

CURRICULUM VITAE
THOMAS PIETRAHO

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ACADEMIC AND RESEARCH POSITIONS

Assistant Professor of Mathematics, Bowdoin College, 2001–Present.

Scott Assistant Professor of Mathematics, University of Utah, 2001–2002.

EDUCATION

Ph.D. in Mathematics, Massachusetts Institute of Technology, Cambridge, MA, June, 2001.
Thesis: *Orbital Varieties and Unipotent Representations of Classical Semisimple Lie Groups*
Advisor: David A. Vogan, Jr.

M.S. and B.A. in Mathematics, University of Chicago, Chicago, IL, June, 1996.

RESEARCH INTERESTS

Representation theory of reductive Lie groups: geometric quantization

Unequal-parameter Hecke algebras

Combinatorics of representation theory

PAPERS

Peer-Reviewed Publications:

Module Structure of Cells in Unequal Parameter Hecke Algebras, submitted for review, 2009.
(20 pages). A version is available on the Mathematics ArXiv as [arXiv:0902.1907](https://arxiv.org/abs/0902.1907).

Orbital Varieties and Unipotent Representations, submitted for review, 2009. (35 pages),
[arXiv:math.RT/0603685](https://arxiv.org/abs/math/0603685).

Knuth Relations for the Hyperoctahedral Groups, *Journal of Algebraic Combinatorics*, 29
(2009), no. 4, pp. 509–535. [arXiv:0803.3335](https://arxiv.org/abs/0803.3335).

Cells and Constructible Representations in type B, *New York Journal of Mathematics*, 14
(2008), pp. 411-430. [arXiv:0710.3846](https://arxiv.org/abs/0710.3846).

Equivalence Classes in the Weyl groups of type B_n , *Journal of Algebraic Combinatorics*,
27(2008), no. 2, pp. 247-262. [arXiv:math.CO/0607231](https://arxiv.org/abs/math/0607231).

A Relation for Domino Robinson-Schensted Algorithms, *Annals of Combinatorics*, accepted
December, 2007, to appear. [arXiv:math.CO/0603654](https://arxiv.org/abs/math/0603654).

Components of the Springer Fiber and Domino Tableaux, *Journal of Algebra*, 272(2004), no. 2,
pp. 711-729. [arXiv:math.RT/0210416](https://arxiv.org/abs/math/0210416).

Other Publications:

Orbital Varieties and Unipotent Representations of Classical Semisimple Lie Groups, Thesis, Massachusetts Institute of Technology, June, 2001. (83 pages).

INVITED TALKS AND OTHER LECTURES

1. "Cells in Hecke Algebras," Algebra Seminar, Wesleyan University, April, 2008.
2. "No Statistician Left Behind, or how (not) to Measure the Achievement Gap," Keynote Address, Honors Day, University of Connecticut, April, 2008.
3. "Geometry, Combinatorics, and Representations of Semisimple Groups", Mathematics Department Colloquium, University of Nebraska, April, 2008.
4. "Kazhdan-Lusztig Cells in Unequal Parameter Hecke Algebras," Special Session on Geometric and Combinatorial Representation Theory, Baton Rouge American Mathematical Society Conference, March, 2008.
5. "Unequal Parameter Hecke Algebras," Maine-Quebec Conference on Number Theory and Related Topics, University of Maine, September, 2007.
6. "Orbital Varieties," Mathematics Department Colloquium, Pennsylvania State University, October, 2004.
7. "Group Representations, or Everything I Needed to Know in Life I Learned From the Symmetric Group," Colby-Bates-Bowdoin Mathematics Colloquium, Bates College, April, 2004.
8. "Representation Theory and the Geometry of Orbital Varieties," Mathematics Department Colloquium, Tufts University, November, 2003.
9. "Parrondo's Games," Mathematics Department Colloquium, Vassar College, November, 2003.
10. "Unipotent Representations and Orbital Varieties," Lie Groups Seminar, The Graduate Center, City University of New York, October, 2003.
11. "Orbital Varieties," Algebra Seminar, Wesleyan University, September, 2003.
12. "Parameterizations of Orbital Varieties and Components of the Springer Fiber," Special Session on Recent Developments in the Orbit Method, Boston American Mathematical Society Conference, October, 2002.
13. "Nilpotent Coadjoint Orbits and Combinatorics," Mathematics Department Colloquium, University at Albany, State University of New York, March, 2002.
14. "The Geometry of Nilpotent Coadjoint Orbits and some Combinatorics," Karcher Colloquium, University of Oklahoma, November, 2001.
15. "Orbital Varieties and the Graham-Vogan construction I and II," Representation Theory Seminar, University of Utah, October, 2001.
16. "Unipotent Representations of Complex Semisimple Lie Groups," Lie Group Seminar, Massachusetts Institute of Technology, February, 2001.
17. "Brownian Ratchets, or How I Learned to Stop Worrying and Love the New York Times," Bowdoin College, January, 2001.
18. "Orbital Varieties and Domino Tableaux," Institute for Defense Analyses, La Jolla, CA, March, 2000.

