I. GENERAL INFORMATION

Contact Information

Department of Mathematics & Statistics
Texas Tech University
phone: 806-834-8770
email: victoria.howle@ttu.edu

Education

2001, *Ph.D. in Applied Mathematics*, Cornell University
1998, *M.S. in Applied Mathematics*, Cornell University
1988, *B.A. in English Literature*, Rutgers University

Current Academic Position

2019–present **Texas Tech University**, Lubbock, TX
Associate Professor
Department of Mathematics & Statistics

Prior Academic Position

2017–2019 **Texas Tech University**, Lubbock, TX
Associate Professor and Associate Chair for Graduate and Postdoctoral Research and Career Development,
Department of Mathematics & Statistics

2014–2017 **Texas Tech University**, Lubbock, TX
Associate Professor and Associate Chair for Graduate Studies,
Department of Mathematics & Statistics

2013–2014 **Texas Tech University**, Lubbock, TX
Associate Professor, Department of Mathematics & Statistics

2007–2013 **Texas Tech University**, Lubbock, TX
Assistant Professor, Department of Mathematics & Statistics

1998–2007 **Sandia National Laboratories**, Livermore, CA
Senior Member of the Technical Staff, 2000–2007
Graduate Student Summer Intern, summers 1998–1999

1995–2000 **Cornell University**, Ithaca, NY
Research Assistant to Stephen A. Vavasis, 1997–2000
Research Assistant to Nick Trefethen, 1996–1997
Teaching Assistant, Math and Computer Science Depts., 1995–1997

Membership in Professional Activities

- Society for Industrial and Applied Mathematics (SIAM)
- Association for Women in Mathematics (AWM)

II. TEACHING

RESEARCH MENTORING

Mentor for Postdoctoral Researcher

- Guoyi Ke, postdoc completed May 2018, (co-mentored with Eugenio Aulisa)

Chair of Doctoral Committees — Completed

- Amin Nikakhtar, Ph.D. in Industrial Engineering, May 2019, "Piecewise Linear Approximation for Separable Concave Programming Problems," (Co-Chair with Ismael de Farias, Industrial Engineering, TTU).
- Hum Nath Bhandari, Ph.D. in Mathematics, August 2018, "Particle swarm optimization (PSO) algorithm: Analysis, improvements, and applications," (Co-Chair with Phil Smith, Mathematics and HPCC, TTU).
- Ashley Meek, Ph.D. in Mathematics, August 2016, "Block preconditioned implicit Runge-Kutta methods for the incompressible Navier-Stokes equations."
- Ashley Cherry, Ph.D. in Mathematics, August 2016, "Piecewise linear approximation for nonlinear programming problems," (co-chair with Ismael De Farias, Industrial Engineering, TTU).
- Sarah Osborn, Ph.D. in Mathematics, August 2015, "Multilevel solution strategies for the Stochastic Galerkin Method."
- Geoffrey Dillon, Ph.D. in Mathematics, August 2014, "Block preconditioners for coupled physics problems," (Co-Chair with R. Kirby, Baylor University).

Chair of Doctoral Committees — Current Students

- Liang Chuan, Ph.D. student in Mathematics
- Michael Clines, Ph.D. student in Mathematics
- Colton Mikes, Ph.D. student in Mathematics
- Nicholas Moore, Ph.D. student in Mathematics

Member of Doctoral Committees — Completed

- Elyas Ailiyasi Ainiwaer, Ph.D. in Geosciences, May 2019.
- Josh Engwer, Ph.D. in Mathematics, August 2018.
- Bimali Jayasinghe, Ph.D. in Mathematics, August 2018.
- Giacomo Capodaglio, Ph.D. in Mathematics, May 2018.
- Krystin Steelman Huff, Ph.D. in Mathematics, May 2018.
- Simon Rush, Ph.D. in Mathematics, May 2018.
- Chandani Dissanayake, Ph.D. in Mathematics, August 2016.
- Li Ding, Ph.D. in Industrial Engineering, May 2015.
- Kendall Gillies, Ph.D. in Mathematics, May 2014.

