

Katalin Berlow

Curriculum Vitae

Education

- 2021– **Ph.D in Mathematics**, *The University of California*, Berkeley.
Advised by Andrew Marks and Robin Tucker-Drob.
- 2017–2021 **B.S. in Mathematics with Honors**, *Carnegie Mellon University*, Pittsburgh, PA.

Research

From Undergraduate

- Intersection bodies of polytopes. *Beitr Algebra Geom* **63**, 419–439 (2022) ([arXiv](#))
With M. Brandenburg, C. Meroni, I. Shankar
- Restricted Stacks as Functions. *Discrete Mathematics*. **334** (2021) ([arXiv](#))
- Distance Sequences of Locally Infinite Primitive Graphs. (2020) ([arXiv](#))
- Analysis on almost Abelian Lie groups: Groups, subgroups and quotients. *J. Math. Sci.* (2022) ([arXiv](#)) With M. Almora-Rios et. al.

Honors and Awards

- GSR Grant, 2022
- NSF Graduate Research Fellowship, 2021
- Benter Foundation Mathematics Scholarship, 2021

Activities

Research Programs

- June–July 2021 **Max Planck Institute Nonlinear Algebra Group**, *Leipzig, Germany*, Advisor: Prof. Bernd Sturmfels.
Visiting Scholar conducting original research in nonlinear algebra.
- June–August 2020 **Duluth REU - University of Minnesota Duluth**, *Duluth, MN*, Advisor: Prof. Joe Gallian.
Conducted original research in Combinatorics.
- June–August 2019 **UCSB REU - University of California Santa Barbara**, *Santa Barbara, CA*, Advisor: Prof. Zhirayr Avetisyan.
Conducted original research in Lie Theory.

Workshops and Mini Courses Attended

- March 2023 **CRM Measured Group Theory Workshop**, *Montreal, Canada.*
- July-August 2022 **MSRI Summer School on Topological Methods for the Discrete Mathematician**, *Moroga, CA.*
- July 2022 **UT Austin Graduate Mini-school in Groups and Dynamics**, *Austin, TX.*
- June 2022 **Erdős Center Summer School on Graphs, Groups, and Stochastic Processes**, *Budapest, Hungary.*
- July 2021 **Max Planck Institute Minicourse on Convex Geometry**, *Leipzig, Germany.*
- May 2021 **Institute for Advanced Study WAM Representation Theory: Categories and Combinatorics**, *virtual.*

Programs I've Organized

- Fall 2023 **Distributed Algorithms and Borel Combinatorics**, *UC Berkeley.*
A graduate student learning seminar on the recent work on Anton Bernshteyn connecting local algorithms to descriptive combinatorics
- Spring 2022 **Descriptive Set Theory Seminar**, *UC Berkeley.*
A graduate student seminar which involved students presenting material including the contents of Anush Tserunyan's descriptive set theory notes and various papers.
- January–December 2021 **Topics in Mathematics**, *virtual.*
An informal zoom seminar where undergraduate students from various universities can give presentations on a topic of their choosing.

Teaching and Mentorship

Mentorship

- Fall 2022 **UC Berkeley Directed Reading Program**, *I was a mentor for the UC Berkeley directed reading program. The topic was classical descriptive set theory.*
- Fall 2021 **UC Berkeley Directed Reading Program**, *I was a mentor for the UC Berkeley directed reading program. The topics were extremal and probabilistic combinatorics.*

Graduate Student Instructor at UC Berkeley

- Spring 2023 **MATH 1B: Calculus II**, *A second calculus course for STEM majors..*
- Fall 2022 **MATH 54: Linear Algebra and Differential Equations.**, *Introductory course to linear algebra and differential equations. .*
- Fall 2021 **MUSA 74: Transition to Upper-Division Mathematics.**, *Course on proof writing in the context of various subjects including algebra, analysis and combinatorics..*

Teaching Assistant at Carnegie Mellon University

- Spring 2020 **21-127: Concepts of Mathematics**, *Introductory proofs course covering basic logic, set theory, cardinality, functions, combinatorics, probability, and elementary number theory.*
- Summer 2018 **33-106: Physics 1 for Engineering Students**, *Introductory physics course.*

Talks/Posters

Seminar Talks

- *The Friedman-Stanley Jump and Complexity of Borel Equivalence Relations*, (January 2023) Berkeley Recursion Theory Seminar
- *Introduction to Borel Equivalence Relations*, (November 2022) Berkeley Recursion Theory Seminar
- *Hyperbolic Geometry*, (May 2022) UC Berkeley geometric group theory reading group.
- *Descriptive Combinatorics*, (May 2022) UC Berkeley Descriptive Set Theory Seminar
- *Borel Determinacy*, (April 2022) UC Berkeley Set Theory Seminar
- *Flexibility, Rigidity and Configuration Spaces*, (April 2021) Nonlinear Algebra and Applications Graduate Student Seminar

Research Talks

- *Restricted Stacks as Functions*, (October 2020) 2020 Fall Western Sectional Meeting
- *Distance Sequences of Locally Infinite Primitive Graphs*, (May 2019) CMU Mathematics Poster Competition
- *Almost Abelian Lie Groups, Their Quotient Groups and Automorphisms*, (August 2019) Undergraduate and Graduate Research Colloquium, UC Santa Barbara
- *Almost Abelian Groups, Their Subgroups and Automorphisms*, (August 2019) Young Mathematicians Conference