Edith J Zhang

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EDUCATION

Columbia University, New York, NY

- Ph.D. in Applied and Mathematics — 2021 – 2025
  Funded by NSF Graduate Research Fellowships Program
- MS in Applied Mathematics — 2019 – 2021

University of Virginia, Charlottesville, VA

- BA in Mathematics — 2015 – 2019

RESEARCH INTERESTS

Infinite graphs, Nonlocal PDEs, Calculus of Variations, Interacting Particle Systems

PUBLICATIONS

[1] Edith Zhang, James Scott, Qiang Du, Mason A. Porter, Ginzburg–Landau functionals in the large-graph limit, *arXiv:2408.00422*, 2024. Link

[2] Soumyadip Ghosh, Yingdong Lu, Tomasz Nowicki, Edith Zhang, On representations of mean-field variational inference, *arXiv:2210.11385*, 2022. Link

[3] Edith Zhang, David Blei. Unveiling mode-connectivity of the ELBO landscape, *Bayesian Deep Learning Workshop*, 2021. Link

[4] Edith Zhang, James Scott, Qiang Du. Reaction–diffusion equations in the large-graph limit. *To be submitted.*

[5] Kaizheng Wang, Edith Zhang. A particle algorithm for mean-field variational inference. *To be submitted.*

CONFERENCES

- Interacting Particle Systems, Providence, RI — May 2024
  Workshop at ICERM
- Bridges Conference, Richmond, VA — Aug 2024
  Exhibition of two mathematical artworks.
- Joint Math Meetings, Seattle, WA — Jan 2024
  Talk at the Complex Social Systems minisymposium titled “Higher-Dimension Opinion Dynamics”.
- Mathematics Research Communities, Java Center, NY — Jun 2023
  Workshop on Complex Social Systems.
- SIAM New York-New Jersey-Pennsylvania Section, Newark, NJ — Oct 2023
  Poster presentation titled “Ginzburg–Landau on Large Graph Limits”.
- Columbia University Data Science Day, New York, NY — Apr 2022
  Poster Presentation titled “VI flow: a Statistical Physics Approach to a Statistical Algorithm”.

AWARDS & SCHOLARSHIPS

- NSF Graduate Research Fellowships Program — Awarded Apr 2019
- Echols Scholar at the University of Virginia — Awarded Aug 2016

TEACHING AND OUTREACH

Adjunct Instructor, The Cooper Union, New York, NY

- Written agreement to teach a 4-credit course in Calculus II. — Spring 2025

Teaching Assistant, Columbia University, New York, NY

- Partial Differential Equations — Fall 2019
- Introduction to Numerical Methods — Fall 2023

Applied Mathematics Graduate Student Seminar, Columbia University, New York, NY — 2022-2024

- Initiated and co-lead weekly seminar for graduate students to present topics relating to their research, hard and soft skills, job search, writing, etc.

Grader, Columbia University, New York, NY — 2019 – 2024

- Numerical Methods, Linear Algebra, Mathematics for Data Science

Grader, University of Virginia, Charlottesville, VA — 2017 – 2019

- Financial Mathematics, Calculus II, Calculus III.

Mathematics Tutor, Charlottesville, VA — 2016 – 2019

- Group and individual tutoring in calculus, linear algebra, differential equations, and abstract algebra.

OTHER WORK EXPERIENCE

University of California, Los Angeles, Los Angeles, CA — May 2022 – Aug 2022

- Collaborated with Dr. Mason Porter on research relating to Ginzburg–Landau theory on large-graph limits.

PROGRAMMING Proficient in Python, LaTeX

COURSES READ

During Graduate studies in Applied Mathematics

- Dynamical Systems
- Numerical Methods
- Elementary Stochastic Processes
- Probability Theory I
- Applied Functional Analysis
- Analytic Methods for Partial Differential Equations
- Numerical Methods for Partial Differential Equations
- Machine Learning
- Convex Optimization
- Foundations of Graphical Models
- Geometric Data Analysis

During Bachelor studies in Mathematics (Highlights)

- Abstract Algebra
- Differential Geometry
- Algebraic Combinatorics
- Knot Theory
- Real Analysis

MISC. INTERESTS Art, Poetry, Cycling, Transportation Activism