Member of Doctoral Committees — Current Students

- Erdi Kara, Ph.D. student in Mathematics
- Saba Nafees, Ph.D. student in Biology
- Md Masud Rana, Ph.D. student in Mathematics
- Dilini Fonseka, Ph.D. student in Mathematics

Chair of Master's Committees — Completed

- Amin Nikakhtar, M.S. in Mathematics, December 2018, "A Dynamic Approach for Separable Concave Quadratically Constrained Programming Problems."
- Guoyi Ke, M.S. in Mathematics, August 2016. "Block Triangular Preconditioners for Linearizations Schemes for the Rayleigh-Benard Convection Problem."
- Sarah Osborn, M.S. in Mathematics, May 2012, "GPU vs. CPU Performance for Solutions of Linear Systems Arising from PDEs."
- Kristin Yearkey, M.S. in Mathematics, August 2011, "A Stochastic Two-Patch Model for Disease Propagation," (Co-Chair with Linda Allen).
- Ashlee Fuchs, M.S. in Mathematics, May 2011, "An Investigation of the Effectiveness of Block Preconditioners on a Non-Newtonian Blood Flow Model."
- Jerod Clopton, M.S. in Mathematics, August 2010, "An Investigation of Block Preconditioners for Solving the Steady State Incompressible Navier-Stokes Equations."
- Nicholas Murray, M.S. in Mathematics, August 2009, "Random Flow on Random Graphs: Amphibian Movement in the Playas," (Co-Chair with Clyde Martin, TTU).

Chair of Master's Committees — Current Students

- Saba Nafees, M.S. student in Mathematics (and Ph.D. student in Biology).

Member of Master's Committees — Completed

- Kimberly Kennedy
- Chris Hansen, M.S. August 2012. "Molecular Simulations Involving Various Potential Functions and Integration Methods."
- Chandani Dissanayake, December 2011. "Regularized Image Matching Through Finite Element Methods."
- Mark Lira, August 2011. "On the Solution of Rank Deficient Least Squares Problem."
- Jedidiah Gohlke, May 2011. "A Validation Study of a Software Implementation of the Gauge Method for the Incompressible Navier-Stokes Equations."
- Kaleb McKale, May 2011. "Archimedes, Gauss and Stochastic Computation: A New (Old) Approach to Fast Algorithms for the Evaluation of Transcendental Functions of Generalized Polynomial Chaos Expansions."
- Deyi Zhang, May 2010. "Least Squares Approximation by Splines with Free Knots"
- Jennifer Emerson, 2010. "Modeling the Search for Rare Events: in search of Sasquatch."
- Dhawei Chang, 2009. "Peaceman's Numerical Productivity Index for Non-Linear Flows in Porous Media."

Undergraduate/Honors Research

- Ayush Dhumal, current undergraduate research student in quantum computing.

- Ellen Durant, undergraduate honors research (URF) (Fall 2008 – Fall 2009)
- Jonathan Adams, undergraduate research (URF) (Fall 2010)

Student Advising Activities

- Mentor, SPMS students (2008 – 2010)
- Mentor, Noyce Scholar student (2009 – 2010)
- Board member, SACNAS student group at Texas Tech., 2009.

III. RESEARCH

PUBLICATIONS

My degree of contribution is listed parenthetically for each publication, with criteria used for author order given after the author list. Number of non-author, non-coauthor citations is given after each publication.

