

## *Academics*

---

### **University of Maryland at College Park**

Ph.D. in Mathematics, May 2006

Dissertation title: *Orbit discontinuities and topological models for Borel semiflows*

Advisor: Daniel J. Rudolph

### **University of North Carolina at Chapel Hill**

B.S. with Highest Honors in Mathematics, May 2000

Undergraduate thesis title: *A study of the dynamics of a family of quadratic rational maps and its corresponding parameter space*

Advisor: Jane M. Hawkins

## *Professional Experience*

---

**Associate Professor** Ferris State University (Fall 2015-present)

**Assistant Professor** Ferris State University (Fall 2012-Spring 2015)

Courses taught:

- Math 116 (Intermediate Algebra-Numerical Trigonometry)
- Math 120 (Trigonometry)
- Math 216 (Applied Calculus)
- Math 220 (Calculus I)
- Math 230 (Calculus II)
- Math 322 (Linear Algebra)
- Math 330 (Differential Equations)
- Math 414 (Mathematical Statistics I)
- Math 416 (Mathematical Statistics II)
- Math 417 (Problem Solving for Actuarial Exam P)
- Math 430 (Advanced Calculus)

**Visiting Assistant Professor** Swarthmore College (Fall 2010-Spring 2012)

Courses taught:

- Math 25 (Calculus II)
- Math 26 (Intensive Calculus II)
- Math 28S (First-Year Honors Seminar in Linear Algebra)
- Math 53 (Topics in Analysis - Dynamics, Chaos and Fractals)
- Math 63 (Real Analysis)

**Boas Assistant Professor** Northwestern University (Fall 2007-Spring 2010)

**Lecturer** Northwestern University (Fall 2006-Spring 2007)

Courses taught:

- Math 105-6 (Freshman Seminar - Philosophy of Mathematics)
- Math 202-0 (Finite Mathematics)
- Math 230-0 (Differential Calculus of Functions of Several Variables)
- Math 291-1 (MENU (Honors) Linear Algebra and Multivariable Calculus)
- Math 310-1,2,3 (Probability and Stochastic Processes I, II, III)
- Math 364-0 (Game Theory)

**Professional Experience (Continued)****Teaching Assistant** University of Maryland (Fall 2000-Spring 2006)

Courses taught:

- Math 110 (Finite Mathematics)
- Math 113 (College Algebra)
- Math 113T (College Algebra with Trigonometry)
- Math 115 (Precalculus)
- Math 211 (Topics in Geometry and Probability for Elementary Education Majors)

Teaching assistant for the following courses:

- Math 141 (Calculus II)
- Math 406 (Number Theory)
- Math 461 (Linear Algebra for Scientists and Engineers with MATLAB)
- Math 730 (Topology)
- Math 734 (Algebraic Topology)

**Adjunct Instructor** Colorado State University (Spring 2005)

Taught Math 160 (Calculus for Physical Scientists and Engineers I)

**Substitute Teacher** Polk County Public Schools, Bartow, FL (Summer 2000)

Taught high-school geometry full-time to summer school students

**Tutor** UNC-Chapel Hill Mathematics Department (Fall 1998-Spring 2000)

Tutored students in Calculus I, Calculus III, and Abstract Algebra

**Tutor** UNC-Chapel Hill Peer Tutoring Program (Fall 1998)

Tutored students in Trigonometry and Calculus

**Research Interests**

Ergodic theory and dynamical systems, in particular: symbolic dynamics and ergodic theory of amenable group actions; descriptive dynamics of semigroup actions; equivalence relations in ergodic theory; cocycles and group extensions; and complexity issues in ergodic Ramsey theory

**Publications**

- (with A.S.A. Johnson) **Speedups and orbit equivalence of finite extensions of ergodic  $\mathbb{Z}^d$ -actions**, *New York J. Math.* **21** (2015) 1371-1387.
- (with A.S.A. Johnson) **Speedups of ergodic group extensions of  $\mathbb{Z}^d$ -actions** *Dyn. Syst.* **29** (2014), 255-284.
- **An Ambrose-Kakutani representation theorem for countable-to-1 semiflows** *Discrete Contin. Dyn. Syst. Ser. S* **2** (2009), 251-268.
- **Continuity of conditional measures associated to measure-preserving semiflows** *Trans. AMS* **361** (2009), 331-341.
- **A study of the dynamics of a family of quadratic rational maps and its corresponding parameter space** UNC-Chapel Hill Undergraduate Honors Thesis (2000), cited in lit.

