

Katalin Berlow

Curriculum Vitae

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Research Interests

My research focuses on descriptive combinatorics and measured group theory with applications to ergodic theory and geometric group theory. I work with the broader goal of understanding how combinatorial structure encodes dynamical and group-theoretic information.

Appointments

Stephen E. Warschawski Visiting Assistant Professor 2026–2029
University of California, San Diego, La Jolla, CA

Education

Ph.D. in Mathematics, 2021–2026
University of California, Berkeley, Berkeley, CA
Advisors: Andrew Marks and Robin Tucker-Drob

B.S. in Mathematics with Honors 2017–2021
Carnegie Mellon University, Pittsburgh, PA

Honors and Fellowships

Simons Dissertation Fellowship in Mathematics 2025
NSF Graduate Research Fellowship 2021
Fulbright Fellowship, *declined* 2021
Benter Foundation Mathematics Scholarship 2021
Duluth REU 2020

Research Publications

In Preparation

- [1] **A Measurable Analog to Euler’s Formula in pmp Graphs** (in preparation).
- [2] **Equivalence Relations Acting on Bundles of Trees** (in preparation).
with R. Chen, A. Tserunyan, and R. Tucker-Drob
- [3] **Separating Complexity Classes of LCL Problems on Grids, Part 2** (in preparation).
with A. Bernshteyn, C. Lyons, and F. Weilacher

Submitted

- [4] **The Polychromatic Number of Grids** (submitted, 2025).
<https://arxiv.org/abs/2508.18559>. *with E. Hou*
- [5] **Separating Complexity Classes of LCL Problems on Grids** (submitted, 2025).
<https://arxiv.org/abs/2501.17445>. *with A. Bernshteyn, C. Lyons, and F. Weilacher*

Published

- [6] **Intersection Bodies of Polytopes**, *Beiträge zur Algebra und Geometrie* 63 (2022), 419–439.

<https://arxiv.org/abs/2110.05996>. *with M. Brandenburg, C. Meroni, and I. Shankar*

[7] **Analysis on Almost Abelian Lie Groups**, *Journal of Mathematical Sciences* (2022).

<https://arxiv.org/abs/2004.04369>. *with M. Almora-Rios et al.*

[8] **Restricted Stacks as Functions**, *Discrete Mathematics* 334 (2021).

<https://arxiv.org/abs/2008.01164>

Selected Talks

Invited Talks

Local Problems on Grids: FIID/FFIID Separations and a Failure of Baire Shift Universality Apr. 15, 2026

Caltech Logic Seminar

Measurable analog of Euler's formula for pmp graphs Mar. 2026

UT Austin Groups and Dynamics Seminar, Austin, TX

Separating Complexity Classes of LCLs on Grids Mar. 2026

AMS Spring Western Sectional Meeting, Boise, ID

A Measurable Analog to Euler's Formula Feb. 2026

Rényi Borel Combinatorics Seminar, Budapest, Hungary

Separating Complexity Classes of LCLs on Grids Oct. 2025

North American Descriptive Set Theory Conference, University of Maryland

Separating Complexity Classes of LCLs on Grids May 2025

CanadAM, Ottawa, Canada

Separating Complexity Classes of LCLs on Grids, South Eastern Mar. 2025

Logic Symposium, University of Florida

Teaching

Main Instructor

MATH 109: Mathematical Reasoning, UC San Diego Fall 2026

MATH 110: Abstract Linear Algebra, UC Berkeley Summer 2025

Teaching Assistant / Graduate Student Instructor

MATH 135: Set Theory, UC Berkeley Spring 2026

MATH 142: Elementary Algebraic Geometry, UC Berkeley Spring 2026

MATH 113: Abstract Algebra, UC Berkeley Fall 2025

MATH 1B: Calculus II, UC Berkeley Spring 2023

MATH 54: Linear Algebra and Differential Equations, UC Berkeley Fall 2022

MUSA 74: Transition to Upper-Division Mathematics, UC Berkeley Fall 2021

21-127: Concepts of Mathematics, Carnegie Mellon University Spring 2020

33-142: Physics II for Engineers, Carnegie Mellon University Summer 2018

Organizing and Outreach

Mentorship

Visiting Research Mentor, Duluth REU in Combinatorics 2021–2024

Mentor, UC Berkeley Directed Reading Program 2021–2026

Topics: extremal and probabilistic combinatorics, descriptive set theory, equidecompositions, amenable groups

Seminars Organized

Distributed Algorithms and Borel Combinatorics Seminar, UC Berkeley Fall 2023

Descriptive Set Theory Seminar, UC Berkeley Spring 2022

Topics in Mathematics, virtual seminar 2021

Professional Service

Reviewer, *Discrete Mathematics*

Expository Writing and Miscellaneous

Expository Writing

Amenable groups acting on trees, expository note on website

Riddles, expository collection on website

Miscellaneous

Erdős number: 3

Languages: English (native); Hungarian (conversational)

References

Available upon request.