Kathryn L. Nyman

Willamette University
Department of Mathematics
Salem, OR 97301

Office: (503) 370–6886
knyman@willamette.edu

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

Willamette University, Assistant Professor, Fall 2009 – Present.
Courses taught: Combinatorics, Foundations of Advanced Mathematics, Linear Algebra, Calculus II, Contemporary Mathematics.

Loyola University Chicago, Assistant Professor, Fall 2004 – Spring 2009.
Courses taught: Combinatorics, Number Theory, Linear Algebra, Introductory Statistics, College Algebra, Calculus I & II, Pre-Calculus, Quantitative Reasoning, Math in Cahoots with Science.

Texas A&M University, VIGRE Postdoctoral Fellow, Fall 2001 – Summer 2004.
Courses taught: Calculus, Introduction to Proofs, Geometry and Algebra for Pre-Service Teachers.

Cornell University, Graduate Teaching Assistant, Fall 1995 – Spring 2001.

Peer–Reviewed Publications

Two-player envy-free multi-cake division, with J. Cloutier and F. Su, Mathematical Social Sciences, 59, (2010), 26–37.

Annihilators of permutation modules, with S. Doty, Quarterly Journal of Mathematics, doi: 10.1093/qmath/hap020 (2009).

Relations on generalized degree sequences, with C. Klivans and B. Tenner, Discrete Mathematics, 309, (2009), 4377–4383.

Two-batch liar games on a general bounded channel, with R. Ellis, Journal of Combinatorial Theory, Series A, 116 (2009), 1253–1270.

New results on the peak algebra, with M. Aguiar and R. Orellana, Journal of Algebraic Combinatorics, 23, (2006), 149–188.

Inequalities for the h- and flag h–vector of geometric lattices, with E. Swartz, Discrete and Computational Geometry, 32, no. 4 (2004), 533–548.

The peak algebra and the descent algebras of types B and D, with M. Aguiar and N. Bergeron, Transactions of the American Mathematical Society, 356 (2004), 2781–2824.

Linear inequalities for rank 3 geometric lattices, Discrete and Computational Geometry, 31, no. 2 (2004), 229–242.

The peak algebra of the symmetric group, Journal of Algebraic Combinatorics 17 (2003), 309–322.

A hierarchy of classes of bounded bitolerance orders, with G. Isaak and A. Trenk, ARS Combinatoria, 69 (2003), 33–53.

Submitted Papers Under Review

Weighted pebbling numbers of graphs, with S. Jones, J. Laison, C. McLeman.

Properties of generalized derangements graphs, with H. Jackson and L. Reid.

Fan's Lemma: Equivalent to the Borsuk-Ulam Theorem and implies Sperner's Lemma, with F. Su.

Awards and Fellowships

Project NExT (New Experiences in Teaching) Fellow, 2004–2005, an MAA mentoring program.

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

Hutchinson Fellowship, Spring 1999. Cornell Mathematics Department.

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

Grants

Hewlett Grant, " Investigate the potential for an Economics-Mathematics major at Willamette University", with P. Otto and N. Boyce 2010.

Lilly Grant, "Getting Things Done faculty reading group", with E. Coddington and H. Cheng 2009.

Loyola University Chicago Summer Stipend, "Brauer Algebra Annihilators", Summer 2008.

Loyola University Chicago Summer Stipend, "Adaptive unidirectional liar games", Summer 2006.

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

Selected Invited Research Talks

"Double interval societies", AMS/MAA Joint Mathematics Meeting, Boston, January 2012.

"The peak algebra of the symmetric group", Dartmouth College Faculty Seminar, December 2011.

"Two player envy-free multi-cake division using a polytopal Sperner's lemma", AMS/MAA Joint Mathematics Meeting, San Francisco, January 2010

"Liar games on a general bounded channel", Billera Fest, Cornell University, June 2008, also given at Claremont Colleges , February 2008, and at Cleveland State University and DePaul University, November 2008.

"Descent algebras, rising sequences, and a good card trick done poorly, if at all", Illinois Institute of Technology graph theory seminar, November 2007.

"Results on the peak algebra of the symmetric group algebra", AMS special session on algebraic representations and deformations, Evanston, October 2004.

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

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

"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/MAA Joint Mathematics Meetings, San Diego, January 2002.

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

Selected Invited Undergraduate Talks

"Cutting cakes with Sperner's Lemma", Western Oregon University Math Club, April 2010.

"Getting your fair share", Carthage College Math Club, October 2005.

"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.

Service

Something about Assessment liason for department, 2010-2011.

Committee Member, Undergraduate Grants and Awards, Fall 2010.

Presenter, Expanding Your Horizons, Willamette University, January 2011.

Faculty and Staff Campaign Member, Willamette University 2009–2010.

Panelist, "The missing link between high school and college mathematics" for the Mathematics Teachers Association, Chicago, IL, Fall 2008.

Instructor for a 2-day calculus review for high school teachers attending the 2008 AP Summer Institute, Loyola University Chicago.

Discover Loyola Freshman Advisor, Summer 2008.

Academic Council Member, Loyola University Chicago, Fall 2006 – 2008.

Contributor and Editor of the Teachers Manual for McCallum, Connally, Hughes-Hallett, et al. Algebra: Form and Function, Fall 2007.

Co-organizer of a special session on Geometric Combinatorics at the AMS meeting at DePaul University, October 9-10, 2007.

Co-Advisor of Loyola University Chicago's Math Club, Fall 2005 – Spring 2009.

Judge of the Annual Chicago Region Junior Science and Humanities Symposium – March 2004, 2005, 2007; Reviewer of submitted projects – March 2006.

Referee for Math Magazine, Advances in Mathematics, Discrete Mathematics, Mathematical Foundations of Computer Science.