---

***Undergraduate Research Projects and Independent Studies Directed***

---

- Advised **Allie Wicklund**, Ferris State University undergraduate, on her undergraduate research project "A density-dependent sex-age model for white-tailed deer population incorporating annual harvest" (2016)
- Directed the independent study of **Allie Wicklund**, Ferris State University undergraduate, in "Mathematical biology" (2015)
- Directed the senior honors symposium of **Andrew Elenbaas**, Ferris State University undergraduate, on "The hot-hand fallacy" (2015)
- Directed the independent study of **Jaime Mullen**, Ferris State University undergraduate, in "Introduction to Measure Theory" (2014)
- Advised **Tyler George**, Ferris State University undergraduate, on his undergraduate research project "*E*-ergodicity and speedups of ergodic systems" (2014) (this paper appeared in *Rose-Hulman Undergraduate Mathematics Journal* **16** (2015))
- Directed the independent study of **Mickelle Bradley** and **Jaime Mullen**, Ferris State University undergraduates, in "Topics in Real Analysis" and on their poster presentation "The Raindrop Function: Looks can be Deceiving" (2014)
- Directed the independent study of **Joel McGorman**, Ferris State University undergraduate, in "Advanced Calculus II" (2013)
- Advised **Steve Crow** and **Tyler George**, Ferris State University undergraduates, on their colloquium talk and poster presentation "Dynamical systems and chaos" (2013)
- Advised **Yuwen Wang**, Swarthmore College undergraduate, on her summer project "A new approach to computing Weyl complexity" (2012)
- Advised **Keith Goldner**, Northwestern University undergraduate, on his thesis "A Markov model of American football" (2010) (this paper appeared in *Journal of Quantitative Analysis in Sports* **8** (2012))

---

***Honors, Grants and Fellowships***

---

**Teaching-related:**

- Ferris Foundation Exceptional Merit Grant "Student-centered, technology-based reform in calculus" (2013)
- Winner, Northwestern University Department of Mathematics Excellence in Teaching Award (2010)
- Nominated for University of Maryland Excellence in Teaching Award (2001, 2002, 2004)
- UNC-Chapel Hill Math Tutor of the Year (1999 and 2000)

**Research-related:**

- Jacob Timme Travel Grants (2015, 2013, 2012)
- Swarthmore College Research Grant (2011)
- Research Member, Mathematical Sciences Research Institute (2009)
- Winner, Monroe Martin Prize, University of Maryland Spotlight on Graduate Research Competition (2005)

---

*Honors, Grants and Fellowships (continued)*

---

**Research-related (continued):**

- Jacob K. Goldhaber Travel Grant (2005)
- University of Maryland VIGRE Travel Grant (2004, 2005)
- University of Maryland Mathematics Department Fellowship (2002-2004)
- University of Maryland Graduate School Fellowship (2000-2002)
- Alfred Brauer Prize for excellence in Algebra and Number Theory (2000)

