

Bonita V. Saunders

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Education

PhD, Computational and Applied Mathematics, Old Dominion University, Norfolk, VA, 1985

MS, Mathematics, University of Virginia, Charlottesville, VA, 1979

BA, Mathematics, College of William and Mary, Williamsburg, VA, 1977

Cradock High School, Portsmouth, Virginia, valedictorian, 1973

Dissertation

Algebraic Grid Generation Using Tensor Product B-Splines

Advisor: Philip W. Smith

Research Interests

Visualization of Complex Functions Data

Numerical Software for Special Functions

Numerical Grid Generation

Numerical Solution of Partial Differential Equations

Current Employment

Leader, Mathematical Software Group, NIST Applied and Computational Mathematics Division, (ACMD), Information Technology Laboratory (ITL), 2022-present

Mathematician, NIST ACMD, ITL, 1989-2022

Current Projects

Project Leader, [DLMF Standard Reference Tables on Demand](http://dlmftables.uantwerpen.be/) (DLMF Tables).

<http://dlmftables.uantwerpen.be/>.

Visualization Editor/Board Member, [NIST Digital Library of Mathematical Functions](https://dlmf.nist.gov/) (DLMF).

<https://dlmf.nist.gov/>.

Previous Positions

Programmer Analyst, BDM Corporation, McLean, VA, 1985-1989

Graduate Student Research Fellow, NASA Langley Research Center, Hampton, VA, 1983-1985

Instructor, Department of Mathematics, Hampton University, Hampton, VA, 1980-1982

Instructor, Department of Mathematics, Norfolk State University, Norfolk, VA, 1979-1980

