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(Last updated July 2015)

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EDUCATION

Massachusetts Institute of Technology Ph.D. in Mathematics, September 1991.

Swarthmore College BA, June 1985.

External Examination Program: graduated with High Honors in Mathematics with a minor in classical Greek. Phi Beta Kappa

EXPERIENCE

University of Connecticut

Associate Professor of Mathematics
Director of Quantitative Learning Center

Storrs, CT
2005–present
2005–2012

Taught courses in linear algebra (ugrad with Honors supplement), cryptography (ugrad), combinatorics (ugrad & grad), number theory (ugrad), probability (ugrad), proof-writing (ugrad), symmetric functions (grad), representation theory (grad); continued research in algebraic combinatorics and math education.

Directed the *Quantitative Learning Center*, which supports students in lower division quantitatively-intensive courses, during its initial phase of rapid growth. Built logistical and IT infrastructure. Supervised associate director, assistant director, and program assistant, 5–12 graduate assistants, and about 20–100 peer tutors who handled from 600 to 11,000 student visits per semester as the center grew. Oversaw annual budgets of up to about \$500,000.

California State University

Associate Professor
Assistant Professor

Hayward, CA
2002–2005
1997–2002

Taught a variety of undergraduate and masters level math courses, and continued research in algebraic combinatorics.

PI and director of ACCLAIM professional development institutes, overseeing a budget of over \$4 million (including stipends) in FY 2001–04.

Served on statewide educational committees: STAR Test Content Review Panel and California Mathematics Project Advisory Board. Chaired the latter 9/2000–9/2005.

Founding Mathlets Editor of new MAA *Journal of Online Mathematics and its Applications*, 7/2000–8/2002.

University of Wisconsin

Research Associate

Madison, WI
1995–97

Conducted research in algebraic combinatorics and collaborated on curriculum for preservice elementary teachers, developing a mathematical modeling course.

Reed College

Assistant Professor of Mathematics

Portland, OR
1993–95

Taught a variety of undergraduate math courses. Supervised senior theses. Supplemented calculus classes with labs using Mathematica and Maple. Chosen as a fellow in the MAA's Project NExT (New Experiences in Teaching) for 1994–95; supervised NExT mailing lists, 1995–2000.

Center for Communications Research San Diego, CA
 Consultant Summer 1994
 Researched combinatorial aspects of practical communications problems; programmed in C.

University of Tokyo Tokyo, JAPAN
 Japan Society for the Promotion of Science Fellow 1991–93
 Researched problems in combinatorics and representation theory.
 Achieved fluency in Japanese.

Harvard University Cambridge, MA
 Lecturer Fall 1990
 Taught the core course in quantitative reasoning and computer programming (QRA).

Massachusetts Institute of Technology Cambridge, MA
 User Consultant, Project Athena 1989–91
 Aided users of MIT’s main academic computing system; fielded questions on system problems and a wide variety of software, including typesetting and numerical analysis packages.

Tufts University Medford, MA
 Instructor 1989–90
 Taught several-variable calculus. Gave lectures and graded examinations.

Boston University Program in Mathematics for Young Scientists Boston, MA
 Recitation Leader, Head Counselor Summers 1989–91
 Group Project Leader, Teacher Program Liaison Summer 2000
 Tutored talented high-school students in number theory and abstract algebra. Oversaw the similar tutoring of 24–60 students by 9–15 other counselors. Reviewed applications and evaluated the work of counselors and students. Supervised participants’ living in dormitories. Created and supervised group research projects for high-school teachers and students.

Massachusetts Institute of Technology Cambridge, MA
 Research Assistant 1988–89
 Teaching Assistant 1985–88
 Researched problems in algebraic combinatorics under Richard Stanley.
 Taught recitation sections in calculus and complex analysis; graded homework and exams.

Hampshire College Summer Studies in Mathematics Amherst, MA
 Senior Staff Summers 1987–88
 Organized and taught courses in combinatorics, number theory, and graph theory to talented high-school students. Supervised teaching assistants.

Northfield Mount Hermon Northfield, MA
 Teaching Fellow Summer 1985

Ross Summer Program in Mathematics at Ohio State University Columbus, OH
 Counselor Summers 1981–83
 Tutored talented high-school students in number theory and abstract algebra.

