# NATASHA S. SHARMA

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Last updated on February 12, 2024.

## Education

- **University of Houston**                                                     Houston, TX
  *Ph.D., Applied Mathematics,*  ***Advisor:*** *Prof. R.H.W Hoppe*          *Jan. 2009 – Dec. 2011*
  *Thesis Title: 'Convergence analysis of adaptive IPDG method for Helmholtz equation'*

- **University of Houston**                                                     Houston, TX
  *Master of Science, Applied Mathematics*                                 *Aug. 2006 – Dec. 2008*

- **Lady Shri Ram College, Delhi University**                              New Delhi, India
  *Master of Arts, Mathematics*                                             *Jul. 2004 – Jul. 2006*

- **Sri Venkateswara College, Delhi University**                           New Delhi, India
  *Bachelor of Arts, Mathematics*                                           *Jul. 2000 – Jul. 2004*

## Professional Experience

- **August 2022 – present**        **Associate Professor**, University of Texas at El Paso, El Paso.

- **June 5 –August 11, 2023**       **Participant**, Sustainable Research Pathways Program at Lawrence Livermore National Laboratory

- **August 2014 – 2022**           **Assistant Professor**, University of Texas at El Paso, El Paso.

- **August 2012 –August 2014**     **Postdoctoral Fellow**, Heidelberg University, Germany.

- **January 2012 –July 2012**      **Postdoctoral Fellow** University of Houston, Houston, Texas.

## Research

### Manuscript Under Review

1. D. Bond, A. E. Diegel and N. S. Sharma, Stability and Error Analysis for a $C^0$ Interior Penalty Method for the Modified Phase Field Crystal Equation.

### Selected Publications

1. A. E. Diegel and N. S. Sharma, Unconditional Energy Stability and Solvability for a $C^0$ Interior Penalty Method for a Sixth-Order Equation Modeling Microemulsions. International Journal of Numerical Analysis and Modeling, 20, pp. 459-477, 2023. [doi] Link to download.
2. A. E. Diegel and N. S. Sharma, A $C^0$ Interior Penalty Method for the Phase Field Crystal Equation, Numerical Methods for Partial Differential Equations, 39(3), 2510-2537, 2022. [doi]
3. N. Sharma, Robust a-posteriori error estimates for weak Galerkin method for the convection-diffusion problem, Applied Numerical Mathematics, Volume 170, December 2021, Pages 384-397, 2021. [doi]
4. N. S. Sharma and G. Kanschat, A Contraction Property of an Adaptive Divergence-Conforming Discontinuous Galerkin Method for the Stokes Problem, Journal of Numerical Mathematics, 26(4), pp. 209-232, 2018. [doi]

5. S. Brenner, M. Oh, S. Pollock, K. Porwal, M. Schedensack, N. Sharma, A $C^0$ interior penalty method for elliptic distributed optimal control problems in three dimensions with pointwise state constraints, in Topics in Numerical Partial Differential Equations and Scientific Computing, IMA Volumes in Mathematics and Its Applications, 160, 2016. [doi]

6. G. Kanschat and N. S. Sharma, Divergence-conforming Discontinuous Galerkin Methods and $C^0$ Interior Penalty Methods. SIAM, Journal of Numerical Analysis, Vol. 52, Issue 4, 2014. [doi]

7. R.H.W. Hoppe. and N. S. Sharma, Convergence Analysis of an Adaptive Interior Penalty Discontinuous Galerkin Method for the Helmholtz Equation. IMA Journal of Numerical Analysis, 2013. [doi]

8. C. Carstensen, R.H.W. Hoppe, N. Sharma and T. Warburton, Adaptive hybridized Interior Penalty Discontinuous Galerkin methods for H(curl)-elliptic problems. Numer. Math. Theor. Meth. Appl. 4, 13–37, 2011. [doi]

## Conference Proceedings

1. N . S. Sharma and R. H. W. Hoppe, Convergence Analysis of an Adaptive Interior Penalty Discontinuous Galerkin Method for the Helmholtz Equation. Theory and Applications of Discontinuous Galerkin Methods. Oberwolfach Rep. 9 (2012), 555-609, 2012. [doi]