Selected Publications

- **B. V. Saunders** and **W. Hawkins**, Reflections on Dr. Genevieve M. Knight: 1939-2021, *MAA Focus*, Mathematical Association of America, Vol. 41, No.6, December 2021/January 2022, pp. 14-20.
- **B. V. Saunders**, Complex Variables, Mesh Generation, and 3D Web Graphics: Research and Technology Behind the Visualizations in the NIST Digital Library of Mathematical Functions. In *Proceedings of the Golden Anniversary Celebration of the National Association of Mathematicians*, AMS Contemporary Mathematics Series **759**, 2020, <https://doi.org/10.1090/conm/759/15272>, pp. 145-156.
- **B. Schneider**, **B. Miller**, **B. Saunders**, NIST's Digital Library of Mathematical Functions, *Physics Today* **71:2** (2018), 48-53. DOI: <https://doi.org/10.1063/PT.3.3846> .
- **B. Saunders**, Somebody Else's Dream. *SIAM News* 51:2 (2018), 5-6. See <https://sinews.siam.org/Details-Page/somebody-elses-dream> .
- **B. Saunders**, Plotting a Path from NASA Grids to NIST Graphics, *NIST Taking Measure: Just a Standard Blog*, April 27, 2017. See <https://www.nist.gov/blogs/taking-measure/plotting-path-nasa-grids-nist-graphics>.
- **H. Cohl**, **M. Schubotz**, **A. Youssef**, **A. Greiner-Petter**, **J. Gerhard**, **B. Saunders**, **M. McClain**, **J. Bang** and **K. Chen**, Semantic Preserving Bijective Mappings of Mathematical Formulae between Document Preparation Systems and Computer Algebra Systems, *Proceedings of Conference on Intelligent Computer Mathematics, Lecture Notes in Artificial Intelligence*, vol. 10383, Springer (2017), 115-131.
- **B. Saunders**, **B. Antonishek**, **Q. Wang**, **B. Miller**, Dynamic 3D Visualizations of Complex Function Surfaces Using X3DOM and WebGL, *Proceedings of the 20th International Conference on 3D Web Technology*, Crete, Greece, (Web3D 2015), ACM (2015), 219-225.
- **B. Saunders**, **Q. Wang**, **B. Antonishek**, Adaptive Composite B-Spline Grid Generation for Interactive 3D Visualizations, *Proceedings of MASCOT/ISGG 2012 International IMACS/ISGG and Biannual Conference of Grid Generation*, Las Palmas de Gran Canaria, Spain, *IMACS Series in Computational and Applied Mathematics*, vol. 18, IMACS (2014), 241-250.
- **H.S. Cohl**, **M.A. McClain**, **B.V. Saunders**, **M. Schubotz**, **J.C. Williams**, Digital Repository of Mathematical Formulae, *Proceedings of Conference on Intelligent Computer Mathematics, Lecture Notes in Artificial Intelligence*, vol. 8543, Springer (2014), 419-422.
- **Bonita Saunders** and **Qiming Wang**, Tensor Product B-Spline Mesh Generation for Accurate Surface Visualization in the NIST Digital Library of Mathematical Functions, Revised Selected Papers of the Seventh International Conference on Mathematical Methods for Curves and Surfaces (MMCS 2008), Tonsberg, Norway, June 26-July 1, 2008, *Lecture Notes in Computer Science*, vol. 5862, Springer (2010), 385-393.
- **Bonita Saunders** and **Qiming Wang**, Tensor Product Grid Generation for Complex Surface Visualizations in a Digital Library of Mathematical Functions, *Proceedings of 11th International Society for Grid Generation (ISGG) Conference*, Montreal, Canada, May 25-28, 2009.
- **Bonita Saunders** and **Qiming Wang**, From B-Spline Mesh Generation to Effective Visualizations for the NIST Digital Library of Mathematical Functions, *Curve and Surface Design: Avignon 2006* (P. Chenin et al., eds.), Nashboro Press, 2007.
- **Qiming Wang**, **Bonita Saunders**, and **Sandy Ressler**, Dissemination of Complex Function Data for the NIST Digital Library of Mathematical Functions, *Data Science Journal*, Volume 6, Supplement, March 11, 2007.
- **Bonita Saunders** and **Qiming Wang**, Boundary/Contour Fitted Grid Generation for Effective Visualizations in a Digital Library of Mathematical Functions, *Numerical Grid Generation in Computational Field Simulations* (P. Papadopoulos et al., eds.), ISGG, San Jose State University, San Jose, CA, June 12-15, 2005.
- **Qiming Wang** and **Bonita Saunders**, Web-Based 3D Visualization in a Digital Library of Mathematical Functions, *Proceedings of the Web3D 2005 Symposium*, University of Wales, Bangor, UK, March 29-April 1, 2005.

