

Associate Professor
Department of Mathematics
Reed College

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AREAS OF SPECIALIZATION

General: Algebra and Combinatorics (MSC 16, 05E, 17B)
Specific: Combinatorial representation theory, centralizer and diagram algebras, Hecke algebras, Lie algebras and quantum groups.

EDUCATION

Ph.D. Mathematics, University of Wisconsin–Madison, August 2010
Dissertation title: *Degenerate two-boundary centralizer algebras*
Advisor: Arun Ram
Minor: Mathematics education

M.A. Mathematics, University of Wisconsin–Madison, December 2006

B.S. Mathematics (with distinction), Harvey Mudd College, May 2005

EMPLOYMENT

The City College of New York, Associate Professor (Fall 2022–present)

The City College of New York

Associate Professor with Tenure (Fall 2022–present) Assistant Professor (Spring 2015–Spring 2023)

CUNY Graduate Center, Doctoral Faculty in Mathematics (Fall 2018–present)

The City College of New York, Assistant Professor (Spring 2015–present)

University of Melbourne, Research Fellow in Representation Theory (Fall 2014), Faculty of Science Fellow (Summer 2009)

Dartmouth College, John Wesley Young Research Instructor (Summer 2011–Summer 2014)

Institute for Computational and Experimental Research in Mathematics, Postdoctoral Fellow (Spring 2013)

St. Olaf College, Visiting Assistant Professor of Mathematics (Fall 2010–Spring 2011)

University of Wisconsin, Madison, Graduate student (Fall 2005–Spring 2010)

Teaching Assistant

Research Assistant (funded by NSF) (Summer 2008)

VIGRE Fellow (Spring 2006, Summer 2006, Spring 2009)

MSRI, Program Associate and Research Assistant (Spring 2008)

HONORS, AWARDS, AND GRANTS

CCNY Division of Science Award for Excellence in Teaching, Curricular Innovation and Assessment, 2021.

Simons Foundation Collaboration Grants for Mathematicians (PI), #586728 “Combinatorics and representation theory of centralizer algebras” \$42,000 (2018–2023)

National Science Foundation Recruitment and Mentoring in Mathematics Program Grant (Senior Personnel) #1820731 \$477,136 (2018–2021)

Membership to two sessions of *MSRI Summer Research for Women in Mathematics*, \$6,996 (2018)

PSC-CUNY Research Award (PI), #61204-00 49, \$3,500 (2018–2019)

PSC-CUNY Research Award (PI), #69636-00 47, \$6,000 (2016–2017)

National Science Foundation Individual Grant (PI) DMS-1162010 “Combinatorics and representation theory of centralizer algebras” \$82,543 (2012–2017)

Australian Research Council Discovery Grant (co-PI) DP130100674 “Tantalizer algebras and generalized lattice models,” with A. Ram, \$350,000 (2013–2016)

AMS-Simons Travel Grant (PI) (2012–2014)

UW-Madison university-wide Capstone Ph.D. Teaching Award (2010)

(Granted to Ph.D. students who have performed as outstanding teaching assistants throughout their UW-Madison tenure.)

Elizabeth S. Hirschfelder Scholarship (2010)

(Granted to female mathematics graduate students at UW making excellent progress towards the PhD.)

VIGRE Merit Based Fellowships (Spring 2006, Summer 2006, Spring 2009)

Mathematics Graduate Teaching Award (2009)

Celebrating Women in Science & Engineering Grant (2008 - P.I., 2009)

(Grant to support invited female mathematics colloquium speakers and related activities.)

Mary Ellen Rudin Fellowship (2005)

PUBLICATIONS

Preprints (submitted for publication):

[i] *Calibrated representations of the two-boundary Temperley-Lieb algebras*, (with A. Ram) arXiv:2009.02812

[ii] *Two boundary Hecke algebras and combinatorics of type C*, (with A. Ram) arXiv:1804.10296

In print:

[1] *On calibrated representations of the degenerate affine periplectic Brauer algebra*, (with I. Halacheva, M.S. Im, and E. Norton), *Surv. Math. its Appl.* **16** (2021). arXiv:1905.05148

[2] *Quasisymmetric power sums* (with C. Ballantine, A. Hicks, S. Mason, E. Niese), *J. Combin. Theory Ser. A* **175** (2020); Extended abstract appearing in *FPSAC 2018 Conference Proceedings*, *Sem. Lothar. Combin.* **80B** (2018) #25, 12 pp. arXiv:1710.11613