2. N. S. Sharma, R. H. W. Hoppe and T. Warburton, A posteriori error analysis for hybridized Interior Penalty Discontinuous Galerkin Method for H(curl)-elliptic problems. Oberwolfach Reports, Workshop on Computational Electromagnetism and Acoustics, Springer, Berlin-Heidelberg-New York, 2010. [doi]

## Open-source code software

N. Sharma, G. Kanschat, T. Heister, W. Bangerth, and Z. Wang, Biharmonic equation solver `deal.II` Version 9.2 step-47 tutorial program, 2020.
`https://www.dealii.org/developer/doxygen/deal.II/step_47.html`

## Other Articles

1. D. Beigel, M. Klingebiel, N. Sharma, An adaptive DG-$\theta$ method with residual-type error estimates for linear parabolic problems, 2017. Technical Report.

2. R.H.W. Hoppe, J. Neher, N. Sharma, A Posteriori Error Analysis of Hybridized Mixed Finite Element Methods for Second Order Elliptic Boundary Value Problems, 2009. Technical Report, opus.bibliothek.uni-augsburg.de

## External Funding

1. DOE NNSA/MSIPP (Grant Number: GRANT13584020): The Rio Grande Consortium for Advanced Research on Exascale Simulation (Grande CARES), 2022-2027; **Co-PI** (with participating institutes: UNM (Lead, Vorobieff - PI, Poroseva), UTEP (Kumar PI, Co-PIs: Bronson, Tandon, Tosh, Sharma), NMSU (Kota),NMT (Hargather), PVAMU (Radhakrishnan) and Sandia (Tezaur), DOE NNSA/MSIPP). **Funded** \$5M, Abstract

2. DOE ASCR (Grant Number DE-SC0022957): Broadening National Science on Advanced Modeling and Simulations, 2022-2023; **Senior Personnel** (with PI Vinod Kumar, University of Texas at El Paso). **Funded** \$44, 000.

3. NSF DMS 2110774: Collaborative Research: Numerical Methods and Adaptive Algorithms for Sixth-Order Phase Field Models, 2021-2024; **PI** (with PI at participating institute Amanda Diegel, Mississippi State University). **Funded** \$125, 000.00. Abstract.

4. NSF DMS 1520862: Collaborative Research: Numerical Simulation of the Morphosynthesis of Polycrystalline Biominerals, 2015-2018; **PI** (with PI at participating institute Ronald Hoppe, University of Houston). **Funded** $159,999.00. Abstract

## Invited Presentations

1. SIAM Annual Meeting (SIAM AN24), Spokane Convention Center, Spokane, Washington July 8–12, 2024.
2. Mathematics of Multiscale and Multiphysics Phenomena in Materials Science, Banff International Research Station for Mathematical Innovation and Discovery, The Banff Centre in Banff, Alberta, Canada June 16–June 21, 2024.
3. SIAM Conference on Mathematical Aspects of Materials Science (MS24), Pittsburgh, Pennsylvania May 19-23, 2024.
4. New Mexico Tech (NMT) Department of Mathematics Colloquium, New Mexico Tech, Socorro, New Mexico February 16, 2023.
5. Millican Colloquium Talk, University of North Texas, Denton, Texas October 9, 2023.
6. 17th U.S. National Congress on Computational Mechanics, Albuquerque, New Mexico July 23-27, 2023.
7. FEM@LLNL Seminar Series, Lawrence Livermore National Laboratory, Livermore, California July 18, 2023.
8. Spring Central Sectional Meeting, University of Cincinnati, Cincinnati, Ohio April 15-16, 2023.
9. Colloquium Talk, Idaho State University, Pocatello, Idaho March 6, 2023.
10. Applied Mathematics and Computation Seminar, Oregon State University, Corvallis, Oregon, February 10, 2023.
11. 5th Annual Meeting of the SIAM Texas-Louisiana Section, University of Houston, Houston Texas, November 4-6, 2022.
12. Modeling and Computation Seminar, University of Arizona, Tuscon, Arizona, October 27, 2022.
13. 7th Annual Meeting of SIAM Central States Section, Oklahoma State University, Stillwater, Oklahoma, October 1-2, 2022.
14. 2022 SIAM Conference on Mathematics of Data Science 2022, San Diego, California, September 26-30, 2022.
15. AMS Fall Central Sectional Meeting, University of Texas at El Paso, El Paso Texas, September 17-18, 2022.
16. Plenary Talk at Ghana Numerical Analysis Day 2022 (Virtual), August 24-25, 2022.
17. 2022 SIAM Annual Meeting 2022, Pittsburgh, Pennsylvania, July 11-15, 2022.
18. International Conference on Computational Methods and Applications in Engineering 2022, Mississippi State University, Starkville, Mississippi, May 7-8, 2022.
19. Seminar on Numerical Analysis and Applied Mathematics at Valparaíso, Institute of Mathematics at PUCV, Chile, November 12, 2021.
20. 4th Annual Meeting of the SIAM Texas-Louisiana Section, University of Texas Rio Grande Valley, South Padre Island, TX, November 5-7, 2021.
21. Peaceman Lecture Series on Numerical Mathematics, Rice University, Houston, TX, October 25, 2021.
22. Annual Retreat 2021 Heidelberg Graduate School of Mathematical and Computational Methods for the Sciences (HGS Mathcomp), Heidelberg University, Heidelberg, Germany, September 20-21 2021, (**held 100% virtual due to the pandemic**).