- **Bonita V. Saunders**, The Application of Numerical Grid Generation to Problems in Computational Fluid Dynamics, *Conference for African-American Researchers in the Mathematical Sciences: Volume III*, Contemporary Mathematics Series 275, AMS (2001), 95-106.
- **Bonita Saunders** and **Qiming Wang**, From 2D to 3D: Numerical Grid Generation and the Visualization of Complex Surfaces, in *Numerical Grid Generation in Computational Field Simulations* (B.K. Soni et al., eds.), ISGG, Whistler, British Columbia, Canada, September 2000.
- **Bonita Saunders** and **Qiming Wang**, Using Numerical Grid Generation to Facilitate 3D Visualization of Complicated Mathematical Functions, NISTIR 6413, National Institute of Standards and Technology, November 1999.
- **Daniel W. Lozier**, **Bruce R. Miller** and **Bonita V. Saunders**, Design of a Digital Mathematical Library for Science, Technology and Education, Proceedings of the IEEE Advances in Digital Libraries Conference, Baltimore, Maryland, May 1999.
- **Qiming Wang** and **Bonita Saunders**, Interactive 3D Visualization of Mathematical Functions Using VRML, NISTIR 6289, National Institute of Standards and Technology, February 1999.
- **Bonita V. Saunders**, A Boundary Fitted Grid Generation System for Interface Tracking, in *Numerical Grid Generation in Computational Field Simulations* (B.K. Soni et al., eds.), Mississippi State University, Mississippi, 1996.
- **Bonita V. Saunders**, A Boundary Conforming Grid Generation System for Interface Tracking, *Computers and Mathematics with Applications*, vol. 29, no. 10, 1995.
- **Bonita V. Saunders**, An Algebraic Grid Generation System for Interface Tracking, in *Numerical Grid Generation in Computational Fluid Dynamics and Related Fields*, (N.P. Weatherill et al., eds.), Pineridge Press Ltd., Swansea, UK, 1994.
- **Bonita V. Saunders**, Boundary Fitted Grid Generation Using Tensor Product B-splines, in *Numerical Methods for Fluid Dynamics*, (M.J. Baines and K.W. Morton, eds.), Oxford University Press, Oxford, 1993.
- **B.T. Murray**, **S.R. Coriell**, **G.B. McFadden**, **A.A. Wheeler** and **Bonita V. Saunders**, Gravitational Modulation of Thermosolutal Convection During Directional Solidification, *Journal of Crystal Growth*, vol. 129, 1993.
- **R.F. Boisvert** and **Bonita V. Saunders**, Portable Vectorized Software for Bessel Function Evaluation, *ACM Transactions on Mathematical Software*, vol. 18, no. 4, 1992.
- **Bonita V. Saunders**, **B.T. Murray**, **G.B. McFadden**, **S.R. Coriell**, and **A.A. Wheeler**, The Effect of Gravity Modulation on Thermosolutal Convection in an Infinite Layer of Fluid, *Physical Fluids A* 4, 1176, 1992.
- **Bonita V. Saunders**, *Algebraic Grid Generation Using Tensor Product B-Splines*, Ph.D. dissertation, Old Dominion University, 1985. Also, NASA contractor report: NASA CR -177968, September 1985.

Selected Talks

Invited Lectures

- The Handbook of Mathematical Functions and the DLMF, 75th Anniversary of Mathematics and Statistics at NIST (virtual), June 28, 2022.
- Rounding Error Analysis for Validated Computation of Special Functions, Special Session on the MSRI African Diaspora Joint Mathematics (ADJOINT) Workshop, I, Joint Mathematics Meetings, I, (virtual), April 6, 2022 (with S. Brooks, R. Buckmire, R. Vincent-Finley).
- Validated Computation of Special Mathematical Functions, AWM Special Session on Celebrating the Mathematical Contributions of the AWM, I, Joint Mathematics Meetings, (virtual), April 7, 2022, (with S. Brooks, R. Buckmire, R. Vincent-Finley, F. Backeljauw, S. Becuwe, B. Miller, M. McClain, A. Cuyt).
- Complex Functions, Mesh Generation, and Hidden Figures in the NIST Digital Library of Mathematical Functions, AWM-MAA Etta Zuber Falconer Lecture, MAA MathFest 2021 (virtual), August 6, 2021.

