Zachary M. Deiman
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Education

Ph.D. Mathematics *August 2021 – Present*
University of Michigan, Ann Arbor, MI *Expected June 2027*
Advisor: Dmitry Chelkak

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 project: *Residual estimates for an anisotropic Swift-Hohenberg equation*
Advisor: Arnd Scheel

Publications

[1] Dmitry Chelkak and Zachary Deiman. Domino tilings of black-and-white Temperleyan cylinders. Preprint, 2026. To appear in *Ann. Appl. Probab.* arXiv:2601.13332.

[2] Kelly Chen, Zachary Deiman, Ryan Goh, Sally Jankovic, and Arnd Scheel. Strain and defects in oblique stripe growth. *Multiscale Model. Simul.*, 19(3):1236–1260, 2021. arXiv:2102.02905.

Contributed Talks

More information about my contributed talks and presentations can be found on my website:
https://sites.google.com/umich.edu/zdeiman/presentations/

- *The Mathematics of Domino Tilings.* *October 2026*
  Math Grad Show and Tell Seminar, University of Michigan.
- *Tasty Bits of Several Complex Variables.* *March 2026*
  Math Grad Show and Tell Seminar, University of Michigan.
- *Domino Tilings of Black-and-White Temperleyan Cylinders.* *February 2026*
  Student Analysis Seminar, University of Michigan.
- *Happy Holo-ween!: The Spooky World of Complex Dynamics.* *October 2025*
  Math Club, University of Michigan.
- *Discrete Complex Analysis: T-Holomorphic Functions.* *October 2025*
  Student Combinatorics Seminar, University of Michigan.
- *The Delta Function.* *March 2025*
  Math Club, University of Michigan.
- *WUSTs, LERWs, and SLEs.* *January 2025*
  Student Analysis Seminar, University of Michigan.
- *Introduction to Random Lozenge Tilings.* *December 2024*
  Student Analysis Seminar, University of Michigan.

- *T-Embeddings and Origami Maps.* *November 2024*
  Student Combinatorics Seminar, University of Michigan.
- *Abstract Calculus I.* *October 2023*
  Math Club, University of Michigan.
- *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.
- *Constructing the Real Numbers.* *September 2022*
  Math Club, University of Michigan.
- *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.
- *Introduction to Fractional Differential Equations.* *April 2022*
  Student Analysis Seminar, University of Michigan.
- *Fractional Derivatives.* *February 2022*
  Math Club, University of Michigan.
- *Story Time Over Tea.* *March 2021*
  Peer Tutor Staff Meeting (online), University of Minnesota.
- *Distributional Derivatives of Discontinuous Functions.* *December 2020*
  DRP Final Project Event (online), University of Minnesota.
- *REU Panel* (panelist). *November 2020*
  Math Club (online), University of Minnesota.
- *Solutions and Asymptotics for the Phase-Diffusion Equation.* *November 2020*
  Undergraduate Math Research Seminar (online), University of Minnesota.
- *Theory of Improvisation.* *October 2020*
  Peer Tutor Staff Meeting (online), University of Minnesota.
- *Quenching in the Phase-Diffusion Equation.* *July 2020*
  Complex Systems REU (online), University of Minnesota.
- *Working with Multiple Students* (co-presenter). *March 2020*
  Peer Tutor Staff Meeting (online), University of Minnesota.
- *Improving Confidence in Your Mind and Soul.* *November 2019*
  Peer Tutor Staff Meeting, University of Minnesota.

Conferences Attended

- *Workshop on The Topology and Dynamics of Rational Maps.* *December 2025*
  Boston College, Chestnut Hill, MA.
- *46th Midwest Probability Colloquium.* *October 2025*
  Northwestern University, Evanston, IL.
- *2025 Finger Lakes Probability Seminar.* *April 2025*
  University of Rochester, Rochester, NY.

Teaching Experience

More information about my teaching experience and responsibilities can be found on my website: https://sites.google.com/umich.edu/zdeiman/teaching/

Graduate Student Instructor
University of Michigan

- Compfor 121: Computing for Creative Expression (Teaching assistant, Snap*!*) *Fall 2026*
- Math 105: Data, Functions, and Graphs (Instructor of record) *Fall 2025*
- Math 116: Calculus II (Instructor of record) *Winter 2025*
- Graduate Student Mentor (Classroom observer, exam reader, grader) *Fall 2024*
- Math 115: Calculus I (Course co-coordinator, instructor of record) *Spring 2024*
- Math 116: Calculus II (Course co-coordinator) *Winter 2024*
- Math 115: Calculus I (Instructor of record) *Fall 2023*
- Math 215: Multivariable and Vector Calculus (Teaching assistant, MATLAB) *Winter 2023*
- Math 116: Calculus II (Instructor of record) *Fall 2022*
- Math 116: Calculus II (Instructor of record) *Winter 2022*
- Math 115: Calculus I (Instructor of record) *Fall 2021*

Guest Lecturer
University of Michigan

- Compfor 121: Computing for Creative Expression (1 lecture) *Fall 2026*
- Math 215: Multivariable and Vector Calculus (3 lectures) *Winter 2026*
- Math 215: Multivariable and Vector Calculus (1 lecture) *Fall 2025*

