997)

## **(c.) Community**

### *I. Brown University Academic Years 2017-Present:*

Panelist in Black Panther Symposium at MacMillan, Brown University, 22 Mar 2018.

"A Physicist's Mathematical Intuition Is Not Enough: A Strange Journey Thru Super Differential Equations Graph Theory, Coding Theory, Coxeter Groups to Algebraic Geometry" Math Dept Colloquium, Foxboro Auditorium, Brown Univ., 25 Oct 2017. This was part of a 4-lecture series given to the Math Dept of Brown Univ. during Oct-Nov 2017 by SJ Gates, Charles Doran, and Jordan Kostuik.

"Will Evolution and Information Theory Provide The Fundamentals Of Physics?" Provost Faculty Lecture Series, The Hope Club, Brown University, Providence, RI, 12 Oct 2017.

### *I. University of Maryland: Academic Year 1989-2017*

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.

West Morris Regional High School, "Understanding The Genius of Einstein" panel discussion and teacher professional development day, West Morris, NJ, 15 Feb 2010.

Math, Science & Technology Night presentation, Woodlin Elementary School 2 Feb 2010

St. Louis Science Center, St. Louis, MO, "What is Science?" 15 Jan 2010

Western Michigan Univ, Kalamazoo, MI, "Fun at the Frontiers of Physics Careers," 16 Feb 2009

Ithaca Montessori School, "Fun with Physics Science," 08 Feb 2009

Jones High School, Orlando, FL, "Science & Mathematics Careers," 12 Apr 2008

ATFSG (Advanced Theoretical Fundamental Scientific Group) presentation, Eleanor Roosevelt High School, Greenbelt, MD, 28 Apr 2008

ATFSG (Advanced Theoretical Fundamental Scientific Group) presentation, Blake High School, Silver Spring, MD, 08 Apr 2008

ATFSG (Advanced Theoretical Fundamental Scientific Group) presentation, Thomas Jefferson High School, Fairfax, VA, 015 Feb 2008

SPICE (Science Partnership In Collaborative Education) Centre, University of Western Australia, "Superstring Theory: The DNA of Reality," 28 Mar 2008

Menomonee Falls High School, Menomonee Falls, WI, 07 Mar 2008

Washington Mathematics, Science & Technology Charter School, Washington, DC, 01 Mar 2008



Web Montgomery County Public Schools Summer Institute presentation, UM/Rockville, Jun 27, 2007, page moderator, Davidson Institute for Talent Development Feb. 13 - 18, 2007

Highland Park High School, Houston, TX, 09 Mar 2006

Duval High School, "Physics First" presentation, Greenbelt, MD, Nov. 15, 2004.

St. Marks School "Science = Fun" presentation to grades 2-6 Feb. 13, 2004.

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)

E. Lawrence H. S. "A New Era in Physics: Superstrings" Chatsworth, CA, Mar. 21, 2002.

Troy H.S., "A Career in Science?" Presentation to biology class, (Apr. 20, 2001), Troy, NY

Thomas Jefferson H.S. Presentation to Student Body, Alexandria, VA (Feb. 13, 2000)

L.C. Jones H.S., "Who Owns the Magic of Science?" Presentation to the Science, Engineering, Communication, Mathematics Enrichment (SECME) program, Orlando, FL (Oct. 12, 1999)

Crossland H.S. Presentation for SECME Program, Temple Hills, MD (Feb. 15, 2000)

Suitland H.S. Presentation for Physics Class (Nov. 13, 1997)

Dunbar H.S., Washington, DC, Presentation (Sept. 16, 1997)

De Matha Catholic H.S., Hyattsville, MD, Presentation (Oct. 29, 1997)

Gwynn Park H.S., Brandywine, MD, Presentation (May 23, 1997)

University Park Elem., Science Fair Judge, Univ. Park, MD (Feb. 10, 1998)  
(Mar. 19, 1997)

Gwynn Park H.S. Science Fair Judge, Brandywine, MD (Feb. 23, 1998)  
(May 20, 1997)  
(Feb. 8, 1997)  
(Feb. 10, 1996)