Articles (refereed)

- **Guoyi Ke**, Eugenio Aulisa, **Geoffrey Dillon**, Victoria Howle, "Augmented Lagrangian-based Preconditioners for Steady Buoyancy Driven Flow," *Applied Mathematics Letters*, Volume 82, 2018. (25%)
- **Guoyi Ke**, Eugenio Aulisa, Giorgio Bornia, and Victoria Howle, "Block triangular preconditioners for linearization schemes of the Rayleigh-Bénard convection problem," *Numerical Linear Algebra with Applications*, Volume 24, Issue 5, e2096, 2017. (25%)
- **Mark Lira**, Ram Iyer, A. Alexandre Trindade, and Victoria Howle, "QR Versus Cholesky: A Probabilistic Analysis," *International Journal of Numerical Analysis and Modeling*, Volume 13, No. 1, pp. 114-121, 2016 (25%)
- V.E. Howle, R.C. Kirby, and **G. Dillon**, "Block Preconditioners for Coupled Physics Problems," *SIAM Journal on Scientific Computing*, Volume 35, Number 5, pp. S368-S385, 2013. (33%)
- V. Howle, R. Kirby, K. Long, **B. Brennan**, and **K. Kennedy**, "Playa: High-performance Programmable Linear Algebra," Scientific Programming, Volume 20, Number 3, pp. 257–273, 2012. (Faculty authors alphabetically followed by students alphabetically.) (20%)
- V. Howle and R. Kirby, "Block Preconditioners for Finite Element Discretization of Incompressible Flow with Thermal Convection," *Numerical Linear Algebra with Applications*, Volume 19, Issue 2, pp. 427–440, March 2012. (50%)
- H. Elman, V. Howle, J. Shadid, **R. Shuttleworth**, and R. Tuminaro, "A Taxonomy and Comparison of Parallel Block Multi-Level Preconditioners for the Incompressible Navier–Stokes Equations," *Journal of Computational Physics*, Vol. 227, Issue 3, pp. 1790–1808, 2008. (20%)
- H. Elman, V. Howle, J. Shadid, D. Silvester, and R. Tuminaro, "Least Squares Preconditioners for Stabilized Discretizations of the Navier–Stokes Equations," *SIAM Journal on Scientific Computing*, Vol. 30, Issue 1, pp. 290–311, 2007. (20%)
- H. Elman, V. Howle, J. Shadid, **R. Shuttleworth**, and R. Tuminaro, "Block Preconditioners Based on Approximate Commutators," SIAM Journal on Scientific Computing, Vol.27, No. 5, pp. 1651–1668, 2006. (20%)

- M. Heroux, R. Bartlett, V. Howle, R. Hoekstra, J. Hu, T. Kolda, R. Lehoucq, K. Long, R. Pawlowski, E. Phipps, A. Salinger, H. Thornquist, R. Tuminaro, J. Willenbring, A. Williams, and K. Stanley, "An Overview of the Trilinos Project," *ACM Transactions on Mathematical Software*, Vol. 31, No. 3, September 2005. (Lead author first, Sandia authors next alphabetically, followed by non-Sandia authors. (6%)
- V. Howle and S. Vavasis, "An Iterative Method for Solving Complex-Symmetric Systems Arising in Electrical Power Networks," SIAM Journal on Matrix Analysis and Applications, Vol. 26, No. 4, pp. 1150–1178, 2005. (70%)
- H. Elman, V. Howle, J. Shadid, and R. Tuminaro, "A Parallel Block Multi-level Preconditioner for the 3D Incompressible Navier-Stokes Equations," *Journal of Computational Physics*, Vol. 187, pp. 504–523, May 2003. (35%)
- V. Howle and L. N. Trefethen, "Eigenvalues and Musical Instruments," *Journal of Computational and Applied Mathematics,* Vol. 135, No. 1, pp. 23–40, October 2001. (60%)

Book Chapters

- P. Hough and V. Howle "Fault Tolerance in Large-Scale Scientific Computing," Invited chapter in book Parallel Processing for Scientific Computing, M. A. Heroux, P. Raghavan, and H. D. Simon, Eds., SIAM Press, 2006. (Authorship alphabetical; 3 citations.)(40%),

Proceedings (refereed)

- S. Shontz, V. Howle, and P. Hough, "Experience with Approximations in the Trust-Region Parallel Direct Search Algorithm," *Proceedings of the International Conference on Computational Science (ICCS)*, Baton Rouge, LA, 2009. (33%)

