Stephen Pankavich, Professor & Department Head

Contact Information	Applied Mathematics and Statistics Colorado School of Mines 1500 Illinois St. Golden, CO 80401	303.273.3584 pankavic@mines.edu http://inside.mines.edu/~pankavic

Research Interests
Partial Differential Equations and Kinetic Theory, Multiscale Modeling and Simulation, Chemical Reaction Dynamics, Mathematical and Computational Virology, Biophysics and Bionanosystems, Mathematical Biology & Epidemiology

Education

Department of Mathematical Sciences
Carnegie Mellon University (CMU)

Ph.D. in Mathematical Sciences, May 2005
- Dissertation Topic: The Vlasov-Poisson System with Infinite Mass and Energy
- Advisor: Jack Schaeffer

M.S. in Mathematical Sciences, May 2001

B.S. in Mathematical Sciences, May 2000
- Mellon College of Science Honors
- University Research Honors

Employment

Department of Applied Mathematics and Statistics
Colorado School of Mines (CSM)

Department Head, 2024 - present
Professor, 2023 - present
Associate Professor, 2017 - 2023
Director of Graduate Studies, 2017 - 2019
Assistant Professor, 2012 - 2017

Department of Mathematics
United States Naval Academy (USNA)

Assistant Professor, 2010 - 2012

Department of Mathematics
University of Texas at Arlington (UTA)

Assistant Professor, 2008 - 2010

Department of Mathematics
Indiana University (IU)

Zorn Postdoctoral Fellow, 2005 - 2008

Publications
Submitted

[1] A. Wojnar, S. Pankavich, and A. Pak *Active Subspace Learning for Coarse-Grained Molecular Dynamics*, submitted.

[2] Y. Hong and S. Pankavich, *The Non-relativistic Limit of Scattering States for the Vlasov equation with Short-Range Interaction Potentials*, submitted.

[3] G. Mattingly, J. Ben-Artzi, and S. Pankavich, *Arbitrary Polynomial Decay Rates of Neutral, Collisionless Plasmas*, submitted.

[4] K. Martinez, S. Pankavich, G. Fairchild, A. Ziemen, A. Sira, C. Manore, and S. Del Valle, *An unsupervised multi-objective feature selection method with applications to environmental and demographic data in Brazil*, submitted.

2025 (& in press)

[5] J. Ben-Artzi and S. Pankavich, *Modified Scattering of Solutions to the Relativistic Vlasov-Maxwell System Inside the Light Cone*, to appear in the Journal of the London Mathematical Society.

[6] G. Mattingly, B. Longaker, N. Palmer, D. Silantyev, and S. Pankavich *Stability and Instability of Langmuir Waves via Active Subspace Decompositions*, Physics of Plasmas (2025) **32**: 022119.

[7] S. Pankavich, L. Schauer, N. Engdahl, M. Schmidt, D. Bolster, and D. Benson, *Convergence of random walk and mass-transfer particle tracking algorithms for the simulation of advection-diffusion-reaction equations*, Applied Mathematics and Computation (2025) **496**: 129358.

2024

[8] D. Benson, I. Prebec, N. Engdahl, L. Schauer, and S. Pankavich, *Parallelization of particle-mass-transfer algorithms on shared-memory, multi-core CPUs*, Advances in Water Resources (2024) **193**: 104818.

[9] S. Pankavich and S. Terrab, *Global Sensitivity Analysis of Plasma Instabilities via Active Subspaces*, Communications in Nonlinear Science and Numerical Simulation (2024) **134**: 107994.

[10] C. Clarke and S. Pankavich, *Three-stage modeling of HIV Infection and Implications for Antiretroviral Therapy*, Journal of Mathematical Biology (2024) **88**(3): 34.

[11] J. Ben-Artzi, B. Morisse, and S. Pankavich, *Asymptotic Growth and Decay of Two-dimensional Symmetric Plasmas*, Kinetic and Related Models (2024) **17**(1): 29-51.

2023

[12] S. Pankavich, *Scattering and Asymptotic Behavior of Solutions to the Vlasov-Poisson system in High Dimension*, SIAM Journal on Mathematical Analysis (2023) **55**(5): 4727-4750.

[13] L. Schauer, M. Schmidt, N. Engdahl, S. Pankavich, D. Benson, and D. Bolster, *Parallelized Domain Decomposition for Multi-Dimensional Lagrangian Random Walk, Mass-Transfer Particle Tracking Schemes*, Geoscientific Model Development (2023) **16**: 833-849.

2022

[14] K. Martinez, G. Brown, and S. Pankavich, *Spatially-heterogeneous embedded stochastic SEIR models for the 2014-2016 Ebola outbreak in West Africa*, Spatial and Spatiotemporal Epidemiology (2022) **41**: 100505.

[15] S. Pankavich, *Asymptotic Dynamics of Dispersive, Collisionless Plasmas*, Communications in Mathematical Physics (2022) **391**: 455-493.

[16] J. Ben-Artzi, S. Pankavich, and J. Zhang, *A Toy model for the relativistic Vlasov-Maxwell system*, Kinetic and Related Models (2022) **15**: 341-354.

2021

[17] D. Benson, D. Bolster, M. Schmidt, and S. Pankavich, *Nonparametric, data-based kernel interpolation for particle-tracking simulations and kernel density estimation*, Advances in Water Resources (2021) **152**: 103889.

[18] N. Tran, D. Benson, M. Schmidt, and S. Pankavich, *A Computational Information Criterion for Particle-tracking with Sparse or Noisy data*, Advances in Water Resources (2021) **151**: 103893.

[19] S. Pankavich, *Exact Large-time Behavior of Spherically-Symmetric Plasmas*, SIAM Journal on Mathematical Analysis (2021) **53**(4): 4474-4512.

2020

[20] M. Schmidt, S. Pankavich, A. Navarre-Sitchler, N. Engdahl, D. Bolster, and D. Benson, *Reactive Particle-tracking Solutions to a Benchmark Problem on Heavy Metal Cycling in Lake Sediments*, Journal of Contaminant Hydrology (2020) **234**: 103642.

[21] M. Schmidt, D. Benson, S. Pankavich, N. Engdahl, and D. Bolster, *A Mass-transfer Particle-tracking Method for Simulating Transport with Discontinuous Diffusion Coefficients*, Advances in Water Resources (2020) **140**: 103577.

[22] N. Neri, S. Pankavich, and D. Shutt, *Bistable dynamics and Hopf bifurcation in an early-stage model of HIV Infection*, Discrete and Continuous Dynamical Systems B (2020) **25**(8): 2867-2893.

[23] M. Schmidt, G. Sole-Mari, S. Pankavich, and D. Benson, *Entropy: The former trouble with particles*, Advances in Water Resources (2020) **137**: 103509.

[24] S. Pankavich, *Linear Vector Spaces & Applications*, Open Mines Collection (2020), https://hdl.handle.net/11124/174218.

2019

[25] J. Ben-Artzi, S. Calogero, and S. Pankavich, *Concentrating solutions of the relativistic Vlasov-Maxwell system*, Communications in Mathematical Sciences (2019) **17**(2): 377-392.

[26] G. Sole-Mari, M. Schmidt, S. Pankavich, and D. Benson *Numerical Equivalence Between SPH and Probabilistic Mass Transfer Methods for Lagrangian Simulation of Dispersion*, Advances in Water Resources (2019) **126**: 108-115.

[27] M. Schmidt, D. Benson, A. Sitchler, and S. Pankavich, *A Lagrangian method for reactive transport with sold-liquid interaction*, Journal of Computational Physics X (2019) **2**: 100021.

[28] D. Benson, S. Pankavich, and D. Bolster *On the separate treatment of mixing and spreading by the reactive-particle-tracking algorithm: An example of accurate upscaling of reactive Poiseuille flow*, Advances in Water Resources (2019) **123**: 40-53.

2018

[29] J. Ben-Artzi, S. Calogero, and S. Pankavich, *Arbitrarily large solutions of the Vlasov-Poisson system*, SIAM Journal on Mathematical Analysis (2018) **50** (4): 4311-4326.

[30] M. Schmidt, D. Benson, and S. Pankavich, *On the accuracy of random-walk particle-based mass-transfer algorithms*, Advances in Water Resources (2018) **117**: 115-119.

