CURRICULUM VITAE
PABLO SELESON

CONTACT INFORMATION

Oak Ridge National Laboratory
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RESEARCH INTERESTS

- Computational solid mechanics
- Peridynamics and nonlocal modeling
- Scientific machine learning
- Multiscale modeling and adaptivity
- Uncertainty quantification
- Social networks

EDUCATION

Florida State University, Tallahassee, Florida, USA

- **Ph.D., Computational Science** 08/2010
  Dissertation: *"Peridynamic multiscale models for the mechanics of materials: constitutive relations, upscaling from atomistic systems, and interface problems"*
  Advisor: Dr. Max Gunzburger
  GPA: 4.00/4.00

Hebrew University of Jerusalem, Jerusalem, Israel

- **M.S., Physics** 08/2006
  Thesis: *"The Buildup of Galaxies in Dark-Matter Halos"*
  Advisor: Dr. Avishai Dekel
  GPA: 4.32/4.35
- **B.S., Physics, Philosophy** 08/2002
  Magna cum Laude
  GPA: 4.09/4.35

PROFESSIONAL CERTIFICATES

- **Machine Learning**, Stanford Online 10/2021
  Online course via Coursera
- **Neural Networks and Deep Learning**, DeepLearning.AI 2/2022
  Online course via Coursera
- **Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization**, DeepLearning.AI 8/2022
  Online course via Coursera
- **Structuring Machine Learning Projects**, DeepLearning.AI 8/2024
  Online course via Coursera

Research Experience

Oak Ridge National Laboratory, Oak Ridge, TN, USA

▷ **R&D Staff Member** 04/2020-present
Computer Science and Mathematics Division

- Contributed to a scalable graph neural network architecture for material property predictions
- Developed a GPU-enabled, performance-portable, and exascale-capable peridynamics fracture mechanics code, demonstrating effective high-performance computing scaling on the Summit and Frontier supercomputers
- Advanced data-driven surrogate models for particle-in-cell simulations of plasma-surface interactions and sensitivity analysis
- Developed and analyzed advanced numerical methods for enhanced nonlocal computations

▷ **R&D Associate Staff Member** 08/2016-03/2020
Computer Science and Mathematics Division

- Developed novel mathematical models and numerical methods to enhance predictive accuracy in fracture mechanics
- Advanced nonlocal models of anisotropic materials with application to fiber-reinforced composites, partnering with Ansys and Ford Motor Company

▷ **Alston S. Householder Fellow** 08/2014-07/2016
Computer Science and Mathematics Division

- Developed local-to-nonlocal coupling methods
- Advanced quadrature methods for nonlocal models

The University of Texas at Austin, Austin, TX, USA

▷ **ICES Postdoctoral Fellow** 09/2010-07/2014
Work under the supervision of Dr. J. Tinsley Oden,
Institute for Computational Engineering and Sciences

- Developed mathematical schemes and software prototypes for the coupling of local and nonlocal models in solid mechanics, in collaboration with *Sandia National Laboratories*
- Developed phase-field driven, goal-oriented model-adaptivity methods for blending schemes in concurrent multiscale modeling
- Built coarse-grained models for polymer materials, based upon OPLS potentials, calibrated through Bayesian inversion with LAMMPS all-atom simulation data
- Studied analytically and computationally interface problems for nonlocal diffusion models and their applications to multiscale systems

Sandia National Laboratories, Albuquerque, NM, USA

▷ **Summer Intern** 05/2008-08/2008
Worked with Dr. Michael L. Parks,
Computer Science Research Institute

- Implemented the peridynamics state-based theory in the PDLAMMPS code
- Completed computational experiments comparing peridynamics (as an upscaled molecular dynamics model) to fully molecular dynamics experiments

Florida State University, Tallahassee, Florida, USA

▷ **Research Assistant** 08/2006-05/2007
Worked with Dr. Raúl Tempone,
Department of Scientific Computing

- Applied Smolyak and tensor product quadratures to high-dimensional integrations
- Developed parallel implementations using MPI

Institute of Astrophysics of Paris, Paris, France

▷ **Research Assistant** 01/2005-03/2005
Worked with Dr. Avishai Dekel

- Performed statistical analysis of N-body and hydrodynamical simulations
- Provided quantitative and qualitative descriptions of cold flows through shocks

Hebrew University of Jerusalem, Jerusalem, Israel

▷ **Research Assistant** 10/2001-06/2002
Worked with Dr. Amir Sa'ar,
Department of Applied Physics

- Performed ellipsometric measurements of thin layer structures in porous silicon
- Developed numerical algorithms to compute dielectric properties of materials

Weizmann Institute of Science, Rehovot, Israel

▷ **Summer Intern** 07/2001-09/2001
Worked with Dr. Mordehai Heiblum,
Department of Condensed Matter Physics

- Performed measurements of shot noise
- Developed alternative techniques for the spectrum analyzer

TEACHING EXPERIENCE

The University of Texas at Austin, Austin, TX, USA

▷ **Instructor** Spring 2012
Department of Aerospace Engineering and Engineering Mechanics
Course: "Dynamics"

- Prepared and gave class lectures (92 students)
- Coordinated two teaching assistants
- Designed and graded exams, and assigned homeworks
- Held office hours

The University of Texas at Austin, Austin, TX, USA

▷ **Lecturer and Teaching Assistant** Spring 2011
Institute for Computational Engineering and Sciences
Course: "Finite Element Methods"
Instructor: Dr. Serge Prudhomme

- Gave some of the class lectures (11 students)
- Provided assistance to students with the homeworks

The University of Texas at Austin, Austin, TX, USA

▷ **Teaching Assistant** Fall 2010
Institute for Computational Engineering and Sciences
Course: "Introduction to Mathematical Modeling in Science and Engineering"
Instructor: Dr. J. Tinsley Oden

- Graded homeworks and exams (11 students)
- Assisted with class notes

Hebrew University of Jerusalem, Jerusalem, Israel

▷ **Teaching Assistant** 03/2003-07/2005

- Taught X-ray diffraction by crystals to 20 undergraduate physics majors
- Guided students through experimental steps
- Graded reports and colloquiums

Maayanot Institute, Jerusalem, Israel

▷ **Mathematics Supervisor** 10/2005-07/2006

- Supervised a special project for high school students, to improve their performance on qualifying exams
- Assisted in the design of educational programs, organized monthly meetings, and audited teachers' performance
- Organized and supervised a summer math camp

Maayanot Institute, Jerusalem, Israel

▷ **Teaching Assistant** 03/2000-10/2005

- Taught quarterly intensive math workshops in high schools and elementary schools, each consisting of roughly 30 students
- Participated in evaluation and training meetings
- Prepared reports and evaluations

Jewish Agency for Israel, Jerusalem, Israel

▷ **Teacher** 07/2000-08/2000

- Taught high school physics and mathematics to 25 summer students
- Graded exams and assignments

ORT High School, Buenos Aires, Argentina

▷ **Teaching Assistant** 03/1997-08/1997

- Gave support to high school math teachers during classes (30 students)
- Provided individual in-class help to students

Travel Awards

○ SIAM travel award 2013
U.S. National Science Foundation
Society for Industrial and Applied Mathematics
SIAM Conference on Analysis of Partial Differential Equations

○ USNCCM-12 travel award 2013
12th U.S. National Congress on Computational Mechanics

- Early career travel award 2013
  U.S. National Science Foundation
  Society for Industrial and Applied Mathematics
  Conference on Mathematical Aspects of Materials Science
- IPAM travel award 2012
  Institute for Pure and Applied Mathematics, UCLA
  Program on Materials Defects: Mathematics, Computation, and Engineering
- USACM travel award 2012
  10th World Congress on Computational Mechanics
- SIAM travel award 2011
  U.S. National Science Foundation
  Society for Industrial and Applied Mathematics
  International Congress on Industrial and Applied Mathematics
- USNCCM-11 travel award 2011
  11th U.S. National Congress on Computational Mechanics
- "US Junior Oberwolfach Fellows" grant 2011
  U.S. National Science Foundation
  Mathematisches Forschungsinstitut Oberwolfach
  Mini-Workshop: Mathematical Analysis for Peridynamics
- Student travel award 2010
  Society for Industrial and Applied Mathematics
  Conference on Mathematical Aspects of Materials Science

Honors and Awards

- 2024 CSMD Award: Distinguished Software 2024
  Computer Science and Mathematics Division (CSMD)
  Oak Ridge National Laboratory
- Member-at-Large of the Executive Committee 2024-present
  United States Association for Computational Mechanics
- Vice-Chair of the Technical Thrust Area: "Mathematical Methods in Computational Engineering & Sciences" 2023-present
  United States Association for Computational Mechanics
- 2021 CSMD Award: Mentoring 2021
  "*For long-term excellence in mentoring*"
  Computer Science and Mathematics Division (CSMD)
  Oak Ridge National Laboratory
- Chair of the Technical Thrust Area: "Large Scale Structural Systems and Optimal Design" 2021-2023
  United States Association for Computational Mechanics
- 2019 CSMD Award: Outstanding Community Development 2019
  "*For his work on building a community for computational mechanics and peridynamic methods*"
  Computer Science and Mathematics Division (CSMD)
  Oak Ridge National Laboratory
- Member of the Computational Mechanics Committee 2019-present
  Engineering Mechanics Institute
  American Society of Civil Engineers

- Vice-Chair of the Technical Thrust Area: "Large Scale Structural Systems and Optimal Design" — 2019-2021
  United States Association for Computational Mechanics
- Visiting Scientist Scholarship — 2018
  University of Padova, Padova, Italy
- Member of the Technical Thrust Area: "Large Scale Structural Systems and Optimal Design" — 2015-2019
  United States Association for Computational Mechanics
- Alston S. Householder Fellowship in Scientific Computing — 2014
  Oak Ridge National Laboratory
- ICES Postdoctoral Fellowship — 2010
- StudentStar nomination (Florida State University) — 2009
- Student paper prize — 2009
  Society for Industrial and Applied Mathematics
  The 33rd SIAM Southeastern-Atlantic Section Annual Meeting
- Member of the Honor Society of Phi Kappa Phi — 2008
- Member of Golden Key International Honour Society — 2007
- Graduate Student Scholarship for Academic Excellence — 2003-2004
  Faculty of Natural Sciences, Hebrew University of Jerusalem

JOURNAL PAPERS

1. Samuel Temple Reeve, Jean-Luc Fattebert, Stephen DeWitt, David Joy, **Pablo Seleson**, Stuart Slattery, Aaron Scheinberg, Rene Halver, Christoph Junghans, Christian F. A. Negre, Michael E. Wall, Yu Zhang, Anders M. Niklasson, Danny Perez, Susan M. Mniszewski, and James Belak, *"Co-design for Particle Applications at Exascale"*, Computing in Science & Engineering, 26(2), pp. 43–52, 2024.
2. **Pablo Seleson**, Marco Pasetto, Yohan John, Jeremy Trageser, and Samuel Temple Reeve, *"PDMATLAB2D: A Peridynamics MATLAB Two-Dimensional Code"*, Journal of Peridynamics and Nonlocal Modeling, 6, pp. 149–205, 2024.
3. Alexander Hermann, Arman Shojaei, **Pablo Seleson**, Christian J. Cyron, and Stewart A. Silling, *"Dirichlet-Type Absorbing Boundary Conditions for Peridynamic Scalar Waves in Two-Dimensional Viscous Media"*, International Journal for Numerical Methods in Engineering, 124, pp. 3524–3553, 2023.
4. Arman Shojaei, Alexander Hermann, **Pablo Seleson**, Stewart A. Silling, Timon Rabczuk, and Christian J. Cyron, *"Peridynamic Elastic Waves in Two-Dimensional Unbounded Domains: Construction of Nonlocal Dirichlet-Type Absorbing Boundary Conditions"*, Computer Methods in Applied Mechanics and Engineering, 407, 115948, 2023.
5. Biraj Dahal, **Pablo Seleson**, and Jeremy Trageser, *"The Evolution of the Peridynamics Co-Authorship Network"*, Journal of Peridynamics and Nonlocal Modeling, 5, pp. 311–355, 2023.
6. **Pablo Seleson**, Mohammad Mustafa, Davide Curreli, Cory D. Hauck, Miroslav Stoyanov, and David E. Bernholdt, *"Data-Driven Surrogate Modeling of hPIC Ion Energy-Angle Distributions for High-Dimensional Sensitivity Analysis of Plasma Parameters' Uncertainty"*, Computer Physics Communications, 279, 108436, 2022.
7. Jeremy Trageser and **Pablo Seleson**, *"A New Proof that the Number of Linear Elastic Symmetries in Two Dimensions is Four"*, Journal of Elasticity, 150, pp. 221–239,

2022.