- Validated Computation of Special Functions I, II, and III, ADJOINT (African Diaspora Joint Mathematics Workshop) Research Showcase, 2021 Joint Mathematics Meetings (virtual), January 9, 2021 (with S. Brooks, R. Buckmire, R. Vincent-Finley).
- From Abramowitz and Stegun to the NIST Digital Library of Mathematical Functions and Beyond, History of Mathematics Class, Prof. Hortensia Soto (MAA Associate Secretary), Colorado State University, Fort Collins, CO (virtual), November 10, 2020.
- Celebrating the Career of Dr. Fern Hunt, MAA Session on The EDGE (Enhancing Diversity in Graduate Education) Program: Pure and Applied Talks by Women Math Warriors, 2020 Joint Mathematics Meetings, January 16, 2020.
- Mathematics, Mesh Generation, and 3D Graphics on the Web, and Finding a Career at NIST, MAA MD-DC-VA Fall Section Meeting, Norfolk State University, Norfolk, VA, November 9, 2019.
- Mathematics Behind the 3D Visualizations of the NIST Digital Library of Mathematical Functions, Mathematics Colloquium, George Mason University, Fairfax, VA, October 25, 2019.
- B-Spline Mesh Generation, 3D Web Graphics, and the NIST Digital Library of Mathematical Functions, Mathematics Colloquium, Lafayette College, Easton, PA, September 25, 2019.
- DLMF Standard Reference Tables on Demand (DLMF Tables), B. Saunders, B. Miller, M. McClain, D. Lozier, A. Dienstfrey (NIST); A. Cuyt, S. Becuwe, F. Backeljauw, (U. Antwerp, Belgium), Minisymposium on Orthogonal Polynomials and Special Functions: Computational Aspects, 2015 International Conference on Orthogonal Polynomials, Special Functions and Applications (OPSFA 13), NIST, June 1, 2015.
- NIST Projects: Graphics in the Digital Library of Mathematical Functions (DLMF) and DLMF Standard Reference Tables on Demand (DLMF Tables), Careers in Mathematical Sciences Workshop for Underrepresented Groups, IMA, University of Minnesota, Minneapolis, MN, March 29, 2015.
- Mesh Generation for Interactive 3D Graphs in the NIST Digital Library of Mathematical Functions, Nineteenth Conference for African American Researchers in the Mathematical Sciences (CAARMS 19) San Diego, CA, July 24-27, 2013.
- Interactive 3D Visualizations of Complex Function Data in the NIST Digital Library of Mathematical Functions, SIAM Math Awareness Conference, Old Dominion University, Norfolk, VA, March 24, 2012.
- Constructing Interactive 3D Visualizations for the NIST Digital Library of Mathematical Functions, SIAM Minisymposium on Applied, Computational and Discrete Mathematics at National Laboratories and Federal Research Agencies, Joint Mathematics Meetings, January 4-7, 2012, Boston, MA.
- Numerical Grid Generation Applied to Interactive Complex Function Visualization in the NIST Digital Library of Mathematical Functions, Applied and Computational Mathematics Seminar, George Mason University, March 25, 2011.
- Creating Interactive 3D Graphs for a Digital Library. So How Is This Math?, Kappa Mu Epsilon Honorary Mathematics Society Induction, Stevenson University, Stevenson, MD, September 21, 2010.
- Applying Numerical Grid Generation to the Visualization of Complex Function Data, Institute for Mathematics and its Applications, University of Minnesota, April 9, 2010.
- Dynamic 3D Visualizations for the NIST Digital Library of Mathematical Functions, Twenty-first Willie Bee Rajanna Lecture, Morgan State University, April 20, 2006.
- Dynamic 3D Visualizations of High Level Mathematical Functions, Elizabeth City State University, February 22, 2005.
- 3D Graphics and the NIST Digital Library of Mathematical Functions, Outstanding African American Women in Science, Technology, Engineering and Mathematics Lecture Series, Howard University, March 31, 2003.
- Numerical Grid Generation and Effective 3D Visualizations for the NIST Digital Library of Mathematical Functions, American University, Washington, D.C., October 22, 2002.
- Interactive 3D Visualizations of High Level Functions in a Mathematical Digital Library, IMA 2002 Summer Program: Special Functions in the Digital Age, University of Minnesota, July 22-August 2, 2002.