[31] S. Calogero and S. Pankavich, *On the spatially homogeneous and isotropic Einstein-Vlasov-Fokker-Planck system with cosmological scalar field*, Kinetic and Related Models (2018) **11**(5): 1063-1083.

[32] P. Diaz, P. Constantine, K. Kalmbach, E. Jones, and S. Pankavich, *A Modified SEIR Model for the Spread of Ebola in Western Africa and Metrics for Resource Allocation*, Applied Mathematics and Computation (2018) **324**: 141-155.

2017

[33] D. Shutt, C. Manore, S. Pankavich, A. Porter, and S. Del Valle, *Estimating the reproductive number, total outbreak size, and reporting rates for Zika epidemics in South and Central America*, Epidemics (2017) **21**: 63-79.

[34] S. Pankavich and J. Schaeffer, *Erratum to "Global Classical Solutions of the One and one-half dimensional Vlasov-Maxwell-Fokker-Planck system"*, Communications in Mathematical Sciences (2017) **15**: 1791-1799.

[35] M. Schmidt, S. Pankavich, and D. Benson, *A Kernel-based Lagrangian Method for Imperfectly-Mixed Chemical Reactions*, Journal of Computational Physics (2017) **336**: 288-307.

[36] S. Pankavich and T. Loudon, *Mathematical Analysis and Dynamic Active Subspaces for a Long-term model of HIV*, Mathematical Biosciences and Engineering (2017) **14**(3): 709-733.

2016

[37] S. Minkoff, W. Menasco, S. Pankavich, F. Santosa, and R. Laugesen, *Preparing Graduates for Careers in the Mathematical Sciences: NSF Programs Offer Unique Real-World Experience*, SIAM News (December 2016) 49 (9).

[38] R. Glassey, S. Pankavich, and J. Schaeffer, *Separated Characteristics and Global Solvability for the One and one half dimensional Vlasov Maxwell System*, Kinetic and Related Models (2016) **9**: 455-467.

[39] S. Pankavich and C. Parkinson, *Mathematical Analysis of an in-host Model of Viral Dynamics with Spatial Heterogeneity*, Discrete and Continuous Dynamical Systems B (2016) **21**(4): 1237-1257.

[40] S. Pankavich and J. Schaeffer, *Global Classical Solutions of the One and one-half dimensional Vlasov-Maxwell Fokker-Planck system*, Communications in Mathematical Sciences (2016) **14**(1): 209-232.

2015

[41] S. Pankavich and D. Shutt, *An in-host model of HIV incorporating Latent Infection and Viral Mutation*, Dynamical Systems, Differential Equations, and Applications, AIMS Proceedings 2015, pp. 913-922.

[42] S. Pankavich, *The Effects of Latent Infection on the Dynamics of HIV*, Differential Equations and Dynamical Systems (2015) 24: 1-23.

[43] S. Pankavich and N. Michalowski, *A Short Proof of Increased Parabolic Regularity*, Electronic Journal of Differential Equations (2015) **205**: 1-9.

[44] S. Pankavich and N. Michalowski, *Global Classical Solutions to the One and one-half dimensional relativistic Vlasov-Maxwell-Fokker-Planck system*, Kinetic and Related Models (2015) **8**: 169-199.

[45] S. Pankavich and P. Ortoleva, *A Review of Two Multiscale Methods for the Simulation of Macromolecular Assemblies: Multiscale Perturbation and Multiscale Factorization*, Computation (2015) **3**: 29-57.

[46] S. Pankavich and R. Swanson, *Principal Component Analysis: Resources for an Essential Application of Linear Algebra*, PRIMUS: Problems, Resources, and Issues in Mathematics Undergraduate Studies (2015) **25** (5): 400-420.

2014

[47] S. Calogero, J. Felix, and S. Pankavich, *Spatially homogeneous solutions of the Vlasov-Nordström-Fokker-Planck system*, Journal of Differential Equations (2014) **257**: 3700-3729.

[48] S. Pankavich and R. Allen, *Instability of some Periodic BGK Waves for the Vlasov-Poisson system*, European Physical Journal D (2014) **68**: 363-370.

[49] S. Pankavich and C. Nguyen, *A One-dimensional Kinetic Model of Plasma Dynamics with a Hyperbolic Field*, Evolution Equations and Control Theory (2014) **3**: 681-698.

[50] E. Jones, P. Roemer, M. Raghupathi, and S. Pankavich, *Analysis and Simulation of the Three-Component Model of HIV Dynamics*, SIAM Undergraduate Research Online (2014) **7**: 89-106.

2013

[51] P. Ortoleva, A. Singharoy, and S. Pankavich, *Hierarchical Multiscale Modeling of Macromolecules and their Assemblies*, Soft Matter (2013) **9**: 4319-4335.

[52] S. Pankavich and P. Radu, *Nonlinear Instability of steady states in Parabolic and Hyperbolic Diffusion*, Evolution Equations and Control Theory (2013) **2**: 403-422.

2012

[53] S. Pankavich and P. Ortoleva, *Nanosystem Self-Assembly Pathways Discovered via All-Atom Multiscale Analysis*, Journal of Physical Chemistry B (2012) **116**: 8355-8362.

[54] S. Pankavich, *A Particle Method for a Collisionless Plasma with Infinite Mass*, Mathematics and Computers in Simulation (2012) **82**: 1278-1286.

2011

[55] D. Brewer and S. Pankavich, *Computational Methods for a One-dimensional Plasma Model with Transport Field*, SIAM Undergraduate Research Online (2011) **4**: 81-104.

2010

[56] S. Pankavich and P. Ortoleva, *Multiscaling for Systems with a Broad Continuum of Characteristic Lengths and Times: Structural Transitions in Nanocomposites*, Journal of Mathematical Physics (2010) **51**: 063303.
●Also featured in Advances in Nanotechnology Research and Application (2011).

[57] R. Glassey, S. Pankavich, and J. Schaeffer, *Time Decay for Solutions to One-dimensional Equations of Plasma Dynamics*, In Proceedings of the Brown University Conference on Nonlinear Wave Equations in Honor of Walter A. Strauss on his 70th Birthday, edited by Walter Freiberger, American Mathematical Society (2010).

[58] R. Glassey, S. Pankavich, and J. Schaeffer, *Large Time Behavior of the Relativistic Vlasov-Maxwell System in Low Space Dimension*, Differential and Integral Equations (2010) **23**: 61-77.

[59] R. Glassey, S. Pankavich, and J. Schaeffer, *Time Decay for Solutions to One-dimensional Equations of Plasma Dynamics*, Quarterly of Applied Mathematics (2010) **68**: 135-141.

2009

[60] Z. Shreif, S. Pankavich, and P. Ortoleva, *Liquid-crystal Transitions: A First-principles Multiscale Approach* Physical Review E (2009) **80**: 031703.

[61] R. Glassey, S. Pankavich, and J. Schaeffer, *On Long-time Behavior of Monocharged and Neutral Plasmas in "One and one-half Dimensions"* Kinetic & Related Models (2009) **2**: 465-488.

[62] S. Pankavich, Z. Shreif, Y. Miao, and P. Ortoleva, *Self-Assembly of Nanocomponents into Composite Structures: Derivation and Simulation of Langevin Equations*, Journal of Chemical Physics **130**: 194115 (2009).
•Also featured in Virtual Journal of Nanoscale Science and Technology **19** (2009).

[63] S. Pankavich, Z. Shreif, Y. Chen, and P. Ortoleva, *Multiscale Theory of Boson Droplets: Implications for Collective and Single-Particle Excitations*, Physical Review A (2009) **79**: 013628.

2008

[64] R. Glassey, S. Pankavich, and J. Schaeffer, *Decay in Time for a One-Dimensional, Two Component Plasma*, Mathematical Methods in the Applied Sciences (2008) **31**: 2115-2132.

[65] S. Pankavich, Y. Miao, J. Ortoleva, Z. Shreif, and P. Ortoleva, *Stochastic Dynamics of Bionanosystems: Multiscale Analysis and Specialized Ensembles*, Journal of Chemical Physics (2008) **128**: 234908.
•Also featured in Virtual Journal of Biological Physics Research **16** (2008) and Virtual Journal of Nanoscale Science and Technology **18** (2008).

