

John R. Doyle

Curriculum Vitæ

Contact Information

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Education

- Ph.D., Mathematics, University of Georgia May 2014
Advisor: Robert Rumely
Dissertation: *Dynamics of quadratic polynomials over quadratic fields*
- M.A., Mathematics, University of Georgia Dec 2010
- B.S., Mathematics, University of Georgia May 2008
Summa cum laude, with highest honors
Minor: Spanish

Employment

- Assistant Professor, Louisiana Tech University Fall 2017 – present
- Visiting Assistant Professor, University of Rochester Fall 2014 – Spr 2017
- Graduate Teaching Assistant, University of Georgia Fall 2008 – Spr 2014

Research Interests

Arithmetic dynamics, algebraic number theory, arithmetic geometry

Publications and Preprints

- [13] Andrew Bridy, John R. Doyle, Dragos Ghioca, Liang-Chung Hsia, and Thomas J. Tucker. *Finite index theorems for iterated Galois groups of unicritical polynomials*. Submitted. [arXiv:1810.00990](https://arxiv.org/abs/1810.00990)
- [12] John R. Doyle. *Classification of preperiodic points for quadratic polynomials over cyclotomic quadratic fields*. Submitted. [arXiv:1801.09003](https://arxiv.org/abs/1801.09003)
- [11] John R. Doyle and Bjorn Poonen. *Gonality of dynatomic curves and strong uniform boundedness of preperiodic points*. Submitted. [arXiv:1711.04233](https://arxiv.org/abs/1711.04233)
- [10] John R. Doyle and Joseph H. Silverman. *A uniform field-of-definition/field-of-moduli bound for dynamical systems on \mathbb{P}^N* . *J. Number Theory* **195** (2019), 1–22.
- [9] John R. Doyle. *Dynamical modular curves for quadratic polynomial maps*. *Trans. Amer. Math. Soc.*, to appear. [arXiv:1707.02257](https://arxiv.org/abs/1707.02257).
- [8] John R. Doyle, Holly Krieger, Andrew Obus, Rachel Pries, Simon Rubinstein-Salzedo, and Lloyd West. *Reduction of dynatomic curves*. *Ergodic Theory Dynam. Systems* (2018; published electronically). [arXiv:1703.04172](https://arxiv.org/abs/1703.04172).
- [7] John R. Doyle. *Preperiodic points for quadratic polynomials with small cycles over quadratic fields*. *Math. Z.* **289** (2018), no. 1–2, 729–786.

- [6] John R. Doyle. *Preperiodic portraits for unicritical polynomials over a rational function field*. Trans. Amer. Math. Soc. **370** (2018), no. 5, 3265–3288.
- [5] John R. Doyle, Kenneth Jacobs, and Robert Rumely. *Configuration of the crucial set for a quadratic rational map*. Res. Number Theory **2** (2016), 2:11.
- [4] John R. Doyle. *Preperiodic portraits for unicritical polynomials*. Proc. Amer. Math. Soc. **144** (2016), no. 7, 2885–2899.
- [3] John R. Doyle and David Krumm. *Computing algebraic numbers of bounded height[†]*. Math. Comp. **84** (2015), no. 296, 2867–2891.
- [2] John R. Doyle, Xander Faber, and David Krumm. *Preperiodic points for quadratic polynomials over quadratic fields*. New York J. Math. **20** (2014), 507–605.
- [1] Michael Ching and John R. Doyle. *Apollonian circle packings of the half-plane*. J. Comb. **3** (2012), no. 1, 1–48.

Presentations

<i>Dynamical modular curves and uniform boundedness of preperiodic points</i> , AMS Spring Eastern Sectional Meeting, Special Session on Arithmetic Dynamics	Apr 22, 2018
<i>Preperiodic points in complex and arithmetic dynamics</i> , Oklahoma State University, Colloquium	Mar 2, 2018
<i>Dynamical modular curves and uniform boundedness of preperiodic points</i> , Oklahoma State University, Number Theory Seminar	Mar 1, 2018
<i>Dynamical modular curves and uniform boundedness of preperiodic points</i> , Joint Mathematics Meetings	Jan 12, 2018
<i>Dynamical modular curves and strong uniform boundedness</i> , Brown University, Algebra Seminar	Nov 6, 2017
<i>Dynamical modular curves and strong uniform boundedness</i> , Texas A&M University, Number Theory Seminar	Nov 1, 2017
<i>Reduction of dynatomic curves</i> , Mathematical Congress of the Americas, Special Session on Arithmetic Dynamics	July 25, 2017
<i>Dynamical modular curves for quadratic polynomial maps</i> , University of Georgia, Potential Theory and Arithmetic Dynamics: A conference in honor of Robert Rumely	Mar 25, 2017
<i>Complex and arithmetic dynamics</i> , University of Rochester, Society of Undergraduate Mathematics Students	Mar 23, 2017
<i>Dynamical modular curves for quadratic polynomial maps</i> , Joint Mathematics Meetings, Special Session on Discrete Structures in Number Theory	Jan 5, 2017
<i>Dynamical modular curves</i> , University of Rochester, Algebra and Number Theory Seminar	Sept 14, 2016
<i>Preperiodic portraits for unicritical polynomials over $\mathbb{C}(t)$</i> , University of Rochester, Upstate New York Number Theory Conference	Apr 30, 2016
<i>Preperiodic portraits for unicritical polynomials</i> , Oklahoma State University, Number Theory Seminar	Apr 21, 2015
<i>Preperiodic points for quadratic polynomials over quadratic fields</i> , Cornell University, Upstate New York Number Theory Conference	Apr 12, 2015

