Shiping Zhou

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Education

- **Ph.D. Candidate in Computational and Applied Mathematics**
  Missouri University of Science and Technology (expected graduation: 2024).
  Advisor: Dr. Yanzhi Zhang
- **M.S. in Computational Mathematics**
  Shandong University, China (2019)
- **B.S. in Mathematics and Applied Mathematics**
  Anhui University of Technology, China (2016)

Research Interests

- Modeling and simulation for nonlocal models
- Finite difference methods and spectral methods
- Finite element methods
- Data-driven modeling and simulation
- Deep neural network for solving PDEs

Awards

- Paul W. Eloe Graduate Research Award, Missouri University of Science and Technology, 2022
- Nonlocal School of Fractional Equations NSFE Travel Award, 2022
- Mathematics and Statistics Alumni Endowed Scholarship, Missouri University of Science and Technology, 2022
- Gaoxiong Gan Scholarship Fund, Missouri University of Science and Technology, 2022
- 7th Annual Meeting of SIAM Central State Section Travel Award, 2022

Publications and Preprints

1. *Weak Galerkin finite element method with second-order accuracy in time for parabolic problems*, S. Zhou, F. Gao, B. Li, and Z. Sun, Appl. Math. Lett., 90 (2019), pp. 118-123.

2. *Fourier pseudospectral methods for the spatial variable-order fractional wave equations*, S. Zhou, X. Zhao, and Y. Zhang, (2022), submitted.

3. *A novel spectral method for space-fractional PDEs with the fractional Laplacian*, S. Zhou and Y. Zhang, (2023) submitted.

4. *Data-driven approach for the solutions of time-dependent PDEs using convolutional neural network*, S. Zhou, Y. Li, and Y. Zhang, to be submitted (February, 2023).

5. *Analytical and computational aspects of the high-order fractional Laplacian*, J.P. Borthagaray, Y. Wu, S. Zhou, and Y. Zhang, be to submitted (February, 2023).

Presentations

1. Contributed talk: *Numerical studies on the high-order fractional Laplacian.* Midwest Numerical Analysis Day 2021, Rolla, MO, 10/2021.

2. Invited talk: *Numerical studies on the high-order fractional Laplacian.* 4th Annual Meeting of the SIAM Texas-Louisiana Section, South Padre Island, TX, 11/2021.

3. Seminar talk: *Numerical studies on the high-order fractional Laplacian.* Continuum Mechanics Seminar (CMS) at UNL, Online, 3/2022.

4. Poster: *Numerical studies on the high-order fractional Laplacian.* KU Numerical Analysis Day 2022, Lawrence, KS, 3/2022.

5. Seminar talk: *Numerical Methods for acoustic wave equations.* Graduate Seminar at Missouri University of Science and Technology, Rolla, MO, 4/2022.

6. Poster: *Numerical studies on the high-order fractional Laplacian.* Theoretical and Applied Aspects for nonlocal Models - Workshop of BIRS, Online, 7/2022.

7. Invited talk: *Accurate and efficient spectral method for fractional wave equations.* The 7th Annual Meeting of SIAM Central States Section, Stillwater, OK, 10/2022.

8. Seminar talk: *Accurate and efficient spectral method for fractional wave equations.* Numerical Analysis Seminar at University of Pittsburgh, Pittsburgh, PA, 2/2023.

Teaching Experience

Missouri University of Science and Technology

- **Grader**, Math 1214: *Mathematics Calculus for Engineers I*, Fall 2019 & Spring 2020
- **Lab instructor**, Math 1214: *Mathematics Calculus for Engineers I* Fall 2020
- **Instructor**, Math 3304: *Elementary Differential Equations*, Spring 2023
  (99 students in total)

Professional Membership

- Society for Industrial and Applied Mathematics (SIAM), 2021-present

Skills

- Expert in Numerically Solving PDEs.
- Skilled in MATLAB, Python, Fortran, and LaTeX.
- Proficient in Data-driven Machine Learning