PUBLICATIONS

1. *Applications and Extensions of Fomin's Generalization of the Robinson-Schensted Correspondence to Differential Posets*, Ph.D. Thesis, Massachusetts Institute of Technology, 1991.
2. "The connection between the Robinson-Schensted correspondence for skew oscillating tableaux and graded graphs," *Discrete Math.* **139** (1995) 481–485.
3. (With G. Benkart) "Down-Up algebras," *Journal of Algebra* **209**, 305–344 (1998).
4. (With F. Sottile, J. Stroomer, J. West) "Jeux de tableaux," *Formal Power Series and Algebraic Combinatorics: Twelfth International Conference, FPSAC'00, Moscow, Russia, June 2000, Proceedings*, pp. 332–343.
5. (With F. Sottile, J. Stroomer, J. West) "Complementary algorithms for tableaux," *Journal of Combinatorial Theory A* **96**, 127–161 (2001).
6. "The JOMA mathlets project," *Journal of Online Mathematics and its Applications* **1** (Jan, 2001) <http://joma.org>.
7. "Models for fractions," in *Harcourt Math Professional Handbook* (Orlando, 2002), pp. PH24–25.
8. (with Maletsky, E. and seven other authors) *Harcourt Math (Grades K–6)* Harcourt, Inc., Orlando, 2004.
9. (With R. Merris) "The lattice of threshold graphs," *Journal of Inequalities in Pure and Applied Math*, **6**, #1 (2005).
10. (With I. Terada) "A two-dimensional pictorial presentation of Berele's insertion algorithm for symplectic tableaux," *The Electronic Journal of Combinatorics*, **12**(1), 2005, R4.
11. (with Maletsky, E. and seven other authors) *California HSP Math (Grades K–6)* Harcourt, Inc., Orlando, 2007.
12. (with Burger, E. and seven other authors) *Holt Mathematics Course 1–2 (Grades 6–7)* Holt, Rinehart and Winston, Austin, 2007.
13. (with Burger, E. and seven other authors) *Holt California Algebra 1* Holt, Rinehart and Winston, Austin, 2007.
14. (with Burger, E. and seven other authors) *Holt California Geometry* Holt, Rinehart and Winston, Austin, 2007.
15. (with Maletsky, E. and seven other authors) *HSP Math (Grades K–6)* Harcourt, Inc., Orlando, 2009.
16. (with Burger, E. and seven other authors) *Holt Mathematics Course 1–3 (Grades 6–8)* Holt, Rinehart and Winston, Austin, 2008.
17. (with T. Deans) "Learning in the Commons," *Inside Higher Ed*, 16 November 2009. <http://www.insidehighered.com/views/2009/11/16/deans>
18. (with S. Linton, J. Propp, and J. West) "Equivalence relations of permutations generated by constrained transpositions," presented at *22nd International Conference on Formal Power Series and Algebraic Combinatorics*, extended abstract in *Discrete Mathematics and Theoretical Computer Science*, 2010.
19. (with S. Linton, J. Propp, and J. West) "Equivalence classes of permutations under various relations generated by constrained transpositions," *Journal of Integer Sequences* **15** (2012), Article 12.9.1.
20. (with J. Propp) "Homomesy in products of two chains," presented at *25th International Conference on Formal Power Series and Algebraic Combinatorics*, extended abstract in *Discrete Mathematics and Theoretical Computer Science*, 2013.
21. (with D. Grinberg) "The order of birational rowmotion," extended abstract for FPSAC 2014, *Discrete Mathematics and Theoretical Computer Science*, 2014.

22. “Case Study: Quantitative Learning Center at UConn”, chapter to appear in *A Handbook for Directors of Quantitative and Mathematical Support Centers*, (M. Schuckers, G. Coulombe, M. O’Neill, eds.).
23. (with J. Propp) “Homomesy in products of two chains,” *Electronic Journal of Combinatorics*, **22(3)**, 2015, #P3.4.

SUBMITTED OR IN PREPARATION

24. (with D. Grinberg) “Iterative properties of birational rowmotion I: generalities and skeletal posets,” revised for *Electronic Journal of Combinatorics*.
25. (with D. Grinberg) “Iterative properties of birational rowmotion II: rectangles and triangles,” revised for *Electronic Journal of Combinatorics*.
26. (with J. Propp and B. Young) “Bounce readings of a binary word,” in preparation.
27. (with R. Behrend) “Homomesies for the dihedral action of alternating sign matrices,” in preparation.

