

Department of Mathematics
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EDUCATIONAL AND PROFESSIONAL HISTORY

Higher Education

Ph.D. Mathematics, University of Michigan, August 2009

B.S. Mathematics (minors in Physics and Philosophy), University of Kansas, May 2003

Professional and Academic Positions

Associate Professor of Mathematics, University of Iowa, 2019–present

Assistant Professor of Mathematics, University of Iowa, 2013–2019

Research Instructor, Northeastern University, 2011–2014

Postdoctoral Fellow, University Connecticut, 2009–2011

Invited Research Visits

Bielefeld University, 2 months, June–July 2013

Syracuse University, 2 weeks, August 2010

PUBLICATIONS AND OTHER MANUSCRIPTS

Publications

(with Jenna Rajchgot). Type D quiver representation varieties, double Grassmannians, and symmetric varieties.

Preprint available at <http://arxiv.org/abs/1901.10014>.

(with András C. Lőrincz). Representation varieties of algebras with nodes.

Preprint available at <http://arxiv.org/abs/1810.10997>.

(with Thorsten Weist). Tree normal forms for quiver representations.

Preprint available at <http://arxiv.org/abs/1810.04977>.

(with Andrew T. Carroll, Calin Chindris, and Jerzy Weyman). Moduli spaces of representations of special biserial algebras. Accepted to *International Mathematics Research Notices* in 2018

Preprint available at <http://arxiv.org/abs/1706.07022>.

(with Allen Knutson and Jenna Rajchgot). Three combinatorial formulas for type A quiver polynomials and K -polynomials. *Duke Mathematical Journal*, 168(4):505–551, 2019

(with Calin Chindris). Decomposing moduli of representations of finite-dimensional algebras. *Mathematische Annalen* 372(1–2): 555–580, 2018

K -polynomials of type A quiver orbit closures and lacing diagrams. In *Representations of Algebras, Contemporary Mathematics*, 705: 99–114, 2018

(with Chelsea Walton). Actions of some pointed Hopf algebras on path algebras of quivers. *Algebra & Number Theory*, 10(1): 117–154, 2016

(with Jenna Rajchgot). Type A quiver loci and Schubert varieties. *Journal of Commutative Algebra*, 7(2):265–301, 2015

(with Calin Chindris and Jerzy Weyman). Module varieties and representation type of finite-dimensional algebras. *International Mathematics Research Notices*, 2015(3):631–650, 2015

Tree modules and counting polynomials, *Algebras and Representation Theory*, 16(5):1333–1347, 2013

(with Ralf Schiffler). Idempotents in representation rings of quivers, *Algebra & Number Theory*, 6(5):967–994, 2012

New inequalities for subspace arrangements, *Journal of Combinatorial Theory Series A*, 118(1):152–161, 2011

Rank functions on rooted tree quivers, *Duke Mathematical Journal*, 152(1):27–92, 2010

The rank of a quiver representation, *Journal of Algebra* 320(6):2363–2387, 2008

Non-refereed Manuscripts

A decomposition theorem for moduli of representations of algebras, with application to moduli of special biserial algebras, in *Representation Theory of Quivers and Finite Dimensional Algebras, Oberwolfach Reports*, 14(1):622–624, 2017

(with Jerzy Weyman). Irreducible components of some module varieties via the Springer resolution, in *Representation Theory of Quivers and Finite Dimensional Algebras, Oberwolfach Reports*, 11(1):475–477, 2014

Rank loci in representation spaces of quivers. Manuscript, 14 pp.
<http://arxiv.org/abs/1004.1981>

Refereed Article Related to Undergraduate Physics Lab Research at U. of Kansas, 2000–2003

N. Beasley, J. Jantzi, R. Kinser, and J. S. Olafsen, “Dilation, compression, and convection in granular shear experiments,” *AIP Conference Proceedings*, vol. 1542, 2013, pp.449–452

SERVICE AND MENTORSHIP

Student and postdoc supervision

Ana Berrizbeitia, Ph.D. 2018, currently tenure-track Assistant Professor at Colorado Mesa University

Danny Lara, Ph.D. 2019

Emre Sen, postdoc 2018–present

Shijie Zhu, postdoc 2018–present

Departmental leadership

Director of Diversity and Inclusion in Graduate Mathematics, 2018–present (Member 2014–2018)

Meeting organization

Organizing committee: Conference on Geometric Methods in Representation Theory, University of Missouri, November 2019

Organizing committee: Homological Methods and Tilting Theory of Finite Dimensional Algebras, University of Iowa, 2019

Organizing committee chair: Conference on Geometric Methods in Representation Theory, University of Iowa, November 2018

Organizing committee chair: Conference on Geometric Methods in Representation Theory, University of Iowa, November 2017