8. Arman Shojaei, Alexander Hermann, Christian J. Cyron, **Pablo Seleson**, and Stewart A. Silling, *"A Hybrid Meshfree Discretization to Improve the Numerical Performance of Peridynamic Models"*, Computer Methods in Applied Mechanics and Engineering, 391, 114544, 2022.
9. Bo Ren, C.T. Wu, **Pablo Seleson**, Danielle Zeng, Masato Nishi, and Marco Pasetto, *"An FEM-Based Peridynamic Model for Failure Analysis of Unidirectional Fiber-Reinforced Laminates"*, Journal of Peridynamics and Nonlocal Modeling, 4, pp. 139–158, 2022.
10. [Invited Review Paper] Marta D'Elia, Xingjie Li, **Pablo Seleson**, Xiaochuan Tian, and Yue Yu, *"A Review of Local-to-Nonlocal Coupling Methods in Nonlocal Diffusion and Nonlocal Mechanics"*, Journal of Peridynamics and Nonlocal Modeling, 4, pp. 1–50, 2022.
11. Greta Ongaro, **Pablo Seleson**, Ugo Galvanetto, Tao Ni, and Mirco Zaccariotto, *"Overall Equilibrium in the Coupling of Peridynamics and Classical Continuum Mechanics"*, Computer Methods in Applied Mechanics and Engineering, 381, 113515, 2021.
12. Arman Shojaei, Alexander Hermann, **Pablo Seleson**, and Christian J. Cyron, *"Dirichlet Absorbing Boundary Conditions for Classical and Peridynamic Diffusion-type Models"*, Computational Mechanics, 66, pp. 773–793, 2020.
13. Jeremy Trageser and **Pablo Seleson**, *"Bond-Based Peridynamics: A Tale of Two Poisson's Ratios"*, Journal of Peridynamics and Nonlocal Modeling, 2, pp. 278–288, 2020.
14. Amit Katiyar, Shivam Agrawal, Hisanao Ouchi, **Pablo Seleson**, John T. Foster, and Mukul M. Sharma, *"A General Peridynamics Model for Multiphase Transport of Non-Newtonian Compressible Fluids in Porous Media"*, Journal of Computational Physics, 402, 109075, 2020.
15. Jeremy Trageser and **Pablo Seleson**, *"Anisotropic Two-Dimensional, Plane Strain, and Plane Stress Models in Classical Linear Elasticity and Bond-Based Peridynamics"*, arXiv:1905.12761, 2019.
16. Bo Ren, C.T. Wu, **Pablo Seleson**, Danielle Zeng, and Dandan Lyu, *"A Peridynamic Failure Analysis of Fiber-Reinforced Composite Laminates Using Finite Element Discontinuous Galerkin Approximations"*, International Journal of Fracture, 214(1), pp. 49–68, 2018.
17. Marco Pasetto, Yu Leng, Jiun-Shyan Chen, John T. Foster, and **Pablo Seleson**, *"A Reproducing Kernel Enhanced Approach for Peridynamic Solutions"*, Computer Methods in Applied Mechanics and Engineering, 340, pp. 1044–1078, 2018.
18. **Pablo Seleson**, Qiang Du, and Michael L. Parks, *"On the Consistency Between Nearest-Neighbor Peridynamic Discretizations and Discretized Classical Elasticity Models"*, Computer Methods in Applied Mechanics and Engineering, 311, pp. 698–722, 2016.
19. **Pablo Seleson** and David J. Littlewood, *"Convergence Studies in Meshfree Peridynamic Simulations"*, Computers and Mathematics with Applications, 71(11), pp. 2432-2448, 2016.
20. Stewart A. Silling, David J. Littlewood, and **Pablo Seleson**, *"Variable Horizon in a Peridynamic Medium"*, Journal of Mechanics of Materials and Structures, 10(5), pp. 591-612, 2015.
21. **Pablo Seleson**, Youn Doh Ha, and Samir Beneddine, *"Concurrent Coupling of Bond-Based Peridynamics and the Navier Equation of Classical Elasticity by Blending"*, International Journal for Multiscale Computational Engineering, 13(2), pp. 91-113,

2015.

22. **Pablo Seleson**, *"Improved One-Point Quadrature Algorithms for Two-Dimensional Peridynamic Models based on Analytical Calculations"*, Computer Methods in Applied Mechanics and Engineering, 282, pp. 184-217, 2014.
23. **Pablo Seleson**, Michael L. Parks, and Max Gunzburger, *"Peridynamic State-Based Models and the Embedded-Atom Model"*, Communications in Computational Physics, 15(1), pp. 179-205, 2014.
24. **Pablo Seleson**, Max Gunzburger, and Michael L. Parks, *"Interface Problems in Nonlocal Diffusion and Sharp Transitions between Local and Nonlocal Domains"*, Computer Methods in Applied Mechanics and Engineering, 266, pp. 185-204, 2013.
25. **Pablo Seleson**, Samir Beneddine, and Serge Prudhomme, *"A Force-Based Coupling Scheme for Peridynamics and Classical Elasticity"*, Computational Materials Science, 66, pp. 34-49, 2013.
26. **Pablo Seleson** and Michael L. Parks, *"On the Role of the Influence Function in the Peridynamic Theory"*, International Journal for Multiscale Computational Engineering, 9(6), pp. 689-706, 2011.
27. **Pablo Seleson** and Max Gunzburger, *"Bridging Methods for Atomistic-to-Continuum Coupling and Their Implementation"*, Communications in Computational Physics, 7, pp. 831-876, 2010.
28. **Pablo Seleson**, Michael L. Parks, Max Gunzburger, and Richard B. Lehoucq, *"Peridynamics as an Upscaling of Molecular Dynamics"*, Multiscale Modeling and Simulation, 8, pp. 204-227, 2009.

Book Chapters

1. Jiun-Shyan Chen, Michael Hillman, **Pablo Seleson**, and Joseph Teran, *"Meshfree Methods"*, in Comprehensive Mechanics of Materials, Vadim Silberschmidt, ed., vol. 2, pp. 169-234, Elsevier, Oxford, 2024.
2. **Pablo Seleson** and David J. Littlewood, *"Numerical tools for improved convergence of meshfree peridynamic discretizations"*, in Handbook of Nonlocal Continuum Mechanics for Materials and Structures, George Voyiadjis, ed., Springer, Cham, 2018.
3. **Pablo Seleson** and Michael L. Parks, *"Links between Peridynamic and Atomistic Models"*, in Handbook of Peridynamic Modeling, Florin Bobaru, John T. Foster, Philippe H. Geubelle, and Stewart A. Silling, eds., Taylor & Francis Group, Chapman and Hall/CRC, Publication date: November 3, 2016.
4. Yan Azdoud, Fei Han, David Littlewood, Gilles Lubineau, and **Pablo Seleson**, *"Coupling Local and Nonlocal Models"*, in Handbook of Peridynamic Modeling, Florin Bobaru, John T. Foster, Philippe H. Geubelle, and Stewart A. Silling, eds., Taylor & Francis Group, Chapman and Hall/CRC, Publication date: November 3, 2016.

Technical Reports

1. *"An Advanced Meso-Scale Peridynamic Modeling Technology using High-Performance Computing for Cost-Effective Product Design and Testing of Carbon Fiber Reinforced Polymer Composites in Light-weight Vehicles"*, **Pablo Seleson**, Bo Ren, C.T. Wu, Danielle Zeng, and Marco Pasetto, Technical Report ORNL/TM-2022/1826, February 2022.

2. *"Workshop on Experimental and Computational Fracture Mechanics 2020"*, Patrick Diehl, Serge Prudhomme, and **Pablo Seleson**, eds., Technical Report ORNL/TM-2020/1714, November 2020.
3. David J. Littlewood, Stewart A. Silling, John A. Mitchell, **Pablo D. Seleson**, Stephen D. Bond, Michael L. Parks, Daniel Z. Turner, Damon J. Burnett, Jakob Ostien, and Max Gunzburger, *"Strong Local-Nonlocal Coupling for Integrated Fracture Modeling"*, Technical Report SAND2015-7998, Sandia National Laboratories, September 2015.
4. **Pablo Seleson**, Samir Beneddine, and Serge Prudhomme, *"A Force-Based Coupling Scheme for Peridynamics and Classical Elasticity"*, ICES Report 12-19, The University of Texas at Austin, 2012.
5. **Pablo Seleson**, Michael L. Parks, and Max Gunzburger, *"Peridynamics as an Upscaling of Molecular Dynamics"*, in CSRI Summer Proceedings, D. Ridzal and S. S. Collis, eds., Sandia National Laboratories, 2008, pp. 177-184. Available as Sandia National Laboratories Technical Report SAND2008-8257P.
6. Michael L. Parks, **Pablo Seleson**, Steven J. Plimpton, Richard B. Lehoucq, and Stewart A. Silling, *"Peridynamics with LAMMPS: A User Guide"*, Technical Report SAND 2008-0135, Sandia National Laboratories, January 2008.

Proceedings Articles

1. Miroslav Stoyanov, **Pablo Seleson**, and Clayton Webster, *"A Surrogate Modeling Approach for Crack Pattern Prediction in Peridynamics"*, 19th AIAA Non-Deterministic Approaches Conference, AIAA SciTech Forum, (AIAA 2017-1326).
2. **Pablo Seleson** and Max Gunzburger, *"Bridging Methods and Boundary Treatment for AtC Coupling Problems"*, in Proc. of the 4th International Conference on Multiscale Materials Modeling, Anter El-Azab, ed., pp. 77-80, October 2008, Tallahassee, FL.

Other Articles

1. [Invited Article] **Pablo Seleson**, *"A career at a DOE national laboratory: A personal journey"*, Early Career Section of the AMS Notices, 2022. https://dx.doi.org/10.1090/noti2682

Software

1. CabanaPD (https://github.com/ORNL/CabanaPD).
   DOI: https://doi.org/10.5281/zenodo.7087781.
2. PDMATLAB2D (https://github.com/ORNL/PDMATLAB2D/).
   DOI: https://doi.org/10.5281/zenodo.7348668.
3. hPIC-surrogate (https://github.com/pabloseleson/hPIC-surrogate).

Presentations in Conferences and Workshops

1. *"CabanaPD: A meshfree GPU-enabled peridynamics code for exascale fracture simulations"*, invited talk, SIAM Conference on Computational Science and Engineering, March 3-7, 2025, Fort Worth, TX, USA.
2. *"Data-driven surrogate modeling and sensitivity analysis for particle-in-cell simulations of plasma-material interactions"*, invited talk, SIAM Conference on Mathematical Aspects of Materials Science, May 19-23, 2024, Pittsburgh, PA, USA.

3. *"Performance, portability, and productivity for peridynamics"* (slides prepared by Sam Reeve), USACM Thematic Conference on Quarter Century of Peridynamics, April 23-25, 2024, Tucson, AZ, USA.
4. *"Celebrating the growth of peridynamics in the exascale computing era"*, invited talk, USACM Thematic Conference on Quarter Century of Peridynamics, April 23-25, 2024, Tucson, AZ, USA.
5. *"Tutorial on peridynamics"*, invited talk, Nonlocality: Challenges in Modeling and Simulation, April 15-19, 2024, Institute for Computational and Experimental Research in Mathematics, Providence, RI, USA.
6. *"Peridynamics computations at the exascale"*, invited talk, Workshop on Advances in Computational Mechanics, October 22-25, 2023, Austin, TX, USA.
7. *"CabanaPD: A meshfree GPU-enabled peridynamics code for exascale fracture simulations"*, invited talk, 10th International Congress on Industrial and Applied Mathematics, August 20-25, 2023, Tokyo, Japan.
8. *"Data-driven surrogate modeling and sensitivity analysis for particle-in-cell simulations of plasma-material interactions"*, invited talk, 17th U.S. National Congress on Computational Mechanics, July 23-27, 2023, Albuquerque, NM, USA.
9. *"Peridynamics computations at the exascale"*, invited talk, Engineering Mechanics Institute Conference 2023, June 6-9, 2023, Atlanta, GA, USA.
10. *"Peridynamics computations at the exascale"*, invited talk, 15th World Congress on Computational Mechanics & 8th Asian Pacific Congress on Computational Mechanics, July 31-August 5, 2022, Virtual Conference, Online.
11. *"Analysis of the overall equilibrium in local-to-nonlocal coupling"*, invited talk, BIRS Workshop on Theoretical and Applied Aspects for Nonlocal Models, July 17-22, 2022, Banff, Alberta, Canada.
12. *"Peridynamics computations at the exascale"*, invited talk, Hybrid: 2022 SIAM Annual Meeting, July 11-15, 2022, Pittsburgh, PA, USA.
13. *"Coupling peridynamics with the classical theory: overview, challenges, and recent developments"*, invited talk, 19th U.S. National Congress on Theoretical and Applied Mechanics, June 19-24, 2022, Austin, TX, USA.
14. *"Peridynamics computations at the exascale"*, invited talk, 19th U.S. National Congress on Theoretical and Applied Mechanics, June 19-24, 2022, Austin, TX, USA.
15. *"Peridynamics modeling of failure in composite laminates"* (Zoom presentation), invited talk, International Symposium on Nonlocal Mechanics Approaches for Modeling Localized Deformations, June 7-8, 2022, IIT Hyderabad, India.
16. *"Peridynamics computations at the exascale"*, invited talk, Engineering Mechanics Institute Conference 2022, May 31-June 3, 2022, Baltimore, MD, USA.
17. *"Internships and industry partnerships at Oak Ridge National Laboratory"*, invited talk, 2022 Virtual Joint Mathematics Meetings, April 6-9, 2022, Online.
18. *"A peridynamics MATLAB tool for two-dimensional fracture computations"*, Nonlocal Codes, December 2, 2021, Virtual Workshop, Online.
19. *"Overall equilibrium in the coupling of peridynamics and classical continuum mechanics"*, invited talk, ASME 2021 International Mechanical Engineering Congress & Exposition, November 1-5, 2021, Virtual Conference, Online.
20. *"An FEM-based peridynamic model for failure analysis of unidirectional fiber-reinforced laminates"*, invited talk, ASME 2021 International Mechanical Engineering Congress

& Exposition, November 1-5, 2021, Virtual Conference, Online.