23. 16th U.S. National Congress on Computational Mechanics, Chicago, Illinois, July 25-29, 2021 (**held 100% virtual due to the pandemic**).

24. SIAM Conference on Mathematical Aspects of Materials Science, Bilbao, Spain, May 17-28 2021 (**held 100% virtual due to the pandemic**).

25. Department of Mathematics and Statstics Seminar Texas A&M University, Corpus Christi, April 9, 2021 (**held 100% virtual due to the pandemic**).

26. CMAM 2020: 9th Conference on Computational Methods in Applied Mathematics, TU Wien (Vienna University of Technology), Vienna, Austria, July 13-17, 2020 (**rescheduled due to the pandemic**).

27. SIAM SEAS Conference, Auburn University, Auburn, Alabama. March 14-15, 2020 (**rescheduled due to the pandemic**).

28. Seventh deal.II Users and Developers Workshop, Colorado State University, August 6-9, 2019.

29. International Congress on Industrial and Applied Mathematics 2019, Valencia, Spain, July 15-19 2019.

30. MAFELAP 2019, Brunel University London, UK, June 18-21 2019.

31. Computational and Applied Mathematics Seminar, Mississippi State University, Starkville, MS, March 8, 2019.

32. SIAM Annual Meeting 2018, Portland, Oregon, July 9-13, 2018.

33. Joint Mathematical Meetings, San Diego Convention Center, San Diego, California, January 10-13, 2018.

34. Modeling and Computation Seminar, University of Arizona, Tuscon, Arizona, October 27 2016.

35. Colloquium Series, New Mexico State University, Las Cruces, New Mexico, April 28 2016.

36. Scientific Computing Seminar, University of Houston, Houston, Texas April 21 2016.

37. Computational Mathematics Seminar Series, Louisiana State University, Baton Rouge, Louisiana. February 3, 2015.

38. Fall Southeastern Section Meeting University of North Carolina at Greensboro, Greensboro, North Carolina. November 8-9, 2014.

39. Colloquium Series, University of Texas at El Paso, El Paso, Texas, April 7, 2014.

40. Joint Mathematical Meetings, Baltimore Convention Center, Baltimore, Maryland. January 15-18, 2014.

41. EnuMath, EPFL, Lausanne, Switzerland. August 26-30, 2013.

42. MAFELAP 2013, Brunel University, London, UK. June 11-14, 2013.

43. SIAM SEAS Conference, University of Alabama, Huntsville, Alabama, USA. March 24-25, 2012.

44. Theory and Applications of Discontinuous Galerkin Methods, Mathematisches Forschungsinstitut Oberwolfach, Germany. February 19-25, 2012.

45. Numerical Analysis Seminar, Texas A&M, College Station, Texas, USA. October 12, 2011.

46. Numerical Methods for Incompressible Fluid Flow, University of British Columbia, Vancouver, Canada. July 14-16, 2011.

47. Conference on Computational Electromagnetism and Acoustics, Mathematisches Forschungsinstitut Oberwolfach, Germany. February 14-20, 2010.