- [3] *The affine VW supercategory*, (with M. Balagovic, I. Entova Aizenbud, I. Halacheva, J. Hennig, M.S. Im, G. Letzter, E. Norton, V. Serganova, and C. Stroppel), *Selecta Math.* (N.S.) **26** (2020), no. 2, #20, 42 pp. arXiv:1801.04178
- [4] *Translation functors and decomposition numbers for the periplectic Lie superalgebra $\mathfrak{p}(n)$* , (with M. Balagovic, I. Entova Aizenbud, I. Halacheva, J. Hennig, M.S. Im, G. Letzter, E. Norton, V. Serganova, and C. Stroppel), *Math. Res. Lett.* Vol.26 (2019), no.3. arXiv:1610.08470
- [5] *Centralizers of the infinite symmetric group* (with P. Herbrich), 26th International Conference on Formal Power Series and Algebraic Combinatorics, pp. 453–464. arXiv:1309.3510
- [6] *The quasi-partition algebra* (with R. Orellana), *J. Algebra* **404** (2014), 124–151. arXiv:1212.2596
- [7] *Affine and degenerate affine BMW algebras: Actions on tensor space* (with A. Ram and R. Virk), *Selecta Math.* **19** (2013) no. 2, 611–653. arXiv:1205.1852
- [8] *Affine and degenerate affine BMW algebras: The center* (with A. Ram and R. Virk), *Osaka J. Math.* **51** (2014), no. 1, 257–285. arXiv:1105.4207
- [9] *Degenerate two-boundary centralizer algebras*, *Pacific J. Math.* **258** (2012), no. 1, 91–142. arXiv:1007.3950
- [10] *Degenerate two-boundary centralizer algebras*, Doctoral dissertation, University of Wisconsin–Madison, June 2010.
- [11] *Voting, the symmetric group, and representation theory* (with A. Eustis, G. Minton, and M. Orrison), *Amer. Math. Monthly* **116** (October 2009), no. 8.
- [12] *Integrality of Quotients of Wronskians of the Andrews-Gordon Series*, *Integers* **6** (2006).
- [13] *An Algebraic Approach to Voting Theory*, Senior thesis, Harvey Mudd College (2005)

SERVICE ACTIVITIES

Mentor for Math Alliance (2019–present)

Departmental Social Amenities Treasurer (2019–present)

Faculty advisor for CCNY AWM chapter (2018–present)

Co-organizer, Women in Combinatorics and Representation Theory, Diversity and Excellence Workshop (2021)

Mathematical committee, Women and Math Program, Institute for Advanced Study (2021)

Faculty advisor for CCNY Math Club (2020)

Research leader for WINART2: Women in Noncommutative Algebra and Representation Theory workshop (2019).

Coauthor and administrator for the website for Women in Algebraic Combinatorics and mailing list, <http://www.womeninac.org/>. (2017–present)

Member of the Program Committee for the international conference on Formal Power Series and Algebraic Combinatorics (FPSAC) (2017)

Organizer of Mathematics Colloquium at CCNY (2016–2018)

Presenter at College & Career Week, Girls Prep Bronx (2016, 2017)

Mentor for Women in Science Mentoring Program at CCNY (2016)

Mentor for Summer Scholars research group in representation theory at the University of Melbourne (November–December 2014)

Co-organizer of the Special Session on Algebraic Combinatorics and Representation Theory at the JMM 2015 (Winter 2015)

Co-organizer of the Dartmouth Combinatorics Seminar (Fall 2011–Spring 2014)

Co-organizer of the Discrete Math Day (Spring 2014)

Sonia Kovalevsky Mathematics Days Co-organizer (Fall 2011, 2012, Spring 2014)

Co-founder and organizer of Women in Mathematics at Wisconsin (2005–2009)

UW Mentorship Program for Women in Math and Science, Facilitator (2007, 2008)

Wisconsin Emerging Scholar Program, Instructor (2008)

UW Science Expeditions Outreach Fair, Station designer (2007)

UW Mathematics Tutorial Program, Instructor, (2006)

Academic Excellence Program, Harvey Mudd College, Facilitator (2003 - 2005)

Research Students Mentored:

Independent study 2019: Adrian Falcone (masters)

Summer Scholars 2019 (U. of Melbourne): Casey Smith (undergraduate)

Summer Intern 2019: Pavel Javornick (undergraduate)

Independent study 2017: Casey Bolles (undergraduate)

Summer Intern 2016: Isroel Kogan (masters)

Summer Interns 2015: Anastasia Khomenko, Dhaniram Kesari (undergraduates)

CCNY Committees:

Department of Mathematics Pure Mathematics Committee (2015–current)