*Lectures and Invited Talks*

---

- AMS-MAA Joint Meetings-Special Session on Inquiry Based Teaching and Learning, Seattle, January 2016
- AMS Fall Central Section Meeting-Special Session on Ergodic Theory and Symbolic Dynamics of Amenable Group Actions, Chicago, October 2015
- Colloquium, Hope College, March 2015
- Pingree Park Dynamics Workshop, Fort Collins, CO, July 2014
- AMS-MAA Joint Meetings-Special Session on Ergodic Theory and Symbolic Dynamics, Baltimore, January 2014
- AMS Spring Southeastern Section Meeting-Special Session on Ergodic Theory and Fractal Geometry, Oxford, MS, March 2013
- Luncheon Speaker, Ferris State University Honors Program, November 2012
- Seminar, Oxford College of Emory University, February 2012
- Colloquium, Muskingum College, January 2012
- Colloquium, Ferris State University, January 2012
- AMS-MAA Joint Meetings, Boston, January 2012
- Guest Lecture, Delta Sigma Pi Business Fraternity, Northwestern University, April 2010
- Colloquium, Swarthmore College, March 2010
- Analysis Seminar, Luther College, January 2010
- Joint Meeting of the AMS and Korean Mathematical Society-Special Session on Ergodic Theory and Dynamical Systems, Seoul, December 2009
- Northwestern Undergraduate Math Society, October 2009
- Logic Seminar, University of Illinois at Chicago, April 2009
- Northwest Dynamics Symposium, Victoria, August 2008
- AMS Fall Central Section Meeting-Special Session on Ergodic Theory and Symbolic Dynamical Systems, Chicago, October 2007
- Joint Meeting of the AMS and Polish Mathematical Society-Special Session on Ergodic Theory and Topological Dynamics, Warsaw, August 2007
- Analysis Seminar, DePaul University, February 2007
- AMS-MAA Joint Meetings, New Orleans, January 2007
- AMS Fall Central Section Meeting-Special Session on Ergodic Theory, Cincinnati, October 2006
- Dynamical Systems Seminar, Northwestern University, October 2006
- Graduation Conference, University of Maryland, April 2006
- Maryland-Penn State Semi-Annual Workshop in Dynamical Systems, March 2006

---

*Lectures and Invited Talks (continued)*

---

- VIGRE Research Interaction Team in Symbolic Dynamics, University of Maryland, February 2006
- Canadian Mathematical Society Winter Meeting, Victoria, December 2005
- University of Maryland Spotlight on Graduate Research Competition, November 2005

---

*Conferences and Summer Schools Attended*

---

- MAA Michigan Section Meeting, Hillsdale College, April 2016
- AMS-MAA Joint Mathematics Meetings, Seattle, January 2016
- Gamma Iota Sigma International Conference, Rosemont, IL, October 2015
- AMS-MAA Fall Central Section Meeting, Chicago, October 2015
- MAA Michigan Section Meeting, Hope College, April 2015
- Pingree Park Dynamics Workshop, Fort Collins, CO, July 2014
- AMS-MAA Joint Mathematics Meetings, Baltimore, January 2014
- AMS Spring Southeastern Section Meeting, Oxford, MS, March 2013
- Michigan Undergraduate Mathematics Conference, Adrian, MI, February 2013
- Williams College Ergodic Theory Conference, July 2012
- AMS-MAA Joint Mathematics Meetings, Boston, January 2012
- MAA Eastern Pennsylvania and Delaware Section Meeting, Bryn Mawr, November 2011
- AMS-MAA Joint Mathematics Meetings, New Orleans, January 2011
- Oxtoby Centennial Conference, Bryn Mawr, October 2010
- Maryland-Penn State Workshop on Dynamical Systems and Related Topics, University of Maryland, April 2010
- AMS-MAA Joint Mathematics Meetings, San Francisco, January 2010
- Joint Meeting of the American Mathematical Society and the Korean Mathematical Society, Seoul, December 2009
- Midwest Dynamical Systems Workshop, Chicago, November 2009
- Pingree Park Dynamics Workshop, Fort Collins, CO, August 2009
- Dynamical Systems and Randomness, IHP, Paris, May 2009
- Discrete Rigidity Phenomena in Additive Combinatorics, MSRI, November 2008
- Introduction to Ergodic Theory and Additive Combinatorics, MSRI, August 2008
- Northwest Dynamics Symposium, Victoria, August 2008
- Maryland-Penn State Workshop on Dynamical Systems and Related Topics, University of Maryland, March 2008
- AMS Fall Central Section Meeting, Chicago, October 2007
- Joint Meeting of the American Mathematical Society and the Polish Mathematical Society, Warsaw, August 2007
- Clay Mathematics Institute Summer School: Homogeneous Flows, Moduli Spaces and Arithmetic, Pisa, June 2007
- Workshop on "Set theory and the reals", University of Florida, May 2007
- Maryland-Penn State Workshop on Dynamical Systems and Related Topics, University of Maryland, March 2007
- AMS-MAA Joint Mathematics Meetings, New Orleans, January 2007