[66] S. Pankavich, Z. Shreif, and P. Ortoleva, *Multiscaling in Classical Nanosystems: Derivation of Smoluchowski and Fokker-Planck Equations*, Physica A (2008) **387**: 4053-4069.

[67] S. Pankavich, *Explicit solutions of the One-Dimensional Vlasov-Poisson System with Infinite Mass*, Mathematical Methods in the Applied Sciences (2008) **31**: 375-389.

2007

[68] S. Pankavich, *Global Existence and Increased Spatial Decay for the Radial Vlasov-Poisson System with Steady Spatial Asymptotics* Transport Theory & Statistical Physics (2007) **36**: 531-562.

[69] S. Pankavich, *Recent Trends in the Kinetic Theory of Plasma Physics*, International Conference on Trends and Challenges in Applied Mathematics (2007), Bucharest, Romania; Matrix Rom: 287-290.

[70] S. Pankavich, *Local Existence for the One-Dimensional Vlasov-Poisson System with Infinite Mass*, Mathematical Methods in the Applied Sciences (2007) **30**: 529-548.

2006

[71] S. Pankavich, *Global Existence for the Three-Dimensional Vlasov-Poisson System with Steady Spatial Asymptotics*, Communications in Partial Differential Equations (2006) **31**: 349-370.

Fellowships, Honors & Awards

❑ W. M. Keck Mentorship Award for Mentoring Graduate Students, Colorado School of Mines 2020-2021

❑ Visiting Professor, Chalmers University of Technology, Gothenburg, Sweden; funded by grant from Knut and Alice Wallenberg Foundation (with S. Calogero) 2019-2020

❑ Visiting Professor, Cardiff University, UK; funded by Research in Pairs grant (Scheme 4) from London Mathematical Society (with J. Ben-Artzi) 2019-2020

❑ Colorado School of Mines Alumni Teaching Award, 2016-2017

☐ Colorado Mathematics Award for Outstanding Service to Students, 2014-2015, 2015-2016, 2017-2018, 2018-2019
☐ Colorado School of Mines Outstanding Faculty Award, Department of Applied Mathematics and Statistics, 2014-2015
☐ MAA Preparation for Industrial Careers in Mathematical Sciences (PIC Math) Program Fellow, 2014-2015
☐ Finalist, Sixth Annual UTA Honors College Outstanding Faculty Award, 2009-2010
☐ Center for Undergraduate Research in Mathematics (CURM) Fellow, 2009-2010
☐ Professional Development Award, Office of Provost & Vice President for Academic Affairs, UTA, 2009-2010
☐ NSF VIGRE Graduate Fellowship, 2000-2004
☐ Student Leadership Award, Carnegie Mellon University, May 2000
☐ Andrew Carnegie Scholarship, Carnegie Mellon University, 1997-2000

GRANTS

1. PI, NSF Applied Mathematics Program, DMS-2107938 (2021-2025), $200,000
   Analytical and Numerical Methods in Collisionless Kinetic Theory

2. PI, NSF Applied Mathematics Program, DMS-1911145 (2019-2024), $336,942
   Novel Computational Methods for Imperfectly-Mixed Chemical Reactions

3. PI, NSF Applied Mathematics Program, DMS-1614586 (2016-2020), $233,775
   Well-posedness and Behavior of Solutions to Kinetic Equations

4. PI, NSF Enriched Doctoral Training Program, DMS-1551229 (2016-2020), $299,996
   FRAMEWORK: Front Range Applied Mathematics Exchanges and WORKshops
   (joint with University of Wyoming)

5. PI, MAA Preparation for Industrial Careers in Mathematical Sciences (PIC Math) Grant (2014-2015), $7,500

6. PI, NSF Applied Mathematics Program, DMS-1211667 (2012-2015), $99,997
   Existence, Regularity, and Behavior of Solutions to Kinetic Equations

7. PI, US Naval Academy Research Council Grant, NARC 66-09 (2012-2013), $20,110
   Problems in Collisionless Kinetic Theory

8. PI, US Naval Academy Research Council Grant, NARC 65-09 (2011-2012), $18,370
   Problems in the Collisionless Kinetic Theory of Plasma Dynamics

9. PI, NSF Applied Mathematics Program, DMS-0908413 (2009-2013), $159,569
   Mathematical Problems in Collisionless Kinetic Theory

10. PI, Center for Undergraduate Research in Mathematics (CURM) mini-grant, subcontracted under NSF DMS 06-36648 (2009-2010), $19,850

11. PI, UTA Research Enhancement Grant (2009-2010), $10,000

12. PI, UTA Integrative Computational Sciences Grant (2008-2009), $5,000

13. Co-PI, NIH Center for Physics-Based Simulation of Biological Structures (SimBioS) Grant, subcontracted under NIH Grant U54 GM072970 (2007-2008), $50,000

GRADUATE RESEARCH & ADVISING

Colorado School of Mines

1. Eric Gelphman PhD student (2025-)

2. Grace Mattingly, PhD student (2022-)
   - NSF Graduate Research Fellowship (2022-2026)
   - Collaborative Papers: Pubs. [3], [6]

3. Lucas Schauer, PhD student (2019-2024)
   - Current Position: Computational Scientist at Northrop Grumman
   - Collaborative Papers: Pubs. [7], [8], [13]
   - Best Poster Award, Gordon Research Conference on *Flow and Transport in Permeable Media*, Les Diablerets, Switzerland

4. Kaitlyn Martinez, PhD student (2015-2020)
   - Current Position: Staff Scientist at Los Alamos National Laboratory (LANL)
   - Previous Position: Postdoc at LANL
   - Collaborative Papers: Pubs. [4], [14]
   - NSF Graduate Research Fellowship (2017-2020)
   - 2018 Mines GRADS Award
   - 2020 CoDA Poster Award
   - Thesis: *Understanding the Spatiotemporal Spread of Infectious Diseases Using Mathematical and Statistical Models and Methods Of Data Analytics*
   - Fall 2020 Rath Award
   - Internships: Theoretical Biology, LANL (2018, 2019)

5. Michael Schmidt, Ph.D. (2015-2019)
   - Current Position: Senior Member of Technical Staff at Sandia National Laboratories
   - Previous Positions: Postdoc at University of Notre Dame, Postdoc at Sandia
   - Collaborative Papers: Pubs. [20], [21], [23], [26], [27], [30], [35]
   - Thesis: *Lagrangian Methods for Modeling Transport, Mixing, and Geochemical Reactions*
   - Internship: National Wind Technology Center, National Renewable Energy Laboratory (2017, 2018)

6. Deborah Shutt, Ph.D. (2013-2017)
   - Current Position: Member of Technical Staff at Los Alamos National Laboratory
   - Collaborative Papers: Pubs. [22], [33], [41]
   - Thesis: *Modeling, Analysis, and Simulation of Complex Disease Dynamics for HIV, Ebola, and Zika Virus*
   - Internship: Theoretical Biology, Los Alamos National Lab (2016)

7. Kyle Sperber, M.S. student (2025-)
   - Thesis: *Nonlinear dimension reduction and machine learning algorithms for coarse-grained simulations of biomolecular complexes*

8. Nhat Thanh Tran, M.S. student (2019-2020)
   - Thesis: *Entropic Criteria for Computational Models of Advection-Diffusion Equations*
   - Collaborative Paper: Pub. [18]
   - PhD Student at University of California, Irvine

9. Nathan Neri, M.S. (2014-2016)
   - Collaborative Paper: Pub. [22]
   - Thesis: *A Refined Model for the Acute Stage of HIV Infection*

10. Benjamin Sattelberg, M.S. (2015-2016)
    - Thesis: *Global Sensitivity Analysis for a Collisionless Plasma using Particle-in-Cell Methods*
    - PhD Student at Colorado State University (Computer Science)

11. Christian Parkinson, M.S. (2013-2015)
    - Collaborative Paper: Pub. [39]
    - Thesis: *In-host Modeling of the Spatial Dynamics of HIV*
    - Ph.D., UCLA (Data-driven PDEs)

- Current Position: Assistant Professor at Michigan State
- Postdoc at University of Arizona