Non Peer-Reviewed Publications

- V. Howle, **J. Schroder**, R. Tuminaro, "The Effect of Boundary Conditions within Pressure Convection–Diffusion Preconditioners," Sandia Technical Report, SAND2006-4466, Sandia National Laboratories, Livermore, CA, 2006. (33%)
- M. Heroux, R. Bartlett, V. Howle, R. Hoekstra, J. Hu, T. Kolda, R. Lehoucq, K. Long, R. Pawlowski, E. Phipps, A. Salinger, H. Thornquist, R. Tuminaro, J. Willenbring and A. Williams, "An Overview of Trilinos," Sandia Technical Report SAND2003-2927, Sandia National Laboratories, Albuquerque, New Mexico, August 2003. (Lead author first, Sandia authors next alphabetically, followed by non-Sandia authors; 113 citations.) (6%)
- S. Thomas, P. Boggs, and V. Howle, "A Survey of National Transmission Grid Modeling Capabilities at DOE Laboratories," Sandia Technical Report, SAND2003-8433P, Sandia National Laboratories, Livermore, CA, July 2003. (Dept. Manager first, remaining authorship alphabetical.) (45%)
- V. Howle, "Efficient Iterative Methods for Ill-Conditioned Linear and Nonlinear Network Problems," Ph.D. Thesis, Center for Applied Mathematics, Cornell University, January 2001. (100%)
- V. Howle, S. Shontz, and P. Hough, "Some Parallel Extensions to Optimization Methods in OPT++," Sandia Technical Report, SAND2000-8877, October 2000. (Student authors first alphabetically; mentor last.) (33%)

Manuscripts Currently Submitted

- Giorgio Bornia, **Geoffrey Dillon**, Victoria Howle, and **Guoyi Ke**, "Field-of-Values analysis of preconditioned linearized Rayleigh-Bénard convection problems," submitted to *Journal of Computational and Applied Mathematics*, 2019. (25%)
- **Amin Nikhaktar**, Ming Zhao, Ismael Regis de Farias Jr., and Victoria Howle, "A SOS2 Heuristic for Separable Concave Quadratic Optimization," submitted to *INFORMS Journal on Computing*, December 2018. (25%)

Research Awards

2004 R&D 100 Award winner for Trilinos software project

Super Computing 2004 HPC Software Challenge Award Winner for Trilinos

PROFESSIONAL PRESENTATIONS

Conferences and Colloquiua

- Invited Plenary Talk: "Block Preconditioning for Implicit Runge-Kutta Methods for Time-Dependent PDE Problems," International Conference on Preconditioning Techniques for Scientific and Industrial Applications, Minneapolis, MN, July 2019.
- "Block Preconditioning for Time-Dependent Fluid Flow Problems," SIAM Computational Science and Engineering, February 2017.
- "Block Preconditioning for Time-Dependent Coupled Fluid Flow Problems," (poster) SIAM Linear Algebra, October 2015.
- "Block-structured preconditioners for equal-order finite element discretization of coupled fluid problems," Copper Mountain Conference on Iterative Methods, March 2012.
- "The Effects of Soft Errors on Krylov Methods," SIAM Conference on Parallel Processing for Scientific Computing, Savannah, GA, February 16, 2012. (Invited.)
- "Block Preconditioners for Incompressible Flow with Thermal Convection," AWM 40th Anniversary Conference at Brown University, Providence, RI, September 17, 2011. (Invited.)
- "Block-Structured Preconditioners for Finite Element Discretization of Coupled Fluid Problems," Copper Mountain Conference on Multigrid Methods, Copper Mountain, CO, March 29, 2011.
- " Soft Errors in Linear Solvers as Integrated Components of a Simulation," Copper Mountain Conference on Iterative Methods, Copper Mountain, CO, April 9, 2010.
- " Soft Errors in Linear Solvers as Integrated Components of a Simulation," SIAM Conference on Parallel Processing for Scientific Computing, Seattle, WA, February 24, 2010. (Invited.)
- "The Two-Body Problem & Premature Twins," AWM Workshop: A Balancing Act, SIAM Annual Meeting, Denver, CO, July 6, 2009. (Invited.)
- "Meros: Specialized Preconditioners for Problems with Coupled Simultaneous Solution Variables," Copper Mountain Conference on Iterative Methods, April 7, 2008.
- "Meros: Specialized Preconditioners for Problems with Coupled Simultaneous Solution Variables," SIAM Conference on Parallel Processing, March 10, 2008.
- "AWM Essay Contest: Biographies of Contemporary Women in Mathematics Careers," Joint Mathematics Meeting, San Diego, CA, January 5, 2008.