21. *"Overall equilibrium in the coupling of peridynamics and classical continuum mechanics"*, invited talk, 44th SIAM Southeastern Atlantic Section Conference, September 18-19, 2021, Hybrid Event, Auburn University, Auburn, AL, USA.
22. *"Modeling failure in composite laminates for automotive applications: A peridynamics approach"*, 3rd cross laboratory HPC4EI PI forum, September 7, 2021, Virtual Event.
23. *"Overall equilibrium in the coupling of peridynamics and classical continuum mechanics"*, invited talk, 16th U.S. National Congress on Computational Mechanics, July 25-29, 2021, Virtual Conference.
24. *"Overall equilibrium in the coupling of peridynamics and classical continuum mechanics"*, invited talk, 9th edition of the International Conference on Computational Methods for Coupled Problems in Science and Engineering, June 14-16, 2021, Online Event.
25. *"Toward validation of peridynamic failure models of fiber-reinforced composite laminates "*, invited talk, Engineering Mechanics Institute Conference 2021 and Probabilistic Mechanics & Reliability Conference 2021, May 25-28, 2021, Virtual Event.
26. *"Bond-based peridynamics: A tale of two Poisson's ratios"*, invited talk, SIAM Conference on Mathematical Aspects of Materials Science, May 17-27, 2021, Virtual Conference.
27. *"Analysis of the overall equilibrium in local-to-nonlocal coupling"*, invited talk, The 50th John H. Barrett Memorial Lectures, A^3N^2M: Approximation, Applications, and Analysis of Nonlocal, Nonlinear Models, May 17-19, 2021, Virtual Conference.
28. *"Overall equilibrium in the coupling of peridynamics and classical continuum mechanics"*, invited talk, SIAM Conference on Computational Science and Engineering, March 1-5, 2021, Virtual Conference.
29. *"Toward validation of peridynamic failure models of fiber-reinforced composite laminates"*, invited talk, 14th World Congress on Computational Mechanics – 8th European Congress on Computational Methods in Applied Sciences and Engineering, January 11-15, 2021, Virtual Congress.
30. *"Overall equilibrium in the coupling of peridynamics and classical continuum mechanics"*, invited talk, ASME 2020 International Mechanical Engineering Congress & Exposition, November 16-19, 2020, Virtual Conference, Online.
31. *"The evolution of the field of peridynamics"* (video prepared by Biraj Dahal), invited talk, ASME 2020 International Mechanical Engineering Congress & Exposition, November 16-19, 2020, Virtual Conference, Online.
32. *"Convergence studies in meshfree peridynamic crack propagation"* (video prepared by Marco Pasetto), invited talk, ASME 2020 International Mechanical Engineering Congress & Exposition, November 16-19, 2020, Virtual Conference, Online.
33. *"Overall equilibrium in the coupling of peridynamics and classical continuum mechanics"*, invited talk, 3^{rd} Annual Meeting of the SIAM Texas-Louisiana Section, October 16-18, 2020, Virtual Zoom Meeting.
34. *"Convergence studies in meshfree peridynamic wave and crack propagation"*, invited talk, Workshop on Experimental and Computational Fracture Mechanics, February 26-28, 2020, Baton Rouge, LA, USA.
35. *"Toward validation of peridynamic failure models of fiber-reinforced composite la-*

minates", invited talk, ASME 2019 International Mechanical Engineering Congress & Exposition, November 11-14, 2019, Salt Lake City, UT, USA.

36. *"Anisotropy in two-dimensional and planar elasticity bond-based peridynamics"*, invited talk, ASME 2019 International Mechanical Engineering Congress & Exposition, November 11-14, 2019, Salt Lake City, UT, USA.
37. *"Overall equilibrium in coupled FEM-PD models"*, invited talk, ASME 2019 International Mechanical Engineering Congress & Exposition, November 11-14, 2019, Salt Lake City, UT, USA.
38. *"Modeling material anisotropy in bond-based peridynamics"*, invited talk, 43rd Annual Meeting of the SIAM Southeastern Atlantic Section, September 21-22, 2019, Knoxville, TN, USA.
39. *"Bond-based peridynamics: A tale of two Poisson's ratios"*, invited talk, 15th U.S. National Congress on Computational Mechanics, July 28-August 1, 2019, Austin, TX, USA.
40. *"Anisotropy in two-dimensional and planar elasticity bond-based peridynamics"*, invited talk, Engineering Mechanics Institute Conference 2019, June 18-21, 2019, Caltech, Pasadena, CA, USA.
41. *"Peridynamic models for anisotropic media"*, invited talk, Workshop on Meshfree Method and Advances in Computational Mechanics, March 10-12, 2019, Pleasanton, CA, USA.
42. *"Foundations of material anisotropy in classical elasticity and peridynamics"*, invited talk, SIAM Conference on Computational Science and Engineering, February 25-March 1, 2019, Spokane, WA, USA.
43. *"Convergence studies in meshfree peridynamic simulations"*, invited talk, ASME 2018 International Mechanical Engineering Congress & Exposition, November 9-15, 2018, Pittsburgh, PA, USA.
44. *"Anisotropy in two-dimensional and plane elasticity bond-based peridynamics"*, invited talk, ASME 2018 International Mechanical Engineering Congress & Exposition, November 9-15, 2018, Pittsburgh, PA, USA.
45. *"Modeling material anisotropy with peridynamics"*, invited talk, ASME 2018 International Mechanical Engineering Congress & Exposition, November 9-15, 2018, Pittsburgh, PA, USA.
46. *"Coupling methods in peridynamics for effective failure and damage simulation"*, invited talk, USACM Thematic Conference on Meshfree and Particle Methods: Applications and Theory, September 10-12, 2018, Santa Fe, NM, USA.
47. *"Coupling methods in peridynamics for effective failure and damage simulation"*, invited talk, 13th World Congress on Computational Mechanics, July 22-27, 2018, New York City, NY, USA.
48. *"Modeling material anisotropy with peridynamics"*, invited talk, 18th U.S. National Congress for Theoretical and Applied Mechanics, June 4-9, 2018, Rosemont, IL, USA.
49. *"Convergence studies in meshfree peridynamic simulations"*, invited talk, Engineering Mechanics Institute Conference 2018, May 29-June 1, 2018, Cambridge, MA, USA.
50. *"Nonlocality in peridynamics across scales"*, invited talk, USACM Thematic Conference on Nonlocal Methods in Fracture, January 15-16, 2018, Austin, TX.
51. *"2D computations in peridynamics with MATLAB"*, Modeling, Analysis and Numerics

for Nonlocal Applications Workshop, December 11-15, 2017, Santa Fe, NM, USA.

52. *"Numerical tools for improved convergence of meshfree peridynamic discretizations"*, invited talk, ASME 2017 International Mechanical Engineering Congress & Exposition, November 3-9, 2017, Tampa, FL, USA.
53. *"Peridynamic models for anisotropic media"*, invited talk, ASME 2017 International Mechanical Engineering Congress & Exposition, November 3-9, 2017, Tampa, FL, USA.
54. *"Nonlocal mechanics models for anisotropic media"*, invited talk, Nonlocal School on Fractional Equations, August 17-19, 2017, Ames, IA, USA.
55. *"Uncertainty quantification in materials modeling"*, invited talk, Workshop on Quantification of Uncertainty: Improving Efficiency and Technology, July 18-21, 2017, Trieste, Italy.
56. *"Peridynamic models for anisotropic media"*, invited talk, 14th U.S. National Congress on Computational Mechanics, July 17-20, 2017, Montréal, Canada.
57. *"Anisotropic bond-based peridynamic models"*, invited talk, Nonlocal Dynamics: Theory, Computation and Applications, June 4-9, 2017, Chicago, IL, USA.
58. *"Concurrent multiscale methods for local/nonlocal coupling"*, invited talk, Workshop on Non-local Material Models and Concurrent Multiscale Methods, April 3-7, 2017, Bonn, Germany.
59. *"Anisotropic bond-based peridynamic models"*, invited talk, 41st SIAM Southeastern Atlantic Section Conference, March 18-19, 2017, Tallahassee, FL, USA.
60. *"Blending methods for effective local/nonlocal coupling in materials modeling"*, invited talk, SIAM Conference on Computational Science and Engineering, February 27-March 3, 2017, Atlanta, GA, USA.
61. *"Surface effect analysis and correction in peridynamics"*, invited talk, ASME 2016 International Mechanical Engineering Congress & Exposition, November 11-17, 2016, Phoenix, AZ, USA.
62. *"On the consistency between nearest-neighbor peridynamic discretizations and discretized classical elasticity models"*, invited talk, ASME 2016 International Mechanical Engineering Congress & Exposition, November 11-17, 2016, Phoenix, AZ, USA.
63. *"On the consistency between nearest-neighbor peridynamic discretizations and discretized classical elasticity models"*, invited talk, USACM Thematic Conference on Isogeometric Analysis and Meshfree Methods, October 10-12, 2016, La Jolla, CA, USA.
64. *"Foundations Of Rigorous Mathematics for Uncertainty quantification in Large systems At The Extreme scale (FORMULATE)"* (co-presented with Clayton Webster), invited talk, DARPA EQUiPS Program Review Meeting, September 21-23, 2016, DARPA Conference Center, Arlington, VA, USA.
65. *"On the consistency between nearest-neighbor peridynamic discretizations and discretized classical elasticity models"*, invited talk, SIAM Conference on Nonlinear Waves and Coherent Structures, August 8-11, 2016, Philadelphia, PA, USA.
66. *"Surface effect analysis and correction in peridynamics"*, invited talk, 12th World Congress on Computational Mechanics – 6th Asia-Pacific Congress on Computational Mechanics, July 24-29, 2016, Seoul, Korea.
67. *"Multiscale coupling of peridynamics and classical continuum mechanics"*, invited talk, 9th International Conference on Fracture Mechanics of Concrete and Concrete

Structures, May 28-June 1, 2016, Berkeley, CA, USA.

68. *"On the consistency between nearest-neighbor peridynamics and finite difference classical elasticity"*, invited talk, SIAM Conference on Mathematical Aspects of Materials Science, May 8-12, 2016, Philadelphia, PA, USA.
69. *"Peridynamic models for upscaling crystalline structures"*, contributed talk, SIAM Conference on Mathematical Aspects of Materials Science, May 8-12, 2016, Philadelphia, PA, USA.
70. *"Uncertainty inclusion and characterization in nonlocal theories for materials modeling"*, invited talk, SIAM Conference on Uncertainty Quantification, April 5-8, 2016, Lausanne, Switzerland.
71. *"Toward uncertainty quantification in multiscale materials simulations"*, invited talk, DARPA Open Manufacturing Review Meeting, February 16-18, 2016, Arlington, VA, USA.
72. *"Multiscale coupling methods in peridynamics"*, invited talk, Fifth Chilean Workshop on Numerical Analysis of Partial Differential Equations, January 11-15, 2016, Concepción, Chile.
73. *"Towards multiscale material modeling with peridynamics"* (Skype presentation), invited talk, Current Trends in Non-Classical Continuum Mechanics, December 14-15, 2015, Goa, India.
74. *"On the consistency between: nearest-neighbor peridynamics and discretized classical elasticity"*, invited talk, ASME 2015 International Mechanical Engineering Congress & Exposition, November 13-19, 2015, Houston, TX, USA.
75. *"Foundations Of Rigorous Mathematics for Uncertainty quantification in Large systems At The Extreme scale (FORMULATE)"* (Co-presented with Clayton Webster), invited talk, DARPA EQUiPS Kick-off Meeting, November 9-10, 2015, DARPA Conference Center, Arlington, VA, USA.
76. *"Multiscale coupling methods in peridynamics"*, invited talk, Workshop for Nonlocal Models in Mathematics, Computation, Science, and Engineering, October 26-28, 2015, Oak Ridge National Laboratories, Oak Ridge, TN, USA.
77. *"Convergence studies of meshfree peridynamic simulations"*, invited talk, Advances in Scientific Computing and Applied Mathematics, October 9-12, 2015, Las Vegas, NV, USA.
78. *"Multiscale coupling of peridynamics and classical continuum mechanics by blending"*, invited talk, Eighth International Workshop on Meshfree Methods for Partial Differential Equations, September 7-9, 2015, Bonn, Germany.
79. *"Convergence studies of meshfree peridynamic simulations"*, invited talk, The 8th International Congress on Industrial and Applied Mathematics, August 10-14, 2015, Beijing, China.
80. *"A consistent blending scheme to concurrently couple peridynamics and classical continuum mechanics"*, invited talk, The 8th International Congress on Industrial and Applied Mathematics, August 10-14, 2015, Beijing, China.
81. *"Convergence studies of meshfree peridynamic simulations"*, invited talk, 13th U.S. National Congress on Computational Mechanics, July 26-30, 2015, San Diego, CA, USA.
82. *"A blending approach to concurrently couple peridynamics and classical continuum mechanics"*, invited talk, First Pan-American Congress on Computational Mechanics,

April 27-29, 2015, Buenos Aires, Argentina.