12. Tyson Loudon, M.S. (2014-2015)
    - Collaborative Paper: Pub. [36]
    - Thesis: *Dynamic Active Subspaces for a Long-term model of HIV*
    - Ph.D., University of Minnesota (Computational Mathematics)
    - Current Position: Consultant, Department of Defense
    - Postdoc at Sandia National Laboratories

13. David Hickman, M.S. (2013-2014)
    - Thesis: *Particle Swarm Optimization for Energy Minimization of Molecular Systems*

University of Texas at Arlington

Jennifer Anderson, M.S. (2009-2010)
- Thesis: *Classical Solutions of the Vlasov Equation with a Transport Field*
- Ph.D., Texas A&M University (Several Complex Variables)

UNDERGRADUATE RESEARCH ADVISING

❑ **Colorado School of Mines**

1. Landon Gehr - *Nonlinear dimension reduction and machine learning algorithms for coarse-grained simulations of biomolecular complexes* (2025-2026)

2. Marley Eisman - *Nonlinear dimension reduction and machine learning algorithms for coarse-grained simulations of biomolecular complexes* (2025-2026)

3. Amanda Castillo-Lopez - *Nonlinear dimension reduction and machine learning algorithms for coarse-grained simulations of biomolecular complexes* (2024-2025)
   - Mines First-Year Innovation and Research Scholar Training (FIRST) Fellowship (Fall 2024, Spring 2025)

4. Mimi Rai - *Nonlinear dimension reduction and machine learning algorithms for coarse-grained simulations of biomolecular complexes* (2024-2025)
   - Mines Undergraduate Research Fellowship (Fall 2024, Spring 2025)

5. Benjamin Wu - *Nonlinear dimension reduction and machine learning algorithms for coarse-grained simulations of biomolecular complexes* (2024-2025)
   - supported by NSF research grant (Fall 2024, Spring 2025)

6. Byron Selvage - *Nonlinear dimension reduction and machine learning algorithms for coarse-grained simulations of biomolecular complexes* (2024-2025)
   - supported by NSF research grant (Fall 2024, Spring 2025)

7. Catherine (Quinn) Harrand - *Nonlinear dimension reduction and machine learning algorithms for coarse-grained simulations of biomolecular complexes* (2023-2024)
   - Mines First-Year Innovation and Research Scholar Training (FIRST) Fellowship (Fall 2023, Spring 2024)

8. Logan Pike - *Nonlinear dimension reduction and machine learning algorithms for coarse-grained simulations of biomolecular complexes* (2023-2024)
   - Mines Undergraduate Research Fellowship (Fall 2023, Spring 2024)

9. Nolan Palmer - *Global sensitivity analysis of unstable plasmas* (2023-2024)
   - Mines Undergraduate Research Fellowship (Fall 2023, Spring 2024)

10. Benjamin Longaker - *Global sensitivity analysis of unstable plasmas* (2022-2024)
    - Mines Undergraduate Research Fellowship (Fall 2022, Spring 2023, Spring 2024)

11. Cameron Clarke - *Multiscale modeling and simulation of the in-host dynamics of HIV infection* (2021-2023)
    • Mines Undergraduate Research Fellowship (Fall 2021, Spring 2022, Fall 2022, Spring 2023)

12. Jacob Hofer - *Three stage modeling and anti-retroviral treatment strategies for in-host HIV dynamics* (2022)
    • Mines Undergraduate Research Fellowship (Fall 2022)

13. Roshan Klein-Seetharaman & Jacob Ellis -
    Multi-mutation Evolutionary Dynamics on Graphs (2020-2021)
    • Participants in CoorsTek Denver Metro Regional Science and Engineering Fair from Golden High School

14. John Corrette - *Global sensitivity metrics for Landau Damping* (2018-2019)
    • Mines Undergraduate Research Fellowship (Fall 2018, Spring 2019, Fall 2019)

15. Derrek Smith - *Sensitivity metrics for Particle-in-Cell simulations of plasma dynamics* (2015-2016)
    • Mines Undergraduate Research Fellowship (Fall 2015, Spring 2016)

16. PIC Math research group - *Metrics for Resource Allocation for the Ebola epidemic in Western Africa* (2014-2015)
    • Group - Paul Diaz, Eric Jones, Kelsey Kalmbach, Chelsea Sandridge
    • Collaborative Paper: Pub. [32]
    • Presented with the 2015 Janet Andersen Award for Undergraduate Research in Mathematical or Computational Biology by the MAA's BIO SIGMAA group

17. Eric Jones - *The effects of mutation and efficacy in HIV antiretroviral drug therapy* (2013-2015)
    • Collaborative Paper: Pub. [50]
    • Mines Undergraduate Research Fellowship (Spring 2013, Fall 2014, Spring 2014)

18. Kevin Rozmiarek - "Mathematical model of HIV dynamics in Gut-Associated Lymphoid Tissue" (2013-2014)
    • Mines Undergraduate Research Fellowship (Spring 2014)

❑ **United States Naval Academy**
Peter Roemer - Trident Scholar Project (2011-2013)
• Title: *A study of the persistence of HIV in stochastic population models*
• Collaborative Paper - Pub. [50]

❑ **University of Texas at Arlington**
1. Charles Nguyen, CURM program, B.S. Honors Thesis; Pub. [49], 2009-2010
2. Dustin Brewer, CURM program; SIAM prize (2010); Pub. [55], 2009-2010
3. Robert Allen, CURM program; Pub. [48], 2009-2010

❑ **Indiana University**
Jamil Ortoleva (2007-2008)
• Multiscale Analysis for Bionanosystems (see Pub. [65])

Invited Lectures

2026   ❑ AMS Spring Sectional Meeting, Boston College (March)
❑ AMS/MAA Joint Mathematics Meetings, AMS Special Session on Stability and Instability in Nonlinear Evolution Equations (Jan)

2025	❏ SIAM Conference on Analysis of PDEs, Pittsburgh, PA (Nov)
	❏ AMS/MAA Joint Mathematics Meetings, AMS Special Session on Nonlinear Dispersive and Kinetic Equations (Jan)
2024	❏ AMS/MAA Joint Mathematics Meetings, AMS Special Session on Dynamics and Regularity of PDEs (Jan)
	❏ AMS/MAA Joint Mathematics Meetings, AMS Special Session on Dynamics and Management in Disease or Ecological Models (Jan)
2023	❏ Applied Mathematics and Computation Seminar, Oregon State University (Oct)
	❏ Colorado Nonlinear Day, Colorado Springs, CO (Apr)
	❏ Colloquium, University of Colorado at Colorado Springs (Apr)
	❏ Colloquium, AMS, Colorado School of Mines (Mar)
2022	❏ Gordon Research Conference on *Flow and Transport in Permeable Media*, Les Diablerets, Switzerland (July)
	❏ Colorado Nonlinear Day, Colorado Springs, CO (Apr)
	❏ Center for Wave Phenomena (CWP) Seminar, Colorado School of Mines (Mar)
2020	❏ PDE Seminar, Chalmers Institute of Technology, Sweden (May)
2019	❏ Colloquium, Dept. of Applied Mathematics, University of Colorado, Boulder (Nov)
	❏ PDE Seminar, Chalmers Institute of Technology, Sweden (July)
	❏ PDE Seminar Series, 4 weekly talks, Cardiff University (Feb-Mar)
	❏ Analysis Seminar, Cardiff University (Feb)
2018	❏ PDE Seminar, Pontifical Catholic University, Rio de Janeiro, Brazil (Apr)
	❏ Undergraduate Math Club Seminar, CSM (Feb)
2017	❏ Society for Industrial and Applied Mathematics Central States Section Annual Conference, Colorado State University (Oct)
	❏ PDE Seminar, Chalmers Institute of Technology, Sweden (June)
	❏ Complex Dynamics Seminar, University of Colorado, Boulder (April)
	❏ AMS/MAA Joint Mathematics Meetings, Atlanta, GA - SIAM Minisymposium on Kinetic Theory (Jan)
2016	❏ Society for Industrial and Applied Mathematics Conference on Applied Mathematics Education; Philadelphia, PA (Sep)
	❏ Mathematical Association of America Rocky Mountain Section Meeting, Colorado Mesa University (Apr)
	❏ Applied Math Seminar, Colorado State University (Mar)
2015	❏ Applied Math Seminar, Colorado State University (Nov)
	❏ Conference on the Cauchy Problem in Kinetic Theory, Imperial College London (Sept)
	❏ Colloquium, Computer Science Research Institute, Sandia National Laboratories (Aug)
	❏ PDE Seminar, Imperial College London (June)
	❏ Conference on Continuum Mechanics and PDEs, University of Nebraska, Lincoln (April)
	❏ Fourteenth New Mexico Analysis Seminar, New Mexico State University (March)
	❏ Applied Math Seminar,Colorado State University (March)