- Effective 3D Visualizations for the NIST Digital Library of Mathematical Functions, Mathematical Association of America Maryland, D.C., Virginia Section Meeting, Virginia Polytechnic Institute, Blacksburg, Virginia, October 19, 2001.
- Using Numerical Grid Generation to Develop Effective 3D Visualizations for a Digital Library, IMA Career Workshop in Computational Science and Engineering: Minorities and Applied Mathematics – Connections to Industry and Government Laboratories, IMA, University of Minnesota, Minneapolis, Minnesota, May 4-6, 2001.
- Using Numerical Grid Generation to Develop Interactive 3D Visualizations for the NIST Digital Library of Mathematical Functions, Second Howard-Maryland Mathematics Symposium, Howard University, Washington, D.C., April 27, 2001.
- Effective 3D Visualizations of High Level Mathematical Functions, Mathematical Association of America New Jersey Section Meeting, Rowan University, Glassboro, New Jersey, April 21, 2001.
- Numerical Grid Generation and 3D Visualization of Special Functions, 2001 Claytor Lecture, National Association of Mathematicians (NAM) Annual Meeting, Joint Mathematics Meetings, New Orleans, Louisiana, January 13, 2001.
- Interactive 3D Visualization and the NIST Digital Library of Mathematical Functions Project, Texas Tech University, Lubbock, Texas, April 2000.
- Mathematical Modeling and Adaptive Mesh Generation for Problems in Science and Engineering, University of Maryland, Eastern Shore, February 1997.
- The Application of Numerical Grid Generation to Problems in Computational Fluid Dynamics, Third Conference for African-American Researchers in the Mathematical Sciences (CAARMS3), Morgan State University, June 18-20, 1997.
- Mathematical Modeling and Adaptive Coordinate Systems for Physics and Engineering Applications, NAM Undergraduate Mathfest VI, Xavier University, New Orleans, Louisiana, October 1996.

Contributed Lectures

- An Adaptive Curvature and Gradient Based Grid Generation Method, MASCOT2018, 15th Meeting on Applied Scientific Computing and Tools, Rome, Italy, October 5, 2018.
- Adaptive Curvature-Based Grid Generation for 3D Web Graphics, Curves and Surfaces 2018, Arcachon, France, July 3, 2018.
- NIST's Digital Library of Mathematical Functions and the Digital Age, MD-DC-VA Spring Section Meeting, MAA, Virginia Military Institute/Washington & Lee University, Lexington, VA, April 14, 2018.
- Who Needs Standard Reference Tables on Demand?, MAA, MD-DC-VA Spring Section Meeting, Frostburg State University, Frostburg, MD, April 29, 2017.
- Adaptive Grids for Accurate Visualizations of Complex Function Data, SIAM Conference on Industrial and Applied Geometry (GD17), (Chaired session on Geometry in Finite Elements and Optimization), Pittsburgh, Pennsylvania, July 12, 2017.
- DLMF Live! Tables: NIST/Antwerp Collaboration for Standard Reference Tables on Demand, Business, Industry, and Government Contributed Paper session, Joint Mathematics Meetings, Seattle, Washington, January 8, 2016. (In collaboration with B. Miller, M. McClain, D. Lozier, A. Dienstfrey (NIST), F. Backeljauw, S. Becuwe, A. Cuyt (University of Antwerp, Belgium).
- Slices of 3D Surfaces on the Web Using Tensor Product B-Spline Grids, SIAM Conference on Geometric and Physical Modeling (GD/SPM15), Salt Lake City Utah, Utah, October 12, 2015.
- Adaptive Composite B-Spline Mesh Generation for 3D Visualization, 8th International Conference on Curves and Surfaces, Paris, France, June 17, 2014. (In collaboration with Q. Wang, B. Antonishek, B. Miller.)
- WebGL: Interactive 3D Graphics on the Web without a Plugin, MAA MD-DC-VA Spring Section Meeting, James Madison University, Harrisonburg, VA, April 26, 2014.
- Using Adaptive Composite B-Spline Grid Generation to Enhance 3D Web Visualizations, SIAM Conference on Geometric and Physical Modeling (GD/SPM13), Denver, Colorado, November 14, 2013.

