Sam K. Miller | Curriculum Vitae

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Research Interests

- Modular representation theory of finite groups.
- Local-to-global conjectures such as Broue's abelian defect group conjecture.
- 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

Preprints

Relative endotrivial complexes   **2023**
S. K. Miller   *In preparation*

Brauer pairs for splendid Rickard complexes   **2023**
S. K. Miller and J. Breland   *In preparation*

Endotrivial complexes   **2023**
S. K. Miller   *Submitted to Journal of Algebra*

Publications

A proof of the optimal leapfrogging conjecture   **2023**
S. K. Miller and A. T. Benjamin   *To appear in Involve*

Challenging knight's tours   **2023**
A. T. Benjamin and S. K. Miller   *Math Horizons*

Theses

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

Talks

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*
Oral Qualifying Exam	*June 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 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*