□ SIAM Graduate Student Colloquium, Colorado State University (March)
□ AMS Spring Sectional Meeting, Georgetown University (March)

2014
□ Colorado Nonlinear Day, University of Colorado at Colorado Springs (Nov)
□ Colloquium, Center for Nonlinear Studies, Los Alamos National Laboratory (Oct)
□ Tenth International AIMS Conference, Madrid, Spain - 2 sessions (July)
□ Boltzmann, Vlasov and Related Equations Workshop, Cartagena, Colombia (June)
□ KI-Net Collective Behavior: Macroscopic versus Kinetic Descriptions Conference, Imperial College, London (May)
□ AMS Spring Sectional Meeting, University of Tennessee, Knoxville (March)
□ Departmental Colloquium, New Mexico State University (Feb)
□ Colloquium, Department of Physics, CSM (Feb)

2013
□ Undergraduate Math Club Seminar, CSM (Nov.)
□ Biophysics Graduate Group, CSM (Nov.)
□ Applied Math Seminar, Colorado State University (Nov.)
□ Departmental Colloquium, University of Wyoming (Oct.)
□ IMA Workshop on Stochastic Modeling of Biological Processes (May)
□ Trident Scholar Conference, United States Naval Academy (April)
□ PDE Seminar, Trinity College Dublin (Feb)
□ AMS/MAA Joint Mathematics Meetings, San Diego, CA (Jan)

2012
□ Workshop on Relativistic Kinetic Theory, Wolfgang Pauli Institute, Vienna (Nov)
□ KI-Net Conference on Kinetic Social Dynamics, University of Maryland (Nov)
□ Colloquium, United States Naval Academy (Nov)
□ KI-Net Young Researcher's Conference, University of Wisconsin (Oct)
□ Graduate Student Orientation Talk, Colorado School of Mines (Aug)
□ Departmental Colloquium, Colorado School of Mines (April)
□ Undergraduate Colloquium, Haverford College (Feb)
□ Departmental Colloquium, California State University Channel Islands (Feb)
□ Undergraduate Colloquium, Carleton College (Jan)
□ Departmental Colloquium, Loyola University Chicago (Jan)
□ PDE/Applied Mathematics Seminar, United States Naval Academy (Jan-Feb)

2011
□ SIAM Conference on Analysis of PDE, San Diego, CA (Nov)
□ AMS Fall Sectional Meeting, University of Utah (Oct)
□ AMS Fall Sectional Meeting, University of Nebraska, Lincoln (Oct)
□ PDE Seminar, University of Nebraska, Lincoln (Oct)
□ ICERM Workshop on Vlasov Models in Kinetic Theory (Sept)
□ Undergraduate Seminar, USNA (Aug)

2010
□ Basic Notions Seminar, USNA (Dec)
□ Institute for Mathematical Sciences, National University of Singapore (Nov)
□ Undergraduate Seminar, USNA, Topics in Mathematics (Nov/Dec)
□ Frank Stones Research Lectureship, Texas Christian University (Oct)
□ Isaac Newton Institute, Cambridge University, UK (Sep)
□ MAA MathFest (with Undergraduate Research Group), Pittsburgh, PA (Aug)
□ CURM Workshop (with Undergraduate Research Group), Provo, UT (March)
□ Colloquium, Clemson University (March)
□ Richard F. Barry Colloquium, Old Dominion University (Feb)
□ Departmental Colloquium, United States Naval Academy (Feb)
□ Departmental Colloquium, United States Air Force Institute of Technology (Feb)
□ Departmental Colloquium, Santa Clara University (Feb)

❑ Departmental Colloquium, Fordham University (Feb)
❑ Departmental Colloquium, University of Central Florida (Feb)
❑ Departmental Colloquium, Miami (OH) University (Feb)
❑ Departmental Colloquium, College of Charleston (Jan)
❑ AMS/MAA Joint Mathematics Meetings, San Francisco, CA (Jan)

2009
❑ SIAM Conference on Analysis of PDE, Miami, FL (Dec)
❑ Colloquium, University of Nebraska, Lincoln (Nov)
❑ PDE Seminar, Georgia Institute of Technology (Sep)
❑ Departamento de Matemàtica Aplicada, Universidad de Granada, Spain (July)
❑ Workshop on Quantum and Kinetic Transport, IPAM (April)
❑ PDE Seminar, North Carolina State University (March)
❑ IMACS Conference on Nonlinear Evolution Equations, University of Georgia (March)

2008
❑ Workshop on Multiscale Analysis and Computation (poster), IMA (Nov)
❑ Dallas-Fort Worth Research Day, UTA (Oct)
❑ SIAM Life Sciences 2008 (poster), Montreal, Canada (Aug)
❑ AMS Spring Sectional Meeting, Indiana University (April)
❑ Undergraduate Math Club, Indiana University (April)
❑ Departmental Colloquium, College of Staten Island (CUNY) (March)
❑ Departmental Colloquium, Fairfield University (March)
❑ Departmental Colloquium, Swarthmore College (Feb)
❑ Departmental Colloquium, Queen's College (CUNY) (Feb)
❑ Departmental Colloquium, University of Texas at Arlington (Feb)
❑ Departmental Colloquium, University of Missouri at St. Louis (Feb)
❑ Departmental Colloquium, Xavier University (Jan)

2007
❑ Center for Cell and Virus Theory Seminar, Indiana University (Dec)
❑ PDE Seminar, Mathematisches Institut, Universität Bayreuth, Germany (July)
❑ International Conference on Theoretical, Computational, and Applied Mathematics, Bucharest, Romania (June)
❑ PDE Seminar, Indiana University (April)

2006
❑ PDE Seminar, Indiana University (Oct)

2005
❑ Midwest PDE Seminar, University of Notre Dame (Dec)
❑ AMS Fall Sectional Meeting, University of Nebraska, Lincoln (Oct)
❑ PDE Seminar, Indiana University (Sep)
❑ PDE Seminar, CMU (April)
❑ Colloquium, Goucher College (Feb)
❑ Undergraduate Colloquium, CMU (Jan)

Prior to 2005
❑ Center for Nonlinear Analysis Summer REU Colloquium, CMU (July 2001-2005)
❑ NAM Mathfest XIV, Morehouse College (Oct 2004)
❑ Colloquium, CMU (Oct 2004)
❑ PDE Seminar, CMU (Mar 2004)
❑ PDE Seminar, CMU (Oct 2002)
❑ NAM Mathfest XI, Florida A&M University (Oct 2001)
❑ Optimization Group Seminar, Sandia National Laboratories (Aug 2000)
❑ Center for Nonlinear Analysis Undergraduate Research Seminar, CMU (July 1999)