Bernard Levine Scholarship Committee (2015)

PRESENTATIONS (LAST TEN YEARS)

- 6/16/2022 RAMMP colloquium, The City College of New York.
4/12/2021 Combinatorics seminar, UC Berkeley.
12/2/2020 Colloquium, College of the Holy Cross.
10/25/2020 Special Session on Monoidal Categories in Representation Theory, AMS Fall Western Sectional Meeting, University of Utah.
7/9/2020 RAMMP colloquium, The City College of New York.
2/3/2020 Colloquium, University of Victoria.
1/14/2020 Colloquium, UC Santa Barbara.
10/2/2019 Combinatorics seminar, University of Southern California.
10/1/2019 Algebra, Number Theory, and Combinatorics seminar, Pomona College.
9/2019 Conference on Integrability, Combinatorics, and Representations, Hyères France.
11/2018 The Math and Democracy Seminar, NYU Center for Data Science.

- 9/2018 *Alice Dickinson Lecture in Mathematics* (plenary address) at Women in Mathematics in New England Conference, Smith College.
- 7/2018 Formal Power Series and Algebraic Combinatorics, Dartmouth College.
- 4/2018 Special Session on Combinatorial Representation Theory, Spring Eastern Sectional Meeting, Northeastern University.
- 3/2018 New York Combinatorics Seminar, CUNY Graduate Center.
- 11/2017 3rd meeting of the US-Mexico Conference on Representation Theory, Categorification, and Noncommutative Algebra, Mexico City.
- 10/2017 Discrete Math Day at Queens College, Queens NY.
- 10/2017 Colloquium, Bronx Community College, Bronx NY.
- 4/2017 Mathematical-Physics Seminar, Centre de recherches mathématiques, Montréal.
- 3/2017 Colloquium, New York City College of Technology, Brooklyn, NY.
- 7/2016 Conference on Representation Theory and Physics, University of Leeds, Leeds UK.
- 5/2016 Keynote address at Graduate Student Conference in Algebra, Geometry, and Topology, Temple University, Philadelphia, PA.
- 4/2016 6th Annual York College Women In Mathematics Day, York College, New York, NY.
- 11/2015 Special Session on Representation Theory, Vertex Operator Algebras, and Related Topics, Fall Eastern Sectional Meeting, Rutgers University.
- 7/2015 Workshop on Categorification, University of Melbourne, Australia.
- 3/2015 Representation Theory Seminar, CUNY Graduate Center, New York.
- 12/2014 8th Australia New Zealand Mathematics Convention, Melbourne, AU.
- 11/2014 Conference on Topology and Representation Theory at Kioloa, AU.
- 9/2014 Algebra, Geometry, and Topology Seminar, The University of Melbourne.
- 9/2014 Workshop on Diagram Algebras, University of Stuttgart, Germany.
- 9/2014 Special program on Algebraic Lie theory and representation theory, ICMS, Edinburgh.
- 7/2014 Poster session, FPSAC, Chicago IL.
- 4/2014 Colloquium, City College of NY, New York, NY.
- 2/2014 Colloquium, University of Hawaii at Manoa.
- 1/2014 Lie Groups Seminar, Oklahoma State University.
- 1/2014 Colloquium, Oklahoma State University.
- 12/2013 Algebra Seminar, University of Oregon.
- 5/2013 Combinatorics Seminar, UC Davis.
- 5/2013 Combinatorics Seminar, University of Washington.
- 4/2013 Special Session on Combinatorial Avenues in Representation Theory, AMS meeting, Boulder CO.
- 4/2013 Discrete Math Day, WPI.
- 3/2013 Discrete math Seminar, Brown College.
- 3/2013 Colloquium, Center for Women in Math at Smith College.
- 1/2013 Special session on Algebraic Combinatorics and Representation Theory, Joint Math Meetings.
- 12/2012 Algebra and Combinatorics Seminar, Loyola University.
- 12/2012 Combinatorics Seminar, University of Wisconsin–Madison.
- 4/2012 Representation Theory Seminar, Northeastern University.
- 3/2012 Colloquium, Dartmouth College.
- 3/2012 Algebra, Geometry, and Combinatorics Seminar, San Francisco State University.
- 12/2011 Algebra, Geometry, and Topology Seminar, University of Melbourne.
- 11/2011 Combinatorics Seminar, Dartmouth College.
- 4/2011 Special Session on Combinatorial Representation Theory, AMS Spring Eastern Section

Meeting.
4/2011 Mathematics Research Seminar, St. Olaf College.