83. *"Convergence studies of meshfree peridynamic simulations"*, invited talk, Conference on Recent Developments in Continuum Mechanics and Partial Differential Equations, April 18-19, 2015, Lincoln, NE, USA.
84. *"A concurrent multiscale blending scheme for local/nonlocal coupling"*, invited talk, AMS Spring Southeastern Sectional Meeting, March 27-29, 2015, Huntsville, AL, USA.
85. *"A blending approach to concurrently couple peridynamics and classical continuum mechanics"*, invited talk, 13th International Symposium on Multiscale, Multifunctional and Functionally Graded Materials, October 19-22, 2014, Taua Resort, São Paulo, Brazil.
86. *"Concurrent coupling of peridynamics and classical continuum mechanics by blending"*, invited talk, 17th U.S. National Congress on Theoretical and Applied Mechanics, June 15-20, 2014, East Lansing, MI, USA.
87. *"Improved one-point quadrature algorithms for two-dimensional peridynamic models based on analytical calculations"*, invited talk, SIAM Conference on Analysis of Partial Differential Equations, December 7-10, 2013, Lake Buena Vista, FL, USA.
88. *"Concurrent coupling of bond-based peridynamics and Navier equation of classical elasticity by blending"*, invited talk, 12th U.S. National Congress on Computational Mechanics, July 22-25, 2013, Raleigh, NC, USA.
89. *"Concurrent coupling of bond-based peridynamics and Navier equation of classical elasticity by blending"*, invited talk, SIAM Conference on Mathematical Aspects of Materials Science, June 9-12, 2013, Philadelphia, PA, USA.
90. *"Interface problems in nonlocal diffusion and sharp transitions between local and nonlocal domains"*, invited talk, Workshop on Nonlocal Damage and Failure: Peridynamics and Other Nonlocal Models, March 11-12, 2013, San Antonio, TX, USA.
91. *"Mathematical modeling and analysis of interface problems for nonlocal diffusion"*, invited talk, 2013 Joint Mathematics Meetings, January 9-12, 2013, San Diego, CA, USA.
92. *"Concurrent multiscale modeling in peridynamics"*, invited talk, ASME 2012 International Mechanical Engineering Congress and Exposition, November 9-12, 2012, Houston, TX, USA.
93. *"Blending schemes for concurrent coupling of local and nonlocal continuum models in multiscale solid mechanics"*, invited talk, 49th Annual Technical Meeting of The Society of Engineering Science, October 10-12, 2012, Atlanta, GA, USA.
94. *"A force-based blending between peridynamics and classical elasticity"*, invited talk, 10th World Congress on Computational Mechanics, July 8-13, 2012, São Paulo, Brazil.
95. *"Multiscale modeling approaches in peridynamics"*, invited talk, 10th World Congress on Computational Mechanics, July 8-13, 2012, São Paulo, Brazil.
96. *"A force-based coupling scheme for peridynamics and classical elasticity"*, invited talk, SAMSI Nonlocal Continuum Models for Diffusion, Mechanics, and Other Applications Workshop, June 25-29, 2012, Research Triangle Park, NC, USA.
97. *"Concurrent coupling of nonlocal and local continuum models in peridynamics"*, invited talk, Workshop on Peridynamics, Dissipative Particle Dynamics and the Mori-Zwanzig Formulation, April 10-11, 2012, Providence, RI, USA.

98. *"A force-based blending of peridynamics and classical elasticity"*, invited talk, Colloquium: Advances in Computational Science, Engineering, and Mathematics, *Honoring the 75th Birthday of J. Tinsley Oden*, January 19-20, 2012, Austin, TX, USA.
99. *"Peridynamics as a multiscale material model"*, invited talk, 2011 AMS Fall Central Section Meeting, October 14-16, 2011, Lincoln, Nebraska, USA.
100. *"Interface problems in nonlocal multiscale modeling"*, invited talk, 11th US National Congress on Computational Mechanics, July 25-29, 2011, Minneapolis, Minnesota, USA.
101. *"Coupling local and nonlocal diffusion models across interfaces"*, invited talk, 7th International Congress on Industrial and Applied Mathematics, July 18-22, 2011, Vancouver, British Columbia, Canada.
102. *"Multiscale modeling in peridynamic solid mechanics"*, contributed talk, Workshop on Macroscopic Modeling of Materials with Fine Structure, May 26-28, 2011, Pittsburgh, Pennsylvania, USA.
103. *"Connecting peridynamic models and coupling local and nonlocal systems"*, invited talk, Mini-Workshop: Mathematical Analysis for Peridynamics, January 16-22, 2011, Oberwolfach-Walke, Germany.
104. *"A domain decomposition method for local/nonlocal coupling"*, invited talk, 16th US National Congress on Theoretical and Applied Mechanics, June 27-July 2, 2010, State College, Pennsylvania, USA.
105. *"A domain decomposition method for local/nonlocal coupling"*, invited talk, SIAM Conference on Mathematical Aspects of Materials Science, May 23-26, 2010, Philadelphia, Pennsylvania, USA.
106. *"Peridynamics as an upscaling of molecular dynamics"*, contributed talk, Second Conference on Applied, Computational and Industrial Mathematics, December 14-16, 2009, Rosario, Santa Fe, Argentina.
107. *"Peridynamics as an upscaling of molecular dynamics"*, contributed talk, The 2009 Joint ASCE-ASME-SES Conference on Mechanics and Materials, June 24-27, 2009, Blacksburg, Virginia, USA.
108. *"Peridynamics as an upscaling of molecular dynamics"*, invited talk, 33rd SIAM-SEAS Conference 2009, April 4-5, 2009, Columbia, South Carolina, USA.

Invited Lectures, Seminars, and Colloquia

1. *"Breaking through: Harnessing exascale computing and peridynamics for complex fracture modeling"*, 2025 USACM Novel Methods Spring Seminar, March 28, 2025, Virtual Seminar.
2. *"Coupling peridynamics and classical continuum mechanics: Overview, methods, and analysis"*, Fractional Calculus Seminar, International School for Advanced Studies (SISSA), Italy, December 6, 2024, Virtual Seminar.
3. *"Computational peridynamics for fracture modeling"*, Theory of Linear FEM course, The University of Utah, November 18, 2024, Virtual Guest Lecture.
4. *"Coupling peridynamics and classical continuum mechanics: Overview, methods, and analysis"*, Continuum Mechanics Seminar, University of Nebraska-Lincoln, April 4, 2024, Virtual Seminar.
5. *"Data-driven surrogate modeling and sensitivity analysis for particle-in-cell simulations of plasma-material interactions"*, UQ working group, Science Engagement secti-

on, Oak Ridge National Laboratory, December 21, 2023, Oak Ridge, TN, USA.

6. *"Data-driven surrogate modeling and sensitivity analysis for particle-in-cell simulations of plasma-material interactions"*, Mathematics in Computation Seminar Series, Oak Ridge National Laboratory, December 15, 2022, Oak Ridge, TN, USA.
7. *"Peridynamics: A framework for fracture, multiscale, and complex materials modeling"*, Continuum Mechanics Seminar, University of Nebraska-Lincoln, April 21, 2022, Virtual Seminar.
8. *"Computational fracture modeling with peridynamics: Challenges and opportunities"*, Plenary Lecture, ALOP Workshop on Nonlocal Models: Analysis, Optimization and Implementation, July 12-14, 2021, Virtual Workshop.
9. *"Peridynamics: A framework for fracture, multiscale, and complex materials modeling"*, Mathematics in Computation Seminar Series, Oak Ridge National Laboratory, April 22, 2021, Virtual Colloquium.
10. *"Peridynamics: A framework for fracture, multiscale, and complex materials modeling"*, Applied Mathematics Colloquium, University of North Carolina at Chapel Hill, April 16, 2021, Virtual Colloquium.
11. *"Computational fracture modeling with peridynamics"*, Department of Mathematics Colloquium, January 28, 2020, Iowa State University, Ames, IA, USA.
12. *"Computational fracture modeling with peridynamics"*, Computational Mechanics Seminar Series, December 12, 2019, Oak Ridge National Laboratory, Oak Ridge, TN, USA.
13. *"Peridynamics: A framework for fracture, multiscale, and complex materials modeling"*, Journal Club Seminar Series, October 11, 2019, Materials Theory Group, Oak Ridge National Laboratory, Oak Ridge, TN, USA.
14. *"Numerical and modeling advances for peridynamic fracture computations"*, CSMD-CSED Seminar Series, March 6, 2019, Oak Ridge National Laboratory, Oak Ridge, TN, USA.
15. *"Toward effective simulation of fracture in anisotropic media"*, December 14, 2018, Department of Industrial Engineering, University of Padova, Padova, Italy.
16. *"Concurrent multiscale methods for local/nonlocal coupling"*, December 7, 2018, Department of Industrial Engineering, University of Padova, Padova, Italy.
17. *"Toward effective simulation of fracture in anisotropic media"*, Computational Mechanics Special Seminar, May 11, 2018, Department of Structural Engineering, University of California, San Diego, La Jolla, CA, USA.
18. *"Mathematical & multiscale modeling in peridynamics"*, Modeling, Analysis and Numerics for Nonlocal Applications Workshop, December 11-15, 2017, Santa Fe, NM, USA.
19. *"Uncertainty quantification in materials modeling"* (co-presented with Miroslav Stoyanov), February 7, 2017, U.S. Army Research Laboratory, Aberdeen Proving Ground, MD, USA.
20. *"Convergence studies for nonlocal peridynamic models"*, Computational and Applied Mathematics Seminar, December 1, 2016, Computer Science and Mathematics Division, Oak Ridge National Laboratory, Oak Ridge, TN, USA.
21. *"Toward multiscale material modeling with peridynamics"*, Mechanical Engineering Seminar, April 18, 2016, Department of Mechanical Engineering, Technion–Israel Institute of Technology, Haifa, Israel.

22. *"Toward multiscale material modeling with peridynamics"*, Numerical Analysis Seminar, March 1, 2016, Department of Mathematics, University of Maryland, College Park, MD, USA.
23. *"Nonlocal models in solid mechanics: overview, applications, challenges, and multiscale modeling"*, Group meeting, June 23, 2015, Computational Data Analytics Group, Oak Ridge National Laboratory, Oak Ridge, TN, USA.
24. *"Multiscale material modeling with mesoscopic models"*, Colloquium, February 5, 2014, Department of Computational and Applied Mathematics, Rice University, Houston, TX, USA.
25. *"Multiscale material modeling with mesoscopic models"*, Colloquium, January 23, 2014, Department of Mathematical Sciences, The University of Texas at El Paso, El Paso, TX, USA.
26. *"Multiscale material modeling with mesoscopic models"*, Colloquium, January 17, 2014, Department of Mathematics, Statistics and Computer Science, Marquette University, Milwaukee, WI, USA.
27. *"Bridging scales in materials with mesoscopic models"*, Computer Science and Mathematics Division Seminar, January 13, 2014, Oak Ridge National Laboratory, Oak Ridge, TN, USA.
28. *"Multiscale material modeling with mesoscopic models"*, Mathematics Colloquium, December 3, 2013, Department of Mathematics, Kansas State University, Manhattan, KS, USA.
29. *"Multiscale material modeling with mesoscopic models"*, Collaboratory on Mathematics for Mesoscopic Modeling of Materials Webinar, Pacific Northwest National Laboratory, September 9, 2013.
30. *"Multiscale material modeling with peridynamics"*, Computer Science and Mathematics Division Seminar, May 31, 2013, Oak Ridge National Laboratory, Oak Ridge, TN, USA.
31. *"Multiscale material modeling with peridynamics"*, Mathematics Colloquium, January 24, 2013, Department of Mathematics, University of Tennessee, Knoxville, TN, USA.
32. *"Coupling local and nonlocal continuum models by blending in peridynamics"*, IPAM MD2012 Seminar Series, October 18, 2012, Institute for Pure and Applied Mathematics, University of California, Los Angeles, CA, USA.
33. *"Bridging scales with nonlocal continuum models for applications to material failure and damage"*, Applied Math Seminar, November 27, 2012, Department of Mathematics, California State University, Northridge, CA, USA.
34. *"Nonlocal models in solid mechanics: overview, applications, challenges, and multiscale modeling"*, Mathematics Colloquium, September 28, 2012, Department of Mathematics, University of Nebraska-Lincoln, Lincoln, NE, USA.
35. *"Scientific research from a computational science perspective"*, Math Club, September 27, 2012, Department of Mathematics, University of Nebraska-Lincoln, Lincoln, NE, USA.
36. *"Bridging scales in solid mechanics: a new approach to concurrent multiscale modeling"*, Continuum Mechanics Seminar, September 27, 2012, Department of Mathematics, University of Nebraska-Lincoln, Lincoln, NE, USA.
37. *"Concurrent coupling of nonlocal and local continuum models in peridynamics"*,

Computational and Applied Mathematics Colloquium, April 13, 2012, Mathematics Department, The Pennsylvania State University, State College, PA, USA.