## Other Presentations

1. Classroom Research Presentation for the Undergraduate course SCI-1301: Inquiry in Science and Math, University of Texas at El Paso, Texas, April 11, 2023.

2. Mathematics Colloquium The University of Texas at El Paso, El Paso, TX, 2022.

3. 2022 Finite Element Rodeo Conference at Southern Methodist University, Dallas, TX, 2022.

4. Mathematics Colloquium The University of Texas at El Paso, TX, 2021.

5. Mathematics Colloquium The University of Texas at El Paso, TX, 2020.

6. 2020 Finite Element Rodeo Conference at Baylor University, Waco, TX, 2020.

7. 22nd Joint NMSU/UTEP Workshop on Mathematics, Computer Science, and Computational Sciences, New Mexico State University, Las Cruces, NM, 2018.

8. 2018 Finite Element Rodeo Conference at Louisiana State University, Baton Rouge, LA, 2018.

9. 2014 Finite Element Rodeo Conference at the University of Texas at Austin, Austin TX, 2014.

10. 2012 Finite Element Rodeo Conference at Rice University, Houston TX, 2012.

11. 2010 Finite Element Circus at Institute for Mathematics and its Applications, Minneapolis, MN, 2010.

12. 2010 Finite Element Rodeo Conference at Southern Methodist University, Dallas, TX, 2010.

## Invited Workshop Participation

1. Structured Machine Learning and Time-Stepping for Dynamical Systems, Banff International Research Station (BIRS), The Banff Center in Banff, Alberta, Canada February 18 - 23, 2024. **(Virtual Participant).**

2. Workshop on Theoretical and Numerical Challenges in Materials Science, University of Alabama, Tuscaloosa, Alabama August 12-16, 2024. (Organizers: Shibin Dai and Abba Ramadan).

## Thesis and Independent Study supervising

- 2023-2024 (at the University of Texas at El Paso)

  1. Tera D. Smith, *Data Science Project: Reinforcement Learning Driven Adaptive Time Stepping Methods for Sixth-Order Cahn-Hilliard Type Equations.* (Fall 2023-present).

  2. Romasa Qasim, *Project: Finite Difference Method for Sixth-Order partial differential equations.* (Spring 2023).

  3. Abigail Cobbinah, *Project: Numerical Methods for Sixth-Order Cahn-Hilliard Type Equations.* (Fall 2022-Summer 2023)

  4. Augustine Twumasi, *Ph.D. thesis: Reinforcement Learning-Driven Adaptive Mesh Refinement for nonlinear parabolic partial differential equations,* (Fall 2021–Spring 2023).

- 2022-2023 (at the University of Texas at El Paso)

  1. Abigail Cobbinah, *Master's Thesis: Numerical Simulation of Drug Delivery systems using a coupled Fourth and Sixth Order Cahn-Hilliard type Equations, (Fall 2022-Summer 2023).*

  2. Augustine Twumasi, *Ph.D. thesis: Reinforcement Learning-Driven Adaptive Mesh Refinement for nonlinear parabolic partial differential equations,* (Fall 2021–present).

- 2021-2022 (at the University of Texas at El Paso)

1. Atiqur Chowdhury, *Data Science Project: Data-Driven Adaptive Space and Time Stepping Schemes for diffuse interface models with applications to material science and drug delivery systems,* (Spring 2022).

2. Oula Khouzam, *Master's Thesis: Numerical Study of Cahn-Hilliard Equations* (Fall 2021–Spring 2022).

3. Augustine Twumasi, *Ph.D. Thesis: Reinforcement Learning-Driven Adaptive Mesh Refinement for nonlinear parabolic partial differential equations,* (Fall 2021–Fall 2022).

- 2020–2021 (at the University of Texas at El Paso)

  1. Augustine Twumasi, *Master's thesis: Reinforcement Learning-Driven Adaptive Mesh Refinement for Partial Differential Equations* (Fall 2020–Summer 2021).

  2. Oula Khouzam, *Project: Numerical Simulation of Grain Growth using Phase Field Crystal Equation* (Fall 2020-Summer 2021).

- 2019–2020 (at the University of Texas at El Paso)

  1. Ogochukwu N. Ifeacho, *Master's thesis: Mathematical Modeling of Microemulsification Processes* (Fall 2019–Summer 2020).

