Matthew N. Mastroeni

Contact Information

Department of Mathematics
University of Illinois at Urbana-Champaign
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Education

Ph.D. in Mathematics
University of Illinois at Urbana-Champaign, expected August 2018.
Thesis: *Betti Numbers of Koszul Algebras and Codimension Two Matrix Factorizations*
Advisor: Hal Schenck

M.S. in Mathematics
Syracuse University, 2012.

B.A. in Mathematics
Ithaca College, 2009.

Research Interests

Computational and homological aspects of commutative algebra, especially the structure of free resolutions.

Publications

(1) M. Mastroeni. *Koszul almost complete intersections.* J. Algebra 501 (2018), 285–302.

(2) M. Mastroeni. *Matrix factorizations and singularity categories in codimension two.* Proc. Amer. Math. Soc. Accepted.

Conference Presentations

Koszul Almost Complete Intersections

- *AMS Special Session on Commutative and Combinatorial Algebra*, March 2018, Columbus, OH.
- *AMS Special Session on Commutative Algebra in All Characteristics*, January 2018, San Diego, CA.
- *Structures on Free Resolutions*, October 2017, Lubbock, TX.

Honors and Awards

Departmental TA Instructional Award
University of Illinois Math Department, 2017.

- Annual departmental award based on a teaching portfolio, student evaluations, an interview, and classroom observation.

REGS Day Award
University of Illinois Math Department, 2013.

- Award for the best summer research project on higher codimension matrix factorizations.

Donald E. Kibbey Prize
Syracuse University Math Department, 2010.

University Fellowship
Syracuse University, 2009.

TEACHING AND
MENTORING
EXPERIENCE

Teaching Assistant
University of Illinois, 2012 – 2017.

- 10 semesters of experience.
- On the university's List of Teachers Ranked as Excellent for 9 semesters in a row.
- Served as Head TA in Spring 2015, responsible for supervising 14 TA's and helping with course administration.

Graduate Student Mentor – Illinois Geometry Lab
University of Illinois, June 2017.

- Mentored four undergraduates doing research on a combinatorial game involving commutative Noetherian rings.
- Taught relevant aspects of commutative algebra and using Macaulay2 to compute examples, posed research questions, and gave students feedback on their work.

Teaching Assistant
Syracuse University, 2010–2012.

- Served as the primary course instructor for 3 semesters.

SERVICE
EXPERIENCE

Graduate Affairs Committee Member
University of Illinois Math Department, Fall 2017 – Spring 2018.

TA Teaching Awards Committee Member
University of Illinois Math Department, Fall 2017.

Seminar Organizer – Commutative Ring Theory Seminar
University of Illinois, Fall 2014 – present.

Stillman's Conjecture and other Progress on Free Resolutions, UC Berkeley, July 2017.

RTG Homological Conjectures in Commutative Algebra Workshop, University of Illinois Chicago, November 2016.

Macaulay 2 Workshop, University of Utah, May 2016.

RTG Local Cohomology Workshop, University of Illinois Chicago, February 2015.