38. *"A crash course on peridynamics: theory, applications, and challenges"*, CCMA Luncheon Seminar, April 13, 2012, Mathematics Department, The Pennsylvania State University, State College, PA, USA.
39. *"Peridynamics as a multiscale material model"*, Multiscale Modeling & Analysis Course, April 12, 2012, Mathematics Department, The Pennsylvania State University, State College, PA, USA.
40. *"Molecular dynamics at larger scales: peridynamics as an upscaling of molecular dynamics"*, Introductory SC Graduate Student Seminar, April 17, 2009, Department of Scientific Computing, Florida State University, Tallahassee, Florida, USA.
41. *"Introduction to software versioning, SVN & CVS"*, SCS technical topics series, October 10, 2007, School of Computational Science, Florida State University, Tallahassee, Florida, USA.
42. *"Managing software development using SVN, a case study"*, SCS technical topics series, February 28, 2007, School of Computational Science, Florida State University, Tallahassee, Florida, USA.

Poster Presentations

1. *"A scalable Cabana based peridynamics fracture simulator"*, ORNL Software and Data Expo 2022, May 10-11, 2022, Oak Ridge National Laboratory, Oak Ridge, TN, USA.
2. *"Concurrent multiscale algorithms for local/nonlocal coupling and its adaptivity"*, Workshop for Advances in Computational Sciences and Engineering, March 20-21, 2017, Austin, TX, USA.
3. *"Multiscale material modeling with mesoscopic models"*, Joint NSRC Workshop: Big, Deep, and Smart Data Analytics in Materials Imaging, June 8-10, 2015, Oak Ridge National Laboratory, Oak Ridge, TN, USA.
4. *"A force-based coupling scheme for peridynamics and classical elasticity"*, Computational Methods for Multiscale Modeling of Materials Defects Workshop, December 3-7, 2012, Institute for Pure and Applied Mathematics, University of California, Los Angeles, CA, USA.
5. *"A force-based coupling scheme for peridynamics and classical elasticity"*, SAMSI Nonlocal Continuum Models for Diffusion, Mechanics, and Other Applications Workshop, June 25-29, 2012, Research Triangle Park, NC, USA.
6. *"Peridynamics as a multiscale material model"*, 2011 DOE Applied Mathematics Program Meeting, October 17-19, 2011, Reston, Virginia, USA.
7. *"Interface problems in nonlocal multiscale modeling"*, 11th US National Congress on Computational Mechanics, July 25-29, 2011, Minneapolis, Minnesota, USA.
8. *"On the role of the influence function in the peridynamic theory"*, Computational Expo 2010, April 14, 2010, Department of Scientific Computing, Florida State University, Tallahassee, Florida, USA.
9. *"Peridynamics as an upscaling of molecular dynamics"*, Computational Xposition 2009, April 14, 2009, Department of Scientific Computing, Florida State University, Tallahassee, Florida, USA.
10. *"Bridging methods and boundary treatment for AtC coupling problems"*, The Fourth International Conference on Multiscale Materials Modeling, October 27-31, 2008,

Tallahassee, Florida, USA.

11. *"Peridynamics as an upscaling of molecular dynamics"*, Applied Mathematics Principal Investigators Meeting, October 15-17, 2008, Argonne, Illinois, USA.
12. *"Bridging methods and boundary treatment for AtC coupling problems"*, The 4th Annual Meeting of the Florida Society for Materials Simulation, May 5-7, 2008, Tallahassee, Florida, USA.
13. *"Bridging methods and boundary treatment for AtC coupling problems"*, Computational Xposition 2008, February 25, 2008, Department of Scientific Computing, Florida State University, Tallahassee, Florida, USA.
14. *"The buildup of galaxies in dark-matter halos"*, Nearly Normal Galaxies in a ΛCDM Universe conference, August 8-12, 2005, Santa Cruz, California, USA.

Contracts and Grants

Oak Ridge National Laboratory 2025
Seed Money
Title: Exascale computing for fiber-reinforced composite design
Role: Principal Investigator
Total Award: $240,000
Co-Investigator: Christopher Bowland (ORNL)
ORNL Contributor: Sam Reeve
External Advisor: Stephanie TerMaath (The University of Tennessee, Knoxville)

U.S. Department of Energy 2025
Advanced Materials and Manufacturing Technologies Office
Title: Scalable and performance portable particle simulation for powder metallurgy-based advanced manufacturing
Role: Co-Investigator
PI: Sam Reeve (Oak Ridge National Laboratory)
Other Co-Investigators: Austin Isner, Yousub Lee (ORNL)
Total Award: $500,000

Oak Ridge National Laboratory 2024-2025
Laboratory Directed Research & Development (LDRD)
Title: Machine learning informed multi-scale simulation of plasma-facing materials
Role: Co-Investigator
Total Award: $992,400
PI: Rinkle Juneja (Oak Ridge National Laboratory)
Other Co-Investigators: M. Alnaggar, C. Parish, and S. Seeve (ORNL)
ORNL Contributors: Y. Le Pape, J. Rapp, and J. Weinmeister
External Advisors: J. W. Coenen (Institute for Energy and Climate Research, Juelich, Germany), A. Durif (CEA Cadarache, France), and M. Wirtz (Institute for Energy and Climate Research, Juelich, Germany)

U.S. Department of Energy 2024
Advanced Materials and Manufacturing Technologies Office (HPC4Manufacturing Program)
Title: HPC simulations to accelerate design and manufacturing of impact-resistant composite fuselages for open rotor engines
Role: National Laboratory Principal Investigator
Industry PI: Olaf Weckner (Boeing)

Total Award: $300,000

Oak Ridge National Laboratory 2022
Oak Ridge Leadership Computing Facility (OLCF Director's Discretionary Program)
Title: A scalable Cabana based peridynamics fracture simulator
Role: Principal Investigator
Total Award: 20,000 Summit node-hours
Co-PI: Sam Reeve (ORNL)

Oak Ridge National Laboratory 2022
Seed Money
Title: A scalable Cabana based peridynamics fracture simulator
Role: Principal Investigator
Total Award: $190,000
Co-PI: Sam Reeve (ORNL)

Oak Ridge National Laboratory 2020
Computing and Computational Sciences Directorate
Workshop: Meshfree and Finite Element Methods with Applications
Location: Berkeley, CA, USA
Dates: September 27-29, 2020
Website: http://mfem2020.usacm.org
Total Award: $10,000

Oak Ridge National Laboratory 2020
Computing and Computational Sciences Directorate
Workshop: Experimental and Computational Fracture Mechanics
Location: Baton Rouge, LA, USA
Dates: February 26-28, 2020
Website: http://wfm2020.usacm.org
Total Award: $10,000

USNC/TAM AmeriMech Symposia 2020
Workshop: Experimental and Computational Fracture Mechanics
Location: Baton Rouge, LA, USA
Dates: February 26-28, 2020
Website: http://wfm2020.usacm.org
Total Award: $4,000

U.S. Department of Energy 2019
Vehicle Technologies Office (HPC4Materials Program)
Title: An advanced meso-scale peridynamic modeling technology using high-performance computing for cost-effective product design and testing of carbon fiber reinforced polymer composites in light-weight vehicles
Role: National Laboratory Principal Investigator
Industry PI: Danielle Zeng (Ford Motor Company)
Total Award: $300,000

Oak Ridge National Laboratory 2018-2019
Laboratory Directed Research & Development (LDRD)
Title: Advanced numerical methods for fracture modeling

Role: Principal Investigator
Total Award: $595,000
Co-PIs: L. Mu, M. Stoyanov, and J. Trageser (ORNL)

Oak Ridge National Laboratory 2018
Computer Science and Mathematics Division
Workshop: Nonlocal Methods in Fracture
Location: Austin, TX, USA
Dates: January 15-16, 2018
Website: http://nmf2018.usacm.org
Total Award: $5,000

U.S. Department of Defense 2016-2017
Defense Advanced Research Projects Agency (DARPA)
Title: Foundations of rigorous mathematics for uncertainty quantification of large multiscale systems at the extreme scale
Role: Senior Investigator
Total Award: $2,000,000
PI: Clayton Webster (Oak Ridge National Laboratory)
Co-PIs: W. Dahmen (RWTH Aachen), R. DeVore (Texas A&M), Q. Du (Columbia University), M. Gunzburger (Florida State University), and N. Zabaras (University of Warwick)

Oak Ridge National Laboratory 2016-2017
Laboratory Directed Research & Development (LDRD)
Title: Novel numerical methods for uncertainty quantification of multiscale materials
Role: Co-Principal Investigator
Total Award: $722,000
PI: Clayton Webster (Oak Ridge National Laboratory)
Other Co-PIs: G. Fann, M. Stoyanov, and G. Zhang (ORNL)

Oak Ridge National Laboratory 2015-2017
Laboratory Directed Research & Development (LDRD)
Title: Concurrent multiscale algorithms for local/nonlocal coupling and its adaptivity
Role: Principal Investigator
Total Award: $577,200

U.S. Department of Energy 2015-2017
Advanced Scientific Computing Research (ASCR)
Title: Householder fellowship
Role: Principal Investigator
Total Award: $300,000

USNC/TAM AmeriMech Symposia 2015
Workshop: Nonlocal Models in Mathematics, Computation, Science, and Engineering
Location: Oak Ridge, TN, USA
Dates: October 26-28, 2015
Website: http://nlmcse.usacm.org/
Total Award: $4,000

Sandia National Laboratories 2012-2014
Laboratory Directed Research & Development (LDRD)

Title: Strong local-nonlocal coupling for integrated fracture modeling
Role: Co-Principal Investigator
Award: $165,000 for UT Austin
PI: David Littlewood (Sandia National Laboratories)

Other Projects Contribution

Oak Ridge National Laboratory 2024-present
AI Initiative – Thrust: Artificial Intelligence for Scientific Discovery and Design
Title: Scalable Generative Graph Models
Role: Collaborator
PI: Massimiliano Lupo Pasini (ORNL)

U.S. Department of Energy 2023-2024
Advanced Scientific Computing Research (ASCR)
Title: Exascale Computing Project, Co-design center for Particle Applications (CoPA)
Role: Collaborator
Lead PI: Susan Mniszewski (Los Alamos National Laboratory)
ORNL Lead: Stuart Slattery

U.S. Department of Energy 2019–2023
Scientific Discovery through Advanced Computing (SciDAC)
Title: Plasma Surface Interactions: Predicting the Performance and Impact of Dynamic PFC Surfaces
Role: Senior Investigator
Lead PI: Brian Wirth (University of Tennessee, Knoxville)
ORNL PI: David Bernholdt

Faculty Host

Walter Gerstle

I hosted Walter Gerstle during his participation in the HBCU/MEI Faculty Summer Research Program at ORNL in the summer of 2019. At that time, Walter was a Professor Emeritus in the Department of Civil Engineering at the University of New Mexico.

Postdoc Advisor

Marco Pasetto

Marco Pasetto joined the Computational and Applied Mathematics group at ORNL for a short-term Postdoctoral Research Associate position in the fall of 2019. I was his postdoc advisor until the end of his postdoc appointment in the spring of 2020, when he began a postdoc position at the University of California San Diego.

Jeremy Trageser

Jeremy Trageser joined the Computational and Applied Mathematics group at ORNL as a Postdoctoral Research Associate in the summer of 2017. I was his postdoc advisor until the end of his postdoc appointment in the summer of 2019, when he joined Sandia National Laboratories.

Student Mentor and Supervisor

Biraj Dahal

I mentored Biraj Dahal during his participation in the SULI program in the summer of 2019 and spring of 2020. Biraj completed an undergraduate dual degree program in computer science and mathematical sciences at Clemson University in the fall of 2019. As a result of his internship work, Biraj was selected as an ORISE IGNITE winner at ORNL in the spring of 2020 for his presentation on Complex Network Analysis. I further supervised Biraj during his participation in the NSF Mathematical Sciences Graduate Internship (MSGI) Program at ORNL in the summer of 2022. At that time, Biraj was a Ph.D. student in the School of Mathematics at Georgia Institute of Technology.

Evan Isbell

I mentored Evan Isbell during his participation in the SULI program in the summer of 2022. At that time, Evan was an undergraduate mechanical engineering major at University of Tulsa.

Martin Scott Driggers

I mentored Martin Scott Driggers during his participation in the SULI program in the summer of 2020. At that time, Scott was an undergraduate mathematics and physics majors at Clemson University.

Debdeep Bhattacharya

I supervised Debdeep Bhattacharya during his participation in the NSF Mathematical Sciences Graduate Internship (MSGI) Program at ORNL in the summer of 2019. At that time, Debdeep was a Ph.D. student in the Department of Mathematics at George Washington University.

Marco Pasetto

I supervised Marco Pasetto during his participation in the Advanced Short-Term Research Opportunity (ASTRO) Program at ORNL in the summer of 2018 and summer of 2019. At that time, Marco was a Ph.D. student in the Department of Structural Engineering at the University of California, San Diego.

Mary Vaughan

I supervised Mary Vaughan during her participation in the NSF Mathematical Sciences Graduate Internship (MSGI) Program at ORNL in the summer of 2018. At that time, Mary was a Ph.D. student in the Department of Mathematics at Iowa State University.

