

Jeffrey Mermin Curriculum Vitae

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Education

- Ph.D., Mathematics, Cornell University, May 2006.
Advisors: Irena Peeva, Michael Stillman.
Thesis title: Lexicographic Ideals.
- B.S., Mathematics, Duke University, May 2000.

Employment

NSF Mathematical Sciences Postdoctoral Fellow, Kansas University	2007-present.
Assistant Professor of Mathematics, Kansas University	2006-2007.
Graduate Student in Mathematics, Cornell University	2000-2006.
Mathematician at the National Security Agency	Summer 2001.
Intern at the National Security Agency, Director's Summer Program	Summer 1999.

Research Interests

- Primary research interest: Commutative algebra.
- Other research interests: Algebraic geometry, Computational algebra.

Awards

- NSF Postdoctoral Fellow (award No. DMS-0703625), 2007-2009.
- The Eleanor Norton York award for excellent performance as a graduate student, 2004.
- NSF VIGRE Graduate Fellow, 2000-2003.
- The Mathematical Contest in Modeling is a 4-day event in which about 500 three-person teams from undergraduate institutions around the world produce papers addressing real-world mathematical problems. Five to ten of these papers are designated as “outstanding” and published in the UMAP Journal. I was a member of an outstanding team twice: in 1998 and 2000.

Publications

Preprints available on my webpage, <http://www.math.ku.edu/~mermin/>

1. J. Mermin: The Eliahou-Kervaire resolution is cellular, submitted.
2. J. Mermin, S. Murai: Betti numbers of lex ideals over some Macaulay-Lex rings, submitted.
3. J. Mermin, S. Murai: The Lex-Plus-Powers conjecture holds for pure powers, submitted.
4. J. Mermin: Monomial regular sequences, submitted.
5. J. Mermin: Compressed ideals, *Bull. London Math. Soc.* **40** (2008), 77–87.
6. J. Mermin, I. Peeva, M. Stillman: Ideals containing the squares of the variables, *Adv. Math.* **217** (2008), 2206–2230.
7. J. Mermin, I. Peeva: Hilbert functions and lex ideals, *J. Algebra* **313** (2007), 642–656.
8. J. Mermin, I. Peeva: Lexifying ideals, *Math. Res. Letters* **13** (2006), 409–422.
9. J. Mermin: Lexlike sequences: *J. Algebra* **303** (2006), 295–308.
10. S. Malone, J. Mermin, D. Neill: Air Traffic Control, *UMAP Journal* **21.3** (2000), 241–256.
11. J. Mermin, W. G. Mitchener, J. Thacker: Alternatives to the Grade Point Average for Ranking Students, *UMAP Journal* **19.3** (1998), 279–298.

Teaching experience

- Instructor for Math 116 at Kansas, a second-semester calculus course, Spring 2007.
- Instructor for Math 115 at Kansas, a first-semester calculus course, Fall 2006.
- Grader for Math 632 at Cornell, a graduate algebra course, Spring 2006.
- Instructor for Math 112 at Cornell, a second-semester calculus course, Spring 2005.
- Grader for Math 631 and 632 at Cornell, the graduate abstract algebra sequence, Fall 2003-Spring 2004.
- Recitation instructor for Math 294 at Cornell, a linear algebra course, Fall 2001 and Fall 2002.

Service and Outreach activities

- Referee for: Journal of Commutative Algebra, Proceedings of the AMS, Rocky Mountain Journal of Mathematics, Transactions of the AMS.
- Organizer for the Number Theory and Algebraic Geometry seminar for graduate students at Cornell, 2004-2005.
- Ithaca High School Senior Seminar, a post-calculus enrichment program for seniors at Ithaca High (Ithaca, NY)
 - Designed and taught a six-week minicourse on voting theory, November-December 2005.
 - Designed and taught a six-week minicourse on continued fractions, September-October 2004.
 - Designed and taught a six-week minicourse on cryptology, November-December 2002.
- Chapel Hill High School Math Club (Chapel Hill, NC)
 - “Baseball, Euclid, and continued fractions”, an invited expository talk, October 2004.
 - “The Vigenere Cipher”, an invited expository talk, January 2003.
- “What is e ”, an invited expository talk at the Cornell Educator Professional Development Day, March 2006.
- “Continued Fractions”, an invited expository talk at Cornell Mathematics Outreach Saturday Workshops for Teachers, November 2004.