- 2017–2021 (at the University of Texas at El Paso)

  1. Amitabh Biswas, *Project: Adaptive time-stepping schemes for Sixth-Order Phase Field Models* (Spring 2021–Summer 2021).

  2. Julio Solis *Project: Towards a Hybridizable Discontinuous Galerkin Method for two-phase flow problem in porous media* (Fall 2015–Summer 2018).

  3. Modupe Odusanya *Project: Numerical Analysis of Cahn-Hilliard equation in one dimension* (Spring 2018).

- 2016–2017 (at the University of Texas at El Paso)

  1. Jazmin Quezada supervised the independent study on Multigrid Solvers (Spring 2017).

  2. Mohammad Arifur Rahman, *Master's Thesis: On numerical methods for linear and nonlinear fourth order problems* (Summer 2015–Summer 2016).

  3. Julio Solis, *Project: Mathematical Modeling and Analysis of Methane Gas production* (Spring 2015–Summer 2015).

  4. Claudia Garcia, undergraduate summer research intern, UT System Louis Stokes Alliance for Minority Participation (LSAMP) *Project: Efficient Solvers for Large Scale Linear Systems.* The duration of her internship is June–August 2016.

- 2015–2016 (at the University of Texas at El Paso)

  1. Bethuel Khamala, *Project: Numerical Simulation of Cahn-Hilliard-Navier-Stokes system* (Spring 2015–Summer 2016).

  2. Mohammad Arifur Rahman, *Master's thesis: On numerical methods for linear and nonlinear fourth-order problems* (Summer 2015–Summer 2016).

  3. Julio Solis, *Mathematical Modeling and Analysis of Methane Gas production* (Spring 2015–Summer 2015).

- 2013-2014 (at Heidelberg University)

  1. Patrik Esser, supervised an independent study on *robust a posteriori error estimation for non-conforming finite element methods* (Winter semester 2013-14).

2. Alexander Hoffmann, supervised an independent study on *a posteriori error analysis adaptive Interior Penalty method for second-order and fourth-order elliptic problems.* (Winter and Summer Semester 2013-2014).

3. Egzon Miftari, Co-advised the student's bachelor's thesis on *a posteriori error estimates for the strongly coupled Darcy-Stokes flow through differential relations* (Winter semester 2013-14).

## Mentoring experience

1. Mentor, Computational Methods for PDEs Summer School, Colorado State University. August 3- 6 2019.

2. Faculty Advisor, Society for Industrial and Applied Mathematics Student Chapter at UTEP (2015–present).

3. Co-mentor, IMA Special Workshop WhAM! A Research Collaboration Workshop for Women in Applied Mathematics: Numerical Partial Differential Equations and Scientific Computing, August 2014.

4. Mentor for Michael Herbst, Ph.D. student, Theoretical and Computational Chemistry Group, IWR, Heidelberg University.

## Awards

- Oberwolfach Leibniz Graduate Student Grant 2012.

- Supported as Research Assistant under NSF grant-'Collaborative Research: Tuning-free Adaptive Multilevel Discontinuous Galerkin Methods for Maxwell's Equations.' (DMS-0810176 ) *(Summer 2009 - Fall 2011)*.

- Awarded Graduate Assistant Tuition Fellowship  for Academic and Teaching excellence. (Fall 2007 – Spring 2012).

## Teaching Experience

1. **Graduate Course: Introduction to Computational Science, UTEP**
*High-performance computing techniques introduced to graduate students. Fall 2022 and 2023.*

2. **Graduate Course: Computational Methods of Linear Algebra, UTEP**
*Numerical methods for solving linear systems including learning from data. Fall 2021 and 2023.*

3. **Graduate Seminar, UTEP**
*Hosting seminar on topics ranging from research to professional development. Spring 2021–2023.*

4. **Graduate Course: Mathematical and Computer Modeling, UTEP**
*Introducing graduate students to Mechanistic Models and related software. Spring 2016–2023.*

5. **Numerical Analysis, UTEP**
*Introducing undergraduate students to Numerical Analysis. Fall 2016-2022, Spring 2017–2020.*

6. **Calculus II, UTEP**
*Teaching undergraduate students basics of Calculus II. Spring 2019, Fall 2017–2020.*

