

MATTHEW N. MASTROENI

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| CONTACT INFORMATION | Department of Mathematics – Iowa State University 396 Carver Hall 411 Morrill Rd Ames, IA 50011 | mmastro@iastate.edu mnmastro/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: <i>Betti Numbers of Koszul Algebras and Codimension Two Matrix Factorizations</i> 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 | <ol style="list-style-type: none">(1) L. Ferraro, F. Galetto, F. Gandini, H. Huang, M. Mastroeni, and X. Ni. <i>The InvariantRing package for Macaulay2</i>. Submitted.(2) P. Mantero and M. Mastroeni. <i>The structure of Koszul algebras defined by four quadrics</i>. Submitted.(3) M. Mastroeni, H. Schenck, and M. Stillman. <i>Quadratic Gorenstein rings and the Koszul property II</i>. Submitted.(4) P. Mantero and M. Mastroeni. <i>Betti numbers of Koszul algebras defined by four quadrics</i>. J. Pure Appl. Algebra. To appear.(5) M. Mastroeni, H. Schenck, and M. Stillman. <i>Quadratic Gorenstein rings and the Koszul property I</i>. Trans. Amer. Math. Soc. 374 (2021), no. 2, 1077–1093. | |

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| PUBLICATIONS (CONTINUED) | (6) M. Mastroeni. <i>Koszul almost complete intersections</i> . J. Algebra 501 (2018), 285–302. | |
| | (7) M. Mastroeni. <i>Matrix factorizations and singularity categories in codimension two</i> . Proc. Amer. Math. Soc. 136 (2018), no. 11, 4605–4617. | |
| INVITED TALKS | 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 |
| | 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.

Donald E. Kibbey Prize

Syracuse University Math Department, 2010.

University Fellowship

Syracuse University, 2009.

TEACHING
EXPERIENCE

Instructor (Iowa State University)

| | |
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| Math 151 Calculus for Business and Social Sciences | Fall 2021 |
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Teaching Assistant (Iowa State University)

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| Math 267 Elementary Differential Equations and Laplace Transforms | Fall 2021 |
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Instructor (Oklahoma State University)

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| 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 |

Instructor (University of Illinois)

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| Math 124 Finite Mathematics | Spring 2018 |
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Grader (University of Illinois)

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| Math 416 Abstract Linear Algebra | Spring 2018 |
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Teaching Assistant (University of Illinois)

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| Math 221 Calculus 1 | Fall 2016, Fall 2015 |
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TEACHING
EXPERIENCE
(CONTINUED)

Teaching Assistant (University of Illinois)

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| 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)

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| MAT 221 Elementary Probability and Statistics 1 | Fall 2011, Spring 2011 |
| MAT 286 Calculus for the Life Sciences | Spring 2012 |

Teaching Assistant (Syracuse University)

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| MAT 121 Probability and Statistics for the Liberal Arts 1 | Fall 2010 |
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SERVICE,
MENTORING,
AND OUTREACH

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.

Graduate Student Mentor – Illinois Geometry Lab

University of Illinois, June 2017.

Seminar Organizer – Commutative Ring Theory Seminar

University of Illinois, Fall 2014 – Spring 2018.

PROFESSIONAL
DEVELOPMENT

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| Macaulay2 Workshop – Cleveland State University (online workshop) | May 2020 |
| CIME Recent Developments in Commutative Algebra Workshop | July 2019 |
| 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 |

PROFESSIONAL
DEVELOPMENT
(CONTINUED)

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