- "Preconditioners Based on Algebraic Commutators for Incompressible Navier-Stokes Equations," Simbios NIH Center for Biomedical Computation, Stanford University, April 11, 2007. (Invited.)
- "Preconditioners Based on Algebraic Commutators," Colloquium, Texas Tech University, Department of Mathematics & Statistics , Lubbock, TX, March 26, 2007.
- "Algebraic Least Squares Preconditioners for Incompressible Navier–Stokes," 2006 Copper Mountain Conference on Iterative Methods, Copper Mountain, CO, April 2006.
- "Preconditioners Based on Algebraic Commutators," 2005 International Conference On Preconditioning Techniques For Large Sparse Matrix Problems In Scientific And Industrial Applications, Atlanta, GA, May 19-21, 2005.
- "An Iterative Method for Solving Complex-Symmetric Systems Arising in Electrical Power Modeling," SIAM Conference on Computational Science & Engineering, Orlando, Florida, Feb. 12 - 15, 2005. (Invited.)
- "Block Preconditioners for the Incompressible Navier-Stokes Equations," 2004 Copper Mountain Conference on Iterative Methods, Copper Mountain, CO, March 2004.
- "Fault Tolerant Linear Algebra with Flexible Krylov Methods," 2004 SIAM Conference on Parallel Processing for Scientific Computing, San Francisco, CA, February 2004.
- "Career Development Opportunities in Mathematical Sciences: Sandia National Labs," Society for Advancement of Chicanos and Native Americans in Science (SACNAS) Annual Meeting, October, 2003. (Invited.)
- "Fault Tolerant Linear Algebra with FCG," 2003 SIAM Conference on Applied Linear Algebra, Williamsburg, VA, July 2003.
- "Solving 3D Incompressible Navier-Stokes Problems via Parallel Block Preconditioning," 2002 Copper Mountain Conference on Iterative Methods, Copper Mountain, CO, March 2002.
- "Solving 3D Incompressible Navier-Stokes Problems via Parallel Block Preconditioning," University of Maryland Numerical Analysis Seminar, College Park, MD, February 2002.
- "Accurate Integration of the Transient Stability Equations in Electrical Power Modeling," Preconditioning 2001 Conference, Tahoe City, CA, April 2001.
- "Parallel Block Preconditioning of the Linearized Incompressible Navier-Stokes Equations," Copper Mountain Conference on Multigrid Methods, Copper Mountain, CO, April 2001.
- "Efficient Iterative Methods for Ill-Conditioned Linear and Nonlinear Power Network Problems," Bay Area Scientific Computing Day, Livermore, CA, February 2001.

Seminars

- "Telling Ham from Spam," (with Lourdes Juan) Emmy Noether Day, TTU, May 2013.
- "Numerical Linear Algebra for High-Performance Simulation: Block Structured Preconditioning and Fault Tolerance," Colloquium, Deparment of Mathematics & Statistics, Texas Tech University, September 27, 2013.
- "Counting and Optimization," TTU Summer Mathematics Academy, Lubbock, TX, June 12, 2012.
- "The Effects of Soft Errors on Krylov Methods Including a Fault Tolerant Conjugate Gradient Algorithm," Applied Mathematics Seminar, Texas Tech, March 18 and 25, 2012.
- "Counting and Optimization," TTU Summer Mathematics Academy, Lubbock, TX, June 15, 2011.

