

Sonya Berg

Curriculum Vitae

University of California, Davis
Department of Mathematics
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Education

Ph.D. Mathematics, University of California, Davis (expected June 2010).

Advisor: Greg Kuperberg

M.A. Mathematics, California State University, Sacramento (May 2005).

B.S. Mathematics, University of California, Santa Barbara (June 2003).

Research Interests

Quantum computational algorithms and complexity theory. In particular, quantum algorithms for problems arising from group and algebra representation theory.

Papers

A quantum algebraic version of the quantum Schur transform (Ph.D. thesis). In preparation.

Selected Talks

The Quantum Algorithm for Simon's Problem. Tuesday April 17, 2007. Student Run Discrete Math Seminar.

A Fast Fourier Transform for S_n with Quantum Computational Motivation. Thursday September 6, 2007. Student Run Discrete Math Seminar.

A Combinatorial Formula for ∇e_n . Thursday November 1, 2007. Combinatorics of Symmetric Functions Research Focus Group.

Introduction to Quantum Algorithms - Part I. Friday November 2, 2007. Quantum Information Research Focus Group.

Primes is in P. Wednesday November 21, 2007. Student Run Seminar.

Introduction to Quantum Algorithms - Part II. Friday December 7, 2007. Quantum Information Research Focus Group.

Straightening algorithms and connection to RSK. Thursday January 29, 2009. Student run discrete math seminar.

Introduction to quantum algorithms and complexity. Wednesday February 11, 2009. Student run pure and applied math seminar.

Teaching Experience

University of California, Santa Barbara, Campus Learning Assistance Services

Mathematics Tutor and Section Leader, 2002-2003.

California State University, Sacramento, Department of Mathematics and Statistics

Teaching assistant, Fall 2003, Intermediate algebra.

Instructor, Spring and Fall 2004, Intermediate algebra.

Instructor, Spring 2005, Mathematical Ideas.

Sacramento City College, Department of Mathematics

Instructor, Spring 2005, Basic Skills.

University of California, Davis, Department of Mathematics

Teaching Assistant, Winter 2006, Calculus (Math 21B).

Teaching Assistant, Spring 2006, Probability (Math 131).

Associate Instructor, Summer 2006, Calculus (Math 21C).

Teaching Assistant, Fall 2006, Advanced Calculus (Math 25).

Associate Instructor, Winter 2007, Calculus (Math 21C).

Associate Instructor, Summer 2007, Differential Equations (Math 22B).

Associate Instructor, Summer 2008, Advanced Calculus (Math 25).

Associate Instructor, Fall 2008, Linear Algebra (Math 22A).

Teaching Assistant under Greg Kuperberg, Winter 2009, developed notes for a course on Quantum Information and Computation.

Lead Teaching Assistant, Spring 2009, Calculus (Math 21B).

Associate Instructor, Summer 2009, Introduction to Proof (Math 108).

Teaching Assistant, Fall 2009, Introduction to Proof (Math 108).

Teaching Assistant, Fall 2009, Calculus (Math 21C).

Honors & Awards

Fellowships

NSF Vigre Fellowship, University of California, Davis, Spring 2007, Winter and Spring 2008.

NSF Summer Research Fellowship, University of California, Davis, 2006, 2007, 2008, 2009.

Professional Activities

Service

Organizer, Student Discrete Mathematics Seminar, University of California, Davis, 2007–2008

Co-organizer, Graduate Student Combinatorics Conference, University of California, Davis, 2008.

Coordinator, Department tea, University of California, Davis, 2008-2009.