

MICHAEL RUDDY

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Nonlinear Algebra Group ◊ Max Planck Institute for Mathematics in the Sciences

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POSITIONS

Postdoctoral Researcher

Max Planck Institute for Mathematics in the Sciences

August 2019

Leipzig, Germany

EDUCATION

Ph.D. in Mathematics

North Carolina State University

Advisors: Dr. Irina Kogan, Dr. Cynthia Vinzant

May 2019

Raleigh, NC

M.S. in Mathematics

North Carolina State University

December 2016

Raleigh, NC

B.S. in Mathematics

University of Tennessee at Martin

Minor in Physics

May 2014

Martin, TN

HONORS AND AWARDS

- Winton-Rose Award April 2019
- ICERM Travel and Housing Scholarship Fall 2018
- Maltbie Award May 2018
- Meeting on Applied Algebraic Geometry Conference Travel Scholarship April 2018, 2019
- NSF PRODUCT Travel Scholarship June 2017
- Preparing the Profesoriate Stipend August 2016
- Recognition for Excellence in Classroom Teaching March 2016
- Louise Knifely Annual Mathematics Scholarship Award 2012, 2013

PUBLICATIONS

J. DeVito, R. DeYeso III, M. Ruddy, P. Wesner. *The classification and curvature of biquotients of the form $Sp(3)//Sp(1)^2$* , Ann. Global Anal. Geom. 46 (2014), no. 4, 389-407.

J. D. Johnson, L. Kong, M. G. Ruddy, A. M. Ruys de Perez. *Existence of positive periodic solutions for higher order singular difference equations*., Electron. J. Qual. Theory Differ. Equ. (2014), No. 3, 8 pp.

PREPRINTS

J. I. Coons, O. Margiliano, M. Ruddy. *Maximum Likelihood Degree of the Small Linear Gaussian Covariance Model*. arXiv:1909.04553 (2019) *submitted*.

I. A. Kogan, M. Ruddy, C. Vinzant. *Differential signatures of algebraic curves*. arXiv:1812.11388 (2018) *submitted*.

TEACHING EXPERIENCE

North Carolina State University

Instructor of Record: Create syllabi, develop and give lectures/in-class activities, write and grade exams, hold office hours, determine final grades. Occasionally grade or manage other teaching assistants.

- Calculus II Honors Spring 2018
- Calculus II Fall 2017
- Foundations of Euclidean Geometry Spring 2017
- Calculus for Life and Management Sciences A Fall 2016
- Calculus for Life and Management Sciences B Spring 2016
- Calculus I Fall 2015

Recitation Leader: Grade exams and conduct small recitation sections.

- Calculus for Life and Management Sciences A Spring 2015

Lecture Assistant: Grade exams and take attendance.

- Calculus II Fall 2014

University of Tennessee at Martin

Tutor: Work in the drop-in tutoring lab Fall 2013 - Spring 2014

Presenter: Present material for a self-paced college algebra course. Fall 2013, Spring 2014

RESEARCH ACTIVITIES

Algebraic Vision Research Cluster at ICERM, Brown University February 2019

Workshop designed to foster collaboration between the nonlinear algebra and computer vision communities at the Institute for Computational and Experimental Research in Mathematics (ICERM).

Graduate Participant at ICERM, Brown University Fall 2018

Semester program on Nonlinear Algebra at ICERM.

Research Assistant, NC State Summer 2016, 2017, 2018

Advisors: Dr. Irina Kogan, Dr. Cynthia Vinzant

Research Experience for Undergraduates, University of Tennessee at Chattanooga Summer 2013

Advisor: Dr. Lingju Kong

CONFERENCE PRESENTATIONS

Signatures of Algebraic Curves

Poster

- Nonlinear Algebra in Applications Workshop, *ICERM* November 2018
- Real Algebraic Geometry and Optimization Workshop, *ICERM* October 2018
- Meeting on Applied Algebraic Geometry, *Georgia Tech University* April 2018, 2019

Presentation

- AMS Fall Central Sectional Meeting - Special Session, *University of Michigan, Ann Arbor* October 2018
- Triangle Area Graduate Mathematics Conference, *Duke University* April 2017

Foundations of Euclidean Geometry

Poster

- Geometry for Secondary Teachers Conference, *University of Michigan, Ann Arbor* June 2018

Quasi-Positive Curvature on Biquotients of $\mathrm{Sp}(3)$

Presentation

- MAA Southeastern Sectional Meeting, *Tennessee Tech University* March 2014

Existence of Positive Periodic Solutions

Presentation

- Illinois-Missouri Regional Undergraduate Mathematics Conference November 2013
Southeast Missouri State University
- Southeastern-Atlantic Regional Conference of Differential Equations September 2013
University of Tennessee Knoxville

SEMINAR TALKS

Signatures of Algebraic Curve

Presentation

- Summer Seminar, *MPI MiS* July 2019
- Graduate Student Algebra Seminar, *NC State* April 2017

What is Inquiry-Based Learning?

Presentation

- Graduate Instructor Support and Tools Seminar, *NC State* February 2018

Solving First Order Ordinary Differential Equations using Lie Symmetries

Presentation

- Graduate Student Algebra Seminar, *NC State* November 2016

PROFESSIONAL DEVELOPMENT

Geometry for Secondary Teachers Conference, *University of Michigan, Ann Arbor* June 2018

Applications of Polynomial Systems, *Texas Christian University* June 2018

The Geometry of Redistricting Workshop, Educator Track, *Duke University* November 2017

Inquiry Based Learning Workshop, *Cal Poly, San Luis Obispo* June 2017

Preparing the Professoriate, *NC State* Fall 2016 - Spring 2017

SERVICE AND OUTREACH

Geometry for Teachers Support Project, *Participant* Fall 2018 - Spring 2018

Assist with the Task Repository Project organized by the Geometry, Reasoning, and Instructional Practices group at University of Michigan, which involves organizing materials for geometry courses for future secondary teachers.

Graduate Instructor Support and Tools, *Committee Member* Fall 2018 - Spring 2018

Help maintain the Teaching Assistant Wiki and organize workshops and seminars centered around graduate instruction at NC State.

Graduate Student Course Development Seminar, *Co-organizer* Summer 2018

Helped organize a summer seminar for graduate students at NC State to discuss teaching-related topics and collaborate on course development, led several workshops for the seminar.

SUM Series, *Organizational Assistant*

Fall 2017 - Spring 2018

Maintain website, student mailing list and publicize talks for undergraduate mathematics lecture series at NC State.

Math Doesn't Bug Me!, *Volunteer*

2015-2018

Conduct mathematical games with grade school children at North Carolina Museum of Science's "BugFest," (2015, 2016, 2017) and at NC State College of Science's "State of the Sciences" (2016, 2018).

TA Workshop Panel, *Panel Member*

August 2017

Participated in a panel hosted by the NC State Graduate School for incoming graduate teaching assistants from all departments.

UT Martin Math Society, *Vice President*

Fall 2013 - Spring 2014

Organized the UT Martin Math Colloquium and other events for UT Martin's Statistics and Mathematics Department.

UT Martin Middle School Mathematics Contest, *Organizational Assistant*

Fall 2017 - Spring 2018

Helped run a mathematics competition hosted by UT Martin for middle schools across northwestern Tennessee.