Kylie Berry

I supervised Kylie Berry during her participation in the DOE Office of Science Graduate Student Research (SCGSR) Program at ORNL in the spring/summer of 2018. At that time, Kylie was a Ph.D. student in the Department of Mathematics at the University of Tennessee, Knoxville.

Kelsey Wells

I supervised Kelsey Wells during her participation in the NSF Mathematical Sciences Graduate Internship (MSGI) Program at ORNL in the summer of 2017. At that time, Kelsey was a Ph.D. student in the Department of Mathematics at the University of Nebraska–Lincoln.

Mae Markowski

I mentored Mae Markowski during her participation in the SULI program at ORNL in the summer of 2017. At that time, Mae was an undergraduate mathematics major at George Mason University.

Jeremy Trageser

I co-supervised Jeremy Trageser during his summer internship at ORNL in the summer of 2016. At that time, Jeremy was a Postdoctoral Scientist in the Department of Mathematics at George Washington University.

Yunzhe Tao

I co-supervised Yunzhe Tao during his summer internship at ORNL in the summer of 2016. At that time, Yunzhe was a Ph.D. student in the Department of Applied Physics and Applied Mathematics at Columbia University.

Xiaochuan Tian

I co-supervised Xiaochuan Tian during her summer internship at ORNL in the summer of 2016. At that time, Xiaochuan was a Ph.D. student in the Department of Applied Physics and Applied Mathematics at Columbia University.

Túlio Patriota

I mentored Túlio Patriota during an internship at ORNL in the summer of 2016 and in the spring of 2017. At that time, Túlio was an undergraduate mechanical engineering major at the University of São Paulo in Brazil.

Konrad Genser

I mentored Konrad Genser during his participation in the SULI program at ORNL in the summer of 2015. At that time, Konrad was an undergraduate physics major at the University of Illinois at Urbana-Champaign.

Yohan John

I mentored Yohan John during his participation in the SULI program in the summer of 2015. At that time, Yohan was an undergraduate mechanical engineering major at the Georgia Institute of Technology. As a result of his internship work, Yohan received a “Best Poster Award” in the 2015 Summer Student Poster Session at ORNL.

Timo van Opstal

I co-supervised Timo van Opstal during his internship at ICES in the summer/fall of 2012. At that time, Timo was a Ph.D. student in the Department of Mechanical Engineering at the Eindhoven University of Technology in the Netherlands.

Eric Wright

I co-supervised Eric Wright in 2010-2012 in his graduate research, while he was a Ph.D. student in the CSEM program in ICES at The University of Texas at Austin.

Kathryn Farrell

I co-supervised Kathryn Farrell in 2010-2012 in her graduate research, while she was a Ph.D. student in the CSEM program in ICES at The University of Texas at Austin.

Samir Beneddine

I co-supervised Samir Beneddine during his internship at ICES in the summer of 2011. At that time, Samir was a Master's student in the Department of Mechanical Engineering at the École Normale Supérieure de Cachan in France.

Professional Societies

- Society for Industrial and Applied Mathematics (SIAM)
- United States Association for Computational Mechanics (USACM)
- International Association for Computational Mechanics (IACM)
- Engineering Mechanics Institute (EMI) of the American Society of Civil Engineers (ASCE)

Professional Service Activities

- **Short-Course/Tutorial Instructor**

  2024:

  - *Introduction to Graph Neural Networks*
    Artificial Intelligence Summer Institute, July 18, 2024, Oak Ridge National Laboratory, Oak Ridge, TN, USA.
  - *PDMATLAB2D: A Meshfree Peridynamics MATLAB Code for 2D Fracture Computations*
    Nonlocality: Challenges in Modeling and Simulation, April 12, 2024, Institute for Computational and Experimental Research in Mathematics, Providence, RI, USA.
  - *HydraGNN: A Scalable Graph Neural Network Architecture for Material Property Predictions*
    Artificial Intelligence Tutorial Series, March 28, 2024, Oak Ridge National Laboratory, Oak Ridge, TN, USA.
    Co-taught with Jong Youl Choi, Massimiliano Lupo Pasini, Kshitij Mehta, and Pei Zhang (Oak Ridge National Laboratory).

  2023:

  - *Peridynamic Theory of Solid Mechanics: Modeling, Computation, and Applications*
    17th U.S. National Congress on Computational Mechanics
    Co-taught with John Foster (University of Texas at Austin) and David Littlewood (Sandia National Laboratories).

  2021:

  - *Meshfree Peridynamics Computations: 2D MATLAB and 3D Peridigm* (tutorial)
    Nonlocal Codes, December 7, 2021, Virtual Workshop, Online.
    Co-taught with David Littlewood (Sandia National Laboratories).

  2019:

  - *Peridynamic Theory of Solid Mechanics: Modeling, Computation, and Applications*
    15th U.S. National Congress on Computational Mechanics
    Co-taught with John Foster (University of Texas at Austin) and David Littlewood (Sandia National Laboratories).

2018:

- *Peridynamic Theory of Solid Mechanics: Modeling, Computation, and Applications*
  13th World Congress on Computational Mechanics
  Co-taught with John Foster (University of Texas at Austin) and David Littlewood (Sandia National Laboratories).
- *Peridynamic Theory of Solid Mechanics: Modeling, Computation, and Applications*
  18th U.S. National Congress for Theoretical and Applied Mechanics
  Co-taught with John Foster (University of Texas at Austin) and David Littlewood (Sandia National Laboratories).

2017:

- *Peridynamic Theory of Solid Mechanics: Modeling, Computation, and Applications*
  14th U.S. National Congress on Computational Mechanics
  Co-taught with John Foster (University of Texas at Austin) and David Littlewood (Sandia National Laboratories).

- **Minisymposium Co-organizer**

2025:

- *Nonlocal Models in Computational Science and Engineering*
  SIAM Conference on Computational Science and Engineering
  Co-organized with Marta D'Elia (Stanford University), Stewart Silling (Sandia National Laboratories), and Yue Yu (Lehigh University).

2024:

- *Recent Developments in Peridynamics Modeling*
  16th World Congress on Computational Mechanics and 4th Pan American Congress on Computational Mechanics
  Co-organized with Patrick Diehl (Louisiana State University), Fei Han (Dalian University of Technology), Robert Lipton (Louisiana State University), Gilles Lubineau (KAUST), and Erkan Oterkus (University of Strathclyde).
- *Advances and Applications in Meshfree, Particle, and Peridynamic Methods*
  16th World Congress on Computational Mechanics and 4th Pan American Congress on Computational Mechanics
  Co-organized with Frank Beckwith (Sandia National Laboratories), J.S. Chen (UC San Diego), Zhen Chen (U. Missouri), Sheng-Wei Chi (U. Illinois at Chicago), Michael Hillman (Karagozian & Case), Tsung-Hui Huang (National Tsing-Hua University), Marc Alexander Schweitzer (Fraunhofer SCAI & U. Bonn), and Cheng-Tang Wu (ANSYS).
- *Advances and Applications in Meshfree, Particle, and Peridynamic Methods*
  9th European Congress on Computational Methods in Applied Sciences and Engineering
  Co-organized with J.S. Chen (UC San Diego), Zhen Chen (U. Missouri), and Michael Hillman (Karagozian & Case).
- *Meshfree, Peridynamic, and Particle Methods: Advancements and Applications*
  Engineering Mechanics Institute Conference 2024 and Probabilistic Mechanics & Reliability Conference 2024
  Co-organized with J.S. Chen (UC San Diego), Sheng-Wei Chi (U. Illinois at Chicago), John Foster (UT Austin), and Michael Hillman (Karagozian & Case).

2023:

- *Meshfree, Particle, and Peridynamic Methods*
  XVII International Conference on Computational Plasticity
  Co-organized with J.S. Chen (UC San Diego), John Foster (UT Austin), and Michael Hillman (Karagozian & Case).
- *Nonlocal Modeling, Analysis, and Computation*
  10th International Congress on Industrial and Applied Mathematics
  Co-organized with Qiang Du (Columbia University), Patrick Diehl (Louisiana State University), and Robert Lipton (Louisiana State University).
- *Interface Problems in Nonlocal Modeling: Advances in Local-to-Nonlocal and Nonlocal-to-Nonlocal Coupling Methods*
  17th U.S. National Congress on Computational Mechanics
  Co-organized with Marta D'Elia (Meta Reality Labs).
- *Recent Developments in Peridynamics Modeling*
  17th U.S. National Congress on Computational Mechanics
  Co-organized with Patrick Diehl (Louisiana State University), Fei Han (Dalian University of Technology), Robert Lipton (Louisiana State University), Gilles Lubineau (KAUST), and Erkan Oterkus (University of Strathclyde).
- *Meshfree, Peridynamic, and Particle Methods: Contemporary Methods and Applications*
  Engineering Mechanics Institute Conference 2023
  Co-organized with J.S. Chen (UC San Diego), Sheng-Wei Chi (U. Illinois at Chicago), John Foster (UT Austin), and Michael Hillman (Karagozian & Case).
- *Nonlocal Models in Computational Science and Engineering*
  SIAM Conference on Computational Science and Engineering
  Co-organized with Marta D'Elia (Sandia National Laboratories) and Yue Yu (Lehigh University).

2022:

- *Peridynamic Modeling of Materials' Behavior*
  ASME 2022 International Mechanical Engineering Congress & Exposition
  Co-organized with Florin Bobaru (U. Nebraska-Lincoln), John Foster (UT Austin), Ibrahim Guven (Virginia Commonwealth University), Erdogan Madenci (U. Arizona), Erkan Oterkus (University of Strathclyde), and Stewart Silling (Sandia National Laboratories).
- *A Celebration of Peridynamics: Honoring the Contributions of Dr. Stewart Silling*
  Society of Engineering Science Annual Technical Meeting
  Co-organized with Florin Bobaru (U. Nebraska-Lincoln), Marta D'Elia (Sandia National Laboratories), John Foster (UT Austin), Robert Lipton (Lousiana State University), and Erdogan Madenci (U. Arizona).
- *Composite Material*
  USACM Thematic Conference on Meshfree and Novel Finite Element Methods with Applications
  Co-organized with Shinya Hayashi (JSOL Corporation), Masaaki Nishikawa (Kyoto University), Caglar Oskay (Vanderbilt University), Leo Shen (CoreTech System Co., Ltd.), Qingda Yang (University of Miami), and Danielle Zeng (Ford Motor Company).

- *Nonlocal Models in Computational Mechanics: Perspectives, Challenges, and Applications*
  15th World Congress on Computational Mechanics & 8th Asian Pacific Congress on Computational Mechanics
  Co-organized with Marta D'Elia (Sandia National Laboratories), Ugo Galvanetto (University of Padova), and Mirco Zaccariotto (University of Padova).
- *Peridynamic Theory and Multiscale Methods for Complex Material Behavior*
  15th World Congress on Computational Mechanics & 8th Asian Pacific Congress on Computational Mechanics
  Co-organized with Patrick Diehl (Lousiana State University), Fei Han (Dalian University of Technology), Gilles Lubineau (KAUST), and Erkan Oterkus (University of Strathclyde).
- *Recent Advances in Peridynamics Materials Modeling and Analysis*
  Hybrid: 2022 SIAM Annual Meeting
  Co-organized with Shank Kulkarni (Pacific Northwest National Laboratory), Tadele Mengesha (University of Tennessee, Knoxville), and Serina Wang (ANSYS).
- *Recent Developments in Peridynamics Modeling*
  19th U.S. National Congress on Theoretical and Applied Mechanics
  Co-organized with Patrick Diehl (Louisiana State University), Fei Han (Dalian University of Technology), Robert Lipton (Louisiana State University), Gilles Lubineau (KAUST), and Erkan Oterkus (University of Strathclyde).
- *Meshfree, Peridynamics, and Particle Methods: Contemporary Advances and Applications*
  19th U.S. National Congress on Theoretical and Applied Mechanics
  Co-organized with J.S. Chen (UC San Diego), Zhen Chen (U. Missouri), and Michael Hillman (Penn State).
- *Meshfree, Peridynamics, and Particle Methods: Contemporary Methods and Applications*
  Engineering Mechanics Institute Conference 2022
  Co-organized with J.S. Chen (UC San Diego), Sheng-Wei Chi (U. Illinois at Chicago), John Foster (UT Austin), and Michael Hillman (Penn State).

2021:

- *Peridynamic Modeling of Materials' Behavior*
  ASME 2021 International Mechanical Engineering Congress & Exposition
  Co-organized with Florin Bobaru (U. Nebraska-Lincoln), John Foster (UT Austin), Ibrahim Guven (Virginia Commonwealth University), Erdogan Madenci (U. Arizona), Erkan Oterkus (University of Strathclyde), and Stewart Silling (Sandia National Laboratories).
- *Recent Developments in Nonlocal Continuum Modeling*
  44th SIAM Southeastern Atlantic Section Conference
  Co-organized with James Scott (University of Pittsburgh).
- *Recent Advances in Meshfree, Particle, and Peridynamics Methods*
  XVI International Conference on Computational Plasticity. Fundamentals and Applications
  Co-organized with J.S. Chen (University of California San Diego), John Foster (University of Texas at Austin), and Michael Hillman (Pennsylvania State University).

