

# James Rohal

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## Education

- August 2009 – **Ph.D. in Applied Mathematics**, North Carolina State University (NCSU).  
 May 2014 – Concentration: Computational Mathematics.  
 (expected) – Thesis Title: *Connectivity in Semialgebraic Sets*.  
 Thesis Adviser: Hoon Hong.  
 Thesis Committee: Jonathan Hauenstein (NCSU), Hoon Hong (NCSU),  
 Erich Kaltofen (NCSU), Mohab Safey El Din (Université Pierre et Marie Curie),  
 Agnes Szanto (NCSU).
- August 2007 – **M.S. in Mathematics**, Miami University.  
 August 2009 – Master's Project: *On the Solution to the Nonlinear Resource Allocation Problem  
 Using Variable Fixing and Interior-Point Methods*.  
 Project Adviser: Stephen Wright.  
 Project Committee: Patrick Dowling, Douglas Ward, Stephen Wright.
- August 2003 – **B.A. in Mathematics with Computer Science Minor**, College of Wooster.  
 May 2007 – Senior Thesis Title: *The SIAM 100.0000000-Digit Challenge: A Study In High  
 Accuracy Numerical Computing Using Interval Analysis and Mathematica*.
- Spring 2006 – **Budapest Semesters in Mathematics**, Technical University of Budapest.

## Publications

### In Preparation

H. Hong, J. Rohal, M. Safey El Din, and É. Schost. *Connectivity in Semialgebraic Sets I*.

H. Hong, J. Rohal, M. Safey El Din, and É. Schost. *Connectivity in Semialgebraic Sets II*.

### To Appear

- 2014 S. Wright and J. Rohal. *Solving the continuous nonlinear resource allocation problem with an interior point method*. Preprint at arXiv:1305.1284. To appear in Operations Research Letters.

## Mentoring

- Summer 2013 Mary Ambrosino, Graduate Student, North Carolina State Univeristy.  
 Topic: Gaps between consecutive exponents in cyclotomic polynomials.

- Summer 2013 Cleveland Waddell, Graduate Student, North Carolina State Univeristy.  
Topic: Closed form for higher order derivatives of an implicitly defined function.
- Summer 2011 Aaron Herman, Graduate Student, North Carolina State Univeristy.  
Topic: Root separation bounds.

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## Posters and Presentations

- January 2014 *Connectivity in Semialgebraic Sets*. MAA General Contributed Paper Session on Research in Algebra and Topology (I), Joint Mathematics Meetings, Baltimore, MD.
- August 2013 *Connectivity in Semialgebraic Sets*. Preliminary Exam, North Carolina State University.
- May 2012 *Connectivity in Semialgebraic Sets*. Poster, East Coast Computer Algebra Day, Oakland University.
- October 2011 *Connectivity in Semialgebraic Sets*. Minisymposium talk, SIAM Conference on Applied Algebraic Geometry, North Carolina State University.
- September 2011 *Connectivity in Semialgebraic Sets*. Seminar talk, Symbolic Computation Seminar, North Carolina State University.
- June 2009 *On the Solution to the Nonlinear Resource Allocation Problem Using Variable Fixing and Interior Point Methods*. Master's project defense, Miami University.
- May 2007 *The SIAM 100.0000000-Digit Challenge: A Study in High Accuracy Numerical Computing Using Interval Analysis and Mathematica*. Senior thesis defense, College of Wooster.
- March 2007 *Self-similar tilings of nilpotent Lie groups*. Colloquium, College of Wooster.
- January 2007 *Self-similar tilings of nilpotent Lie groups*. AMS-MAA-SIAM Special Session on Research in Mathematics by Undergraduates (IV), Joint Mathematics Meetings, New Orleans, LA.
- January 2007 *Self-similar tilings of nilpotent Lie groups*. MAA Undergraduate Poster Session, Joint Mathematics Meetings, New Orleans, LA.