Oakland Terrace Elementary School, Silver Springs, MD (Apr. 28, 1995)

Tubman Elementary School, Wash.,D.C. (Mar. 19, 1993)

Whitney Young Middle School, Detroit, MI (Oct. 1992)

Suitland H.S. Science Fair Judge (Mar.1991)

Suitland H.S. Presentation for Chemistry Class (Mar. 1991)

NAACP Science Fair Judge (Feb.1989)

## **Appendix K: Advising (Research directed)**

In 2018, for the first time, the Summer Student Theoretical Physics Research Session (SSTPRS) was hosted at Brown University. For the 20 years prior to 2018, SSTPRS was held on the campus of the University of Maryland.

Initially, as well as during the 20-year period, **Prof. Vincent G. J. Rodgers, University of Iowa**, has intermittently collaborated.

Listed below are individuals who participated as teaching assistants.

William Linch, III, Texas A&M University  
Mathew P. Calkins, University of Maryland  
Kory M. Stiffler, Indiana University Northwest  
Willie Merrell, Texas A&M University  
Kevin Iga, Pepperdine University  
Tristan Hubsch, Howard University  
Isaac Friend, University of Chicago  
Sze Ning "Hazel" Mak, Brown University  
Leopoldo Pando Zayas, University of Michigan  
Mary Kemp, John Hersey High School, Illinois  
Delilah Gates, Harvard University  
Stephen Randall, UC Berkeley  
Yangrui Hu, Brown University  
Konstantinos Koutrolikos, Brown University

### ***Students attending SSTPRS from 1999 to present:***

#### *Student's Name & Year(s) of Participation:*

(The HS designation next to the year indicates the student was a high school student when they participated that year.)

**Shane Weiner (2020); Aleksander Cianciaro (2020); Laurel McIntyre (2020); Gabe Yerger (2020); John Caporaletti (2020); Abdulrahman Alenazi (2020); Saul Hilsenrath (2020); Delina Levine (2020); Isaiah Hilsenrath (2020); Yu-Chin Chen (Gene) (2020); Daniel Bordwin (2020); Adam Dirican (2020); Zachary Kirk (2020); Frank Lau (2020); Leong Cheng (2020); Levi Poon (2020); Erik Imathiu-Jones (2020); Ismail Elmengad (2020); Abdalla Hableel (2020); Devin Bristow (2020); Luis Camargo-Carlos (2020); Anson Chen (2020).**

**John Ball (2019); Stellan Bechtold (2019); Kevin Braga (2019); Alexander Brown (2019); Alexander Einarsson (2019); Daniel Escalante (2019); Veritas Gassman (2019); Gabriel Hannon (2019); Lawrence Menefee (2019); Tyco Mera Evans (2019); Jorge Palacios (2019); Phillip Robles (2019); Cameron Sylber (2019); Jeffrey Wack (2019); Thomas Wade (2019); Sarah Weatherly (2019); Robert Whitlock (2019); Holly Wilson (2019).**

**Yu-Chin Chen (2018); Derrick Choi (2018); Nitzan Hirshberg (2018); Matthew Kirby (2018); Victoria Palmaccio (2018); Brock Peters (2018); Aravind Ramakrishan (2018); Shaina Rudman (2018); Angel Torres (2018); Benjamin Wade (2018); Andrew Witten (2018); James Yoe (2018); Yifan Yuan (2018); Peter Zhou (2018); Sarah Bawabe (2018); Mitchell Haeuser (2018); Colin Jackson (2018); Xiao Xiao (2018); Wimpee, Zachary (2017-2018); Zhang, JinJie (2017-2018).**

**Britt, Dylan (2017); Corbett, Jordan (2017); Chung, Matthew (2017); Cui, Guang (2017 HS); Isham, Jason (2017); Kang, Lucas (2017-2018); Libelo, Christopher (2017); Lin, Shuanpeng (2017); Sonam, Chimey (2017); Sullivan, Mahesh (2017).**

