

# Kathryn L. Nyman

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## Education

**Cornell University, Ph.D.**, Mathematics, August 2001.

*Advisor:* L.J. Billera

*Field of Study:* Algebraic Combinatorics

*Minor:* Operations Research

**Cornell University, M.S.**, Mathematics, August 1998.

**Carthage College, B.A.**, Mathematics, May, 1995.

Summa Cum Laude with distinction in mathematics

## Academic Experience

**Texas A&M University**, VIGRE Visiting Assistant Professor, Department of Mathematics, College Station, Texas. Fall 2001 – Present.

**Cornell University**, Teaching Assistant. Department of Mathematics, Ithaca, New York. Fall 1995 – Spring 2001.

## Publications

*Inequalities for the  $h$ - and flag  $h$ -vector of geometric lattices*, with E. Swartz, Discrete and Computational Geometry, submitted.

*The peak algebra and the descent algebras of types  $B$  and  $D$* , with M. Aguiar and N. Bergeron, Trans. Amer. Math. Soc., to appear.

*Linear inequalities for rank 3 geometric lattices*, Discrete and Computational Geometry, to appear.

*A hierarchy of classes of bounded bitolerance orders*, with G. Isaak and A. Trenk, ARS Combinatoria, to appear.

*The peak algebra of the symmetric group*, J. Algebraic Combinatorics 17 (2003), 309-322.

## Awards and Fellowships

*Clark Distinguished Teaching Award*, College of Arts and Sciences, Cornell University, 3 awarded out of over 500 eligible teaching assistants, 2001.

*NSF VIGRE Grant*, Fall 2001. Funding to develop interactive and web based labs for an introductory statistics course.

*Hutchinson Fellowship*, Spring 1999. Cornell Mathematics Department.

*Eleanor Norton York Award*, Fall 1998. Cornell Mathematics Department.

## Invited Research Talks

### National/Regional Talks

“Inequalities for the h-vector and flag h-vector of geometric lattices”, AMS special session on topological combinatorics, Binghamton, October 2003.

“A peak subalgebra of the symmetric group algebra”, AMS special session on combinatorial Hopf algebras, Montreal, May 2002.

“Linear inequalities for the flag Whitney numbers of geometric lattices”, AMS special session, San Diego, January 2002.

### Seminar Talks

“Inequalities for the flag Whitney numbers of geometric lattices”, University of Washington combinatorics and geometry seminar, May 2002.

“Geometric lattices and inequalities of the flag f-vector”, Binghamton University combinatorics seminar, January 2001.

### Contributed Talks

“Inequalities for the h-vector and flag h-vector of geometric lattices”, Texas A&M algebra and combinatorics seminar, September 2003.

“The peak algebra and the descent algebras of types B and D”, Texas A&M algebra and combinatorics seminar, September, 2002.

“Incidence numbers for line and pseudo-line arrangements”, AWM women graduate student poster session, AMS/MAA joint meetings, New Orleans, January, 2001. Also presented at CombinaTexas, Texas A&M University, College Station, TX, March 2001.

“Characterizations of interval graphs”, Olivetti Club. Graduate student seminar, Cornell University, April 2000.

“Graduate outreach – Exploring mathematics in elementary and high school” (with D. Brown), MAA seaway section meeting, SUNY Oswego, April 2000.

### Teaching Experience

*Instructor, Texas A&M University.* Courses taught: Finite math: introduction to proofs for math majors, Geometry for education majors, Engineering calculus I. Co-taught VI-GRE seminars in computational algebraic geometry, and algorithmic number theory.

*Instructor, Cornell University.* Courses taught: Introductory statistics, Calculus I and II for arts and sciences students.

*Instructor, Graduate Outreach Program, Cornell University.* Designed and taught a six week mini-course on graph theory to 5th graders in Candor, NY, Spring 2000, and to 2nd graders, Ithaca, NY, Spring 2001.

### Invited Educational Talks

“Cutting cakes, fair division and Sperner’s lemma”, Wellesley College math club, October 2002.

“Conditional probability, taxi cabs, and the prosecutor’s fallacy”, University of Wisconsin – La Crosse math club, March 2002.

“The mathematics of perspective drawing”, Ithaca College math club, Hobart College math club, October 1999.

“Small college talks for preparing future faculty”, Program on New Initiatives for Graduate Schools, Washington, D.C., June 1998.

“When more is less; counter intuitive mathematics in economics”, (with N. Shah), Ithaca College math club, October 1996.

## Activities and Training in Mathematics Education

Participant, MAA PREP Workshop: Active learning approaches to teaching mathematics content courses for elementary and middle-school teachers, July 2003.

Instructor, Mathematics Department TA Training, Cornell University. Led workshops on classroom techniques for incoming graduate students, Fall 1997, 1999, 2000.

Workshop Facilitator, “Expanding Your Horizons”, Cornell University. Led hands-on workshops on topology and minimal surfaces for middle school girls, October 1995, 1998, 1999.

Participant, Preparing Future Faculty (PFF) Day, Ithaca College. MAA sponsored workshop on teaching calculus using student projects, October 2000.

Participant, Cornell University Mathematics Department courses on undergraduate teaching issues, Fall 1995, 1999, 2000.

## Service

Co-organizer, Algebra and Combinatorics Seminar, Texas A&M University, Fall 2002 – Spring 2003.

Judge, AWM Essay Contest, December 2002, 2003.

Scientific Judge, Texas Science Bowl, Texas A&M, April 2002.

Coordinator, Cornell Mathematics Department “Preparing Future Faculty Program”. Coordinated talks by Cornell graduate students at local colleges, Fall 1997 – May 2001.

Member, Math. Assoc. of America, Assoc. of Women in Math.

Co-organizer, Math and Music Seminar, Cornell University, Fall 1997 – Spring 1998.

Editor, *Sine on the Dotted Line*. Carthage College Journal of Undergraduate Mathematics, Fall 1994 – Spring 1995.

## References

Louis Billera, Mathematics Department, Cornell University, Ithaca, NY 14853

Ann Trenk, Mathematics Department, Wellesley College, Wellesley, MA 02481

Tom Rishel, Mathematics Department, Cornell University, Qatar

Marcelo Aguiar, Mathematics Department, Texas A&M University, College Station, TX 77843

Sue Geller, Mathematics Department, Texas A&M University, College Station, TX 77843