19. "Equivariant Homotopy of Posets," University of Vermont, August, 1992.

Lectures at Bowdoin College

20. "Five Easy Pieces: Game Theory and Common Knowledge," Christie Undergraduate Mathematics Seminar, Spring, 2009.
21. "The Orbit Method, Part II: Combinatorics" Mathematics Seminar, Fall, 2008.
22. "The Orbit Method, Part I: Geometry" Mathematics Seminar, Fall, 2008.
23. "Representations, Orbits, and Combinatorics," Mathematics Seminar, Spring, 2008.
24. "On gambling with mathematicians (and other things you should never do)," Christie Undergraduate Mathematics Seminar, Spring, 2008.
25. "How not to measure the achievement gap," Christie Undergraduate Mathematics Seminar, Spring, 2007.
26. "No Statistician left behind," Bowdoin Faculty Seminar, February, 2007.
27. "Popularity, the Power-Law, and How to Name Your First-Born Child," Christie Undergraduate Mathematics Seminar, November, 2005.
28. "Popularity, the Power-Law, and How to Name Your First-Born Child," Bowdoin Faculty Seminar, September, 2005.
29. "The Geometry of Primitive Ideals," Mathematics Seminar, November, 2004.
30. "How to Make Master Keys, or Why not to Trust Number Theorists," Mathematics Seminar, April, 2003.
31. "Complex Networks," Mathematics Seminar, November, 2002.

TEACHING EXPERIENCE

Undergraduate Teaching at Bowdoin College

Each course is listed with the number of semesters I have taught it, followed by the most recent overall student course evaluation score (out of 5.0).

1. Advanced Integral Calculus (4), 4.8.
2. Multivariate Calculus (8), 4.9.
3. Introduction to Mathematical Reasoning (2), 4.5.
4. Real Analysis (4), 4.8.
5. Mathematical Statistics (2), 4.8.
6. Advanced Topics in Analysis (3), 5.0.

Summer and Enrichment Programs and Other Experience

1. Instructor, Bowdoin Science Experience (2 summers)
2. Lecturer, Summer Mathematics Institute, University of Vermont (7 summers)
3. Instructor, University of Utah Math Circles program (1 summer)
4. Course Instructor: Experimental Study Group at MIT, Department of Mathematics at SUNY Albany, Department of Mathematics at the University of Utah.
5. Teaching Assistantships: MIT, Park City Mathematics Institute.

MENTORING ACTIVITIES

Student Projects Supervised at Bowdoin College

1. Michael Krohn, Financial Mathematics, Spring, 2009.
2. Sarah Landrum, Financial Mathematics, Spring, 2009.
3. Seth Glickman, Algebraic Topology, Fall, 2008.
4. Susanna Kimport, Algebraic Topology, Fall, 2008.
5. Sean Wilner, Algebraic Topology, Fall, 2008.
6. David White, Visual Complex Analysis, Fall, 2006.
7. Taylor Arnold, Differential Geometry, Fall, 2004–Spring, 2005.
8. William Alto, Representation Theory (Honors Thesis), Fall, 2004 – Spring, 2005.
9. Somboon Chiewchernpipat, Stochastic Processes and Finance (Honors Thesis), Fall, 2003 –Spring, 2004.
10. William Alto, Algebraic Topology, Spring, 2004.
11. Micah Miller, Algebraic Topology, Spring, 2004.
12. Greg Kelsey, Algebraic Topology, Spring, 2004.
13. Jessica Lo, Complex Networks, Spring, 2003.

HONORS AND AWARDS

1. Fletcher Family Research Award, Bowdoin College, 2008–2010.
2. Fletcher Family Research Award, Bowdoin College, 2005–2006.
3. Department of Defense/National Defense Science Graduate Fellowship, held at the Massachusetts Institute of Technology, 1996–1999.
4. National Science Foundation Graduate Research Fellowship, selected as fellow, 1996.

PROFESSIONAL ACTIVITIES AND SERVICE

Refereeing: I have been a referee for the following journals:

1. *Compositio Mathematica*
2. *Journal of Algebraic Combinatorics*
3. *European Journal of Combinatorics*
4. Reviewer for *AMS Mathematics Reviews*.

College Committees:

1. Lectures and Concerts Committee, 2003–2008.
2. Benefits Advisory Committee, 2008–2009.
3. Trustee Investment Committee, 2009–2010.

Departmental Activities:

1. Faculty Advisor of Bowdoin Putnam Examination Team, 2004–2008.
2. Instructor in the Bowdoin Science Experience, 2006 – 2007.
3. Co-organizer (with Jennifer Taback) of Christie Mathematics Lunchtime Seminar, 2004–2009.
4. Co-organizer (with Jennifer Taback and Peter Wong) Colby-Bates-Bowdoin Mellon Foundation Algebra and Topology Colloquium Series, 2007–2009.