- DLMF Live! Tables: NIST Digital Library of Mathematical Functions Tables Project, MAA MD-DC-VA Section Meeting, Salisbury University, Salisbury, MD, April 13, 2013. (In collaboration with B. Miller, M. McClain, D. Lozier.)
- Balancing Research Interests with Project Goals at the National Institute of Standards and Technology, MAA Session on Mathematics Experiences in Business, Industry, and Government, Joint Mathematics Meetings, San Diego, California, January 12, 2013.
- Adaptive Composite B-Spline Mesh Generation for the Visualization of Complex Function Surfaces, Eighth International Conference on Mathematical Methods for Curves and Surfaces, Oslo, Norway, June 28- July 3, 2012.
- Adaptive Grid Generation Using the Composition of Tensor Product B-Splines, SIAM Conference on Geometric and Physical Modeling, Orlando, Florida, October 24-27, 2011.
- B-Spline Mesh Generation for the Visualization of Complex Function Data. Seventh International Conference on Curves and Surfaces, Avignon, France, June 24-30, 2010.
- Tensor Product B-Spline Mesh Generation for Accurate Surface Visualization in the NIST Digital Library of Mathematical Functions, Seventh International Conference on Mathematical Methods for Curves and Surfaces, Tonsberg, Norway, June 26-July 1, 2008.
- From 2D to 3D: Numerical Grid Generation and the Visualization of Complex Surfaces, for the 7th International Conference on Numerical Grid Generation in Computational Field Simulations, Whistler, British Columbia, Canada, September 2000.
- 3D Visualization of Mathematical Functions Using the Virtual Reality Modeling Language, Maryland-D.C.- Virginia Section Meeting of MAA, James Madison University, Harrisonburg, Virginia, April 1999.
- Computation of a Solid Liquid Interface Using a Boundary Fitted Coordinate System (poster), Second Conference on Mathematical Aspects of Materials Science, Philadelphia, Pennsylvania, April 1997.
- Applying an Algebraic Grid Generation Technique to Track a Solid-Liquid Interface, SIAM Annual Meeting, Charlotte, North Carolina, October 1995.
- An Algebraic Grid Generation System for Interface Tracking, Fourth International Conference on Numerical Grid Generation in Computational Fluid Dynamics and Related Fields, Swansea, Wales, April 1994.
- Boundary Fitted Grid Generation Using Tensor Product B-splines, Third International Conference on Numerical Methods for Fluid Dynamics, Reading, England, U.K., April 1992.
- The Effect of Gravity Modulation on Thermosolutal Convection (poster), VIII European Symposium on Materials and Fluid Sciences in Microgravity, Brussels, Belgium, April 1992. (In collaboration with B.T. Murray, G.B. McFadden, S.R. Coriell, and A.A. Wheeler.)

Selected Honors/Awards

- AWM-MAA Etta Z. Falconer Lecture Award, 2021, <https://awm-math.org/wp-content/uploads/2021/06/PR-Falconer-2021-Saunders.pdf>.
- Society for Industrial and Applied Mathematics, 2021 Black History Month Honoree, <https://sinews.siam.org/Details-Page/honoring-bonita-v-saunders-1>.
- NIST 2020 Diversity, Inclusivity and Equal Opportunity Award "for exemplary service as a role model, mentor, and tutor in support of careers by women and minorities."
- Research Leader, African Diaspora Joint Mathematics Workshop (ADJOINT) 2020, Topic: Validated Numerical Computations of Mathematical Functions, MSRI, Berkeley, CA, (virtual), June 15-26, 2020, <https://www.msri.org/web/msri/scientific/adjoint/adjoint-2020>.
- NIST Story Booth Interview in Celebration of 2020 Black History Month, 2020 Women's History Month.
- Academic Visit, Computational Mathematics Group, University of Antwerp, Belgium, Topic: Advancing the DLMF Standard Reference Tables on Demand Project, May 17-June 17, 2019.
- Fellow, Washington Academy of Sciences, elected 2019.
- Washington Academy of Sciences 2019 Award for Excellence in Research in Mathematics and Computer Science "in recognition of her outstanding contributions to grid generation, scientific