Undergraduate Teaching Assistant
University of Minnesota

- Math 1031: College Algebra and Probability (Student learning assistant, online) *Spring 2021*
- Math 1051: Precalculus I (Student learning assistant, online) *Fall 2020*
- Math 5651: Basic Theory of Probability and Statistics (Grader) *Fall 2019*
- Math 4242: Applied Linear Algebra (Grader) *Summer 2019*
- Math 1271: Calculus I (Grader) *Summer 2018*

Mentorship and Service

Directed Reading Program Mentor *Winter 2025 – Fall 2026*
Department of Mathematics, University of Michigan
https://sites.google.com/umich.edu/drp/

- Met weekly with an undergraduate student to read a textbook and discuss a project on an advanced mathematics topic of mutual interest, with a student presentation at the end of the program.
  - Fall 2026: Emily Hlavaty-Bronson (partial differential equations).
  - Fall 2026: Oliver Maranda and Joseph Heerema (measure theory, real analysis).
  - Winter 2026: Elliott Hanish, *Lost a Rope at Sea* (algebraic topology).
  - Winter 2026: Yawen Liu, *Discrete Analytic Functions and Domino Tilings*.
  - Fall 2025: Yawen Liu, *Random Lozenge Tilings*.
  - Winter 2025: Luka Todorovic, *The Wave Equation* (complex analysis, differential equations).

Math Grad Show and Tell Seminar Co-organizer *Winter 2026 – Fall 2026*
Department of Mathematics, University of Michigan
https://public.websites.umich.edu/~mmadrugo/MGSTS/

- Co-founder of a seminar intended for math graduate students to share interesting and accessible mathematical results with other graduate students outside of their field of math.

Graduate Student Advisory Committee *Fall 2025 – Fall 2026*
Department of Mathematics, University of Michigan

- Assisted with organizing social events for math graduate students.

Student Analysis Seminar Co-organizer *Winter 2023 – Winter 2026*
Department of Mathematics, University of Michigan

- Managed logistics and scheduled speakers for a seminar intended for math graduate students to share and learn about results related to probability, differential equations, and other areas of analysis.

Tutor II *Fall 2022, Summer 2023, Fall 2023*
Department of Mathematics, 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 solutions for over 160 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, Remote

- 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, inclusion, creative collaboration, and constructive feedback.

Peer Tutor Mentor *Fall 2019 – Spring 2021*
Tutoring & Academic Success Center, University of Minnesota

- Observed, mentored, and provided constructive feedback for new Peer Tutors.
- Designed and presented four one-hour staff meetings for continuous Peer Tutor training.
- Provided tutoring information for undergraduate students who required assistance in their courses.

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.

Programs

Learning Community on Inclusive Teaching *Fall 2025 – Fall 2026*
Department of Mathematics, University of Michigan
https://sites.lsa.umich.edu/math-lcit/

- Attended a monthly seminar with other instructors in the Department of Mathematics to discuss topics related to inclusivity and accessibility in mathematics education.

Preparing Future Faculty Seminar *Spring 2026*
Center for Research on Learning and Teaching (CRLT), University of Michigan
https://crlt.umich.edu/programs/pffseminar/

- Completed a five-week seminar series designed to prepare Ph.D. candidates for the academic job search, with an emphasis on backward course design and equity-focused teaching.
- Discussed course syllabi and teaching philosophy statements through peer feedback.

Graduate Teacher Certificate Program *Fall 2025 – Winter 2026*
CRLT, University of Michigan
https://crlt.umich.edu/um.gtc/description/

- Completed an asynchronous multi-semester program for the purpose of developing teaching skills and documenting professional development as a college-level instructor.
- Attended six teaching workshops and delivered four guest lectures with feedback.

Michigan Research Experience for Graduates (MREG) *Summer 2022*
Department of Mathematics, University of Michigan
https://sites.google.com/umich.edu/mreg-2022/home/

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

Directed Reading Program *Spring 2020, Fall 2020*
Department of Mathematics, University of Minnesota
https://sites.google.com/umn.edu/mathdrp/home/

- Met weekly with a graduate student to read a textbook and discuss a project on an advanced mathematics topic of mutual interest.
  - Fall 2020: *Distributional Derivatives of Discontinuous Functions* (functional analysis).
  - Spring 2020: *Algebraic Topology for Everyone*.

Research Experience for Undergraduates (REU) *Summer 2020*
Department of Mathematics, University of Minnesota
https://www-users.cse.umn.edu/~scheel/reu/reu-opportunities.html

- Participated in a six-week research project on analyzing a phase-diffusion equation as part of the University of Minnesota Complex Systems REU supervised 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) *Fall 2016 – Spring 2017*
University of Minnesota
https://ccaps.umn.edu/post-secondary-enrollment-options-pseo/

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

Awards and Scholarships

University of Michigan

- Preparing Future Faculty Certificate *Spring 2026*
- U-M Graduate Teacher Certificate *Winter 2026*
- Rackham One-Term Dissertation Fellowship *Winter 2026*
- G. Cleaves Byers Endowment for Collegiate Mathematics Education *Winter 2024*

University of Minnesota

- 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*

Spring Lake Park High School

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