

Curriculum Vita

Derek Smith

Mathematics Department

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Education

- Ph.D., mathematics, Princeton University, 1999.
“On finitely-generated quantum logic,” advisor John H. Conway.
- M.A., mathematics, Princeton University, 1995.
- B.S., applied mathematics, North Carolina State University, 1992.

Awards and Honors

- Jones Faculty Lecture Award for Excellence in Teaching and Scholarship, Lafayette College, 2003.
- Academic Research Committee Summer Research Fellowship, Lafayette College, 2000.
- MAA Project NExT Fellow, 1999.
- Princeton University Graduate Fellowship, 1992–1997.
- Valedictorian, North Carolina State University, 1992.

Academic Positions

- Associate Professor, Lafayette College, 2006–present.
- Assistant Professor, Lafayette College, 1999–2006.
- Lecturer, Princeton University, Spring 1997–Spring 1998.
- Graduate Instructor, Princeton University, Spring 1996–Fall 1996.

Research Interests

- Ordered algebra, combinatorics, octonion and related algebras, quantum logic.

Publications

- “On cosets of the unit loop of integral octonions,” with M. Abouzaid, J. Alper, S. DiMauro, and J. Grosslight, *Communications in Algebra*, vol. 35, pp. 207–214, 2007.
- “Group-valued measures on the lattice of closed subspaces of a Hilbert space,” with J. Harding and E. Jager, *International Journal of Theoretical Physics*, vol. 44, pp. 539–548, 2005.
- “Orthomodular Bell-Kochen-Specker theorem,” *International Journal of Theoretical Physics*, vol. 43, pp. 2023–2027, 2004.
- “Algebraic partial Boolean algebras,” *Journal of Physics A*, vol. 36, pp. 3899–3910, 2003.
- *On Quaternions and Octonions: Their Geometry, Arithmetic and Symmetry*, with J. H. Conway, AK Peters, 2003.
- “Factorization in the composition algebras,” *Lecture Notes in Computer Science*, Springer-Verlag, vol. 1838, W. Bosma ed., pp. 533–538, 2000.

Selected Works in Progress

- “Common left- and right-hand divisors of integral quaternions,” with M. Abouzaid, J. Alper, S. DiMauro, and J. Grosslight, submitted.
- “A symmetric chain decomposition of Young’s lattice, $L(5, n)$, when n is odd.”
- “The partition problem for integral octonions.”
- “Cycles in Boolean lattices.”

Invited Research Presentations

- Algebra Seminar, Warsaw University, January 2008.
- Algebra Seminar, Silesian University, October 2007.
- MASS Colloquium, Penn State, November 2006.
- “Finite configurations in quantum logic,” Combinatorics Seminar, MIT, April 2005.
- “Octonion multiplication theorems,” with J. Conway, Joint Meetings of the AMS and MAA, Phoenix, January 2004.
- “The integral octonions,” Seminar, Bell Labs, December 2003.
- “The integral octonions,” University of Georgia, Athens, April 2002.
- “A symmetric chain decomposition of Young’s lattice, $L(5, n)$, when n is odd,” Joint Meetings of the AMS and MAA, San Diego, January 2002.
- “Four-dimensional point groups via quaternions,” Algebra Seminar, SUNY-Binghamton, October 2000.
- “Factorization in the composition algebras,” Math Department Colloquium, Vanderbilt University, March 2000.
- “A problem from quantum logic,” Discrete Mathematics Seminar, Princeton University, March 1997.

Other Research Presentations

- “Group-valued measures on Hilbert space,” with J. Harding and E. Jager, IQSA Quantum Structures, Denver, July 2004.
- “On cosets of the unit loop of integral octonions,” with M. Abouzaid, J. Alper, S. DiMauro, and J. Grosslight, Loops 03, Prague, Czech Republic, August 2003.

- “On cosets of the unit loop of integral octonions,” with M. Abouzaid, J. Alper, S. DiMauro, and J. Grosslight, AMS Sectional Meeting, NYU, April 2003.
- “The integral octonions,” 6th International Conference on Clifford Algebras, Cookeville, TN, May 2002.
- “Algebraic partial Boolean algebras,” Southeastern Section Meeting of the AMS and MAA, Atlanta, March 2002.
- “Finitely-generated partial Boolean algebras in orthomodular lattices,” International Quantum Structures Association, 5th Biannual Meeting, Cesenatico, Italy, April 2001.
- “Four-generator partial Boolean algebras in orthomodular lattices,” Joint Meetings of the AMS and MAA, New Orleans, January 2001.
- “Factorization in the composition algebras,” ANTS IV, Leiden, Netherlands, July 2000.
- “The geometry and arithmetic of the composition algebras,” Math Department Colloquium, Lehigh University, April 2000.
- “A problem from quantum logic,” Discrete Mathematics Seminar, Princeton University, March 1997.
- “Finitely-generated partial Boolean algebras,” Joint Meetings of the AMS and MAA, San Diego, January 1997.

Other Presentations

- Math Department Colloquium, Susquehanna University, March 2007.
- “Quaternions for Fun and Profit,” Lafayette-Lehigh Conference on Making the Most of Mathematics Graduate School, April 2006.
- Math Department Colloquium, Middlebury College, Fall 2005.
- Panelist, “Extra-curricular Student Math Activities,” Project Next-EPADEL Spring Meeting, April 2005.

- “Irrational Geometry,” Epsilon Talk, Moravian College, April 2005.
- Keynote address, Undergraduate Math Conference, Shippensburg University, March 2005.
- “Quaternions and octonions, flipbooks and party hats,” Math Department Colloquium, Susquehanna University, December 2003.
- “Mathematical Card Tricks,” a 2-day workshop with C. Mulcahy, Math Jubilee, University of Georgia, Athens, April 2002.
- Panelist, “Reading and writing (and speaking!) in mathematics,” Project NExT, New Orleans, January 2001.
- “The Pizza Problem, and other proofs without words,” Undergraduate talk, Vanderbilt University, March 2000.

Professional Service and Activities

- Co-editor, Problem Section of *Math Horizons*, 2007–present.
- Author, Lower Michigan Mathematics Competition, 2004 and 2005.
- Co-organizer, Special Session on Geometry and Arithmetic of Lattices, AMS Eastern Sectional Meeting, Spring 2004.
- Advisor, Research Experience for Undergraduates, Lafayette College, Summer 2001.
- Editorial Assistant, *Annals of Mathematics*, 1998–1999.
- Co-organizer, Rutgers-Princeton Group Theory Seminar, 1996–1997.
- Member (off and on) of American Mathematical Society, Mathematical Association of America, and International Quantum Structures Association.
- Reviewer, *Ars Combinatorica*, *London Mathematical Society*, *Journal of Algebra*, and *American Mathematical Monthly*.