- visualization, mathematical reference data, and efforts to foster greater diversity in the field of mathematics.”
- SIAM Visiting Lecturer, (2018-present), <https://www.siam.org/Students-Education/Programs-Initiatives/SIAM-Visiting-Lecturer-Program> .
 - US Department of Commerce Gold Medal for Distinguished Achievement (2011). (Group award “For development of the NIST Digital Library of Mathematical Functions, an unprecedented reference on the special functions of applied mathematics.”)
 - Government Computer News Award for Outstanding Information Technology Achievement (2011). (Group award for the NIST Digital Library of Mathematical Functions.)
 - 2018 Black History Month honoree, Network of Minorities in Mathematical Sciences. Profile at <http://mathematicallygiftedandblack.com/honorees/bonita-v-saunders/> .
 - Featured on American Mathematical Society (AMS) Mathematically Gifted & Black poster (2018).
 - 2017 NIST Information Technology Laboratory Outstanding Contribution Award for excellence in technical leadership.
 - 2017 AWM Essay Contest Subject - Profile written by student Kailande Cassamajor received High School Level Honorable Mention. See <https://sites.google.com/site/awmmath/programs/essay-contest/Past-Winning-Essays/https-sites-google-com-site-awmmath-programs-essay-contest-2017-results> .
 - Honored for community service at Washington Wizards basketball game for leading Virginia Standards of Learning Tutoring/Enrichment Program at Alexandria, Virginia Boys and Girls Club. Program sponsored by Northern Virginia Alumnae Chapter, Delta Sigma Theta Sorority, Inc. (2014).
 - Career essays published in 101 Careers in Mathematics, MAA, 1996 ed., 2002 ed., 2014 ed., 2019 ed.
 - Golden Eagle Award, Delta Kappa Gamma Society International, Alpha Nu Chapter, Citation: “You exemplify the highest professional standards and you set the highest possible academic expectations for your students”, 2013.
 - Elected to Sigma Xi Scientific Research Honor Society, NIST, 1995
 - Elected to Phi Kappa Phi Honor Society, Old Dominion University, 1984

Professional Memberships

- Society for Industrial and Applied Mathematics (SIAM)
- Mathematical Association of America (MAA)
- American Mathematical Society (AMS)
- National Association of Mathematicians (NAM)
- Association for Women in Mathematics (AWM)

Professional Activities

- Member, SIAM Board of Trustees (2020- present).
- Member, SIAM Systems Oversight Committee (2021- present).
- Member, Advisory Board for DoD Center of Excellence on Advanced Electro-Photonics with Two-Dimensional Materials, Morgan State University, Baltimore, MD, (2022-present).
- Associate Editor, MAA Mathematics Magazine (2020-present) .
- MD-DC-VA Section Representative, MAA Congress (2019- 2022).
- Secretary, SIAM Activity Group (SIAG) on Geometric Design (2016-2018).
- Webmaster, SIAG on Orthogonal Polynomials and Special Functions (SIAG/OPSF), (2000-present)
- SIAG/OPSF Mailing List Moderator (2000- 2021).
- SIAG/OPSF Engage Community Moderator (2022-present)
- Member, Selection Committee, SIAG/OPSF Gabor Szego Prize, (2018).
- Member, MAA Business, Industry, and Government (BIG) Committee, (2012-2017).