INVITED TALKS (SELECTED)

- California State University, Hayward*, “Counting on Noncommutative Algebra,” 14 March 1997.
- University of Victoria, BC, Canada*, “Pictorial Presentations of Schensted’s Algorithm,” 20 November 1998.
- Malaspina University College, Nanaimo, BC, Canada*, “Knuth-Robinson-Schensted Correspondences for the Symmetric Group of Permutations,” 23 November 1998.
- California State University, Hayward*, “Slide, Slide: The combinatorics of Young Tableaux,” 16 January 1998.
- Sonoma State University*, “Enumeracy: The Art of Literate Counting,” 17 March 1999.
- San Jose State University*, “The Lattice of Threshold Graphs,” 25 March 1999.
- Boston University PROgram in Mathematics for Young Scientists (PROMYS)*, “Enumeracy: The Art of Literate Counting,” 7 July 1999.
- University of California, Berkeley*, “Jeux de Tableaux,” 8 November 1999.
- Santa Clara University Colloquium*, “Ups and Downs in Posets and Algebras,” 2 February 2000.
- MIT (Cambridge, MA)*, “Jeux de Tableaux,” 12 April 2000.
- University of Washington (Seattle)*, “Jeux de Tableaux,” 26 April 2000.
- University of Tokyo (Japan)*, “Complementary Algorithms for Tableaux,” 29 May 2000.
- UC, Davis Colloquium*, “Differential Posets, Down-up Algebras, and the Robinson-Schensted-Fomin Machine,” 20 November 2000.
- Malaspina University College, Nanaimo, BC, Canada Science & Technology Lecture Series*, “Teaching Cultures in California, China, and Japan,” 4 April 2001.
- University of California, Berkeley*, “Ups & Downs in Posets & Algebras,” 23 April 2001.
- Ohio State University, Arnold Ross Reunion Conference*, “Teaching cultures in the US, China, & Japan,” 27 July 2001.
- Kyoto University, Research Institute for Mathematical Sciences (RIMS)*, “Complementation and Tableaux Games,” 7 November 2001.
- California Mathematics Council Annual Meeting (Asilomar, CA)* “Using Free Web-based Technology in the Classroom,” 1 December 2001.
- Presentation High School (San Jose)*, “Enumeracy: The Art of Literate Counting” 12 March 2003.
- Hosei University (Tokyo, Japan)*, “K-12 Math & Science Education near Silicon Valley,” 28 March 2003.
- American Mathematical Society National Meeting Special Session on the Many Lives of Lattice Theory*, “Differential Posets and Down Up Algebras,” 8 January 2004.

MIT Richard Stanley 60th Birthday Conference (Cambridge, MA), “The Lattice of Threshold Graphs and Split Graphs,” 22 June 2004.

Park City Mathematics Institute (sponsored by the Institute for Advanced Study), “Mathematicians working with teachers in California: The ACCLAIM Experience,” 13 July 2004.

Park City Mathematics Institute (sponsored by the Institute for Advanced Study), “Japanese Lesson Study: Teaching cultures in Japan and California,” 15 July 2004.

California State University Hayward Colloquium, “Proving Primes in Polynomial Time,” 12 November 2004.

Mathematical Sciences Research Institute (Berkeley) Conference on Mathematical Circles, Contests, and Summer Programs, “The Ross Program, HCSSiM, and ProMYS,” 18 December 2004.

University of Connecticut Colloquium, “The Lattice of Threshold Graphs,” and “Mathematicians working with teachers in California: The ACCLAIM Experience,” 18 January 2005.

*Sonoma State University (CA) M*A*T*H* Colloquium*, “Graphical Degree Sequences,” 16 March 2005.

California State University, East Bay, “Mathematicians working with teachers in California: The ACCLAIM Experience,” 22 April 2005.

UC Davis Combinatorics Seminar, “A pictorial presentation of Berele’s insertion algorithm for symplectic tableaux via local rules,” 16 May 2005.

Harvard University Seminar, “Inquiry-Based Learning and the Arnold Ross Program,” 9 March 2007.

UConn Early College Experience, “Euler & Infinite Series,” 20 August 2007.

Mathematical Sciences Research Institute (Berkeley), “Supporting students Struggling with Algebra: Lessons from UConn’s Q Center,” at workshop on *Critical Issues in Education: Teaching and Learning Algebra* 16 May 2008.