**Caldwell, Wes (2016); Diaz, Alejandro (2016); Guyton, Forrest (2016); Kessler, David (2016); Harmalkar, Siddhartha (2016); Lambert-Brown, Tamar (2016); Lay, Daniel (2016); Martirosova, Karina (2016); Meszaros, Victor (2016) Omokanwaye, Mayowa (2016); Rudman, Shaina (2016); Shin, Daniel (2016); Vershov, Anthony (2016); Yom, Aria (2016).**

**Grover, Tyler (2015); Mondal, Benedict (2015); Miller-Dickson, Miles (2015); Oshiro, Alexander (2015); Oskoui, Amir (2015); Ross, Ethan (2015); Regmi, Shirash (2015); Shetty, Rajath (2015).**

**Baer, Andrew (2014); Borak, Nathan (2014); Chukwu, Uchenna (2014); Friend, Isaac (2014 & 2016); McPeak, Brian (2014); Osjhiro, Alexander (2014); Simon, Gray (2014); Vartak, Sohan (2014).**

**Chukwu, Uchenna (2013); Gates, Delilah (2013 & 2014); Kang, Hoyoung (2013); McPeak, Brian (2013); Ridgway, Alec (2013).**

**Burghardt, Keith (2012); Randall, Stephen (2012); Raseic, Andrej (2012); Ridgway, Alec (2012); Rimlinger, Thomas (2012); Parker, James (2012).**

**Burghardt, Keith (2011); Rimlinger, Thomas (2011).**

**Fillingham, Sean (2010); Fink, Allison (2010); Ammar Husain (2010); Matthews, Nolan (2010); Rimlinger, Thomas (2010 HS); Mondragon, Matthew (2010); Polo-Sherk, Ruben (2010); Scher, Henry (2010); Wood, Austin (2010).**

**Cohen, Michael (2009); Cowan, Ethan (2009); Parker, James (2009); Morrison, Akin (2009 HS); Watts, John (2009).**

**Ackla, Anakizi (2008); Cohen, Michael (2008 HS); Gonzales, James (2008); Hallet, Jared (2008); Li, Daniel (2008); Kulikova, Masha (2008); MacGregor, Boanne (2008); Parker, James (2008 HS); Gonzales, James (2008 HS); Hallett, Jared (2008 HS); Polo-Sherk (2008); Daniel Li (2008 HS); Wassink, Luke (2008).**

**Maria Divoky (2006); Xiaolong Liu (2005 & 2006); Leo Rodriguez (2005 & 2006); Heather Bruch (2006); Henderson, David (2006 HS); Sannah Ziana (2006); Renee Harton (2006); Scott Kathrein (2006); Jonathon Samorajski (2006); William Stem (2006); Jay Delgado (2006); Samorajski, Jonathan (2006 HS); Advait Nagarkar (2006); Mary Kemp (2006).**

**Ibrahima Bah** (REU) (2005); **Jeffrey Hansen** (REU) (2005); **Nichole Kiefer**(2005); **Negron, Christopher** (2005 HS); **Osaro Harriott** (2005 & 2006); **Cris Negron** (2005); **Brislin Thomas** (2005); **Benjamin Dalgaard** (2005); **Nicholas Romano** (2005); **Quentin Collier** (2005, 2006); **Stephen Gliske** (2005).

**Matt Barr** (2004); **Alexandra Curtin** (2004); **Tim Dulaney** (2004); **Ninad Jog** (2004, 2005); **Erin Lynch** (2004); **Tencia Lee** (2004); **Stephen Colodner** (2004 & 2005); **Andrew Lytle** (2004); **Kaustabh Singh** (2004); **Lee, Tencia** (2004 HS); **McGady, David** (2004 HS).