Organizing committee: Conference on Geometric Methods in Representation Theory, University of Missouri, November 2016

GRANTS FUNDED

(as PI) Conference on Geometric Methods in Representation Theory 2018 and 2019, NSF DMS-1839720, \$11,836, September 2018–August 2020

(as PI) Conference on Geometric Methods in Representation Theory 2016 and 2017, NSF DMS-1644393, \$11,285, September 2016–August 2019

(as PI) NSA Young Investigator Grant H98230-12-1-0244, \$39,399, January 2012–January 2014

INVITED TALKS**Conference Talks, International**

CIMPA summer research school short course on Geometry of Representations of Algebras, Medellín, Colombia, June 2018

US-Mexico Conference on Representation Theory, Categorification, and Noncommutative Algebra, UNAM, Mexico City, November 2017

Algebra Extravaganza!, Temple University, July 2017

Maurice Auslander Lectures and International Conference, Woods Hole, Massachusetts, April 2017

Mathematical Research Institute, Oberwolfach, Germany, February 2017

International Conference on Representations of Algebras XVII (plenary talk), Syracuse, New York, August 2016

Maurice Auslander Lectures and International Conference, Woods Hole, Massachusetts, May 2015

International Conference on Representation Theory and Commutative Algebra, Storrs, Connecticut, April 2015

Conference on Cluster Algebras and Representation Theory, Korea Institute for Advanced Study, Seoul, November 2014

Encuentro de Matemáticas, Universidad Nacional de Colombia, Bogotá, July 2014
Mathematical Research Institute, Oberwolfach, Germany, February 2014
Conference on Geometric Methods in Representation Theory, University of Missouri, November 2013
XXVth Meeting on Representation Theory of Algebras, Sherbrooke, Québec, October 2013
17th Nord–West–Deutscher–Darstellungs–Ring Workshop, Wuppertal, Germany, July 2013
Conference on Geometric Methods in Representation Theory, University of Missouri, November 2012
International Conference on Representations of Algebras XV, Bielefeld, Germany, August 2012
Maurice Auslander Lectures and International Conference, Woods Hole, Massachusetts, April 2012
Maurice Auslander Lectures and International Conference, Woods Hole, Massachusetts, April 2011
Maurice Auslander Lectures and International Conference, Woods Hole, Massachusetts, April 2010
XXIst Meeting on Representation Theory of Algebras, Sherbrooke, Québec, October 2009
International Conference on Representations of Algebras XIII, São Paulo, Brazil, August 2008
Maurice Auslander Lectures and International Conference, Woods Hole, Massachusetts, March 2008

Conference Talks, National

AMS Special Session on Commutative Algebra and Complexity, University of Michigan, October 2018
The 2015 Midwest Combinatorics Conference, University of Minnesota, May 2015
AMS Special Session on Topics in Noncommutative Algebra and Algebraic Geometry, Michigan State University, March 2015
ALGECOM9, Loyola University, Chicago, November 2013
AMS Special Session in Noncommutative Algebra, Wake Forest University, September 2011
AMS Special Session on Representations of Algebras, University of Iowa, March 2011
AMS Special Session on Representations of Finite-Dimensional Algebras, Syracuse University, October 2010
AMS Special Session on Representations of Finite-Dimensional Algebras, UC Riverside, November 2009
AMS Special Session on Algebra, Geometry, and Combinatorics, UIUC, March 2009

Colloquium Talks

DePaul University, September 2017
University of Saskatchewan, January 2017
Worldwide Center of Mathematics, Cambridge, Massachusetts, September 2012
(Video online at <http://www.centerofmath.org/research.html>)
Tufts University Mathematics Department Colloquium, February 2011

Seminar Talks

University of Saskatchewan, January 2017

University of Illinois Algebra-Geometry-Combinatorics Seminar, February 2016

University of Connecticut Cluster Algebra Seminar, November 2015

Sapienza University of Rome, Italy, June 2015

Bielefeld University Representation Theory Seminar, July 2013

CUNY Representation Theory Seminar, May 2012

University of Connecticut Cluster Seminar, March 2012

University of Connecticut SIGMA Seminar, March 2012

University of Missouri Algebra Seminar, March 2012

Princeton University Algebraic Geometry Seminar, February 2012

University of Syracuse Algebra Seminar, August 2010

University of Massachusetts, Amherst Representation Theory Seminar, April 2010

University of Kansas Algebra Seminar, March 2010

Northeastern University GASC Seminar, February 2010

DePaul University Algebra Seminar, September 2008

Institut Fourier Summer School, Graduate Student Seminar, Grenoble, France, June 2008

Pontificia Universidad Católica de Chile, Complex Geometry Seminar, June 2007