Katalin Berlow — Curriculum Vitae

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Research Interests

My research focuses primarily on applied descriptive set theory, with particular interests in descriptive combinatorics, measured group theory, and their applications to ergodic theory and geometric group theory.

Education

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

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

Research Publications

Preprints and In Preperation

[1]: **The Polychromatic Number of Grids** (in preparation, 2025+).
with E. Hou

[2]: **Equivalence Relations Acting on Bundles of Trees** (in preparation, 2025+).
with R. Chen, A. Tserunyan, R. Tucker-Drob

[3]: **Separating Complexity Classes of LCL Problems on Grids** (submitted, 2024).
arXiv:2501.17445. *with A. Bernshteyn, C. Lyons, F. Weilacher*

Published

[4]: **Intersection Bodies of Polytopes**, *Beitr Algebra Geom*, 63 (2022), 419–439.
arXiv:2110.05996. *with M. Brandenburg, C. Meroni, I. Shankar*

[5]: **Analysis on Almost Abelian Lie Groups**, *J. Math. Sci.* (2022).
arXiv:2004.04369. *with M. Almora-Rios et al.*

[6]: **Restricted Stacks as Functions**, *Discrete Mathematics*, 334 (2021).
arXiv:2008.01164

Honors and Awards

NSF Graduate Research Fellowship, 2021.

Benter Foundation Mathematics Scholarship, 2021.

Selected Talks

Invited Talks

Separating Complexity Classes of LCLs on Grids, North American Descriptive Set Theory, University of Maryland, Oct 2025.

Separating Complexity Classes of LCLs on Grids, CanaDAM, Ottawa, May 2025.

Separating Complexity Classes of LCLs on Grids, South Eastern Logic Symposium, University of Florida, Mar 2025.

Other Research Talks

Borel Polychromatic Number of Graphs Induced by $\mathbb{Z}^d$ Actions, Berkeley Student Logic Colloquium, Dec 2023.

Restricted Stacks as Functions, Western Sectional Meeting, Oct 2020.

Almost Abelian Groups, Their Subgroups and Automorphisms, Young Mathematicians Conference, Aug 2019.

Teaching and Mentorship

Mentorship

Mentor, UC Berkeley Directed Reading Program (2021–2025).
Topics: extremal/probabilistic combinatorics, descriptive set theory, equidecompositions, amenable groups.

Graduate Student Instructor

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

Seminars and Organizing

Distributed Algorithms and Borel Combinatorics Seminar, UC Berkeley, Fall 2023

Descriptive Set Theory Seminar, UC Berkeley, Spring 2022

Topics in Mathematics (Virtual), 2021