

Education

2021–2026 **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

Graduate Research

- Separating complexity classes of LCL problems on grids (2024) (in preparation). With A. Bernshteyn, C. Lyons, F. Weilacher.
- Equivalence relations acting on bundles of trees (2024) (in preparation). With R. Chen, A. Tserunyan, R. Tucker-Drob.

Undergraduate Research

- Intersection bodies of polytopes. *Beitr Algebra Geom* **63**, 419–439 (2022). arXiv:2110.05996. With M. Brandenburg, C. Meroni, I. Shankar.
- Restricted Stacks as Functions. *Discrete Mathematics* **334** (2021). arXiv:2008.01164.
- Distance Sequences of Locally Infinite Primitive Graphs. (2020). arXiv:2009.11276.
- Analysis on almost Abelian Lie groups: Groups, subgroups, and quotients. *J. Math. Sci.* (2022). arXiv:2004.04369. With M. Almora-Rios et al.

Honors and Awards

- NSF Graduate Research Fellowship, 2021.
- Benter Foundation Mathematics Scholarship, 2021.

Activities

Research Programs

June–July 2021 **Visiting Scholar, Max Planck Institute Nonlinear Algebra Group, Leipzig, Germany**, Advisor: Prof. Bernd Sturmfels
Conducted original research in nonlinear algebra.

June–August 2020 **Research Participant, Duluth REU - University of Minnesota Duluth**, Advisor: Prof. Joe Gallian
Conducted original research in combinatorics.

June–August 2019 **Research Participant, 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

June 2024 **Workshop on Measurable Combinatorics**, Erdős Center, *Budapest, Hungary*

March 2023 **CRM Measured Group Theory Workshop**, *Montreal, Canada*

July 2022 **Topological Methods for the Discrete Mathematician**, MSRI, *Moraga, 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 Organized

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

Organized a graduate student learning seminar on Anton Bernshteyn's recent work connecting local algorithms to descriptive combinatorics.

Spring 2022 **Descriptive Set Theory Seminar**, *UC Berkeley*

Coordinated a graduate student seminar featuring presentations on Anush Tserunyan's descriptive set theory notes and various papers.

Teaching and Mentorship

Mentorship

Fall 2023 **Mentor, UC Berkeley Directed Reading Program**, *Berkeley, CA*
Mentored a student on classical descriptive set theory.

Fall 2022 **Mentor, UC Berkeley Directed Reading Program**, *Berkeley, CA*
Mentored a student on classical descriptive set theory.

Fall 2021 **Mentor, UC Berkeley Directed Reading Program**, *Berkeley, CA*
Mentored a student on extremal and probabilistic combinatorics.

Graduate Student Instructor

Spring 2023 **MATH 1B: Calculus II**, *UC Berkeley*
Taught a second calculus course for STEM majors.

Fall 2022 **MATH 54: Linear Algebra and Differential Equations**, *UC Berkeley*
Taught an introductory course on linear algebra and differential equations.

Fall 2021 **MUSA 74: Transition to Upper-Division Mathematics**, *UC Berkeley*
Taught a course on proof writing in algebra, analysis, and combinatorics.

Teaching Assistant

Spring 2020 **21-127: Concepts of Mathematics**, *Carnegie Mellon University*
Assisted in an introductory proofs course covering logic, set theory, cardinality, functions, combinatorics, probability, and elementary number theory.

Summer 2018 **33-106: Physics 1 for Engineering Students**, *Carnegie Mellon University*
Assisted in an introductory physics course.

Selected Talks and Posters

Research Talks

- *Borel Polychromatic Number of Graphs Induced by \mathbb{Z}^d Actions*, Berkeley Student Logic Colloquium, December 2023.
- *Restricted Stacks as Functions*, Western Sectional Meeting, October 2020.
- *Distance Sequences of Locally Infinite Primitive Graphs*, CMU Mathematics Poster Competition, May 2019.
- *Almost Abelian Groups, Their Subgroups and Automorphisms*, Young Mathematicians Conference, August 2019.

Seminar Talks

- *Ellentuck's Proof that Analytic Sets are Ramsey*, Berkeley Computability Theory Seminar, February 2024.
- *Deterministic Local Algorithms Produce Borel Colorings*, Berkeley Distributed Algorithms and Borel Combinatorics Seminar, November 2023.
- *Determinacy and the Theory of Scales*, Berkeley Set Theory Seminar, October 2023.
- *Polish Group Actions*, Berkeley Recursion Theory Seminar, October 2023.
- *Introduction to Borel Combinatorics*, Berkeley Distributed Algorithms and Borel Combinatorics Seminar, September 2023.
- *The Friedman-Stanley Jump and Complexity of Borel Equivalence Relations*, Berkeley Recursion Theory Seminar, January 2023.
- *Introduction to Borel Equivalence Relations*, Berkeley Recursion Theory Seminar, November 2022.
- *Hyperbolic Geometry*, UC Berkeley Geometric Group Theory Reading Group, May 2022.
- *Descriptive Combinatorics*, UC Berkeley Descriptive Set Theory Seminar, May 2022.