**Jessica Till** (2003).

**Daniel Chapman** (2002); **Micah Hawkins** (2002 & 2004).

**Antonio Bovia** (2001); **Bjorg Larson** (2001)

**Dagny Kimberly** (2000); **Christina Zelano** (2000); **Joseph Phillips** (2001-2002).

**Takeshi Yasuda** (1999); **Carina Curto** (1999-2000).

***Below is a list of research papers created with student co-authors over the 20 years of the program.***

On the Ubiquity Of Electromagnetic-Duality Rotations in 4D,  $N = N = 1$  Holonomy Tensors for On-Shell 4D Supermultiplets, S. James Gates(Brown U.), Daniel Lay(Maryland U.), S.N. Hazel Mak(Brown U.), Brock Peters(Maryland U.), Aravind Ramakrishnan(Maryland U.) et al. (Jun 7, 2019) Published in: Int.J.Mod.Phys.A 35 (2020) 01, 2050008 • e-Print: 1906.02971 [hep-th]

Generating all 36,864 Four-Color Adinkras via Signed Permutations and Organizing into  $\ell$ - and  $\tilde{\ell}$ -Equivalence Classes, S. James Gates(Maryland U. and Brown U.), Kevin Iga(Pepperdine U.), Lucas Kang(Brown U.), Vadim Korotkikh(Maryland U.), Kory Stiffler(Northwest Missouri State U., Maryville) (Dec 21, 2017) Published in: Symmetry 11 (2019) 1, 120 • e-Print: 1712.07826 [hep-th]

Adinkras from ordered quartets of BC4 Coxeter group elements and regarding another Gadget's 1,358,954,496 matrix elements, S. James Gates, Lucas Kang (Brown U.), David S. Kessler (Massachusetts U., Amherst), Vadim Korotkikh (Maryland U.). - e-Print: arXiv:1802.02890 [hep-th], Feb. 5, 2018, Int.J.Mod.Phys. A33 (2018) no.12, 1850066. 21 pp.

Generating all 36,864 Four-Color Adinkras via Signed Permutations and Organizing into  $\ell$ - and  $\tilde{\ell}$ -Equivalence Classes, SJ Gates Jr, K Iga, L Kang, V Korotkikh, K Stiffler - arXiv preprint arXiv:1712.07826, Dec 21, 2017, 34 pp.

On the Four Dimensional Holonomy of the 4D,  $N = 1$  Complex Linear Supermultiplet, W Caldwell, A Diaz, I Friend, SJ Gates Jr, S Harmalkar... - arXiv preprint arXiv:1702.05453, Int.J.Mod.Phys. A33 (2018) no.12, 1850072, PP-017-020, HET-1711 Feb 17, 2017. 29 pp.

On the Four Dimensional Holonomy of the 4D,  $\mathcal{N} = 1$  Complex Linear Supermultiplet, W Caldwell, A Diaz, I Friend, SJ Gates Jr, S Harmalkar... - arXiv preprint arXiv:1702.05453, Int.J.Mod.Phys. A33 (2018) no.12, 1850072, PP-017-020, HET-1711 Feb 17, 2017. 29 pp.

Adinkras from ordered quartets of BC4 Coxeter group elements and regarding 1,358,954,496 matrix elements of the Gadget, S. James Gates, Jr. (Maryland U. & Brown U.), Forrest Guyton (Rensselaer Polytech. Inst.), Siddhartha Harmalkar, David S. Kessler, Vadim Korotkikh, Victor A. Meszaros (Maryland U.). - e-Print: arXiv:1701.08102 [hep-th], JHEP 1706 (2017) 006, Jan 1, 2017. 58 pp.

A proposal on culling & filtering a coxeter group for 4D,  $\mathcal{N} = 1$  spacetime SUSY representations: revised, D.E.A. Gates (Jefferson Lab), S. James Gates (Maryland U. & Dartmouth Coll.), Kory Stiffler (Indiana U. Northwest). - e-Print: arXiv:1601.00725 [hep-th], JHEP 1608 (2016) 076, Jan 4, 2016. 11 pp.

A Lorentz covariant holonomy-induced "gadget" from minimal off-shell 4D,  $\mathcal{N}=1$  supermultiplets, S.James Gates, Tyler Grover, Miles David Miller-Dickson, Benedict A. Mondal, Amir Oskoui, Shirash Regmi (Maryland U.), Ethan Ross (Maryland U. & Alberta U.), Rajath Shetty (Maryland U.) - e-Print: arXiv:1508.07546 [hep-th], JHEP 1511 (2015) 113, Aug 30, 2015. 17 pp.