- "Block Preconditioning Incompressible Fluid Flow Problems, Part 2," TTU Applied Mathematics Seminar, October 20, 2010.
- "Block Preconditioning Incompressible Fluid Flow Problems," TTU Applied Mathematics Seminar, October 13, 2010.
- "Counting and Optimization," TTU Summer Mathematics Academy, Lubbock, TX, June 11, 2010.
- "Graph Theory in Ill-Conditioned Network Problems," Graph Theory Seminar, Texas Tech University, Lubbock, TX, September 18, 2009.
- "Counting and Optimization," TTU Summer Mathematics Academy, Lubbock, TX, June 9, 2009.
- "Topics in Numerical Analysis and Scientific Computing," SIAM Student Chapter Minisymposium, Texas Tech University, Lubbock, TX, October, 16, 2008.
- "Counting and Optimization," TTU Women's Summer Mathematics Academy, Lubbock, TX, June 2, 2008.
- "Efficient Iterative Methods for Ill-Conditioned Linear and Nonlinear Power Network Problems," SIAM Student Chapter Minisymposium, Texas Tech University, Lubbock, TX, October 25, 2007.
- "Efficient Iterative Methods for Ill-Conditioned Linear and Nonlinear Power Network Problems," Applied Mathematics Seminar, Texas Tech University, Lubbock, TX, October 10, 2007.
- "Scalable Linear Solvers for Incompressible Flow Problems," Dean R&D Seminar, Sandia National Labs, Livermore, CA, May 11, 2005.
- "Using Problem Structure to Improve the Performance of Linear Solvers," Dean R&D Seminar, Sandia National Labs, Livermore, CA, July 7, 2004

CONFERENCE WORKSHOPS ORGANIZED/CONDUCTED

- Member of Organizing Committee, SIAM Conference on Computational Science and Engineering — SIAM CSE 2021. (April 2019 — present)
- Co-organizer, "Vertically Integrated Fault Tolerance for Large-Scale Scientific Computing," three-part minisymposium with 12 talks at SIAM Parallel Processing. February 2010.
- Co-organizer, Red Raider Minisymposium. "Non-linear Analysis, PDEs, and Applications," October 2009.
- Co-organizer, "Fault Tolerance in Large-Scale Scientific Computing," SIAM Parallel Processing, 2004.
- Co-organizer, "Bay Area Scientific Computing Day," 2002.

FUNDING

External Applications, Acceptances

- "Processing Hydroacoustic Telemetry Data Using High-Throughput Computing," US Geological Survey — Texas Co-Op Research Unit, $45K, April 2018 – September 1, 2019, (PI, 100%)
- "Metanumerical Computing for Emerging Architectures: Automated Embedded Algorithms for Partial Differential Equations on Multicore Platforms," V. Howle and K. Long, Subcontract from Baylor University, $200K, January 2013 – September 2014, (PI, 60%).

- "Metanumerical Computing for Emerging Architectures: Automated Embedded Algorithms for Partial Differential Equations on Multicore Platforms," R. Kirby, V. Howle, and K. Long, NSF, $499K, October 2011 – September 2014, (Co-PI, 30%).
- "Automated Intrusive Algorithms for Numerical Simulation of Partial Differential Equations Via Software-Based Fréchet Differentiation," R. Kirby, V. Howle, and K. Long, NSF, $356K, October 2008 – September 2011, (Co-PI, 30%).
- "Texas Tech University Women's Summer Mathematics Academy," MAA Tensor-SUMMA, V. Howle, J. Dwyer, J. Lee, and T. Stevens $6K, Summer 2010, (PI, 25%).
- "Texas Tech Noyce Scholars Program," J. Dwyer, M. Strauss, L. Schovanec, D. Casadonte, and T. Stevens, NSF, $740K, January 2009 – December 2013, (Senior Personnel, 5%).
- "Understanding by Design — MS^2," Z. Aguirre, D. Casadonte, D. Lamp, M. McGinley, R. Ortiz, and G. B. Williams, Greater Texas Foundation, $1.5M, January 2009 – December 2013, (Senior Personnel, 5%).
- "Texas Tech University Women's Summer Mathematics Academy," V. Howle, J. Dwyer, and T. Stevens, MAA Tensor-SUMMA, $6K, Summer 2009, (PI, 30%).
- "Texas Tech University Women's Summer Mathematics Academy," V. Howle, J. Dwyer, and T. Stevens, MAA Tensor-SUMMA, $6K, Summer 2008, (PI, 40%).