- *Local-to-Nonlocal and Nonlocal-to-Nonlocal Coupling Methods: Advances in Coupling Techniques and Treatment of Interfaces in Nonlocal Mechanics and Diffusion*
  16th U.S. National Congress on Computational Mechanics
  Co-organized with Marta D'Elia (Sandia National Laboratories).
- *Peridynamic Theory and Multiscale Methods for Complex Material Behavior*
  16th U.S. National Congress on Computational Mechanics
  Co-organized with Patrick Diehl (Louisiana State University), Fei Han (Dalian University of Technology), Gilles Lubineau (KAUST), and Erkan Oterkus (University of Strathclyde).
- *Nonlocality in Data-driven and Physics-based Materials Modeling*
  SIAM Conference on Mathematical Aspects of Materials Science
  Co-organized with Marta D'Elia (Sandia National Laboratories), Xingjie (Helen) Li (UNC Charlotte), Petronela Radu (U. Nebraska-Lincoln), and Yue Yu (Lehigh University).
- *Meshfree, Peridynamic, and Particle Methods: Contemporary Methods and Applications*
  Engineering Mechanics Institute Conference 2021 and Probabilistic Mechanics & Reliability Conference 2021
  Co-organized with J.S. Chen (UC San Diego), Sheng-Wei Chi (U. Illinois at Chicago), John Foster (UT Austin), and Michael Hillman (Penn State).
- *Nonlocal Models in Computational Science and Engineering*
  SIAM Conference on Computational Science and Engineering
  Co-organized with Marta D'Elia (Sandia National Laboratories) and Yue Yu (Lehigh University).
- *Peridynamic Theory and Multiscale Methods for Complex Material Behavior*
  14th World Congress on Computational Mechanics – 8th European Congress on Computational Methods in Applied Sciences and Engineering
  Co-organized with Patrick Diehl (Lousiana State University), Fei Han (Dalian University of Technology), Gilles Lubineau (KAUST), and Erkan Oterkus (University of Strathclyde).
- *Nonlocal Models in Computational Mechanics: Challenges and Applications*
  14th World Congress on Computational Mechanics – 8th European Congress on Computational Methods in Applied Sciences and Engineering
  Co-organized with Marta D'Elia (Sandia National Laboratories), Ugo Galvanetto (University of Padova), and Mirco Zaccariotto (University of Padova).

2020:

- *Peridynamic Modeling of Materials' Behavior*
  ASME 2020 International Mechanical Engineering Congress & Exposition
  Co-organized with Florin Bobaru (U. Nebraska-Lincoln), John Foster (UT Austin), Ibrahim Guven (Virginia Commonwealth University), Erdogan Madenci (U. Arizona), and Stewart Silling (Sandia National Laboratories).

2019:

- *Peridynamic Modeling of Materials' Behavior*
  ASME 2019 International Mechanical Engineering Congress & Exposition
  Co-organized with Florin Bobaru (U. Nebraska-Lincoln), John Foster (UT Austin), Ibrahim Guven (Virginia Commonwealth University), Erdogan Madenci (U. Arizona), and Stewart Silling (Sandia National Laboratories).

- *Analysis and Applications of Fractional PDEs and Nonlocal Operators*
  43rd Annual Meeting of the SIAM Southeastern Atlantic Section
  Co-organized with Tadele Mengesha (University of Tennessee, Knoxville) and Mitchell Sutton (University of Tennessee, Knoxville).
- *Meshfree, Particle, and Peridynamic Methods*
  XV International Conference on Computational Plasticity. Fundamentals and Applications
  Co-organized with J.S. Chen (University of California San Diego) and Michael Hillman (Pennsylvania State University).
- *Local-Nonlocal Coupling Methods for Nonlocal Models*
  15th U.S. National Congress on Computational Mechanics
  Co-organized with Marta D'Elia (Sandia National Laboratories).
- *Nonlocal Modeling, Analysis, and Computation*
  International Congress on Industrial and Applied Mathematics
  Co-organized with Qiang Du (Columbia University) and Robert Lipton (Louisiana State University).
- *Meshfree, Peridynamics, and Particle Methods: Contemporary Methods and Applications*
  Engineering Mechanics Institute Conference 2019
  Co-organized with J.S. Chen (UC San Diego), Sheng-Wei Chi (U. Illinois at Chicago), John Foster (UT Austin), and Michael Hillman (Penn State).
- *Nonlocal Models in Computational Science and Engineering*
  SIAM Conference on Computational Science and Engineering
  Co-organized with Marta D'Elia (Sandia National Laboratories) and Yue Yu (Lehigh University).

2018:

- *Peridynamic Modeling of Materials' Behavior*
  ASME 2018 International Mechanical Engineering Congress & Exposition
  Co-organized with Florin Bobaru (U. Nebraska-Lincoln), John Foster (UT Austin), Ibrahim Guven (Virginia Commonwealth University), Erdogan Madenci (U. Arizona), and Stewart Silling (Sandia National Laboratories).
- *Multi-Scale*
  USACM Thematic Conference on Meshfree and Particle Methods: Applications and Theory
  Co-organized with Armando Duarte (U. Illinois at Urbana-Champaign) and Julia Plews (Sandia National Laboratories).
- *Local-Nonlocal Coupling Methods for Nonlocal Models*
  13th World Congress on Computational Mechanics
  Co-organized with Marta D'Elia (Sandia National Laboratories).
- *Peridynamics and Its Applications*
  13th World Congress on Computational Mechanics
  Co-organized with Erdogan Madenci (U. Arizona), Erkan Oterkus (U. Strathclyde), Florin Bobaru (U. Nebraska–Lincoln), and John Foster (UT Austin).
- *Nonlocal Models and Methods for Material Failure and Damage Simulation*
  6th European Conference on Computational Mechanics – 7th European Conference on Computational Fluid Dynamics

Co-organized with Adair Aguiar (U. São Paulo), Mahmoud Mousavi (Karlstad University), and Erkan Oterkus (U. Strathclyde).

- *Peridynamics – Modeling, Theory, and Applications*
  18th U.S. National Congress for Theoretical and Applied Mechanics
  Co-organized with Florin Bobaru (U. Nebraska–Lincoln), John Foster (UT Austin), Erdogan Madenci (U. Arizona), Jianxiang Wang (Peking University), and Qing Zhang (Hohai University).
- *Meshfree, Peridynamics, and Particle Methods: Contemporary Methods and Applications*
  Engineering Mechanics Institute Conference 2018
  Co-organized with J.S. Chen (UC San Diego), Sheng-Wei Chi (U. Illinois at Chicago), John Foster (UT Austin), Michael Hillman (Penn State), and Dongdong Wang (Xiamen University).

2017:

- *Nonlocal Models in Computational Science and Engineering*
  SIAM Conference on Computational Science and Engineering
  Co-organized with Marta D'Elia (Sandia National Laboratories) and Qiang Du (Columbia).

2016:

- *Nonlocal Theories and Multiscale Methods for Complex Material Behavior*
  12th World Congress on Computational Mechanics – 6th Asia-Pacific Congress on Computational Mechanics
  Co-organized with Youn Doh Ha (Kunsan National University), Fei Han (KAUST), David Littlewood (Sandia National Laboratories), and Gilles Lubineau (KAUST).

2015:

- *Nonlocal Models for Mechanics and Diffusion*
  First Pan-American Congress on Computational Mechanics
  Co-organized with Diego Del-Castillo-Negrete (Oak Ridge National Laboratory) and Michael Parks (Sandia National Laboratories).
- *Mathematical and Computational Methods for Coupling Local and Nonlocal Models*
  8th International Congress on Industrial and Applied Mathematics
  Co-organized with Marta D'Elia (Sandia National Laboratories) and Pavel Bochev (Sandia National Laboratories).

2013:

- *Multiscale Methods and Nonlocal Theories for Complex Material Behavior*
  12th US National Congress on Computational Mechanics
  Co-organized with Florin Bobaru (U. Nebraska–Lincoln) and John Foster (UT San Antonio).
- *Mathematical and Computational Aspects of Peridynamics and Related Nonlocal Models*
  SIAM Conference on Mathematical Aspects of Materials Science
  Co-organized with Qiang Du (Penn State) and Michael Parks (Sandia National Laboratories).

2012:

- *Nonlocal Models: Analytical, Numerical, Uncertainty Quantification, and High-Performance Computing Methods*
  10th World Congress on Computational Mechanics
  Co-organized with Florin Bobaru (U. Nebraska–Lincoln) and Ernesto Prudencio (UT Austin).
- *Mathematical and Computational Analysis of Concurrent Methods for Multiscale Material Modeling*
  10th World Congress on Computational Mechanics
  Co-organized with Michael Parks (Sandia National Laboratories) and Serge Prudhomme (UT Austin).

2011:

- *Mathematical Modeling and Analysis for Multiscale Materials*
  11th US National Congress on Computational Mechanics
  Co-organized with Mitchell Luskin (U. Minnesota), Michael Parks (Sandia National Laboratories), and Serge Prudhomme (UT Austin).

○ **Workshop Co-organizer**

2024:

- *Nonlocality: Challenges in Modeling and Simulation*, April 15-19, 2024, Institute for Computational and Experimental Research in Mathematics (ICERM), Providence, RI, USA
  Co-organized with Marta D'Elia (Pasteur Labs), Abner Salgado (University of Tennessee, Knoxville), and Xiaochuan Tian (University of California San Diego).
- *Experimental and Computational Fracture Mechanics*, March 4-6, 2024, Baton Rouge, LA, USA
  Co-organized with Patrick Diehl (Louisiana State University), Serge Prudhomme (Polytechnique Montréal), and Gowri Srinivasan (Los Alamos National Laboratory).

  - Workshop sponsored by USACM, LSU CCT, and LANL.

2021:

- *Nonlocal Codes* (organized jointly by One Nonlocal World and the Journal of Peridynamics and Nonlocal Modeling), December 2, 2021, Virtual Workshop
  Co-organized with Marta D'Elia (Sandia National Laboratories), Qiang Du (Columbia University), Petronela Radu (University of Nebraska-Lincoln), Xiaochuan Tian (University of California San Diego), Yue Yu (Lehigh University), Stewart Silling (Sandia National Laboratories), and Erdogan Madenci (University of Arizona).
- *One Nonlocal World, Opening Event*, January 22-23, 2021, Virtual Workshop
  Co-organized with Marta D'Elia (Sandia National Laboratories), Qiang Du (Columbia University), Petronela Radu (University of Nebraska-Lincoln), Xiaochuan Tian (University of California San Diego), and Yue Yu (Lehigh University).

2020:

- *Experimental and Computational Fracture Mechanics: Validating peridynamics and phase field models for fracture prediction and experimental design*, February 26-28, 2020, Baton Rouge, LA, USA
  Co-organized with Patrick Diehl (Louisiana State University) and Serge Prudhomme (Polytechnique Montréal).

  - Workshop sponsored by USACM, LSU CCT, ORNL, SES, and USNCTAM.

  - Partial support provided by ORNL and USNCTAM (AmeriMech).

2019:

- *The Future of Uncertainty Quantification and Multiscale Modeling Across the Department of Energy* (2^{nd} Applied Math Visioning Workshop), September 17-18, 2019, Albuquerque, NM, USA
  Co-organized with David Barajas-Solano (Pacific Northwest National Laboratory), Aydin Buluç (Lawrence Berkeley National Laboratory), Emil Constantinescu (Argonne National Laboratory), Meifeng Lin (Brookhaven National Laboratory), Kara Peterson (Sandia National Laboratories), Gowri Srinivasan (Los Alamos National Laboratory), and Jayaraman Thiagarajan (Lawrence Livermore National Laboratory).

  - Workshop organized with the help and guidance of the Computational Research Leadership Council (CRLC) from eight national laboratories.
- *The Future of Machine Learning and Data Analytics Across the Department of Energy* (1^{st} Applied Math Visioning Workshop), Lawrence Berkeley National Laboratory, April 2-3, 2019, Berkeley, CA, USA
  Co-organized with David Barajas-Solano (Pacific Northwest National Laboratory), Aydin Buluç (Lawrence Berkeley National Laboratory), Emil Constantinescu (Argonne National Laboratory), Meifeng Lin (Brookhaven National Laboratory), Kara Peterson (Sandia National Laboratories), Gowri Srinivasan (Los Alamos National Laboratory), Jayaraman Thiagarajan (Lawrence Livermore National Laboratory), and Xiu Yang (Pacific Northwest National Laboratory).

  - Workshop organized with the help and guidance of the Computational Research Leadership Council (CRLC) from eight national laboratories.

2018:

- *Nonlocal Methods in Fracture*, January 15-16, 2018, Austin, TX, USA
  Co-organized with Michael Borden (Brigham Young University), John Foster (UT Austin), Chad Landis (UT Austin), Rob Lipton (Louisiana State University), Erdogan Madenci (U. Arizona), and Stewart Silling (Sandia National Laboratories).

  - Workshop organized through the USACM.

  - Partial support provided by ORNL.

