

Department of Mathematics
The City College of New York
New York, NY, 10031

zdaugherty@ccny.cuny.edu
<http://zdaugherty.ccny.cuny.edu/>

AREAS OF SPECIALIZATION

General: Algebra and Combinatorics (MSC 16, 05E, 17B)
Specific: 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

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

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

Simons Foundation Collaboration Grants for Mathematicians #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, # 61204-00 49, \$3,500 (2018–2019)

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

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

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

AMS-Simons Travel Grant (2012–2014)

UW-Madison university-wide Capstone Ph.D. Teaching Award (2010)
(One of four granted to Ph.D. students who have performed as outstanding teaching assistants throughout their UW-Madison tenure.)

Elizabeth S. Hirschfelder Scholarship (2010)
(One of three 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

Two boundary Hecke Algebras and combinatorics of type C, (with A. Ram), preprint. arXiv:1804.10296

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), preprint. arXiv:1801.04178

Quasisymmetric power sums (with C. Ballantine, A. Hicks, S. Mason, E. Niese), preprint, extended abstract accepted to FPSAC 2018. arXiv:1710.11613

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), accepted to Math Res Lett. arXiv:1610.08470

Centralizers of the infinite symmetric group (with P. Herbrich), DMTCS Proceedings for FPSAC 2014. arXiv:1309.3510

The quasi-partition algebra (with R. Orellana), *J. Algebra* **404** (2014), 124–151. arXiv:1212.2596

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

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

Degenerate two-boundary centralizer algebras, *Pacific J. Math.* **258** (2012), no. 1, 91–142. arXiv:1007.3950

Degenerate two-boundary centralizer algebras, Doctoral dissertation, University of Wisconsin–Madison, June 2010.

Voting, the symmetric group, and representation theory (with A. Eustis, G. Minton, and M. Orrison), *Amer. Math. Monthly* **116** (October 2009), no. 8.

Integrality of Quotients of Wronskians of the Andrews-Gordon Series, *Integers* **6** (2006).

An Algebraic Approach to Voting Theory, Senior thesis, Harvey Mudd College (2005)

SERVICE ACTIVITIES

Faculty advisor for CCNY AWM chapter (2018–)

Coauthor and administrator for the website for Women in Algebraic Combinatorics and associated mailing list, <http://www.womeninac.org/>.

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 WinS 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)

Student mentees

Independent study 2017: Casey Bolles

Summer Rich students 2016: Isroel Kogan

Summer Rich students 2015: Anastasia Khomenko, Dhaniram Kesari

Committees: Pure mathematics (2015–current)

PRESENTATIONS

Permutations, partitions, and lattices: taste of combinatorial representation theory, “Alice Dickinson Lecture in Mathematics” (plenary address) at Women in Mathematics in New England Conference, Smith College, September 2018.

Quasisymmetric power sums, Formal Power Series and Algebraic Combinatorics, Dartmouth College, July 2018.

The affine signed Brauer algebra, Special Session on Combinatorial Representation Theory, Spring Eastern Sectional Meeting, Northeastern University, April 2018.

Quasisymmetric power sums, New York Combinatorics Seminar, CUNY Graduate Center, March 2018.

Representations of the periplectic Lie superalgebra, 3rd meeting of the US-Mexico Conference on Representation Theory, Categorification, and Noncommutative Algebra, Mexico City, MX, November 2017.

Quasisymmetric power sums, Discrete Math Day at Queens College, Queens NY, October 2017.

Two-boundary diagram algebras, Colloquium, Bronx Community College, Bronx NY, October 2017.

Representation theory and combinatorics of two-boundary Temperley-Lieb algebras, Mathematical-Physics Seminar, Centre de recherches mathématiques, Montréal, April 2017.

Brauer algebras and their generalizations, Colloquium, New York City College of Technology, Brooklyn, NY, March 2017.

Centralizers of the Lie superalgebra $p(n)$ (where loops go to die), Representation Theory and Physics, University of Leeds, Leeds UK, July 2016.

Representation theory and combinatorics of diagram algebras, Graduate Student Conference in Algebra, Geometry, and Topology (Keynote address), Temple University, Philadelphia, PA, May 2016.

Permutations, partitions, lattices, and some linear algebra: taste of combinatorial representation theory, 6th Annual York College Women In Mathematics Day, York College, New York, NY, April 2016.

Representations of the two boundary Temperley-Lieb algebra, Special Session on Representation Theory, Vertex Operator Algebras, and Related Topics, Fall Eastern Sectional Meeting, Rutgers University, November 2015.

Diagrammatics and actions of the affine BMW algebra, Workshop on Categorification, University of Melbourne, Australia, July 2015.

Representations of the two-boundary Temperley Lieb algebra, CUNY Representation Theory Seminar, New York, March 2015.

Representation theory and combinatorics of tensor power centralizer algebras, 8th Australia New Zealand Mathematics Convention, Melbourne, AU, December 2014.

Representations of the infinite symmetric group, Topology and Representation Theory at Kioloa, AU, November 2014.