7. **Graduate Course: Introduction to Computational Science, UTEP**
*Held Lab sessions for this scientific computing course, Fall 2015.*

8. **Graduate Course: Transitioning to C++ for Scientific Computations, UTEP**
*Designed this pioneering course with the goal of mathematical modeling in Fall 2014 and 2015.*

9. **Graduate Course: Numerical Solutions to Partial Differential Equations, UTEP**
*Introduction to the analysis and implementation of numerical methods, Spring 2015.*

10. **Graduate Course: Implementation of numerical methods for PDE, Heidelberg University**
*Summer semester 2014, Winter semester 2013-14*

11. **Graduate Course: Solving differential equations with deal.II, Heidelberg University**
*Introduced graduate students to the use of the software deal.II during the Summer semester 2013.*

12. **Graduate Course: Convergent Adaptive Finite Element Methods, Heidelberg University**
*Designed and taught this pioneering compact course in February 2013 targeted at Ph.D. students.*

13. **Fundamentals of Mathematics, University of Houston**
    *Taught a class of 50 students during Spring 2012.*

14. **Pre-Calculus, University of Houston**
    *Taught a Pre-Calculus class consisting of 120 students during Spring 2011.*

## Service

- **Professional Service**

  1. Treasurer and District Liaison Officer for SIAM Texas-Lousiana Section, 2023–present.
  2. Organizing Committee, 6th SIAM Texas-Louisiana Sectional Meeting, November 3-5, 2023.
  3. Minisymposium Co-organizer of Mini-symposium at SIAM Conference on Mathematical Aspects of Materials Science (MS24), Pittsburgh, Pennsylvania , May 19-23, 2024.
  4. NSF Panelist and reviewer, 2023.
  5. Minisymposium Co-organizer of Special Session at AMS Fall Central Sectional Meeting, University of Texas at El Paso, September 17-18, 2022.
  6. Minisymposium Co-organizer, 2022 SIAM Annual Meeting Recent Advances in Finite Element Methods for Coupled Systems, July 11-15, 2022.
  7. Minisymposium Co-organizer, 2022 SIAM Annual Meeting Women in the Mathematics of Materials: Recent Advances in Modeling and Numerical Methods, July 11-15, 2022.
  8. NSF Panelist and reviewer, 2021.
  9. Minisymposium Co-organizer of Special Session at AMS Fall Central Sectional Meeting (Virtual), University of Texas at El Paso, September 12-13, 2020.
  10. Co-organizer of Computational Methods for PDEs Summer School, Colorado State University, August 3-6 2019.
  11. Chair for Career Panel session and Minisymposium Co-organizer, International Congress of Industrial and Applied Mathematics, Valencia Spain, July 15-19, 2019.
  12. Minisymposium Co-organizer, MAFELAP 2019, Brunel University, UK, June 18-21 2019.
  13. Minisymposium Co-organizer, MAFELAP 2016, Brunel University, UK, June 14-17, 2016.
  14. Journal reviewer for Journal of Computational and Applied Mathematics, Journal of Numerical Mathematics, IMA Journal of Numerical Analysis, Applied Numerical Mathematics, Journal of Scientific Computing, International Journal for Numerical Methods in Engineering, Cogent Mathematics, Science China Mathematics.

- **University Service**

  1. Faculty senator, UTEP Faculty Senate, (Fall 2022–present).
  2. Undergraduate Advisor, (Fall 2018–Spring 2022).
  3. Member, University Undergraduate Curriculum Committee (Fall 2015–Fall 2016).
  4. COURI judge representing UTEP College of Science (April 2015).

- **Department Service**

  1. Chair, Undergraduate Curriculum Committee, (Spring 2024–present).
  2. Member, CPS Admissions Committee, (Spring 2023–present).
  3. Member, Bioinformatics Faculty Hiring Committee, (Fall 2021–Spring 2022).
  4. Member, Data Science Ph.D. Program Qualifying Exams Committee (Fall 2021–present).
  5. Member, Computational Science Program PhD Qualifying Exams Committee (Spring 2015–present).