UConn Math Club, “Generating Functions: Power Series You Can Count On,” 10 September 2008.

(with Álvaro Lozano-Robledo) *UConn Math Education Seminar*, “Peer Tutoring at the Quantitative Learning Center,” 11 February 2009; and “UConn’s Quantitative Learning Center: Research and Future Directions,” 18 February 2009.

(with Álvaro Lozano-Robledo) *MAA Session on Developmental Math*, “The Quantitative Learning Center at UConn and the effects of online homework in the study habits of students” at the Joint Mathematics Meetings, 14 January 2010.

UConn Algebra Seminar, “Equivalence Relations of Permutations Generated by Constrained Transpositions,” 3 March 2010.

Smith College Math Dept, “Games on Permutations,” 9 March 2010.

Joint Mathematics Meetings, Co-organized and chaired an MAA panel discussion on “Inquiry-proof instructional techniques” at the JMM, New Orleans, 8 January 2011.

New England Consortium for Quantitative Literacy XV, Panelist on “Math Support Centers: Common Themes”, UMass Boston, 19 March 2011.

Institute for Mathematics and Education, University of Arizona, Panelist on “Concerns of Mathematics” at *Workshop on Knowledge of Mathematics for Teaching at the Secondary Level*, 24–26 March 2011.

University of Washington Combinatorics Seminar, “Equivalence relations of permutations generated by constrained transpositions,” 27 April 2011.

MIT Combinatorics Seminar, “Equivalence relations of permutations generated by constrained transpositions,” 18 November 2011.

Joint Mathematics Meetings Panel Discussion, “Quantitative Support Centers,” 4 January 2012.

Joint Mathematics Meetings Special Session on Beautiful Bijections or Clever Counting?, “A Bijection that Counts: The Robinson-Schensted-Knuth Correspondence,” 5 January 2012.

Boston Math Circle, “See-saw swap solitaire,” 4 March 2012.

University of Wisconsin Combinatorics Seminar, “Equivalence relations of permutations generated by constrained transpositions,” 12 March 2012.

Gathering for Gardner X, “See-saw swap solitaire,” 28 March 2012.

2012 SIAM Conference on Discrete Math, Halifax, Nova Scotia, Canada, “Combinatorial ergodicity in products of chains,” 18 June 2012.

University of Tokyo Combinatorics Seminar, “Combinatorial Ergodicity,” 23 July 2012.

International Institute for Advanced Study (Kyoto, Japan), “Combinatorial Ergodicity,” at *Workshop on algebraic combinatorics related to Young diagrams and statistical physics*, 9 August 2012.

American Mathematical Society Committee on Education Panel Discussion, “Mathematics serving students in other disciplines,” 12 January 2013.

University of Connecticut Math Club, “Generating Functions: Power Series You Can Count On,” 30 January 2013.

University of Connecticut Algebra Seminar, “Combinatorial Ergodicity,” 27 March 2013.

Dartmouth University Combinatorics Seminar, “Homomesy of Order Ideals in Products of Two Chains,” 23 May 2013.

Dartmouth University Colloquium, “Combinatorial Actions and Homomesic Orbit Averages,” 23 May 2013.

Sage Days 49: Free and Practical Software for (Algebraic) Combinatorics, “Generalized toggle operations which define homomesic actions on monotone boolean, piecewise linear, and birational maps on posets,” 20 June 2013.

University of Minnesota Combinatorics Seminar, “Homomesy of Order Ideals in Products of Two Chains,” 6 September 2013.

Gathering for Gardner XI in Atlanta, GA, “The Eleven Clocks Problem,” 22 March 2014.

Stanley@70 Conference at MIT, “Rowmotion: Classical & Birational,” 25 June 2014.

Canada-USA Mathcamp, “See-Saw Swap Solitaire and Other Games on Permutations,” 29 July 2014

UConn Math Club, “Integer Partitions”, 27 October 2014.

AIM Workshop on Dynamical Algebraic Combinatorics, “Birational Rowmotion,” 24 March 2015.

University of Minnesota Combinatorics Seminar, “Birational rowmotion: order, homomesy, and cluster connections,” 22 May 2015.

SERVICE

Founding Mathlets Editor for the Mathematical Association of America’s *Journal of Online Mathematics and its Applications*, 2001–2003. Served on JOMA advisory board, 2001–2005.

Member of the California Mathematics Project Advisory Board 1998–2005. Chair of this advisory board, a position of considerable statewide leadership in mathematics education in California, 2000–2005.

