

JONATHAN D. BROWDER

Department of Mathematics
University of Washington
Box 354350
Seattle, WA 98195

E-mail: browder@math.washington.edu
Website: www.math.washington.edu/~browder

EDUCATION

Washington University in St. Louis, St. Louis, Missouri

- Ph.D., Mathematics, May 2009
 - Dissertation Topic: “Proper Group Actions and the Face Structure of Simplicial Complexes”
 - Advisor: John Shareshian
- A.M., Mathematics, May 2006

Washington and Lee University, Lexington, Virginia

- B.S., Summa cum Laude, Mathematics, June 2004

RESEARCH AND PUBLICATIONS

Research Interests:

Algebraic and geometric combinatorics, specifically the investigation of the face structure of simplicial complexes and polytopes.

Papers:

- (with Benjamin Braun and Steven Klee) Cellular Resolutions of Ideals Defined by Simplicial Homomorphisms, submitted.
- Face Numbers of Certain Cohen-Macaulay Flag Complexes, *SIAM Journal on Discrete Mathematics*, to appear.
- (with Steven Klee) Lower Bounds for Buchsbaum* Complexes, *European Journal of Combinatorics*, **32**, 2011, 146-153.
- (with Isabella Novik) Face numbers of generalized Cohen-Macaulay complexes, *Combinatorica*, to appear.
- Representations of Cyclic Groups Acting on Complete Simplicial Fans, *J. Combin. Theory Ser. A*, **117** (2010), 766-775.
- Shellable Complexes from Multicomplexes, *J. Algebraic Combin.*, **32** (2010), 99-112.

EMPLOYMENT

2009- Acting Assistant Professor, Dept. of Mathematics, University of Washington.

PROFESSIONAL ACTIVITIES

American Mathematical Society, Member, 2002-present

Peer Mentoring Committee, Washington University in St. Louis, Member, Fall 2006-Spring 2007, Co-chair, Summer 2007-Present

- The Peer Mentoring Committee oversees the graduate school peer mentoring program, which provides support and resources for new graduate students.

Organizer, Combinatorics and Topology Seminar (Washington University), Spring 2008

Organizer, Combinatorics and Group Theory Seminar (Washington University), Fall 2008

AWARDS AND FELLOWSHIPS

Washington University in St. Louis, St. Louis, Missouri

- Dissertation Fellowship, Fall 2008 - Spring 2009
- Research Fellowship, Spring 2007
- University Fellowship, Fall 2004 - Spring 2005

Washington and Lee University, Lexington, Virginia

- The Phi Beta Kappa Society, Gamma of Virginia Chapter, inducted Spring 2003
- Pi Mu Epsilon (Mathematics Honor Society), Virginia Theta Chapter, inducted Spring 2002, Chapter Vice President 2004
- The Williams Prize in Mathematics, Spring 2003

TEACHING EXPERIENCE

Instructor: Duties included designing syllabi, writing and grading homework and exams, lecturing and leading class discussions holding office hours, and coordinating with graders and teaching assistants.

- *Math 461 and 462, Combinatorial Theory*, University of Washington, Fall and Winter 2010, 2011
- *Math 308, Matrix Algebra*, University of Washington, Fall 2010, Spring 2011
- *Math 309, Linear Analysis*, University of Washington, Fall 2009, 2011
- *Math 156, Calculus II*, Washington University in St. Louis University College, Summer 2007

Teaching Assistant: Duties included leading recitation sections, grading quizzes and exams, and holding office hours.

- *Math 132, Calculus II*, Washington University in St. Louis, Fall 2005
- *Math 128, Calculus II for the Life, Social and Managerial Sciences*, Washington University in St. Louis, Spring 2006
- *Math 131, Calculus I*, Washington University in St. Louis, Fall 2006
- *Math 127, Calculus I for the Life, Social, and Managerial Sciences*, Washington University in St. Louis, Fall 2007

PRESENTATIONS AND TALKS

Conferences Talks

- AMS Special Session on Algebraic and Geometric Combinatorics, Statesboro, Georgia, March 2011
- AMS Special Session on Algebraic and Topological Combinatorics, Notre Dame, Indiana, November 2010
- Graduate Student Combinatorics Conference, Lexington, Kentucky, March 2009

Seminar Talks (Selected)

- “Face Numbers of Balanced Cohen-Macaulay Complexes,” Algebra and Discrete Mathematics Seminar, UC Davis, Fall 2011
- “Face Numbers of Cohen-Macaulay Complexes,” University of Kentucky CATS Seminar, Winter 2011
- “Face Numbers of Cohen-Macaulay Flag Complexes,” University of Washington Combinatorics Seminar, Fall 2010
- “Balanced Buchsbaum* Complexes,” University of Kentucky CATS Seminar, Spring 2010

- “Shellings and Compressed Multicomplexes,” University of Washington Combinatorics Seminar, Spring 2009
- “Characterizing the Face Numbers of Simplicial Complexes,” Graduate Student Combinatorics Conference, Spring 2009
- “The Face Structure of Simplicial Complexes,” St. Louis University Combinatorics and Graph Theory Seminar, Fall 2008
- “The g -conjecture,” Washington University in St. Louis Combinatorics and Group Theory Seminar, Fall 2008
- “Permutation Representations Associated with Proper Group Actions on Complete Simplicial Fans,” Washington University Combinatorics and Topology Seminar, Spring 2008
- “ f -vectors, h -vectors, and You,” Washington University Combinatorics and Topology Seminar, Spring 2008
- “The Evasiveness Conjecture for Graph Properties,” Washington University, Spring 2007
- “Vassiliev Invariants” Washington University OT Seminar, Spring 2007

JOURNALS REFEREED

- Journal of Combinatorial Theory, Series A
- Journal of Algebraic Combinatorics
- Electronic Journal of Combinatorics

REFERENCES

John Shareshian, Washington University in St. Louis, shareshi@math.wustl.edu
 Isabella Novik, University of Washington, novik@math.washington.edu
 Volkmar Welker, Philipps-Universität Marburg, welker@mathematik.uni-marburg.de
 Judith Arms, University of Washington, arms@math.wustl.edu (Teaching)