- **Referee/Reviewer:** Archive for Rational Mechanics and Analysis; Communications on Pure and Applied Mathematics; Communications in Mathematical Physics (6); International Mathematics Research Notices (2); Communications in Nonlinear Science and Numerical Simulation; Journal of Differential Equations (11); AIMS Molecular Sciences (3); Journal of Physical Chemistry B; SIAM Journal on Mathematical Analysis (11); SIAM Multiscale Modeling and Simulation; Journal of Mathematical Biology (2); Mathematical Biosciences (4); Nonlinearity (2); Journal of Biological Systems (2); Vaccine (2); Water Research; Computers and Geosciences; Journal of Analytical and Molecular Techniques; Journal of Statistical Physics; Kinetic and Related Models (16); Applicable Analysis (2); Discrete and Continuous Dynamical Systems, Series A (3); Discrete and Continuous Dynamical Systems, Series B (5); Journal of Mathematical Physics (3); Computers & Mathematics with Applications (3); Acta Mathematica Scientia; Mathematical Methods in the Applied Sciences (14); Chaos, Solitons, & Fractals; Rocky Mountain Journal of Mathematics; Journal of Mathematical Analysis and Applications (11); Physics Letters A (2); Classical and Quantum Gravity (2); AIP Advances (6); Symbiosis Journal on AIDS Research (2); British Journal of Mathematics and Computer Science (3); SIAM Undergraduate Research Online (4); Rose-Hulman Undergraduate Mathematics Journal; Physica Scripta (2); Abstract and Applied Analysis; PRIMUS: Problems, Resources, and Issues in Mathematics Undergraduate Studies (9); Physical Science International; Future Generation Computer Systems; AIMS Conference on Differential Equations & Dynamical Systems; NSF Graduate Research Fellowship Panel (2015); *Applied Mathematics* textbook published by Wiley; *Stochastic Modeling and Theoretical Statistics* textbook published by Pearson; *Calculus* textbook published by Prentice-Hall; *Calculus* textbook published by Wiley; *Linear Algebra* textbook published by Freeman & Macmillan; AMS Mathematical Reviews (80-90)

- **Editorial Boards**

  1. Journal of Mathematical Analysis
  2. AIMS Molecular Science
  3. SIAM Undergraduate Research Online (SIURO)

- **Conference Organizer**

  1. Special Session on "Recent developments in kinetic theory and dispersive PDEs" at 2026 AMS Spring Section Meeting, March 2026
  2. Special Session on "Analytical Methods in Kinetic Theory and Fluid Mechanics" at 2025 SIAM Conference on Analysis of PDEs, November 2025
  3. SIAM Central States Section 4th Annual Conference, University of Oklahoma, October 2018
  4. SIAM Central States Section 3rd Annual Conference, Colorado State University, October 2017
  5. SIAM Central States Section 2nd Annual Conference, University of Arkansas at Little Rock, October 2016
  6. International Conference on the Cauchy Problem in Kinetic Theory, Imperial College, London, September 2015
  7. SIAM Central States Section 1st Annual Conference, Missouri University of Science & Technology, April 2015
  8. Special Session on "Kinetic models - analysis, computation, and applications" at 2014 AIMS International Conference, July 2014
  9. SIAM Baltimore-Washington Fall 2013 Sectional Meeting

10. SIAM Baltimore-Washington Summer 2013 Sectional Meeting

11. SIAM Baltimore-Washington Spring 2013 Sectional Meeting

12. SIAM Baltimore-Washington Fall 2012 Sectional Meeting

13. SIAM Baltimore-Washington Summer 2012 Sectional Meeting

14. SIAM Baltimore-Washington Spring 2012 Sectional Meeting

15. Special Session on "Nonlinear Hyperbolic Equations: Theoretical Advances and Applications" at SIAM Conference on Analysis of Partial Differential Equations, November 2011

16. SIAM Baltimore-Washington Fall 2011 Sectional Meeting

17. SIAM Baltimore-Washington Spring 2011 Sectional Meeting

18. SIAM Baltimore-Washington Fall 2010 Sectional Meeting

- **Panel/Proposal Reviewer**

1. External Reviewer for promotion and tenure dossier - Emory University

2. External Reviewer for promotion dossier - Colorado College

3. MAA Project NExT Panel on Applying for Promotion, 2022

4. University of Arizona Panel (Virtual) on Research with Undergraduates, 2022

5. AMS/SIAM Committees on Education Joint Panel Discussion: Broadening Research Experiences for Doctoral Students in the Mathematical Sciences, Joint Mathematics Meetings, 2017

6. NSF Panel on Enriched Doctoral Training, Joint Mathematics Meetings, 2017

7. National Science Foundation (US) Review Panel, 2017 (Applied Math), 2020 (Applied Math), 2021 (Mathematics REUs), 2022 (CyberInfrastructure for Sustained Scientific Innovation), 2023 (LEAPS-MPS), 2024 (Applied Math)

8. Swiss National Science Foundation, 2016, 2017, 2022

9. CSM Fulbright Fellowship Applications, 2012, 2013

10. CSM Marshall Fellowship Applications, 2012, 2013

11. CSM Goldwater Fellowship Applications, 2012, 2013

12. Center for Undergraduate Research in Mathematics (CURM), 2010

13. Math in the City (MitC) Program, University of Nebraska-Lincoln, 2010

14. Indiana University Department of Mathematics Panel on Entering the Academic Workforce, 2010

- **Departmental/University/National Service**

1. AMS Department Head (2024-)

2. Mines Budget Committee (2024-)

3. Graduate Record Examinations (GRE) Mathematics Subject Exam Committee (2020-)

4. Applied Mathematics and Statistics Department Head Search Committee, CSM (2023-2024)

5. Mines Research Council (2022-2024)

6. Mines Research Council Subcommittee on Research Lectures and Special Events (2022-2024); Chair (2023-2024)

7. Mines Research Council Subcommittee on High-Performance and Parallel Computing (2022-2024)

8. Quantitative Biosciences and Engineering (QBE) Graduate Committee, CSM (2022-2024)

9. Research Committee, Applied Mathematics and Statistics, CSM (2023-2024)

10. Undergraduate Committee, Applied Mathematics and Statistics, CSM (2023-2024)

11. Graduate Admissions Committee, Applied Mathematics and Statistics, CSM (2021-2024)

12. Promotion and Tenure Committee, Applied Mathematics and Statistics, CSM (2017-2024)

13. Mines Undergraduate Research Advisory Council (MURAC), CSM (2022-2023)

14. Ad-hoc Committee on Equity-minded Faculty Workload, Applied Mathematics and Statistics, CSM (2022-2023)

15. Ad-hoc Committee on Consulting Center Development, Applied Mathematics and Statistics, CSM (2022-2023)

16. Ad-hoc Committee on Indirect Cost Returns, Applied Mathematics and Statistics, CSM (2022-2023)

17. CSM Launch Major Fair (2023)

18. Promotion and Tenure Committee, Applied Mathematics and Statistics, CSM (2017-2024)

19. Quantitative Biosciences and Engineering Program Faculty, CSM (2017-)

20. Awards Committee, Applied Mathematics and Statistics, CSM (2020-2023)

21. Mines Summer Undergraduate Research Fellowship (SURF) Evaluation Committee, CSM (2022-2023)

22. Putnam Seminar faculty advisor, Applied Mathematics and Statistics, CSM (2022-2023)

23. Departmental Representative and Graduate Student Recruiter, AMS January Mathematics Meetings (2013-2019, 2024)

24. Teaching Postdoctoral Fellow Search Committee, Applied Mathematics and Statistics, CSM (2021-2022)

25. Applied Mathematics and Statistics Bylaws Committee (2019-2022)

26. Faculty Judge for Mines Undergraduate Research Symposium (2022)

27. Faculty Judge for GRADS (2022)

28. Board of Student Media, CSM (2019-2021)

29. Graduate Committee, Applied Mathematics and Statistics, CSM (2013-2020)

30. CSM Faculty Grievance Committee, CSM (2015-2020)

31. Bio@Mines Undergraduate Major Committee (2019-2020)

32. **Director of Graduate Studies**, Applied Mathematics and Statistics, CSM (2017-2019)

33. **CSM Graduate Council**, AMS Representative (2017-2019)

34. Co-founder and Organizer of CSM Problem Solving Seminar, Applied Mathematics and Statistics, CSM (2013-2019)

35. Co-founder and Organizer of CSM Putnam Seminar, Applied Mathematics and Statistics, CSM (2012-2019)

36. Treasurer, SIAM Central States Section (2014-2019)

37. Graduate Student Orientation, Applied Mathematics and Statistics, CSM (2012-2019)

38. Computational and Applied Mathematics Hiring Committee, CSM (2017-2018)

39. CSM Faculty Steering Committee on Compensation (2017-2018)

40. Applied Mathematics and Statistics Department Head Hiring Committee, CSM (2015-2016)

41. Computational and Applied Mathematics Assistant Professor Hiring Committee, CSM (2014-2015)

42. Board of Student Publications, CSM (2013-2015)

43. MATH 207/307 Development Committee, Applied Mathematics and Statistics, CSM (2014-2015)

44. **CSM Faculty Senate Representative** (2013-2014)