<i>Preperiodic portraits for unicritical polynomials</i> , Binghamton University, Arithmetic Seminar	Mar 9, 2015
<i>Preperiodic points for quadratic polynomials over quadratic fields</i> , University of Rochester, Algebra and Number Theory Seminar	Oct 1, 2014
<i>Dynamical modular curves of small genus</i> , Claremont Center for the Mathematical Sciences, Algebra/Number Theory/Combinatorics seminar	Feb 18, 2014
<i>Preperiodic points for quadratic polynomials, II</i> , University of California, Riverside, AMS Western Fall Sectional Meeting	Nov 3, 2013
<i>Preperiodic points for quadratic polynomials over quadratic fields</i> , University of Georgia, Number Theory Seminar	Oct 23, 2013
<i>Preperiodic structures for quadratic polynomials over number fields</i> , University of Georgia, Number Theory Seminar	Oct 17, 2012
<i>Computing Numbers of Bounded Height</i> , ICERM, poster session for the Global Arithmetic Dynamics workshop	Mar 21, 2012
<i>Computing preperiodic graphs: toward an extension of Poonen's conjecture</i> , University of Georgia, Arithmetic Dynamics Summer School Program	May 16, 2011
<i>Apollonian Circle Packings and Continued Fractions</i> , University of Georgia, Number Theory Seminar	Feb 16, 2011

Conferences Attended

AMS Spring Eastern Sectional Meeting, Northeastern University	Apr 21 – 22, 2018
Joint Mathematics Meetings, San Diego, CA	Jan 9 – 13, 2018
Mathematical Congress of the Americas, Montréal, QC	July 24 – 28, 2017
Potential Theory and Arithmetic Dynamics: A conference in honor of Robert Rumely, University of Georgia	Mar 25 – 26, 2017
Joint Mathematics Meetings, Atlanta, GA	Jan 4 – 7, 2017
The Galois theory of orbits in arithmetic dynamics, AIM	May 16 – 20, 2016
Upstate New York Number Theory Conference (VI), University of Rochester	Apr 30 – May 1, 2016
RTG Workshop in Arithmetic Dynamics, University of Michigan	Dec 3 – 6, 2015
Arithmetic 2015: Silvermania, Brown University	Aug 11 – 15, 2015
Upstate New York Number Theory Conference (V), Cornell University	Apr 10 – 12, 2015
Joint Mathematics Meetings, Baltimore, MD	Jan 15 – 18, 2014
Sage Days 55: Arithmetic and Complex Dynamics, Florida Institute of Technology	Nov 7 – 10, 2013
AMS Fall Western Sectional Meeting, University of California, Riverside	Nov 2 – 3, 2013
Georgia Algebraic Geometry Symposium, University of Georgia	Oct 18 – 20, 2013
Complex Dynamics (and related areas), University of Illinois at Chicago	June 5 – 7, 2013
Palmetto Number Theory Series XVIII, Wake Forest University	Sept 15 – 16, 2012
Global Arithmetic Dynamics, ICERM	Mar 19 – 23, 2012
Palmetto Number Theory Series XVI, Emory University	Sept 10 – 11, 2011

Courses taught

Louisiana Tech University

Fall 2017 – present

Introduction to Abstract Algebra (MATH 408)	Fall 2017, Fall 2018
Number Theory (MATH 460)	Spr 2018
Abstract Algebra II (MATH 490/584)	Win 2018

University of Rochester

Fall 2014 – Spring 2017

Calculus II (MTH 142)	Fall 2014, Spr 2016
Calculus IA (MTH 161)	Spr 2015, Fall 2015 [‡] , Fall 2016 [‡]
Linear Algebra with Differential Equations (MTH 165)	Fall 2014
Transition to Advanced Mathematics (MTH 200W)	Spr 2016, Spr 2017
Number Theory with Applications (MTH 230)	Fall 2015
Introduction to Cryptography (MTH 233)	Spr 2017
Introduction to Algebra I (MTH 236)	Spr 2015
Independent Study in Arithmetic Dynamics (MTH 391)	Fall 2016

[‡] During the fall semesters of 2015 and 2016, I was responsible for coordinating all sections of MTH 161 and was the content co-instructor of CAS 352–355.

University of Georgia

Fall 2008 – Spring 2014

Precalculus (MATH1113)	Fall 2009, Fall 2011
Analytic Geometry and Calculus (MATH2200)	Spr 2010
Calculus I for Science and Engineering (MATH2250)	Spr 2012, Sum 2012, Fall 2013, Spr 2014
Calculus II for Science and Engineering (MATH2260)	Sum 2013

Honors and Awards

AMS-Simons Travel Grant	2016
University Outstanding Teaching Assistant Award (UGA)	2013
B. J. Ball Scholarship (UGA)	2012
VIGRE Fellowship (UGA)	2008, 2010, 2012