Software

Playa: Painless linear algebra: a user-friendly, representation-independent system of components for development of high-performance parallel linear solvers, nonlinear solvers, and optimizers. (co-developer)
Meros: a block preconditioning package within the Trilinos solver framework.
(lead developer) Released LGPL, 2006.

IV. SERVICE

Departmental Service

- Associate Chair for Graduate and Postdoctoral Research and Career Developement (Fall 2017 – January 2019)
- Associate Chair for Graduate Studies (Fall 2013 – Spring 2017)
- Graduate Curriculum Committee (Fall 2009 – Spring 2011)
- Undergraduate Curriculum Committee (Fall 2008 – Spring 2010)
  Chair, Calculus sub-committee (Fall 2008 – Spring 2010)
- Numerical Analysis Prelim committee (2008 – present)
- Faculty Sponsor, TTU-MAA Mathematics Club (Fall 2008 – 2010)
- Teaching review of Graduate Student TAs (2007 – present)
- Co-organizer, Applied Math Seminar, Texas Tech University (Fall 2007 – Spring 2009)
- Co-organizer, Computational Science Seminar, Texas Tech University (Spring 2008 – present)

College and University Service

- Interviewee and panelist in support of doctoral candidate Ryan Hoover, English Department; Ph.D. December 2009, "Rhetorical Agency, Social Structures, and Power Relations in the National Science Foundation's Grant Application Process."
- AAUW Research Committee for AAUW Biennial Convention poster selection (2008)

Reviewer

Journal Manuscript Reviews

- Electronic Transactions on Numerical Analysis
- International Journal of Computer Mathematics
- International Journal of Numerical Analysis and Modeling
- International Journal for Numerical Methods in Fluids
- Journal of Applied Mathematics
- Journal of Parellel Computing
- SIAM Journal on Numerical Analysis
- SIAM Journal on Scientific Computing

Proposal Review Panels

- DOE Review Panel: DOE 2012 Advanced Scientific Computing Research Resilient Extreme-Scale Solvers ("RX-Solvers") – September 2012.
- DOE Review Panel: Office of Science, Office of Advanced Scientific Computing Research (ASCR) Applied Math research program, unsolicited proposals. December 2009 – January 2010.
- NSF Review Panel: Numerical Partial Differential Equations Panel, March 2007.

Professional Service

- Organizing Committee, SIAM Conference on Computational Science and Engineering — SIAM CSE 2021. (April 2019 — present)
- Inaugural recipient of the Association for Women in Mathematics' Service Award, 2013.
- Participant, Advanced Scientific Computing Research (ASCR) of the Office of Science, US Department of Energy, Workshop on Extreme-Scale Solvers, March 8, 2012, Washington DC. (Invitation-Only Workshop)
- Secretary, SIAM Activity Group on Linear Algebra (2007–2009)
- Chair, Nominating Committee, SIAM Activity Group on Linear Algebra (2009)
- Nominating Committee, SIAM Activity Group on Supercomputing (2009)
- Association for Women in Mathematics Essay Contest Committee, *Biographies of Contemporary Women in Mathematics* (2008–present)
- Association for Women in Mathematics Essay Contest Committee, *Biographies of Contemporary Women in Mathematics*
  Founder of Contest (2001), Chair (2001–2008), Member of Committee (2001–present)
- Nominating Committee, Association for Women in Mathematics (2005)