Karoline Dubin

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Research Interests

My research interests lie broadly in probability theory, and more specifically in the intersection of statistical physics and theoretical computer science.

Education

University of Illinois Chicago — Chicago, IL
Ph.D. in Mathematical Computer Science, Advisor: Marcus Michelen — **Expected: Summer 2026**

City College of New York — New York, NY
M.S. Mathematics — **May 2020**

Bowdoin College — Brunswick, ME
B.A. in History — **May 2013**

Publications

1. **Lipschitz Continuity of the Time Constant in Continuum Percolation**, with C. Gorski.
2. **Distinguishability of geometric random graphs from distinct manifolds**, with C. Gorski and M. Michelen.

Talks

- **Prospective Student Day (Invited)** — March 2025
  The geometry of random graphs
- **Combinatorics and Discrete Probability Seminar** — February 2025
  Distinguishability of geometric random graphs from distinct manifolds
- **Graduate Student Colloquium** — February 2025
  Distinguishability of geometric random graphs from distinct manifolds
- **Joint Mathematics Meeting** (Invited) — January 2025
  Lipschitz Continuity of the Time Constant in Continuum Percolation
- **Graduate Student Colloquium** — April 2023
  Phase transitions: An Introduction Through Percolation

Teaching

- **MCS 260**: Introduction to Computer Science — Fall 2023, Fall 2024
- **MCS 275**: Programming Tools and File Management — Fall 2022, Spring 2024, Spring 2025
- **MCS 360**: Data Structures in C++ — Spring 2023
- **MATH 109**: Workshop for College Algebra (Instructor of Record) — Spring 2022
- **MATH 110**: College Algebra — Fall 2021, Spring 2022
- **MATH 118**: Mathematical Reasoning — Fall 2020, Spring 2021

Grading

- **MENG 404**: Math Fundamentals for AI Engineers — Spring 2024, Fall 2024, Spring 2025, Fall 2025
- **MCS 423**: Graph Theory — Spring 2023

Other

- **MathILy-Er Instructor** — July 2024
  (Mathematics Infused with Levity, Earlier), lead inquiry based learning classes on finite automata, algorithms, and voting theory for high school students)

Scholarships and Awards

- AMS Graduate Student Travel Grant — 2025
- Tripods Graduate Fellowship, UIC — 2021
- Rich Mathematics Scholarship, CCNY — Spring 2019, Fall 2019, Spring 2020

Research Workshop Participation

- Cornell Probability Summer School — July-August 2022
  Phase Transitions and Counting, Singularity Problems in Random Matrix Theory
- MSRI Summer Graduate School: Random Graphs — July 2022
  Topic: Random Graphs and Complex Structures
- SAMSI Program on Combinatorial Probability (virtual) — Spring 2021
  Research Working Group on Phase Transition and Algorithms
- TRIPODS Program on Data Science (virtual) — Fall 2020
  Research Working Group on The Structure of Data

Service and Leadership

- **Departmental Action Committee** — Fall 2024-Spring 2025
  Member for Mathematics, Statistics, and Computer Science Department
- **Diversity Award Committee** — Fall 2023-Spring 2025
  Committee member
- **Directed Reading Program** — Fall 2023, Summer 2024, Fall 2024, Spring 2025
  Mentored the following projects:
  Computational Learning Theory and Probabilistic Models, Polya's Recurrence Theory and Electrical Networks, Chaotic Cellular Automata and Image Compression, Applied Predictive Modeling
- **Symbols of Inclusion Reading Group** — Summer 2024 - present
  Founder and organizer
- **Symbols of Inclusion Board Member** — Fall 2022 - present
  Student group aimed to foster a supportive community in the MSCS department
- **Computer Science Theory Seminar** — Fall 2021-Spring 2024
  Seminar co-organizer
- **Graduate Assistant for Peer** — Summer 2022 - Spring 2023
  Through the Disability Resource Center