Austin Shapiro

CONTACT INFORMATION

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EDUCATION

University of Michigan, Ann Arbor **2006 – present**

- Ph.D. in Mathematics, expected June 2011
- Dissertation: *Independence Models for Integer Points of Polytopes*
- Advisor: Alexander Barvinok

University of California, Berkeley **2001 – 2005**

- B.A. in Mathematics, May 2005

RESEARCH INTERESTS

Combinatorics: Integer points of polytopes, matrix permanents, contingency tables, the probabilistic method

Convex analysis: Polytopes, high-dimensional convex bodies, discrete analogues of convexity

Probability: Concentration of measure, Littlewood–Offord theory, entropy inequalities

PUBLICATIONS AND RESEARCH TALKS

1. Shapiro, A., "Bounds on the number of integer points in a polytope via concentration estimates", *preprint* (ArXiV: http://arxiv.org/abs/1011.6252), Nov. 2010. 23 pages.

- Invited presentation, AMS Central Section Meeting, Iowa City **Mar. 2011**
- Invited presentation, Séminaire du LaCIM, U. du Québec à Montréal **Feb. 2011**
- Presented to University of Michigan Combinatorics Seminar **Oct. 2010**

2. Shapiro, A., "Contingency tables with uniformly bounded entries", *preprint* (ArXiV: http://arxiv.org/abs/1102.2883), Feb. 2011. 25 pages.

OTHER CONFERENCES ATTENDED

Formal Power Series and Algebraic Combinatorics, Reykjavík, Iceland **Jun. 2011**

Workshop on Inquiry-Based Learning, Ann Arbor, MI **May 2011**

Graduate Student Combinatorics Conference, Davis, CA **Apr. 2008**

TEACHING EXPERIENCE

Instructor **Jun. – Jul. 2011**
M-STEM Academy, University of Michigan, Ann Arbor

- Designed and taught an intensive summer math course for incoming engineering students seeking extra academic support.
- Held 6 hours of class per week plus office hours. Designed assignments, quizzes, and an exam.
- Managed two undergraduate course facilitators.

Graduate Student Instructor **Fall 2007, 2008, 2009, 2010**
University of Michigan, Ann Arbor

- Taught Calculus I and Calculus II as primary instructor.
- Responsible for all student contact (4.5 classroom hours and 3 office hours per week).
- Created lesson plans and quizzes. Graded all student work.
- Rated 4.94/5.00 and 4.89/5.00 by students on last two teaching evaluations (avail. on request).

Counselor/Research Group Leader **Summer 2005, 2006, 2007, 2008**
Stanford University Mathematics Camp (SUMaC)

- Mentored gifted and talented high school students.
- Guided campers through individual research projects and designed associated curriculum. (Selected topics: Cryptography, symmetry groups, nonconstructibility in geometry.)
- Provided one-on-one tutoring in support of camp curriculum (introductory abstract algebra).
- Planned and supervised camp activities, both academic and social.

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Mathematics Tutor **2003 – 2006**
Davis Joint Unified School District, Davis, CA / Partners in Learning, Davis, CA / Freelance

- Supported 'B' and 'C' students in California's college-preparatory AVID program (Advancement via Individual Determination).
- Designed and taught a four-week, low-cost SAT preparatory course.
- Tutored 20+ students individually in calculus, trigonometry, algebra, geometry, and physics. This was my full-time job from 2005–06—a deliberate self-apprenticeship in teaching math.

Selected Expository Talks

"Latin Squares", Student Combinatorics Seminar, U. Michigan	**Feb. 2011**
"Permanents", Student Combinatorics Seminar, U. Michigan	**Sept. 2010**
"The Probabilistic Method", Student Combinatorics Seminar, U. Michigan	**Mar. 2010**
"It Came from the 1.5^{th} Dimension!", Undergraduate Math Club, U. Michigan	**Feb. 2010**
"Entropy", Student Analysis Seminar, U. Michigan	**Jan. 2010**
"Introduction to Convex Polytopes", Student Combinatorics Seminar, U. Michigan	**Sept. 2009**
"Families of Subsets of a Finite Set", Student Combinatorics Seminar, U. Michigan	**Feb. 2009**
"The Tree of Numbers", Undergraduate Math Club, U. Michigan	**Jan. 2009**
"The Horn Conjecture", Student Combinatorics Seminar, U. Michigan	**Sept. 2008**
"Hyperplane Arrangements", Student Combinatorics Seminar, U. Michigan	**Feb. 2008**
"Monomial Ideals", Student Combinatorics Seminar, U. Michigan	**Nov. 2007**
"Semiprimary Lattices and the Schensted Correspondence", Student Combinatorics Seminar, U. Michigan	**Dec. 2006**
"The Fibonacci Numbers", Berkeley Math Circle	**Oct. 2001**

Honors and Awards

NSF Grants Nos. DMS 0400617 and DMS 0856640	**Jan. 2010 – Aug. 2011**
Rackham Travel Grants	**Apr. 2008, Mar. 2011**
Horace H. Rackham Enhanced Mathematics Fellowship	**Sept. 2006 – Aug. 2009**
Zachary Sobol Award ("for outstanding contributions" to ARML)	**Jun. 2002**
Honorable Mention, William Lowell Putnam Competition	**2001, 2002**

Service and Professional Activities

Member, Inquiry-Based Learning Group at University of Michigan	**2010 – 2011**
Grader, Michigan Mathematics Prize Competition	**2007, 2008, 2011**
Grader, American Regions Math League, Western Site	**2002, 2003, 2004, 2005**

Computer Skills

LaTeX, HTML, Maple, Microsoft Office, some programming experience

Citizenship

U.S.

References

Available on request.