Invited talks

- “The lex-plus-powers conjecture holds for monomials” at the AMS Fall Western Section Meeting in Vancouver, October 2008.
- “The Eliahou-Kervaire resolution is cellular” at the AMS Fall Central Section Meeting in Chicago, October 2007.
- “Hilbert functions and Lex ideals” at KUMUNU VII in Lawrence, November 2006.
- I taught a workshop on Hilbert functions at the Summer School on Free Resolutions in Ithaca, New York, May 2006.
- “Compression” at the AMS Spring Western Section Meeting in San Francisco, April 2006.
- “Compression” at the AMS Spring Southeastern Section Meeting in Miami, April 2006.
- “Compression” at the Joint Meetings in San Antonio, January 2006.
- “Ideals containing the squares of the variables” at the Union College Conference in Schenectady, November 2005.
- “Ideals containing the squares of the variables” at the AMS Fall Western Section Meeting in Eugene, November 2005.
- “The Eisenbud-Green-Harris Conjecture for ideals containing a regular sequence of monomials” at the Route 81 Conference, Kingston, October 2005.
- “Ideals containing the squares of the variables” at the AMS Fall Eastern Section Meeting in Annandale-on-Hudson, October 2005.
- ”Lexifying Ideals” at the AMS Fall Southeastern Section Meeting in Nashville, October 2004.
- “Hilbert Functions”, at the workshop on resolutions, Cornell, October 2004.
- “Air Traffic Control” at MITRE corp., MacLane, VA, May 2001.
- “Grade Inflation” at the MCM special session at Mathfest in Toronto, July 1998.

Conferences attended by invitation

- “Kommutative Algebra” at Oberwolfach, April 2009.
- AMS Math Research Communities workshop on Computational Algebra and Convexity, June 2008.
- Workshop on Resolutions in Ithaca, NY, March 2008.
- Syzygies and Hilbert Functions, Banff International Research Meeting, Canada, October 2006.
- AMS Summer school on Local Cohomology in Snowbird, UT, June 2005.

Seminar Talks

- “The Lex-Plus-Powers Conjecture” in the Purdue Commutative Algebra Seminar, March 2008.
- “The Lex-Plus-Powers Conjecture” in the Cleveland State Algebra Seminar, March 2008.
- “Progress on the Lex-Plus-Powers Conjecture” in the Nebraska Commutative Algebra Seminar, November 2007.
- “Hilbert functions” in the Oklahoma State Algebra Seminar, November 2007.
- “The Eliahou-Kervaire Resolution” in the Kansas Commutative Algebra Seminar, September 2007.
- “The Lex-Plus-Powers conjecture” in the Kansas Commutative Algebra Seminar, May 2007.
- “Hilbert Functions” in the Kansas Commutative Algebra Seminar, September 2006.
- “The Eliahou-Kervaire resolution is cellular” in the Cornell Computational and Commutative Algebra Seminar”, February 2006.
- “Compressed ideals” in the Cornell Computational and Commutative Algebra Seminar”, February 2006.
- “The Eisenbud-Green-Harris Conjecture for ideals containing a regular sequence of monomials” in the Cornell Computational and Commutative Algebra seminar, October 2005.
- “Ideals containing the squares of the variables” in the Cornell Computational and Commutative Algebra seminar, October 2005.
- “Monomial regular sequences” in the Cornell Computational and Commutative Algebra seminar, April 2005.
- “A short proof of Macaulay’s theorem” in the Cornell Computational and Commutative Algebra Seminar, March 2005.
- “Introduction to Hilbert functions” in the Cornell Number Theory and Algebraic Geometry Seminar, March 2005.
- “Lexifying Ideals” in the Cornell Computational and Commutative Algebra Seminar, September 2004.

Minicourses given at Cornell Number Theory and Algebraic Geometry Seminar

- “Basic Algebraic Geometry”, Fall 2005 (biweekly talks).
- “Toric Varieties”, Fall 2004 (biweekly talks from Fulton, *Introduction to Toric Varieties*).
- “Basic Algebraic Geometry”, Summer 2004 (5 talks).

- “Elliptic Curves”, Fall 2003, Spring 2004 (biweekly talks from Silverman, *The Arithmetic of Elliptic Curves*).
- “Schemes”, Fall 2002, Spring 2003 (biweekly talks from Hartshorne, *Algebraic Geometry*).
- “Local Fields”, Fall 2001, Spring 2002 (biweekly talks from Serre, *Local Fields*).