45. CSM Faculty Senate Subcommittee on Promotion, Tenure, and Faculty Mentorship (2013-2014)

46. Graduate Student Host for AMS visit (2015-2016); Co-host for Michael Kratochvil, William Terry, John Murphree, Aline Coury, and Ada Palmisano

47. Graduate Student Host for AMS visit (2014-2015); Co-host for Kai Bartlette, Kaitlyn Martinez, Rebecca Conrad, Steve Molinari, and Elizabeth Kanaly

48. Graduate Student Host for AMS visit (2013-2014); Co-host for Hannah Swan, Caitlyn Hannum, Hannah Hardeman, Alison Theobold, Jessica Thomas

49. Colloquium Coordinator, Applied Mathematics and Statistics, CSM (2012-2014)

50. Undergraduate Math Club, CSM (2013-2014)

51. New Faculty Orientation Panelist, CSM (2013-2014)

52. Undergraduate Committee, Applied Mathematics and Statistics, CSM (2012-2013)

53. Computational and Applied Mathematics Hiring Committee, CSM (2012-2013)

54. MATH 307/408 Development Committee, Applied Mathematics and Statistics, CSM (2012-2013)

55. AMS Qualifying Examination Writer/Grader/Proctor -
Analysis (2012-2013)
Differential Equations and Dynamical Systems (2013-2014)
Linear Vector Spaces (2013-2014)
Applied Mathematics (2012-2013, 2014-2020)

