

JOHN HALL

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RESEARCH INTERESTS

Algebraic Combinatorics: representation theory of groups and semigroups, diagram algebras, symmetric functions, alternating sign matrices.

EDUCATION

University of Minnesota: 1996–1998, 1999–2005.

Ph.D. in Mathematics, expected May 2005. Thesis advisor: Dennis Stanton.

M.S. in Mathematics with emphasis in Math Education, October 1998.

Carleton College: 1992–1996.

B.A. in Mathematics and Russian, *magna cum laude*, June 1996.

EXPERIENCE

University of Minnesota: 1996–1998, 1999–present.

Teaching Assistant. Lectured Excursions in Mathematics. Taught Topics in Elementary Mathematics, a course for elementary education majors. Lectured Calculus with Biological Emphasis. Led discussion sessions and proof-writing workshops for a course in Foundations of Proof. Led discussion sessions and lab-based workshops for Single- and Multivariable Calculus. Developed curriculum and led workshop sessions in courses ranging from Calculus to Combinatorics for UMTYMP, a program for gifted high school students run by the Institute of Technology Center for Educational Programs (ITCEP).

University of Minnesota: 1998–1999.

Teaching Specialist. Organized and led workshop sessions for an engineering Calculus sequence. Taught Calculus course for UMTYMP.

ITCEP: summer, 1997.

Instructor. Taught Multivariable Calculus in an eight-week residential program for gifted high school students.

Carleton College: 1995–1996.

Grader and Tutor. Worked in the school's Math Skills Center.

HONORS AND AWARDS

Department of Mathematics Teaching Assistant Award: University of Minnesota, 2001.

Institute of Technology Student Board Teaching Assistant Award: University of Minnesota, 2001.

Institute of Technology Student Board Teaching Assistant Award: University of Minnesota, 2000.

PUBLICATIONS

An Instructor's Guide for Multivariable Calculus, with Harvey Keynes and James Stewart, Brooks/Cole Publishing, 1999.

An Instructor's Guide for Single Variable Calculus, with Harvey Keynes, James Stewart, and Douglas Shaw, Brooks/Cole Publishing, 1999.

TALKS

Combinatorial Deformations of the Full Transformation Semigroup, Formal Power Series and Algebraic Combinatorics, Taormina, Sicily, June 20-25, 2005.

Deformations of the Full Transformation Semigroup, Cellular and Diagram Algebras in Mathematics and Physics, Oxford, England, April 8, 2005.

Combinatorial Deformations of the Full Transformation Semigroup, AMS/MAA Joint Meetings, Atlanta, January 7, 2005.

Arrow's Theorem and the Geometry of Voting Junior Colloquium, University of Minnesota, November 9, 2004

Matroids, Student Combinatorics Seminar, University of Minnesota, October 15, 2004.

Semigroups and combinatorics: radicals, Schur functions, and sandwich matrices, Combinatorics Seminar, University of Wisconsin-Madison, May 10, 2004.

Semigroups and combinatorics: radicals, Schur functions, and sandwich matrices, Combinatorics Seminar, University of Minnesota, April 16, 2004.

The Slope Problem, Mathematics Seminar Series, University of Minnesota, Spring, 2004.

Using computer algebra systems to do Combinatorics, Student Combinatorics Seminar, University of Minnesota, February 10 and 17, 2004.

Shellability, Student Combinatorics Seminar, University of Minnesota, December 2 and 9, 2003.

The Slope Problem, Junior Colloquium, University of Minnesota, September 16, 2003.

Matrices associated to the Full Transformation Semigroup, Summer School in Enumerative Combinatorics, Linköping University, Linköping, Sweden, July 9, 2003.

Some recent results and conjectures involving Alternating Sign Matrices, Combinatorics Seminar, University of Minnesota, October 25, 2002.

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Latin Squares, Junior Colloquium, University of Minnesota, September 24, 2002.

Graph Theory and the Moscow Metro, Summer Explorations in Science, Engineering, and Mathematics, University of Minnesota, June 21, 1999.

OTHER ACTIVITIES

Graduate Student Combinatorics Conference: April 16-17, 2005

organizer. Helped to plan and secure funding for a student-run conference on combinatorics.

Job-Search Seminar: 2004–2005

organizer. Organized and led a seminar to help graduate students navigate the job-search process. Maintained a website containing job postings, sample application materials, and links to other resources.

Assoc. for Women in Math Mentor Network: 2002–2004

mentor. Advised and tutored several undergraduate math majors.

Junior Colloquium: 2003–2004

organizer. Worked to promote talks aimed at first-year graduate students, undergraduate math majors, and gifted high-school students.

Student Combinatorics Seminar: 2003–2004

organizer. Ran a weekly seminar for graduate students in combinatorics.

Graduate Student Orientation: 1999, 2001–2004

organizer. Developed teaching demonstrations and ran micro-teaching sessions for incoming graduate students.

ITCEP: 1996–1999

instructor. Developed and taught mathematics enrichment workshops for grades 3-12.

Membership in Professional Organizations: American Mathematical Society, Mathematical Association of America

Journals Refereed: Journal of Combinatorial Theory, Series A

REFERENCES

Dennis Stanton: University of Minnesota.

Vic Reiner: University of Minnesota.

Harvey Keynes: University of Minnesota.

Larry Gray: University of Minnesota.

David Frank: University of Minnesota.