Founded, directed and taught in ACCLAIM (Alameda County Collaborative for Learning and Instruction in Mathematics), a large, successful professional development program for K–12 teachers, in cooperation with Alameda County Office of Education and local school districts. ACCLAIM has served more than 2000 teachers over six years, providing in-depth content-based training in mathematics and how to teach it.

Founding member of organizing committee for a highly successful semiannual series of local one-day research conferences, the *Bay Area Discrete Mathematics Days*, which rotate among universities in the Bay Area, 2000–2005.

One of 7 main organizers of the 16th Annual International Conference on Formal Power Series and Algebraic Combinatorics (FPSAC), held 28 June–2 July 2004 at the University of British Columbia (Vancouver B.C., Canada). Coordinated travel support for invited speakers and young participants.

With Matt Hubbard, created a comprehensive website, *Pascal’s Triangle from Top to Bottom*, on binomial coefficients that received national recognition from the Math Forum (June 2004).

Served on the following university-wide committees at Cal State Hayward: Committee on Research (3 years), the Library Advisory Committee (2 years), the Faculty Diversity and Equity Committee (2 years), and the Committee to Review the University Librarian and Associate University Librarian (2004).

Organized a special session on “Algebraic Combinatorics” at 2012 SIAM Conference on Discrete Math, Halifax, Nova Scotia, Canada, 18–21 June 2012.

Co-organized a week-long workshop on *Dynamical Algebraic Combinatorics* at AIM (American Institute of Mathematics) funded by the NSF with James Propp, Jessica Striker, and Nathan Williams, March 2015.

University-wide service at UConn

General Education Oversight Committee (GEOC), 2005–2012;

GEOC Q subcommittee (co-chair, 2005–10), 2005–2012;

Library Learning Commons Council, 2009–2012;

Provost’s New GenEd Course Review Committee, spring 2009;

Goldwater Screening Committee, 2009;

Gateway Course Committee, 2006–07;

Gateway subcommittee on preparation and advising, 2006–7 (chair);

Taught two sections each semester of INTD 182 course *Jane Austen Dances* for First Year Programs, Spring 2006–Fall 2009; Fall 2010.

Departmental service at UConn

Advisory Committee 2009–10;

Early College Experience Committee, 2008–2011;

Hiring Screening Committee, 2007–08;

Information Technology Committee (chair May 2008–May 2010);

IT Policy Committee (chair from inception, March 2009–May 2010);

Mathematical Association of America Liaison, 2012–2014;

Newsletter Committee, 2015;

Pi Mu Epsilon Advisor 2012–2015;

Search committee for various Assistant Professor in Residence 2006, 2009 (chair), 2010, 2011;

Undergraduate Program Committee 2005–2011;

Visiting Assistant Professor Hiring Committee 2012–15; chair 2013–15;

MEMBERSHIPS

American Mathematical Society (AMS)

Mathematical Association of America (MAA)

National Council of Teachers of Mathematics (NCTM)

Association for Women in Mathematics (AWM)

GRANTS

Received state grants of \$168,000 for FY 2000, \$518,000 for FY 2001, and \$980,000 for FY 2002–04 to develop and run ACCLAIM professional development institutes for K–12 teachers with school year follow up, in cooperation with Alameda County Office of Education and local districts. Oversaw \$2.4 million in teacher stipends paid separately.

Received grants of \$80,000 for summer 2004, \$25,000 for AY 2004–05, and \$40,000 for Summer 2005 from the Alameda County Office of Education for ACCLAIM institutes and follow up work.

ACCLAIM received a grant for \$993,247 (to the Alameda County Office of Education, not CSUH) from the California Math and Science Partnership Program to support institutes and coaching work with K–12 teachers in the Hayward and Alameda school districts, co-PI, 2005.

Received grants of \$15,400 from the National Science Foundation and \$15,200 from the National Security Agency to support the 16th Annual International Conference on Formal Power Series and Algebraic Combinatorics (FPSAC), held June 28–July 2, 2004 at the University of British Columbia (Vancouver B.C., Canada).

Received a grant of \$110,000 for 2006–07 (joint with Fabiana Cardetti) from the Connecticut Department of Higher Education’s “Teacher Quality Partnership Grant Program” to work with teachers in the New Britain and Hartford school districts on algebra knowledge and pedagogy.