56. Departmental Representative, 10th Annual Ryan Sayers Pi-Mile Run (2012-2014)

57. Departmental Representative, SWE Evening with Industry (2013-2014)

58. CSM Fulbright Fellowship Application Reviewer (2012-2014)

59. CSM Marshall Fellowship Application Reviewer (2012-2014)

60. CSM Goldwater Fellowship Application Reviewer (2012-2014)

61. CSM New Majors Celebration (2013-2014)

62. Celebration of Mines, Applied Mathematics and Statistics, CSM (2012-2014)

63. Discover Mines, Applied Mathematics and Statistics, CSM (2012-2014)

64. Undergraduate Major Group Advising, Applied Mathematics and Statistics, CSM (2012-)

65. Declaration Day, Applied Mathematics and Statistics, CSM (2012-2014)

66. Secretary, SIAM Washington-Baltimore Section (2011-2014)

67. Treasurer, SIAM Washington-Baltimore Section (2011-2014)

68. MD-DC-VA MAA Section NExT Fellow (2010-2012)

69. Organizer & Founder, PDE/Applied Mathematics Seminar, USNA (2011-2012)

70. Hiring Committee, Department of Mathematics, USNA (2010-2012)

71. Honors Committee, Department of Mathematics, USNA (2010-2012)

72. Majors Curriculum Committee, Department of Mathematics, USNA (2010-2012)

73. Majors Recruitment Committee, Department of Mathematics, USNA (2010-2012)

74. Multimedia Support Center Representative, USNA (2010-2012)

75. Combined Federal Campaign Keyperson, USNA (2010-2011)

76. Mathematical Association of America (MAA) Student Chapter Sponsor at UTA (2008-2010)

77. Advisory Committee, Department of Mathematics, UTA (2009-2010)

78. Mid-cities Math Circle Seminar Faculty (2009-2010)

79. UTA University Hearing Board (2009-2010)

80. Calculus Committee, Department of Mathematics, UTA (2009-2010)

81. UTA Graduate Student Preliminary Examination Writer, Proctor, Grader (2008-2010)

82. UTA Putnam Seminar Organizer (2008, 2009)

83. UTA Research and Creative Activity Group (2008-2010)

84. UTA Calculus Bowl Organizer (2008-2010)

85. UTA Teaching Circles Member (2008-2010)

86. GAANN Day - Department of Mathematics Representative (2008-2010)

87. UTA Preview Day - Department of Mathematics Representative (2008)

- **Committee Member/Advisor**

    1. Eric Gelphman - PhD (co-)Advisor, CSM, 2025-

    2. Grace Mattingly - PhD Advisor, CSM, 2022-

    3. Lucas Schauer - PhD Advisor, CSM, 2019-2024

    4. Kaitlyn Martinez - PhD Advisor, CSM, 2015-2020

    5. Nhat Thanh Tran - MS Advisor, CSM, 2019-2020

    6. Michael Schmidt - PhD Advisor, CSM, 2015-2019 (MS Advisor, 2018)

    7. Deborah Shutt - PhD Advisor, CSM, 2013-2017

    8. Kyle Sperber - MS Advisor, CSM, 2024-2025

    9. Nathan Neri - MS Advisor, CSM, 2014-2016

    10. Benjamin Sattelberg - MS Advisor, CSM, 2015-2016

11. Tyson Loudon - MS Advisor, CSM, 2014-2015

12. Christian Parkinson - MS Advisor, CSM, 2013-2015

13. David Hickman - MS Advisor, CSM, 2013-2014

14. Justin Garrish - PhD Committee, CSM, 2018-2025 (advisor: Cecilia Diniz Behn)

15. Shelby Stowe - PhD Committee, CSM, 2019-2024 (advisor: Cecilia Diniz Behn)

16. Soraya Terrab - PhD Committee, CSM, 2019-2024 (advisor: Samy Wu Fung)

17. Laura Albrecht - PhD Committee, CSM, 2018-2024 (advisor: Doug Nychka)

18. David Montgomery - PhD Committee, CSM, 2019-2023 (advisor: Karin Leiderman)

19. Jamie Madrigal - PhD Committee, CSM, 2019-2022 (advisor: Karin Leiderman)

20. Michael Kelley - PhD Committee, CSM, 2016-2022 (advisor: Karin Leiderman)

21. Kai Bartlette - PhD Committee, CSM, 2015-2020 (advisor: Cecilia Diniz Behn)

22. Nicholas Danes - PhD Committee, CSM, 2016-2019 (advisor: Karin Leiderman)

23. Nora Stack - PhD Committee, CSM, 2014-2019 (advisor: Cecilia Diniz Behn)

24. Jennifer Nealy - PhD Committee, CSM, 2013-2015 (advisor: Jon Collis)

25. Kai Bartlette - MS Committee, CSM, 2015-2017 (advisor: Cecilia Diniz Behn)

26. Nora Stack - MS Committee, CSM, 2014-2017 (advisor: Cecilia Diniz Behn)

27. Kelsey Kalmbach - MS Committee, CSM, 2014-2016 (advisor: Cecilia Diniz Behn)

28. Lucas Quintero - MS Committee, CSM, 2014-2016 (advisor: Paul Martin)

29. Alexander Charlesworth - MS Committee, CSM, 2014-2016 (advisor: Ganesh)

30. Jacqueline Simens - MS Committee, CSM, 2013-2015 (advisor: Cecilia Diniz Behn)

31. Dylan Denning - MS Committee, CSM, 2013-2015 (advisor: Paul Martin)

32. William McCollum - MS Committee, CSM, 2012-2014 (advisor: Paul Martin)

33. Greg Johnson - MS Committee, CSM, 2012-2013 (advisor: Paul Martin)

34. Pratik Patnaik - PhD Committee, CSM, 2024- (advisor: Lincoln Carr, Physics)

35. Luc Christians - PhD Committee, CSM, 2021- 2025 (advisor: Alex Pak, CBE)

36. Megan Shepherd - PhD Committee, CSM, 2021- 2024 (advisor: Leslie Lamberson, ME)

37. Patrick Hunt - PhD Committee, CSM, 2019- 2024 (advisor: Chip Durfee, Physics)

38. Jonathan Rose - PhD Committee, CSM, 2020-2023 (advisor: Chip Durfee, Physics)

39. Patipan Saengduean - PhD Committee, CSM, 2017-2022 (advisor: Roel Snieder, Geophysics)

40. Bryant Robbins - PhD Committee, CSM, 2016-2022 (advisor: Vaughan Griffiths, CEE)

41. Gurban Orujov - PhD Committee, CSM, 2017-2021 (advisor: Andrei Swidinsky, Geophysics)

42. Alex Wilhelm - PhD Committee, CSM, 2016-2021 (advisor: Chip Durfee, Physics)

43. Mary Michael Forrester - PhD Committee, CSM, 2017-2020 (advisor: Reed Maxwell, Hydrology)

44. Diego Alcala - PhD Committee, CSM, 2014-2020 (advisor: Lincoln Carr, Physics)

45. Justin Anderson - PhD Committee, CSM, 2012-2020 (advisor: Lincoln Carr, Physics)

46. Qiuwei Li - PhD Committee, CSM, 2014-2019 (advisor: Gongguo Tang, EECS)

47. Ilkay Eker - PhD Committee, CSM, 2014-2018 (advisor: Hossein Kazemi, Petroleum Engineering)

48. Amanda Meier - PhD Committee, CSM, 2012-2015 (advisor: Chip Durfee, Physics)

49. Ross DeMott - MS Committee, CSM, 2022-2023 (advisor: Alex Flournoy, Physics)

50. Jennifer Anderson - MS Defense, UTA, 2010 (chair & advisor)

51. Charles Nguyen - Honors B.S. Thesis Defense, UTA, 2010 (advisor)

52. Caixia (Ruby) Chen - PhD Qualifying Examination, UTA, 2010 (chair: Yue Liu)

53. Alicia Prieto Langarica - PhD Qualifying Examination, UTA, 2010 (chair: Hristo Kojouharov)

54. Stephen Salako - PhD Defense, UTA, 2009 (chair: Goujun Liao)

- **Faculty Judge**

  1. MathWorks Math Modeling Challenge (2012 - present); formerly Moody's M^3 Challenge

  2. Vanderhoof Elementary School Career Science Fair (2013)

  3. Annapolis Middle School Science Fair (2012)

  4. Undergraduate Research Poster Session, AMS/MAA Joint Meetings (2009-2016)

  5. UTA ACES Program, Graduate Student Presentations (2009, 2010)

  6. Indiana Women in Science Program (WISP) Research Conference (2007, 2008)

TEACHING
EXPERIENCE

Colorado School of Mines (2013 - present)
- *Differential Equations* (MATH 225) - Fall 2015, Spring 2016, Fall 2016, Spring 2017, Summer 2018, Summer 2021, Summer 2022, Summer 2023, Summer 2024
- *Introduction to Scientific Computing* (MATH 307) - Summer 2015, Summer 2016
- *Linear Algebra* (MATH 332) - Fall 2013, Fall 2014, Fall 2019, Spring 2021, Summer 2023, Fall 2023
- *Applied Numerical Methods* (MATH 398) - Fall 2012, Spring 2013

- *Partial Differential Equations* (MATH 455) - Fall 2021, Spring 2022, Spring 2023, Spring 2024, Fall 2024
- *Capstone: Mathematical and Computational Modeling* (MATH 484) - Spring 2014, Spring 2015
- *Putnam Seminar* (MATH 498) - Fall 2014
- *Special Topics: Nonlinear Partial Differential Equations* (MATH 498/598) - Fall 2022, Spring 2026
- *Linear Vector Spaces* (MATH 500) - Fall 2014, Fall 2017, Fall 2018, Fall 2020, Fall 2021, Fall 2022, Fall 2023
- *Applied Mathematics I* (MATH 514) - Fall 2016, Fall 2017
- *Differential Equations and Dynamical Systems* (MATH 510) - Fall 2013
- *Graduate Thesis & Research Credit* (MATH 707)

United States Naval Academy (2010-2012)
- *Calculus I* - Fall 2010
- *Introduction to Applied Mathematics* - Spring 2011, Spring 2012
- *Engineering Mathematics with Probability and Statistics* - Fall 2011
- *Senior Capstone - Introduction to Mathematical Finance* - Spring 2012
- *Advanced Topics in Mathematics* - Spring 2012
- *Trident Scholar Project* - Spring 2012

University of Texas at Arlington (2008-2010)
- *Honors Calculus I* - Fall 2009
- *Calculus II* - Fall 2008, Spring 2009
- *Calculus III* - Summer 2009
- *Putnam Seminar* (co-taught)
- *Special Topics in Mathematics* - Spring 2010
- *Undergraduate Research Experiences* - Spring 2010
- *Applied Mathematics I* (Grad) - Fall 2009
- *Applied Mathematics II* (Grad) - Spring 2010
- *Special Project in Mathematics Research* (Grad) - Fall 2009

Indiana University (2005 - 2008)
- *Brief Survey of Calculus I* - Fall 2007
- *Calculus I* - Fall 2005
- *Calculus II* - Spring 2006
- *Introduction to Probability and Statistics* - Summer 2006
- *Partial Differential Equations with Applications I* - Fall 2006
- *Partial Differential Equations with Applications II* - Spring 2007
- *Numerical Analysis II* - Spring 2008

Carnegie Mellon University (2001 - 2005)
- *Differential and Integral Calculus* - Fall 2004
- *Calculus I for Economics Students* - Summer 2003
- *Calculus in 3D* - Summer 2004

Pennsylvania State University, New Kensington/McKeesport (2003 - 2004)
- *Intermediate Algebra* - Fall 2003
- *Calculus I* - Spring 2004

SENIOR CAPSTONE PROJECTS

Colorado School of Mines

Spring 2015

1. Chelsea Sandridge, Eric Jones, Kelsey Kalmbach, Paul Diaz - "A Modified SEIR Model for the Spread of Ebola in Western Africa"
2. Jeffrey Young, Nhat Thanh Van Tran, Tyler Bank - "A Mathematical Model of Ripple Formation"
3. Corey Boettiger, Brian Gregg - "Effects of External Currents on Noble Heartbeat Model"
4. James Brown - "Traffic Modeling and the Human Component"
5. Dustin Burchett, Alyssa Mandarino - "Analysis and Computation of the Time-Dependent Webster's Horn Equation"
6. Nathaniel Keller, Matt Childers - "A Mathematical Approach to Sand Dune Evolution"
7. Andrew Glaws - "Differential Game Theory and Pedestrian Traffic"
8. Shawn Johnson, Ben Sattelberg - "Diffie-Hellman Key Exchange on the TI-MSP430F2618 Microprocessor"
9. April Snively, Thomas Luckett - "A Mathematical Approach on the Effect of Climate Change on Glacial Thickness"
10. Kerrek Stinson - "A One-dimensional Collocation Method for the Korteweg-De Vries Equation"
11. Sarah Verros - "Finite Difference Method for Modeling Seismic Wave Propagation"
12. Jacob Vigil - "The Makarere Model of Hepatitis E Virus Outbreaks"
13. Holly Wenham - "A Mathematical Model of Basal Cell Carcinoma"

Spring 2014

1. Samuel Harvanek, Logan Dean, Abigail Branch - "A Hepatitis B Infection Model with Logistic Hepatocyte Growth and Delay"
2. Alexander Charlesworth - "Electromagnetic Wave Scattering"
3. Lucas Quintero - "Modeling Shear Waves"
4. Andrew Cook - "Simulating Traffic Flow via the Aw-Rascle Model"
5. Nathan Neri - "A Spatial Model of HIV Transmission in Gut-Associated Lymphoid Tissue"
6. Caitlin McNeil, Beverly Smart - "The Epidemiology of Obesity"
7. Marisse Vista, Cassandra Baird - "Mutation Variance in a Bee Colony"
8. Mariah Murphy, Rebecca Ferguson, Anastasia Shpurik - "A Mathematical Model of Honeycomb Construction"
9. Troy Sorenson - "Reading a Digital Clock using Neural Networks and the Back-propagation Algorithm"

Spring 2012   **United States Naval Academy**

1. Peter Besser - "Options pricing with time-dependent interest rates"
2. Britt Campbell - "Monte carlo methods for options pricing"
3. Colleen Fallon - "Random walks and Brownian motion"
4. Kevin Flood - "Exotic Options"
5. Ross Hieatt - "The Black-Scholes options pricing model"
6. Maxwell Klein - "Optimal stopping for the American option"
7. Kelly Ranz - "Combination strategies used to minimize risk "
8. Christopher Ricks - "Investing in a volatile market"
9. Kameron Wright - "Credit default swaps"

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