2015:

- *Nonlocal Models in Mathematics, Computation, Science, and Engineering*, October 26-28, 2015, Oak Ridge, TN, USA
  Co-organized with Tadele Mengesha (University of Tennessee, Knoxville), Michael Parks (Sandia National Laboratories), and Clayton Webster (Oak Ridge National Laboratory).

- Workshop organized through the USACM in cooperation with SIAM.

- Partial support provided by DOE, NSF, Sandia, and USNCTAM (AmeriMech).

- **Mentoring Program Organizer**

  2023:

  – USNCCM17 Mentoring Event, July 24, 2023
  Organized jointly by the USACM Technical Thrust Area on Large Scale Structural Systems and Optimal Design and the USACM Student Chapter.
  Description: 31 USACM graduate students were matched with a mentor from the academia, DOE National Laboratories, or the industry for a one-to-one meeting at the 17th U.S. National Congress on Computational Mechanics (USNCCM17) to discuss topics of interest to the students, including getting guidance on career paths and receiving advice on how to make the best of USNCCM17.

  2022:

  – USACM Large-Scale TTA Graduate Mentoring Program
  Organized by the USACM Technical Thrust Area on Large Scale Structural Systems and Optimal Design.
  Description: 18 USACM graduate students were matched with a mentor from the academia, DOE National Laboratories, or the industry for a virtual one-to-one meeting to discuss topics of interest to the students, including getting guidance on career paths and receiving advice on how to make the best of WCCM-APCOM 2022 for those students planning on attending the congress.

- **Panel Organizer**

  2023:

  – Career Panel at USNCCM17, July 25, 2023
  Co-organized with Joseph Bishop (Sandia National Laboratories), Jay Foulk (Sandia National Laboratories), Stewart Silling (Sandia National Laboratories), Jonathan Zimmerman (Sandia National Laboratories), and Xiaojia Shelly Zhang (University of Illinois at Urbana-Champaign) at the 17th U.S. National Congress on Computational Mechanics (USNCCM17).

  – Career Path Panel at EMI 2023, June 7, 2023
  Organized jointly by the USACM Technical Thrust Area on Large Scale Structural Systems and Optimal Design and the EMI Computational Mechanics Committee at the Engineering Mechanics Institute Conference 2023 (EMI 2023).

  2022:

  – Career Path Panel at EMI 2022, June 1, 2022
  Organized jointly by the USACM Technical Thrust Area on Large Scale Structural Systems and Optimal Design and the EMI Computational Mechanics Committee at the Engineering Mechanics Institute Conference 2022 (EMI 2022).

- **Seminar Series Organizer**

  2024:

  – ORNL Computational Mechanics Seminar (monthly).

  2021–2023:

  – Large-Scale TTA Early-Career Colloquium (monthly, fall 2021 - spring 2023)
  Large Scale Structural Systems and Optimal Design (Large-Scale) Technical

Thrust Area (TTA), U.S. Association for Computational Mechanics (USACM)
Co-organized with Patrick Diehl (Louisiana State University), George Gazonas (CCDC Army Research Laboratory), and X. Shelly Zhang (University of Illinois at Urbana-Champaign).

– ORNL Computational Mechanics Seminar (monthly).

2019–2020:

– ORNL Computational Mechanics Seminar (monthly).

2015:

– ORNL Computational and Applied Mathematics Seminar (weekly).

2010-2012:

– IPAM MD2012 Seminar Series (weekly), Fall 2012
IPAM Program on Materials Defects
University of California, Los Angeles, Los Angeles, CA
Co-organized with Nina Lane (Drexel University).

– Multiscale Modeling Seminar (weekly), 09/2010–05/2012
Institute for Computational Engineering and Sciences
The University of Texas at Austin, Austin, TX.

○ **Editorial Board**

– Associate Editor, Applicable Analysis, Taylor & Francis (2021–present)

– Member, Journal of Peridynamics and Nonlocal Modeling, Springer (2018–present)

– Member, International Journal for Computational Methods in Engineering Science and Mechanics, Taylor & Francis (2021–2024)

○ **Reviewer** Ongoing

Journals

– Acta Mechanica

– Additive Manufacturing

– AIMS Mathematics

– Applied Mathematical Modelling

– Applied Mathematics and Computation

– Applied Mathematics and Mechanics

– Applied Mechanics

– Archive of Applied Mechanics

– Computational Materials Science

– Computational Mechanics

– Computational Methods in Applied Mathematics

– Computational Particle Mechanics

– Computer Methods in Applied Mechanics and Engineering

– Computer Physics Communications

– Computers and Mathematics with Applications

- Computers and Structures
- Discrete & Continuous Dynamical Systems - Series S
- Dynamics
- Engineering Computations
- Engineering Fracture Mechanics
- Engineering with Computers
- ESAIM: Mathematical Modelling and Numerical Analysis
- European Journal of Physics
- Foundations of Data Science
- Fractal and Fractional
- IEEE Antennas and Wireless Propagation Letters
- International Journal for Multiscale Computational Engineering
- International Journal for Numerical Methods in Engineering
- International Journal of Computer Mathematics
- International Journal of Fracture
- International Journal of Solids and Structures
- Journal of Computational Physics
- Journal of Elasticity
- Journal of Engineering Materials and Technology
- Journal of Engineering Mechanics
- Journal of Materials Research
- Journal of Mechanics of Materials and Structures
- Journal of Peridynamics and Nonlocal Modeling
- Journal of Physical Chemistry
- Journal of Scientific Computing
- Journal of the Brazilian Society of Mechanical Sciences and Engineering
- Journal of Thermal Stresses
- Materials
- Mathematical Models and Methods in Applied Sciences
- Mathematical Reviews
- Mathematics
- Mathematics and Mechanics of Solids
- Mechanics Research Communications
- Modelling and Simulation in Materials Science and Engineering
- Molecular Simulation
- Multiscale Modeling and Simulation
- Networks and Heterogeneous Media
- New Journal of Physics

- Nonlinearity
- Numerical Algorithms
- Numerical Functional Analysis and Optimization
- Numerical Methods for Partial Differential Equations
- Numerische Mathematik
- Physica D: Nonlinear Phenomena
- Polish Maritime Research
- Proceedings of the Royal Society A
- Reports on Mathematical Physics
- Rocky Mountain Journal of Mathematics
- SIAM Journal on Applied Mathematics
- SIAM Journal on Numerical Analysis
- SoftwareX

Agencies and Programs

- U.S. National Science Foundation (NSF)
  Division of Mathematical Sciences 2025
- U.S. Department of Energy (DOE)
  - Advanced Scientific Computing Research (ASCR) program 2019, 2020, 2023
  - Nuclear Energy University Program 2020
- Oak Ridge National Laboratory
  Laboratory Directed Research & Development program 2018, 2022
- Army Research Office (ARO) 2017, 2023
- Air Force Office of Scientific Research (AFOSR) 2016, 2019
- Czech Science Foundation 2016
- Swiss National Supercomputing Centre (CSCS) 2015

Faculty Tenure and Promotion

- University of North Carolina at Charlotte
  Department of Mathematics and Statistics 2019

Ph.D. Thesis

- University of Padova
  Department of Industrial Engineering 2017

○ **Committee member**

- Ph.D. Committee

  2024–2025

  - Cody Crusenberry, Department of Mechanical, Aerospace and Biomedical Engineering, University of Tennessee, Knoxville
    Advisor: Stephanie TerMaath

2023–2024

- Joshua Siktar, Department of Mathematics, University of Tennessee, Knoxville
  Advisors: Tadele Mengesha and Abner Salgado
- Maxwell Cole, Department of Physics & Astronomy, Louisiana State University
  Advisor: Wayne Newhauser

2021–2022

- Keon Ho Kim, Department of Mathematics, University of North Carolina at Chapel Hill
  Advisor: Boyce Griffith
- Yixuan Wu, Department of Mathematics and Statistics, Missouri University of Science and Technology
  Advisor: Yanzhi Zhang

2019

- Kileen Berry, Department of Mathematics, University of Tennessee, Knoxville
  Advisors: Tadele Mengesha and Steven Wise
- James Scott, Department of Mathematics, University of Tennessee, Knoxville
  Advisor: Tadele Mengesha

– Conference Committee

2024

- Organizing Committee, SIAM Conference on Mathematical Aspects of Materials Science, May 20-23, 2024, Pittsburgh, Pennsylvania, USA
- Scientific Committee, USACM Thematic Conference on Quarter Century of Peridynamics, April 23-25, 2024, Tucson, Arizona, USA

2023

- Scientific Committee, XVII International Conference on Computational Plasticity. Fundamentals and Applications, September 5-7, 2023, Barcelona, Spain
- Scientific Organizing Committee, 17th U.S. National Congress on Computational Mechanics, July 23-27, 2023, Albuquerque, New Mexico, USA

2022

- Conference Committee, USACM Thematic Conference on Meshfree and Novel Finite Elements with Applications, September 25-27, 2022, Berkeley, CA, USA
- Session Co-Chair: Session 1. Foundational Methods Enabling Science in an Integrated Ecosystem, Smoky Mountains Computational Sciences & Engineering Conference, August 23-25, 2022, Kingsport, TN, USA

2021

- Scientific Committee, XVI International Conference on Computational Plasticity. Fundamentals and Applications, September 7-10, 2021, Barcelona, Spain
- Technical Program Committee, 16th U.S. National Congress on Computational Mechanics, July 25-29, 2021, Chicago, IL, USA

- Selection Committee for Student Poster Competition, Computational Solid Mechanics track, 16th U.S. National Congress on Computational Mechanics, July 25-29, 2021, Chicago, IL, USA

2019

- Organizing Committee, Workshop on Machine Learning for Computational Fluid and Solid Dynamics, February 19-21, 2019, Santa Fe, NM, USA
- DOE Applied Math Visioning Committee

2018

- Scientific Committee, USACM Thematic Conference on Meshfree and Particle Methods: Applications and Theory, September 10-12, 2018, Santa Fe, NM, USA
- Computations Organizing Committee, 18th U.S. National Congress for Theoretical and Applied Mechanics, 2018
- DOE Applied Math Visioning Committee

– Proposal Review Committee

2019

- ORNL Initiative Review Committee, Computer Science and Math for Extreme Scale Computing Initiative, Oak Ridge National Laboratory

– Hiring Committee

2020

- Panel interviews for Section Head and Group Leader positions, Mathematics in Computation Section, Computer Science and Mathematics Division, Oak Ridge National Laboratory

2017–2019

- CSMD Interview/Search Committee, Computer Science and Mathematics Division, Oak Ridge National Laboratory

2016

- Multi-Scale Modeler Hire Committee, Geochemistry & Interfacial Sciences Group, Oak Ridge National Laboratory
- Householder Fellowship Committee, Computational & Applied Mathematics Group, Oak Ridge National Laboratory

2015

- Householder Fellowship Committee, Computational & Applied Mathematics Group, Oak Ridge National Laboratory

○ **Mentor**

– USNCCM17 Mentoring Event, July 24, 2023

– USACM Large-Scale TTA Graduate Mentoring Program, July 28, 2022

○ **Poster Judge**

– Student Poster Competition, July 28, 2021
Computational Solid Mechanics track, 16th U.S. National Congress on Computational Mechanics

- LDRD Poster Session, October 4, 2017
  Laboratory Directed Research & Development (LDRD) program, ORNL
- Annual Student Poster Night, October 26, 2018
  Oak Ridge Chapter of the American Society for Metals (ASM) and the Southeast Section of AACG (American Association for Crystal Growth)

- **Panelist**
  - Career Path Panel, June 7, 2023 (panel chair)
    Organized jointly by the USACM Technical Thrust Area on Large Scale Structural Systems and Optimal Design and the EMI Computational Mechanics Committee
    Engineering Mechanics Institute Conference 2023
  - Professional Development Panel, July 19, 2022
    BIRS Workshop on Theoretical and Applied Aspects for Nonlocal Models
  - BIG (Business Industry and Government) Career Panel, July 11, 2022
    Hybrid: 2022 SIAM Annual Meeting
  - Career Path Panel, June 1, 2022
    Organized jointly by the USACM Technical Thrust Area on Large Scale Structural Systems and Optimal Design and the EMI Computational Mechanics Committee
    Engineering Mechanics Institute Conference 2022
  - Early Career Preparation Workshop, November 28, 2018
    Computer Science and Mathematics Division
    Oak Ridge National Laboratory
  - Quality Enhancement Review Panel, September 30, 2019
    Department of Scientific Computing
    Florida State University

Summer Schools and Long-term Programs

- IPAM Program on Materials Defects: Mathematics, Computation, and Engineering, UCLA, Los Angeles, California, USA, September 10 - December 14, 2012.
- SAMSI/Sandia Summer School on Uncertainty Quantification, Albuquerque, New Mexico, USA, June 20 - 24, 2011.
- 2007 DOE Summer School in Multiscale Mathematics and High Performance Computing, Oregon State University, Corvallis, Oregon, USA, June 29 - July 3, 2007.

Computer Proficiencies

- Programming languages: Fortran 77, Fortran 90, C++, Java, MPI, Matlab
- Operating systems: Microsoft Windows, Mac OS X, Unix, Linux
- Additional software: Latex, HTML, SVN, Mathematica, MathCad, LAMMPS, LabView, Supermongo, Microsoft Office