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## Conferences Attended

- April 2014 East Coast Computer Algebra Day, Duke University.
- January 2014 Joint Mathematics Meetings, Baltimore, MD.
- January 2013 Joint Mathematics Meetings, San Diego, CA.
- May 2012 Michigan Computational Algebraic Geometry Meeting, Oakland University.
- May 2012 East Coast Computer Algebra Day, Oakland University.
- October 2011 SIAM Conference on Applied Algebraic Geometry, North Carolina State University.
- January 2007 Joint Mathematics Meetings, New Orleans, LA.

## Teaching Experience

### Instructor of Record

*Responsibilities:* Prepare and present all lectures; write course exams and quizzes; design course projects and activities; assign student grades; guide graduate student lecture assistants; hold office hours.

Five Semesters **Calculus III.** North Carolina State University.

*Fall 2013:* 110 students.

*Fall 2012:* 52 students.

*Summer 2012:* 12 students.

*Fall 2011:* 116 students.

*Fall 2010:* 13 students.

Two Semesters **Calculus II.** North Carolina State University.

*Spring 2014:* 50 students.

*Spring 2013:* 103 students.

Two Semesters **Calculus I.** Miami University.

*Spring 2009:* 30 students.

*Spring 2008:* 26 students.

Two Semesters **Precalculus with Algebra.** Miami University.

*Fall 2008:* 33 students.

*Fall 2007:* 31 students.

### Recitation Leader / Lecture Assistant

*Responsibilities:* Prepare and present recitations; hold problem sessions; hold office hours; grade tests; attend all lectures.

One Semester **Calculus II.** North Carolina State University.

*Spring 2012:* 122 students.

One Semester **Calculus for Life & Management Sciences.** North Carolina State University.

*Spring 2010:* 239 students.

## Outreach

2013 – Present **Google Helpouts.** Google Helpouts connects people who need help with people who can give help over live video. I offer free calculus tutoring to anyone that has access to a PC or mobile device. Google recruited me to be one of 1000 providers available at their launch on November 5, 2013. My listing is available at <http://goo.gl/0pkAF2>.

2009 – Present **Calculus Labs with Maple.** At North Carolina State University I help students with Maple homework assignments in weekly lab sessions.

2007 – Present **Tutoring in the Community.** On a weekly basis I tutor high school, college and graduate students in all levels of mathematics.

- 2004 – 2006 **Editor for Mathematics Newsletter.** I was the editor for The Infinity, a newsletter published by the College of Wooster's Student Mathematical Association of America Chapter.

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## Pedagogical Training

- August 2009 North Carolina State University Teaching Assistant Workshop.  
August 2007 Miami University Seminar in the Teaching of First-Year Mathematics and Statistics.

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## Honors, Awards, and Scholarships

- November 2013 AMS Student Travel Grant for Joint Mathematics Meetings.  
Fall 2013 Thank-A-Teacher Recipient.  
Summer 2013 NSF Support for mentoring the Research Experience for Early Graduate Students program, North Carolina State University.  
Spring 2013 Outstanding Teaching Assistant Award, North Carolina State University.  
May 2012 Travel grant for East Coast Computer Algebra Day, Oakland University.  
Summer 2011 NSF Support for mentoring the Research Experience for Early Graduate Students program, North Carolina State University.  
Summer 2010 NSF Support for Research Experience for Early Graduate Students, North Carolina State University.  
2009 – 2014 Graduate Assistantship, North Carolina State University.  
May 2008 Inducted to Pi Mu Epsilon (Mathematics Honor Society), Miami University.  
2007 – 2009 Graduate Assistantship, Miami University.  
May 2007 Inducted to Phi Beta Kappa (Honor Society), College of Wooster.  
January 2007 NSF Student Travel Grant for Joint Mathematics Meetings.  
Summer 2006 NSF support for Research Experience for Undergraduates, University of Akron.  
2003 – 2007 Academic Achievement Scholarship, College of Wooster.

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## Memberships

- 2009 – Present American Mathematical Society.  
2009 – Present Society for Industrial and Applied Mathematics.  
2010 – 2012 Secretary for student chapter at North Carolina State University.