

MATTHEW N. MASTROENI

CONTACT INFORMATION

Department of Mathematics –
Iowa State University
396 Carver Hall
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Ames, IA 50011

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`mmastro/github.io`

EMPLOYMENT

Postdoc Research Associate, Iowa State University,
August 2021 – present.

Postdoctoral Fellow, Oklahoma State University,
August 2018 – May 2021.

EDUCATION

Ph.D. in Mathematics

University of Illinois at Urbana-Champaign, 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 and J. McCullough. *Chow rings of matroids are Koszul*. Submitted.
- (2) L. Ferraro, F. Galetto, F. Gandini, H. Huang, M. Mastroeni, and X. Ni. *The InvariantRing package for Macaulay2*. Submitted.
- (3) P. Mantero and M. Mastroeni. *The structure of Koszul algebras defined by four quadrics*. Submitted.
- (4) M. Mastroeni, H. Schenck, and M. Stillman. *Quadratic Gorenstein rings and the Koszul property II*. To appear in Int. Math. Res. Not.
- (5) P. Mantero and M. Mastroeni. *Betti numbers of Koszul algebras defined by four quadrics*. J. Pure Appl. Algebra 225 (2021), no. 2, Paper No. 106504.

PUBLICATIONS
(CONTINUED)

- (6) M. Mastroeni, H. Schenck, and M. Stillman. *Quadratic Gorenstein rings and the Koszul property I*. Trans. Amer. Math. Soc. 374 (2021), no. 2, 1077–1093.
- (7) M. Mastroeni. *Koszul almost complete intersections*. J. Algebra 501 (2018), 285–302.
- (8) M. Mastroeni. *Matrix factorizations and singularity categories in codimension two*. Proc. Amer. Math. Soc. 136 (2018), no. 11, 4605–4617.

INVITED TALKS

AMS Special Session on Commutative Algebra (virtual)	May 2022
AMS Special Session on Combinatorial Methods in Commutative Algebra – Medford, MA	March 2022
CA+ – Minneapolis, MN	October 2021
AMS Special Session on Commutative Algebra (virtual)	October 2021
AMS Special Session on Commutative Algebra (virtual)	April 2021
AMS Special Session on Commutative Algebra and its Interaction with Algebraic Geometry and Combinatorics (virtual)	March 2021
Algebra and Geometry Seminar – Iowa State University	October 2020
AMS Special Session on Commutative Algebra and Connections to Algebraic Geometry and Combinatorics (virtual)	October 2020
AMS Special Session on Combinatorial Techniques in Commutative Algebra – West Lafayette, IN	April 2020 (canceled)
Algebra Seminar – University of Arkansas	April 2019
AMS Special Session on Interactions Between Combinatorics and Commutative Algebra – Fayetteville, AR	November 2018
AMS Special Session on Commutative Algebra and Complexity – Ann Arbor, MI	October 2018
Math Department Colloquium – Oklahoma State University	October 2018
Algebra Seminar – University of Arkansas	April 2018
Combinatorial and Commutative Algebra Seminar – Oklahoma State University	April 2018
Commutative Algebra Seminar – University of Nebraska–Lincoln	April 2018

INVITED TALKS (CONTINUED)	AMS Special Session on Commutative and Combinatorial Algebra – Columbus, OH	March 2018
	AMS Special Session on Commutative Algebra in All Characteristics – San Diego, CA	January 2018
	Structures on Free Resolutions – Lubbock, TX	October 2017
HONORS AND AWARDS	AMS-Simons Travel Grant , 2021.	
	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.	
TEACHING EXPERIENCE	Donald E. Kibbey Prize Syracuse University Math Department, 2010.	
	University Fellowship Syracuse University, 2009.	
	Instructor (Iowa State University)	
	Math 151 Calculus for Business and Social Sciences	Fall 2021
	Math 165 Calculus 1	Spring 2022
	Teaching Assistant (Iowa State University)	
	Math 267 Elementary Differential Equations and Laplace Transforms	Fall 2021
	Instructor (Oklahoma State University)	
	Math 2144 Calculus 1	Spring 2021, Fall 2020, Fall 2018
	Math 2153 Calculus 2	Fall 2019
	Math 3013 Linear Algebra	Spring 2020
	Math 3613 Intro to Abstract Algebra	Spring 2020, Fall 2019, Spring 2019

TEACHING
EXPERIENCE
(CONTINUED)

Instructor (University of Illinois)

Math 124 Finite Mathematics Spring 2018

Grader (University of Illinois)

Math 416 Abstract Linear Algebra Spring 2018

Teaching Assistant (University of Illinois)

Math 221 Calculus 1 Fall 2016, Fall 2015

Math 231 Calculus 2 Fall 2017, Spring 2016,
Spring 2015, Fall 2014,
Spring 2014, Spring 2013,
Fall 2012

Math 241 Calculus 3 Fall 2013

Instructor (Syracuse University)

MAT 221 Elementary Probability and Statistics 1 Fall 2011, Spring 2011

MAT 286 Calculus for the Life Sciences Spring 2012

Teaching Assistant (Syracuse University)

MAT 121 Probability and Statistics for the Liberal Arts 1 Fall 2010

SERVICE,
MENTORING,
AND OUTREACH

Iowa State Mathematics Research Teams Mentor

Iowa State University, Spring 2022.

Stillwater High School Math Seminar

Stillwater, OK, April 2020 (canceled), November 2019.

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.

Illinois Geometry Lab Graduate Student Mentor

University of Illinois, June 2017.

Commutative Ring Theory Seminar Organizer

University of Illinois, Fall 2014 – Spring 2018.

PROFESSIONAL
DEVELOPMENT

Macaulay2 Workshop – Cleveland State University (online workshop) May 2020

CIME Recent Developments in Commutative Algebra Workshop July 2019

PROFESSIONAL DEVELOPMENT (CONTINUED)	CBMS Conference on Applications of Polynomial Systems – Texas Christian University	June 2018
	Macaulay2 Workshop – University of Wisconsin Madison	April 2018
	MSRI Homological Conjectures Workshop	March 2018
	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
	Macaulay2 Workshop – University of Utah	May 2016
	RTG Local Cohomology Workshop – University of Illinois Chicago	February 2015