Zachary M. Deiman

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Education

Ph.D. Mathematics *August 2021 – Present*

University of Michigan, Ann Arbor, MI

M.S. Mathematics *August 2021 – April 2023*

University of Michigan, Ann Arbor, MI

B.S. Mathematics *September 2017 – May 2021*

University of Minnesota, Minneapolis, MN

Minors in Computer Science and Astrophysics

Senior thesis: *Residual estimates for an anisotropic Swift-Hohenberg equation*

Mentor: Arnd Scheel

Publications and Preprints

Publications

- K. Chen, Z. Deiman, R. Goh, S. Jankovic, and A. Scheel. *Strain and defects in oblique stripe growth.* Multiscale Model. Simul., 19(3), 1236–1260 (2021).

Presentations

Seminar Talks

- *Lax Equations and the Toda Lattice.* *September 2023*

  Student Analysis Seminar, University of Michigan.

- *Residual Estimates for an Anisotropic Swift-Hohenberg Equation.* *March 2023*

  Student Analysis Seminar, University of Michigan.

- *Introduction to Fractional Differential Equations.* *April 2022*

  Student Analysis Seminar, University of Michigan.

- *Solutions and Asymptotics for the Phase-Diffusion Equation.* *November 2020*

  Undergraduate Mathematics Research Seminar (online), University of Minnesota.

Undergraduate Math Club Talks

- *Abstract Calculus I.* Math Club, University of Michigan. *October 2023*

- *Constructing the Real Numbers.* Math Club, University of Michigan. *September 2022*

- *Fractional Derivatives.* Math Club, University of Michigan. *February 2022*

- *REU Panel.* Math Club (online), University of Minnesota. *November 2020*

Other Talks

- *MREG Presentation: Parabolic PDEs.* *July 2022*
  Parabolic PDEs MREG (online), University of Michigan.

- *Arcsine Solution to a Nonlocal Transport Equation.* *June 2022*
  Parabolic PDEs MREG (online), University of Michigan.

- *Distributional Derivatives of Discontinuous Functions.* *December 2020*
  DRP Final Project Event (online), University of Minnesota.

- *Quenching in the Phase-Diffusion Equation.* *July 2020*
  Complex Systems REU (online), University of Minnesota.

Teaching

Graduate Student Mentor *Fall 2024*
University of Michigan

Graduate Student Instructor
University of Michigan
- Math 115: Calculus I *Fall 2021, Fall 2023, Spring 2024*
- Math 116: Calculus II *Winter 2022, Fall 2022*

Course Co-coordinator
University of Michigan
- Math 115: Calculus I *Spring 2024*
- Math 116: Calculus II *Winter 2024*

Lab Instructor
University of Michigan
- Math 215: Multivariable and Vector Calculus *Winter 2023*

Undergraduate Teaching Assistant
University of Minnesota
- Math 1031: College Algebra and Probability *Spring 2021*
- Math 1051: Precalculus I *Fall 2020*

Course Grader
University of Minnesota
- Math 5651: Basic Theory of Probability and Statistics *Fall 2019*
- Math 4242: Applied Linear Algebra *Summer 2019*
- Math 1271: Calculus I *Summer 2018*

Mentorship and Service

Student Analysis Seminar Co-organizer *Winter 2023 – Fall 2024*
University of Michigan
- Co-organized with Zhengjun (Jasper) Liang: Fall 2023 – Fall 2024.
- Co-organized with Christopher Stith and Tejaswi Tripathi: Winter 2023.

Tutor II *Fall 2022, Summer 2023, Fall 2023*

University of Michigan
- Organized weekly study groups for Mathematics Ph.D. students to help them prepare for the University of Michigan's Real Analysis and Complex Analysis Qualifying Review (QR) Exams.
- Wrote out solutions for over 130 problems from past Real Analysis, Complex Analysis, and Applied Functional Analysis QR Exams to assist others in studying.

Scratch Community Moderator *Summer 2019 – Summer 2021*

Scratch Foundation
- Reviewed comments and projects for appropriateness on the scratch.mit.edu website, a coding community for children to create games and animations using the Scratch programming language.
- Promoted computer programming, inclusiveness, creative collaboration, and constructive feedback.

Peer Tutor *Spring 2018 – Spring 2021*

Tutoring & Academic Success Center, University of Minnesota
- Met with undergraduate students one-on-one and in groups, both in-person and online, to assist them in mathematics, computer science, and physics courses.
- Fulfilled the College Reading & Learning Association's (CRLA) International Tutor Training Program Certification (ITTPC) requirements for becoming a Level III Certified Master Tutor.

Peer Tutor Mentor *Fall 2019 – Spring 2021*

Tutoring & Academic Success Center, University of Minnesota
- Observed and mentored new Peer Tutors.
- Organized and presented 60-minute staff meetings for continuous Peer Tutor training.
- Provided tutoring information for students who required assistance in their courses.

Programs

Michigan Research Experience for Graduates (MREG) *Summer 2022*

University of Michigan
- Participated in a research project studying various parabolic partial differential equations, organized by University of Michigan graduate students and led by Neel Patel.

Directed Reading Program (DRP) *Spring 2020, Fall 2020*

University of Minnesota
- Met weekly with a graduate student to read a textbook and discuss a project on an advanced mathematics topic of mutual interest.
  - Functional analysis, mentored by Cole Jeznach, Fall 2020
  - Algebraic topology, mentored by Tobias Ramaswamy, Spring 2020

Research Experience for Undergraduates (REU) *Summer 2020*

University of Minnesota
- Participated in a research project on analyzing a phase-diffusion equation as part of the University of Minnesota Complex Systems REU hosted by Arnd Scheel.
- Funded by the University of Minnesota's Undergraduate Research Opportunities Program (UROP) and the National Science Foundation.

Post-Secondary Enrollment Options (PSEO) *September 2016 – May 2017*

University of Minnesota
- The PSEO program through the University of Minnesota allows high school students to enroll in University of Minnesota classes for both high school and college credit.

Awards and Scholarships

University of Michigan Awards
- G. Cleaves Byers Endowment for Collegiate Mathematics Education *May 2024*

University of Minnesota Awards
- University of Minnesota Dean's List *Fall 2016 – Spring 2021*
- Iron Range Scholarship *Fall 2017 – Spring 2021*
- Ella Thorp Undergraduate Scholarship *Fall 2020 – Spring 2021*
- UROP Scholarship *Summer 2020*
- J. Ian Richards Scholarship *Fall 2019 – Spring 2020*
- CRLA ITTPC Tutor Certification
  - Level III Certified Master Tutor *Spring 2019*
  - Level II Certified Advanced Tutor *Spring 2019*
  - Level I Certified Tutor *Spring 2018*

High School Awards
- Beth McGregor Young Memorial Scholarship *May 2017*
- Spring Lake Park Lions Scholarship *May 2017*
- St. Cloud State University Mathematics Contest
  - Grade 11 First Place Individual Winner *April 2016*
  - Grade 10 First Place Team *April 2015*
  - Grade 9 Third Place Individual Winner *April 2014*
  - Grade 9 First Place Team *April 2014*