

# Edward Swartz

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## Current status

Assistant Professor, Cornell University.

## Thesis

Title: *Matroids and quotients of spheres*

Advisor: Prof. Karsten Grove.

## Research Interests

Geometric and Topological Combinatorics, Commutative Algebra, Riemannian Geometry.

## Education

- B.A. (Mathematics), University of Rochester, Rochester, NY, 1981.
- M.S. (Mathematics), Yale University, New Haven, CT, 1989.
- Ph.D. (Mathematics), University of Maryland, College Park, MD, 1999.

## Papers

- (with J. Chestnut and J. Sapir), *Enumerative properties of triangulations of spherical bundles over  $S^1$* , to appear in European J. Comb.
- (with P. Hersh) *Coloring complexes and arrangements*, to appear in J. Algebraic Combinatorics.
- (with I. Novik) *Face ring multiplicity via CM-connectivity sequences*, arXiv: math.CO/0606246.
- *From spheres to manifolds*, preprint 2005, [www.math.cornell.edu/~ebs/spherestomanifolds.pdf](http://www.math.cornell.edu/~ebs/spherestomanifolds.pdf).
- *$g$ -elements, finite buildings and higher Cohen-Macaulay connectivity*, J. Comb. Theory Ser. A, **113** (2006), 1305-1320.
- (with K. Nyman) *Inequalities for the  $h$ - and flag  $h$ -vectors of geometric lattices*, Disc. Comp. Geom., **32** (2004), 533-548.
- *Lower bounds for  $h$ -vectors of  $k$ -CM, independence and broken circuit complexes*, SIAM J. Disc. Math., **18** (2005), 647-661.
- (with T. Hausel) *Intersection forms of toric hyperkähler varieties*, Proc. Amer. Math. Soc., 134 (2006), 2403-2409.
- *Topological representations of matroids*, J. Amer. Math. Soc., **16** (2003), 427-442.
- *$g$ -elements of matroid complexes*, J. of Comb. Theory Series B, **88** (2003), 369-375.
- *Matroids and quotients of spheres*, Math. Zeit., **241** (2002), 247-269.
- *From polytopes to enumeration*, lecture notes from Park City and Math 455 [www.math.cornell.edu/~ebs/math455.pdf](http://www.math.cornell.edu/~ebs/math455.pdf).

## Honors and Awards

- NSF Grant DMS-0600502 (7/06 - 6/09).
- NSF Grant DMS-0245623 (7/03 - 6/06).
- Dissertation fellowship, University of Maryland, Spring 1999.

## Recent Invited Talks and Conferences

- Colloquium, Miami, FL, Spring 2007.
- Geometric and Topological Combinatorics, Oberwolfach, Germany, Spring 2007.
- AMS Special Session on Geometric Combinatorics, Cincinnati, OH, Fall 2007.
- Algebra and Combinatorics Seminar, Binghamton, NY, Fall 2007.
- Geometric and Topological Combinatorics, ICM Satellite Conf., Alcala, Spain, Fall 2007.
- Mid Atlantic Algebra Conference, James Madison University, Harrisonburg, VA, Spring 2006.
- Topology Seminar, University of Indiana, Bloomington, IN, Spring 2006.
- Algebra and Combinatorics Seminar, University of Indiana, Bloomington, IN, Spring 2006.
- Colloquium, University of Oklahoma, Norman OK., Spring 2006.
- Topology and Geometry Seminar, University of Maryland, College Park, MD, Spring 2006.
- Combinatorics Seminar, Washington University, Seattle, Wa., Spring 2005.
- Colloquium, University of Virginia, Charlottesville, VA., Spring 2005
- Trends in Topological Combinatorics, Stockholm, Sweden, Spring 2005.

## Experience in Higher Education

- **REU Advisor**, Geometric and Topological Combinatorics, Cornell University, Summer 2006 (5 students).
- **PCMI Undergraduate Summer School Lecturer**, 3-week course “From polytopes to enumeration,” Parkcity, UT, Summer 2004.
- **Assistant Professor, Cornell University**: 2003 - Present
  - Current graduate students: Jay Schweig
  - Senior thesis advisor: Timothy DeVries
  - Co-organizer: Discrete Geometry and Combinatorics Seminar (Cornell)
- **VIGRE Assistant Professor, Cornell University**: Fall 2000 - 2003.
  - VIGRE Support for Undergraduate Research
- **Visiting Assistant Professor, Cornell University**: Fall 1999 - Spring 2000.
- **University of Maryland**

- Instructor, Summer 1999.
- Teaching Assistant, 1994-1998.
- Research Assistant, Spring 1998 and Spring 1999.
- **Adjunct Faculty, Southern Connecticut State University**, 1989-1994.
- **Adjunct Faculty, Gateway Community-Technical College**, 1993-1994.
- **Adjunct Faculty, Middlesex Community College**, 1987-1988.
- **Adjunct Faculty, Albertus Magnus College**, 1986.
- **Teaching Assistant, Yale University**, 1982-1985.

### **Other Teaching Experiences**

- Senior seminar and math explorer's club organizer, Fall 2005/ Spring 2006.
- Math club faculty advisor, Fall 2003 - present.
- Math Explorers Club, Fall 2001.

### **Technical Experience**

- Knowledgeable in Mathematica, Macaulay 2,  $\text{\LaTeX}$ , Fortran, Basic, DBL, Lisp.

### **Professional Societies**

- American Mathematical Society
- Mathematical Association of America