6. Chair, Computational Science Program PhD Qualifying Exams Committee (Spring–Fall 2018).

7. Member, Graduate Studies Committee (Fall 2016–present).

8. Member, Concentration in Applied Mathematics Committee, (Fall 2015–2016).

9. Member, Applied Mathematics and Computational Science Faculty Hiring Committee, (Fall 2015–Spring 2016).

10. Member, Department Undergraduate Curriculum Committee (Fall 2014–present).

- **UTEP Master Thesis Committee**

  1. Jason E. Sanchez, COVID Synergy: A Machine Learning Approach Uncovering Potential Treatment Combinations for SARS-COV-2, School of Pharmacy, Spring 2022.

  2. Dema Karma, Spin-Flip Excitonic States in Mn12O12-Ac, Department of Physics, Spring 2022.

  3. Francis Biney, Data Science Program, Department of Mathematical Sciences, Summer 2022.

  4. Jazmin Quezada, Data Science Program, Department of Mathematical Sciences, Summer 2022.

  5. Manuel Martinez, Formulation and parallel implementation of iterative method for generating spatially variant lattices, Electrical Engineering Department, April 2019.

  6. Md Al Masum Bhuiyan, Estimation of Volatility in the Study of Financial and Geophysical Time Series, Department of Mathematical Sciences, Fall 2017.

  7. Mohammad Tauhiduzzaman, Design Optimization of Sandwich Core, Department of Mechanical Engineering, Summer 2016.

  8. Hasan Md Mahmudul, The New Issues for Classification Problems, Department of Mathematical Sciences, Summer 2016.

  9. Henry R. Moncada, Towards the scalability and hybrid parallelization of a spatially variant lattice algorithm, Computational Science Program, Spring 2016.

  10. Leobardo Valera, Contributions to the solution of large nonlinear systems via model order reduction and constraint-solving techniques, Computational Science Program, Fall 2015.

  11. Sumi Dey, Numerical study of the supercritical solution of the stationary forced Korteweg-de Vries (sfKdV) equation, Department of Mathematical Sciences Fall 2015.

  12. Maranda Bean, A Block Preconditioner for a Mixed Finite Element Method for a Biot's Equations, Computational Science Program, Fall 2014.

- **PhD Thesis Committee**

  1. Jazmin Quezada, Integrating Machine Learning and Optimization methods for Medical Diagnosis, Fall 2023.

  2. Sharmin Akter, Effect of Self-Interaction Correction on Molecular Polarizabilities and Core Ionization Energies, Fall 2023.

  3. Daewa Kim, A Kinetic Theory Approach To Pedestrian Motion And Onset of Disease Spreading, University of Houston, Spring 2019.

  4. Maranda Bean, A Mixed Finite Element Method for the Coupling of Linear Elasticity and Stokes Flow, Computational Science Program, Fall 2018.

  5. Leobardo Valera, Interval Constraint Solving Techniques and Model-Order Reduction to enhance the Solution of Dynamical Systems, University of Texas at El Paso, Spring 2018.

  6. Chandi Bhandari, $C^0$ IPDG approximations of fourth order total variation flow problems University of Houston, Spring 2018.

  7. Dina Alsheikh, The Hypercircle method and an equilibrated a posteriori error estimator for discontinuous Galerkin approximations of elliptic boundary value problems on simplicial meshes, University of Houston, Spring 2016.

## Seminar Organization

- **Coding day with Kokkos Library, SIAM Student Chapter, (Fall 2015), UTEP.**

- **Graduate Seminar for Bioinformatics, (Spring 2015), UTEP.**

- **Graduate Seminar CPS 5195 (Fall 2014), UTEP.**

- **IWR Seminar on Scientific Computing (Summers 2013-2014), Heidelberg University.**

- **Approximation in Finite Element Spaces Seminar (Summer 2013), Heidelberg University:** Co-organized this seminar where undergraduate students were required to present research topics.

- **Adaptive Finite Elements Seminar (Winters 2012-13), Heidelberg University:** Responsibilities include mentoring students and helping them present research papers.

- **Graduate Student Seminar (Fall 2010–Fall 2011), University of Houston:** Was responsible for hosting and organizing the seminar for graduate students.

## Computing Skills

- **Languages:** C, C++, Fortran.

- **Software:** deal.II, FEniCS Project, Firedrake Project, mfem, Netgen/NGSolve, nodal-dg, Open AI Gym, RLlib: Industry-Grade Reinforcement Learning.

## References available upon request