Tensor spaces, braid groups, and some remarkable quotients, AGT Seminar, The University of Melbourne, September 2014.

Representation theory of the two-boundary Temperley-Lieb algebra, Workshop on Diagram Algebras, University of Stuttgart, Germany, September 2014.

Central elements as parameters for centraliser algebras, Special program on Algebraic Lie theory and representation theory, ICMS, Edinburgh, September 2014.

Representations of the infinite symmetric group, Poster session, FPSAC, Chicago IL, July 2014.

Tensor spaces, braid groups, and some remarkable quotients, Colloquium, City College of NY, New York, NY, April 2014.

Tensor spaces, braid groups, and some remarkable quotients, Colloquium, University of Hawaii at Manoa, February 2014.

Centralizer Properties and Combinatorics of Affine Hecke Algebras of Type C, Lie Groups Seminar, Oklahoma State University, January 2014.

Tensor spaces, braid groups, and some remarkable quotients, Colloquium, Oklahoma State University, January 2014.

Centralizers of the infinite symmetric group, Algebra Seminar, University of Oregon, December 2013.

The quasi-partition algebra, Combinatorics Seminar, UC Davis, May 2013.

Combinatorics of affine Hecke algebras of type C, Combinatorics Seminar, University of Washington, May 2013.

Combinatorics of affine Hecke algebras of type C, Special Session on Combinatorial Avenues in Representation Theory, AMS meeting, Boulder CO, April 2013.

The quasi-partition algebra, Discrete Math Day, WPI, April 2013.

The quasi-partition algebra, Discrete math Seminar, Brown College, March 2013.

A taste of combinatorial representation theory, Center for Women in Math at Smith College, March 2013.

Two boundary Hecke algebra and the affine Hecke algebra of type C, Special session on Algebraic Combinatorics and Representation Theory, Joint Math Meetings, January 2013.

The quasi-partition algebra, Algebra and combinatorics Seminar, Loyola University, December 2012.

The quasi-partition algebra, Combinatorics Seminar, University of Wisconsin–Madison, December 2012.

Universal parameters for centralizer algebras, Representation theory Seminar, Northeastern University, April 2012.

The two-boundary braid group and its amazing quotients, Colloquium, Dartmouth College, March 2012.

Type C symmetry of two-boundary Hecke algebras, AGC Seminar, San Francisco State University, March 2012.

The affine BMW algebra and its degenerate version, Algebra, Geometry, and Topology Seminar, University of Melbourne, December 2011.

Type C symmetry in type A representation theory, Combinatorics Seminar, Dartmouth College, November 2011.

The degenerate affine BMW algebra and its center, Special Session on Combinatorial Representation Theory, AMS Spring Eastern Section Meeting, April 2011.

Permutations, braids, partitions, and tableaux: finding the center of the affine BMW algebra, Mathematics Research Seminar, St. Olaf College, April 2011.

Centers of the affine BMW algebra and its degenerate version, Geometric Commutative Algebra and Applications at the AMS Sectional Meeting in Iowa City, March 2011.

Two-boundary Hecke algebras and the graded Hecke algebra of type C, Algebraic Lie Theory Seminar, University of Colorado at Boulder, Spring 2011.

The center of the affine BMW algebra and its degenerate version, Representation Theory Seminar, University of Oklahoma, January 2011.

The degenerate two-boundary Hecke algebra, Algebra, Geometry, and Topology Seminar, University of Melbourne, August 2010.

Degenerate two-boundary centralizer algebras, Algebraic Geometry Seminar, University of Iowa, April 2010.

The degenerate two-boundary Hecke algebra, Special Session on Combinatorial Representation Theory, AMS Spring Central Section Meeting, April 2010.

Combinatorics of Centralizer Algebras, Colloquium, Vassar College, March 2010.

Algebra and Voting Theory, St. Olaf College, March 2010.

Degenerate two-boundary centralizer algebras, Lie Group/Quantum Mathematics Seminar, Rutgers, January 2010.

Two boundary graded centralizer algebras, AMS Fall Western Section Meeting, November 2009.

Building two boundary diagram algebras, Special Session on Representation Theory, AMS Fall Central Section Meeting, October 2009

Two boundary graded centralizer algebras, Lie Theory Seminar, University of Wisconsin–Madison, September 2009.

Combinatorics and the representation theory of centralizer algebras, Pure Maths Student Seminars, University of Melbourne, August 2009.

Two boundary graded centralizer algebras, Algebra Seminar, University of Sydney, August 2009.

Two boundary graded centralizer algebras, Tuesday Seminar, Department of Mathematics and Statistics, University of Melbourne, August 2009.

Building my favorite centralizer algebras, Combinatorics Seminar, University of Wisconsin–Madison, March 2009.

Centralizers and the combinatorics of diagram algebras, Graduate Student Combinatorics Conference, UC Davis, April 2008.

Graded diagram algebras, Representation Theory Seminar, University of Wisconsin–Madison, December 2007.

Introduction to affine and graded BMW algebras, Representation Theory Seminar, University of Wisconsin–Madison, April 2007.