Think Different: Applying the Old Macintosh Mantra to the Computability of the SUSY Auxiliary Field Problem, Mathew Calkins, D.E.A. Gates, S.James Gates, William M. Golding (Maryland U.) - e-Print: arXiv:1502.04164 [hep-th], JHEP 1504 (2015) 056, Feb 13, 2015. 28 pp.

Is it possible to embed a 4D,  $\mathcal{N}=4$  supersymmetric vector multiplet within a completely off-shell adinkra hologram? Mathew Calkins, D.E.A. Gates, S.James Gates, Brian McPeak (Maryland U.), e-Print: arXiv:1402.5765 [hep-th], JHEP 1405 (2014) 057, Feb 24, 2014. 24 pp.

Reduction Redux of Adinkras, S. James Gates, Jr., Stephen Randall (Maryland U.), Kory Stiffler (Indiana U. Northwest), arXiv:1312.2000 [hep-th], Int.J.Mod.Phys. A29 (2014) no.13, 1450070, Dec 6, 2013. 15 pp.

4D,  $\mathcal{N}=1$  Supergravity Genomics, Isaac Chappell, S.James Gates, Jr., William D. Linch, James Parker, Stephen Randall, Alexander Ridgway (Maryland U.), Kory Stiffler (Maryland U. & Indiana U. Northwest), e-Print: arXiv:1212.3318 [hep-th], JHEP 1310 (2013) 004, Dec 2012, 52 pp.

Adinkra Isomorphisms and Seeing Shapes with Eigenvalues, K Burghardt, SJ Gates Jr - arXiv preprint arXiv:1212.2731, Dec 2012, 23 pp

The Real Anatomy of Complex Linear Superfields, S. J. Gates, Jr., J. Hallett, T. Hubsch, K. Stiffler, UMDEPP-12-003, arXiv:1202.4418 [hep-th], Int.J.Mod.Phys. A27 (2012) 1250143, Feb 2012, 21 pp.

SUSY Equation Topology, Zonohedra, and the Search for Alternate Off-Shell Adinkras, K. Burghardt, S. J. Gates, Jr., Jan 2012. 29pp., arXiv:1201.0307 [math.RT], Jan 2012, 29 pp.

4D,  $\mathcal{N} = 1$  Supersymmetry Genomics (II), S. J. Gates, Jr., J. Hallett, J. Parker, V.G. J. Rodgers, K. Stiffler, UMDEPP-11-019, arXiv:1112.2147 [hep-th], JHEP 1206 (2012) 071, Dec 2011, 40 pp.

A Detailed Investigation of First and Second Order Supersymmetries for Off-Shell  $N = 2$  and  $N = 4$  Supermultiplets, S. J. Gates, Jr., J. Parker, V. G. J. Rodgers, L. Rodriguez, K. Stiffler, UMDEPP-11-009, arXiv:1106.5475 [hep-th], Jun 2011, 46 pp.

4D,  $N = 1$  Supersymmetry Genomics (I), (with J. Gonzales, B. MacGregor, J. Parker, R. Polo-Sherk, V. G. J. Rodgers, L. Wassink), JHEP 0912 (2009) 008, arXiv:0902.3830 [hep-th], Feb 2009, 45 pp.

A Derivation of an Off-Shell  $N = (2,2)$  Supergravity Chiral Projection Operator, (with A. Morrison), J. Phys. A42 (2009) 442002, arXiv:0901.4165 [hep-th], J.Phys. A42 (2009) 442002, Jan 2009, 10 pp.

$D=2$   $N=(2,2)$  Semi Chiral Vector Multiplet, (with W. Merrell), JHEP (2007) 0710:035, arXiv:0705.3207 [hep-th], May 2007, 15 pp.

Chiral Supergravitons Interacting with a 0-Brane  $N$ -Extended NSR Super-Virasoro Group, (with A. Boviea, Dagny M. Kimberly, Bjørn A. Larson and V. G. J. Rodgers), Phys. Lett. B529 (2002) 222, (hep-th/0201094).

Superspace Geometrical Realization of the  $N$ -Extended Super Virasoro Algebra and its Dual, (with C. Curto and V.G.J. Rodgers), Phys. Lett. B480 (2000) 337, (hep-th/0002010).