---

***Conferences and Summer Schools Attended (continued)***

---

- AMS Fall Central Section Meeting, Cincinnati, October 2006
- BIRS Workshop on Measurable Dynamics, Theory and Applications, Banff, August 2006
- Maryland-Penn State Workshop on Dynamical Systems and Related Topics, University of Maryland, March 2006
- AMS-MAA Joint Mathematics Meetings, San Antonio, January 2006
- Canadian Mathematical Society Winter 2005 Meeting, Victoria, December 2005
- Semi-annual Workshop in Dynamical Systems and Related Topics, Pennsylvania State University, October 2005
- Maryland-Penn State Workshop on Dynamical Systems and Related Topics, University of Maryland, March 2005
- Semi-annual Workshop in Dynamical Systems and Related Topics, Pennsylvania State University, October 2004
- Maryland-Penn State Workshop on Dynamical Systems and Related Topics, University of Maryland, March 2004

---

***Service Activities***

---

**Department-level service activities:**

- Hiring Committee, Mathematics tenure-track search, Ferris State University (2013-14, 2014-15)
- Mathematics Department Assessment Committee, Ferris State University (2012-present)
- Mathematics Department Core and Theoretical Division Committees, Ferris State University (2012-present)
- Conducted workshop series on the use of *Mathematica* as a teaching tool, Ferris State University (2013)
- Organized and conducted summer study sessions for Actuarial Exam P/1, Ferris State University (2013)
- Member, committee to develop proposal for new actuarial science major, Ferris State University (2013)
- First-year Mathematics Placement Advisor, Swarthmore College (2011-2012)
- MAA Liaison, Swarthmore College (2010-2011)
- Sponsor, 2010 Northwestern University COMAP Mathematical Contest in Modeling Team (team was selected Meritorious Winner)
- Organizer, Northwestern University Dynamical Systems Seminar (2007-2010)
- Interviewed candidates for Strauss Undergraduate TA Positions, Northwestern University (2008-2010)
- Organizer of inaugural University of Maryland Graduation Conference (2006)
- Student Helper at Maryland-Penn State Workshops on Dynamical Systems and Related Topics (2002-2006)
- Mentored undergraduate and beginning graduate students in Research Interaction Teams, University of Maryland (2002-2005)

***Service Activities (continued)***

---

**College-level service activities:**

- Planning Committee, College of Arts and Sciences, Ferris State University (2014-present)
- Undergraduate Academic Advisor, College of Arts and Sciences, Ferris State University (2013-present)
- Freshman Advisor, Weinberg College of Arts and Sciences, Northwestern University (2007)

**University-wide service activities:**

- Academic Affairs Assessment Committee, Ferris State University (2016-present)
- Professional Development Committee, Ferris State University (2015-present)
- Risk Management and Insurance Program Advisory Board, Ferris State University (2013-present)
- Faculty Sponsor, Gamma Iota Sigma actuarial science, risk management and insurance fraternity, Ferris State University (2012-present)
- Sponsor, Swarthmore College Bridge Club (2010-2012)

**Service to the profession:**

- Reviewer, Mathematical Reviews (MathSciNet) (2016-present)
- Program Committee, 2017 MAA Michigan Section Meeting (2016-present)
- Local Organizing Committee, 2017 MAA Michigan Section Meeting (2015-present)
- Referee for journals including *Annals of Probability*, *Memoirs of the AMS*, *Transactions of the AMS*, *Discrete and Continuous Dynamical Systems*, *PRIMUS* (2007-present)

***Professional Memberships***

---

- American Mathematical Society
- Mathematical Association of America (member of SIGMAA on Inquiry-Based Learning)
- Pi Mu Epsilon Honorary Mathematics Fraternity
- Sigma Xi Honorary Scientific Research Society