- Contributor, Reflections on the Section Meetings 1947-1956, *The Maryland-District of Columbia-Virginia Section of the Mathematical Association of America: The First One Hundred Years*, v. 1.3, 2016, pp. 35-39, <http://sections.maa.org/mddcva/OtherDocuments/MDDCVATheFirstOneHundredYears.pdf> .
- Project NExT panelist, MAA MathFest, 2015, strategies for college/university teachers on advising students with non-academic career goals.
- Treasurer, MAA Maryland-D.C.-Virginia Section (1999-2002).
- Member, Selection Committee, Etta Z. Falconer Lecture, Association for Women in Mathematics (AWM) and MAA (2004-2009, 2021-).
- Member, Nominating Committee, MAA Maryland-D.C.-Virginia (MD-DC-VA) Section (2005)
- Member, Selection Committee, MAA MD-DC-VA Section John Smith Distinguished College or University Teaching Award, (1998-2002).
- Reviewer, Computational and Mathematical Methods in Medicine, 2016.
- Reviewer, NSF Presidential Awards for Excellence in Mathematics and Science Teaching (PAEMST), 7th-12th grade, (2013, 2015).
- Reviewer, Journal of Computing and Information Science in Engineering, 2009.
- Participant, Discussion group on NSF grant proposal to promote mathematics industrial partnerships, student internships, and careers in business, industry, and government, Joint Mathematics Meetings, San Diego, California, January 11, 2013.
- Panelist, AMS Panel, Conversation on Non-Academic Employment, Joint Mathematics Meetings, Boston, MA, January 5, 2012.
- Member, Advisory Committee, NSF CoSMIC Scholars Program, Towson University, co-PIs Martha Siegel, Gail Gasparich, Gabriele Meiselwitz (2011-2014).
- Member, Advisory Board for Degree Programs in Mathematics and Statistics, American University, (2011-2015).
- Member, External Advisory Council for the School of Computer, Mathematical and Natural Sciences, Morgan State University (2003).

Service Organizations

Delta Sigma Theta Sorority, Inc., Northern Virginia Alumnae Chapter
 Delta Sigma Theta Sorority, Inc., Mu Upsilon Chapter, charter member, first predominantly black sorority chapter at College of William and Mary, 1976

Selected Outreach Activities

- Speaker, Research in Computational and Applied Mathematics at NIST, Worcester Polytechnic Institute, Worcester, MA, April 18, 2019 for SIAM Visiting Lecturer Program, <https://www.siam.org/Students-Education/Programs-Initiatives/SIAM-Visiting-Lecturer-Program> .
- Representative, NIST ITL Applied and Computational Mathematics Division, Grace Hopper Celebration 2018, Houston, Texas, September 26-28, 2018.
- Mathematics judge, Siemens Competition in Math, Science and Technology (2003-2017).
- Chair, tutor, Virginia Strengthening Our Leaders (SOL) Tutoring Program, Alexandria, VA Boys & Girls Club, Northern Virginia Alumnae Chapter of Delta Sigma Theta Sorority, Inc. Provides tutoring and enrichment activities for at-risk students, grades 3-8. (2004-).
- NIST presentation, Math SPIRAL: Summer Program in Research and Learning - a multiyear summer program funded by NSF to bring gifted college sophomores and juniors from underrepresented groups to Morgan State University (2006-).
- Panelist, Hidden Figures movie and book, careers in the mathematical sciences.
 - Alexandria-Mount Vernon Jack and Jill, January 8, 2017
 - Booze, Allen, and Hamilton, Washington, D.C., January 27, 2017
 - Altria Group, Inc., Richmond, VA, February 22, 2017
- Panelist, Student Careers in Business, Industry and Government, SIAM Annual Meeting, Pittsburgh, July 10, 2017.

- Speaker, Careers in mathematical sciences, Exploring Possibilities at IPC, Infinite Possibilities Conference (IPC) 2012, University of Maryland Baltimore County, March 31, 2012.
- Presentation, Career Day, Francis Scott Key Middle School, Silver Spring, MD, (2008-2011).
- Mentor, Goals for Girls program, Gaithersburg Middle School, sponsored by Gaithersburg, MD chapter of American Association of University Women, (2007-2012).
- NIST host, George Washington University Summer Program for Women in Mathematics, (2008, 2009).
- Panelist, Non-academic jobs in the mathematical sciences, George Washington University Summer Program for Women in Mathematics (2006, 2007).

Hobbies

Tennis, indoor/outdoor gardening, hiking