Sam K. Miller | Curriculum Vitae

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Current as of May 14, 2024

Research Interests

- Modular representation theory of finite groups.
- Local-to-global conjectures such as Broue's abelian defect group conjecture.
- Character theory and counting conjectures.
- Biset functors and applications.
- Endotrivial modules and generalizations.
- Intersections of homotopy theory and representation theory.

Education

University of California Santa Cruz	**Santa Cruz, CA**
Doctorate of Philosophy in Mathematics	*2019–Present*
Advisor: Robert Boltje	
Harvey Mudd College	**Claremont, CA**
Bachelor Degree in Mathematics	*2013–2017*
Concentration in Political Science	

Research

Publications

On endotrivial complexes and the generalized Dade group	**2024**
arXiv:2403.04088	*Submitted*
Relative endotrivial complexes	**2024**
arXiv:2402.08042	*Submitted*
Brauer pairs for splendid Rickard complexes	**2023**
w/ J. Breland, arXiv:2312.10258	*Submitted*
Endotrivial complexes	**2023**
arXiv:2309.12138	*To appear in Journal of Algebra*
A proof of the optimal leapfrogging conjecture	**2023**
w/ A. T. Benjamin, arXiv:2110.08319	*To appear in Involve*
Challenging knight's tours	**2018**
w/ A. T. Benjamin	*Math Horizons*

Theses

The combinatorial polynomial Hirsch conjecture	**2017**
S. K. Miller	*Undergraduate Thesis*
Advisor: Mohamed Omar	

Fellowships and Awards

UCSC Dissertation Year Fellowship	*September 2024-June 2025*
Harvey Mudd College Dean's List	*September 2014-May 2017*
Putnam: Top 500 Scorers	*December 2014,2015*
ICTM State Math Contest: 1st Place Individual (Senior Division)	*2013*
USCF SuperNationals: 1st Place (U1200 Division)	*2013*

Talks

Groups and Algebras in Bicocca for Young algebraists	*June 2024*
RPTU Kaiserslautern-Landau Algebra Seminar	*June 2024*
Representation Theory and Related Geometry	*May 2024*
UCLA Algebra Seminar	*May 2024*
UCSC Algebra & Number Theory Seminar	*May 2024*
AMS Western Sectional Special Session	*May 2024*
University of San Francisco Math Colloquium	*April 2024*
University of Arizona Algebra Seminar	*January 2024*
JMM 2024 Contributed Paper Session	*January 2024*
University of Georgia Algebra Seminar	*November 2023*
UCSC Mathematics Graduate Student Seminar	*October 2023*
DKO Workshop: Algebra and Number Theory in Conversation	*September 2023*
Topics in Representation Theory: Biset Functors	*June 2023*
AMS Western Sectional, Special Session	*May 2023*
JMM 2023 Contributed Paper Session	*January 2023*
UCSC Mathematics Graduate Student Seminar	*November 2022*
Society of Women Engineers, UCSC Chapter: Science on Tap	*October 2022*
UCSC Postdoc Symposium Poster Session	*May 2022*
UCSC Mathematics Graduate Student Seminar	*May 2022*
UCSC Graduate Symposium	*April 2022*
UCSC Mathematics Graduate Student Seminar	*February 2021*
MAA MathFest Contributed Paper Session	*August 2018*
Harvey Mudd Senior Thesis Day	*May 2017*
MAA SoCal/NV Sectional, Poster Session	*April 2017*

Teaching

Instructor of Record

Math 116: Combinatorics	*Spring 2024*
Math 110: Introduction to Number Theory	*Winter 2024*
Math 101: Problem Solving Strategies	*Fall 2023*
Math 134: Cryptography	*Summer 2023*

Math 110: Introduction to Number Theory	*Summer 2022*
Math 100: Introduction to Proof and Problem Solving	*Summer 2021*
Math 107: Introduction to Partial Differential Equations	*Spring 2021*

Teaching Assistant

Math 21: Linear Algebra	*Spring 2023*
Math 152: Programming for Mathematics	*Winter 2023*
Math 117: Advanced Linear Algebra	*Fall 2022*
Math 140: Industrial Mathematics	*Spring 2022*
Math 152: Programming for Mathematics	*Winter 2022*
Math 23A: Vector Calculus	*Fall 2021*
Math 21: Linear Algebra	*Winter 2021*
Math 21: Linear Algebra	*Fall 2020*
Math 22: Introduction to Calculus of Several Variables	*Summer 2020*
Math 148: Numerical Analysis	*Spring 2020*
Math 19B: Calculus for Science, Engineering, and Mathematics II	*Winter 2020*
Math 19A: Calculus for Science, Engineering, and Mathematics I	*Fall 2019*

Work Experience

University of California Santa Cruz	**Santa Cruz, CA**
Graduate Student Instructor	*2021-Present*
Instructor of record for undergraduate courses.	
University of California Santa Cruz	**Santa Cruz, CA**
Teaching Assistant	*2019-Present*
Teaching assistant for undergraduate courses.	
SupplyFrame	**Pasadena, CA**
Platform Engineer	*2017-2019*
Software engineer, worked primarily with big data and neural networks.	
Harvey Mudd College	**Claremont, CA**
Grutor	*2014-2017*
Graded and tutored undergraduate courses in mathematics and computer science.	
Camp Widjiwagan	**Ely, MN**
Trail Staff	*2014-2015*
Led week-long outdoor canoeing trips for middle- and high-school aged kids.	

Organization and Activities

Organization

UCSC Mathematics Graduate Student Seminar: Co-organizer	*September 2022-Present*
UCSC Graduate Student Committee: Electoral Board	*March 2022-December 2022*
UCSC Mathematics Department Social Committee: Co-organizer	*September 2021-May 2022*

Reading Groups

Organizer: Blocks of Cyclic Defect (BloCD)	*January 2024*

Aschbacher, Kessar, & Oliver, Fusion Systems in Algebra & Topology *September 2021-March 2022*

Bouc, Biset Functors for Finite Groups *September 2021-May 2022*

Linckelmann, The Block Theory of Finite Group Algebras *June 2021-December 2021*

Organizer: Guillot, A Gentle Course in Local Class Field Theory *January 2021-August 2021*

Organizer: Riehl, Category Theory in Context *June 2020-September 2020*

Mentoring

UCSC Peer Mentorship Program: Mentor *September 2023-Present*

UCSC Peer Mentorship Program: Mentor *September 2021-May 2022*

UCSC Directed Reading Program: Mentor *September 2021-December 2021*