Isabel Detherage

CONTACT INFORMATION

1040 Evans Hall
Department of Mathematics
Berkeley, CA 94703

email: isabel_detherage@berkeley.edu
url: math.berkeley.edu/~ihd

EDUCATION

University of California, Berkeley *May 2026*
PhD in Pure Mathematics. Advisor: Nikhil Srivastava.
Dissertation: *Spectral Problems and Probabilistic Techniques.*
Passed Qualifying Exam, Dec. 2023.

Yale University *May 2020*
B.S. Applied Mathematics (concentration in Computer Science).
Phi Beta Kappa (2019), magna cum laude (GPA: 3.91).
Thesis: *A Study of 'An Elementary Proof of the Restricted Invertibility Theorem'.*
Supervised by Wilhelm Schlag.

PUBLICATIONS & PREPRINTS

"Curvature of Basis Exchange Walks" *arXiv:2509.18510*
Isabel Detherage. Submitted.

"Matrix Factorizations with Uniformly Random Pivoting" *arXiv:2505.02023*
Isabel Detherage and Rikhav Shah. Submitted.

"A Kaczmarz-Inspired Method for Orthogonalization" *Quarterly of Appl. Math, 2025*
Isabel Detherage and Rikhav Shah.

"On the Ground State Energies of Schrödinger Operators" *Pure & Applied Analysis, 2024*
Isabel Detherage, Nikhil Srivastava, and Zack Stier.

WORK EXPERIENCE & TEACHING

Bain & Company
Associate Consultant Intern. *Summer '19*
Associate Consultant. *Aug. 2020 - Aug. 2021*

UC, Berkeley
Math 56, Linear Algebra. *Fall '23, '24*
Math 54, Linear Algebra & Differential Equations. *Spring '22, '26*
Math N54, Linear Algebra & Differential Equations. (Instructor) *Summer '22, '24*
Math 55, Discrete Mathematics. *Fall '22*
Math 1B, Calculus. *Fall '21, Spring '23, '25*

TALKS & WORKSHOPS

UC Davis Probability Theory Seminar. Invited talk. *Feb. 2026*
UC Berkeley Spectral Theory Seminar. Invited talk. *Feb. 2026*
Simon's Institute Seminar "Recent Progress on Matrix Computations." Invited talk. *Nov. 2025*
Random Matrix Theory Summer School. *Sept. 2025*
SLMath Summer School on Local Limits of Random Graphs. *Jun. 2025*
IPAM: Free Entropy and Random Matrix Theory, workshop attendee. *Feb. 2025*
AMS Special Session on Spectral Theory of Ergodic Operators, JMM. Invited talk. *Jan. 2025*
SIG PhD Discovery Day. *Apr. 2023*

Awards

UC Berkeley Spring Fellowship. *Spring 2024*

UC Berkeley Outstanding GSI. *Spring 2022*

Organizing & Mentoring

Discrete Analysis Student Seminar. *Spring 2025*
Organizer and speaker at student reading seminar on *Ramanujan Property and Edge Universality of Random Regular Graphs* by Huang, McKenzie, and Yau.

Spectral Graph Theory Student Seminar. *Spring 2024*
Organizer and speaker at student reading seminar on spectral graph theory, broadly focusing on graph curvature.

UC Berkeley Directed Reading Program. *Spring 2024, Fall 2025*
Mentor to undergraduates for semester-long reading program. Program topics included spectral graph theory (specifically Cheeger's inequality) and spectral approaches to Markov chain mixing.

Berkeley's Noetherian Ring. *Fall 2021-present*
Member and organizer in Berkeley mathematics female and non-binary affinity group.

Skills & Interests

Python, MATLAB, Latex; long distance running, backpacking, learning (spoken) languages.