

# BORONG ZHANG

bzhang388@wisc.edu | Madison WI 53706  
[borongzhang.com](https://borongzhang.com) | [github.com/borongzhang](https://github.com/borongzhang)

## EDUCATION

### University of Wisconsin–Madison

*Ph.D. Candidate in Mathematics, Advisors: Prof. Qin Li & Leonardo Andrés Zepeda Núñez*

• **Honors:** Mathematics Department Ascending Scholar Fellowship

Madison, WI

09/2020 – Present

### University of California, Berkeley

*Bachelor of Arts in Applied Mathematics & Computer Science*

• **Honors:** High Honors in Applied Mathematics; Distinction in General Scholarship; Dean's Honors Lists

Berkeley, CA

08/2016 – 06/2020

## PUBLICATIONS

**Zhang, B., Li, Q., & Di, Z. W.** (2025). Stochastic multigrid minimization for ptychographic phase retrieval [Preprint]. ArXiv.org. <https://arxiv.org/abs/2504.10118>

**Zhang, B., Guerra, M., Li, Q., & Zepeda-Núñez, L.** (2025). Back-Projection Diffusion: Solving the wideband inverse scattering problem with diffusion models. *Computer Methods in Applied Mechanics and Engineering*, 443, 118036. <https://doi.org/10.1016/j.cma.2025.118036>

**Zhang, B., Zepeda-Nunez, L., & Li, Q.** (2024). Solving the wide-band inverse scattering problem via equivariant neural networks. *Journal of Computational and Applied Mathematics*, 451, 116050–116050. <https://doi.org/10.1016/j.cam.2024.116050>

Huang, E. G., Wang, R.-Y., Xie, L., Chang, P., Yao, G., **Zhang, B.**, Ham, D. W., Lin, Y., Blakely, E. A., & Sachs, R. K. (2020). Simulating galactic cosmic ray effects: Synergy modeling of murine tumor prevalence after exposure to two one-ion beams in rapid sequence. *Life Sciences in Space Research*, 25, 107–118. <https://doi.org/10.1016/j.lssr.2020.01.001>

## TALKS

### Solving the Inverse Scattering Problem: Leveraging Symmetries for Diffusion Models

• Graduate Applied Math Seminar, University of Wisconsin-Madison

09/2024

Madison, WI

### Solving the Inverse Scattering Problem: Leveraging Symmetries for Machine Learning

• SIAM Student Chapter Seminar, University of Wisconsin-Madison

11/2024

Madison, WI

### Multigrid-based Stochastic Minimization for Ptychographic Phase Retrieval

• Graduate Applied Math Seminar, University of Wisconsin-Madison

03/2025

Madison, WI

### Multigrid-based Stochastic Minimization for Ptychographic Phase Retrieval

• Copper Mountain Conference On Iterative and Multigrid Methods

04/2025

Denver, CO

### Efficient Symmetry-Driven Diffusion Models for Wideband Inverse Scattering

• SIAM Conference on Applications of Dynamical Systems

05/2025

Denver, CO

## CONFERENCES, WORKSHOPS & SUMMER SCHOOLS

### (Upcoming) Statistical and Computational Challenges in SciML

• The Institute for Mathematical and Statistical Innovation

06/2025

Chicago, IL

### SIAM Conferences SIAM Conference on Applications of Dynamical Systems

• Sheraton Denver Downtown Hotel

05/2025

Denver, CO

### Copper Mountain Conference On Iterative and Multigrid Methods

• Copper Mountain

04/2025

Frisco, CO

<b>Atlanta SIAM Student Conference</b> • Georgia Institute of Technology	03/2025 Atlanta, GA
---	------------------------

<b>Data-driven PDE-based Inverse Problem, in Theory and Practice</b> • University of Wisconsin-Madison	08/2024 Madison, WI
---	------------------------

<b>Junior Researcher Meeting, on Forward and Inverse Kinetic theory</b> • University of Wisconsin-Madison	09/2022 Madison, WI
--	------------------------

## RESEARCH EXPERIENCE & INTERNSHIPS

<b>Givens Associate, MCS Division, Argonne National Laboratory</b> Supervisor: Dr. Zichao (Wendy) Di • Upcoming	05/2025 - 08/2025 Lemont, IL
---	---------------------------------

<b>Research Aide, MCS Division, Argonne National Laboratory</b> Supervisor: Dr. Zichao (Wendy) Di • Proposed stochastic multigrid methods for solving ptychographic phase retrieval. • Designed, implemented and tested the model in Python.	06/2024 - 09/2024 Lemont, IL
---	---------------------------------

<b>Solving the Wideband Inverse Scattering Problem with Diffusion Models</b> University of Wisconsin-Madison • Proposed an end-to-end probabilistic framework for approximating the posterior distribution induced by the inverse scattering map from wideband scattering data. • Designed, implemented and tested the model in JAX/Flax.	01/2024 - 08/2024 Madison, WI
--	----------------------------------

<b>Solving the Wide-band Inverse Scattering Problem via Equivariant Neural Networks</b> University of Wisconsin-Madison • Proposed novel deep neural network architecture for solving the inverse scattering problem with wide-band datasets • Designed, implemented and tested the network in TensorFlow.	10/2023 Madison, WI
---	------------------------

## TEACHING EXPERIENCE

Math 211: Calculus, Head TA	Spring 2025
Math 112: College Algebra, Instructor	Fall 2023-Fall 2024
Math 234: Calculus - Functions of Several Variables, TA	Spring 2023
Math 211: Calculus, TA	Fall 2022
Math 521: Analysis I, TA	Summer 2022
Math 222: Calculus and Analytic Geometry II, TA	Spring 2021
Math 221: Calculus and Analytic Geometry I, TA	Fall 2020

## ORGANIZATIONS & OUTREACH

<b>Directed Reading Program, Mentor</b> • Topic: Stochastic Differential Equations: Score-Based Diffusion Models	Spring 2025
---	-------------

<b>Directed Reading Program, Mentor</b> • Topic: Solving the Inverse Scattering Problem: Classical Methods and Machine Learning	Fall 2024
--	-----------

## SKILLS & INTERESTS

<b>Programming Languages:</b> Python, Java, MatLAB, Julia, R, C <b>Libraries, APIs, and Technologies:</b> Git, Jupyter, SciPy, NumPy, JAX, Flax, Tensorflow, PyTorch
---