

CHRISTOPHER J. RASMUSSEN

CURRICULUM VITAE

Mathematics & Computer Science
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PERSONAL INFORMATION

- Nationality: UNITED STATES OF AMERICA
- Date of Birth: JULY 12, 1977
- Research Areas: Arithmetic Geometry, Fundamental Groups, Abelian Varieties, Algorithmic Number Theory

EDUCATION

2004 PhD, Mathematics, The University of Arizona.
1998 MS, Mathematics, The University of Virginia.
1997 BA, Mathematics, The University of Virginia.

PROFESSIONAL APPOINTMENTS

2016– Associate Professor of Mathematics, Wesleyan University
2008–2016 Assistant Professor of Mathematics, Wesleyan University
2007–2008 Guest Research Associate, Research Institute for Mathematical Sciences
Japan Society for the Promotion of Science Postdoctoral Fellow
2004–2007 G. C. Evans Instructor, Rice University

GRANTS, FELLOWSHIPS, AND OTHER FUNDING

Research Grant.

2007–2008 KAKEN-HI Grant 19-07028, Grant-in-aid for JSPS Fellows
Japan Society for the Promotion of Science (1,100,000¥).

Fellowships.

2000–2004 VIGRE Graduate Fellowship, University of Arizona
1997–1998 Pratt-Bequest Mathematics Fellowship, University of Virginia

Workshop Funding.

2016 *joint with Beth Malmskog, Villanova University*
Collaboration Workshop: Solving S -unit equations in SAGE
ICERM, Brown University

Other Funding.

- 2016 GISOS Faculty-Student Internship for Oren Maximov ('17)
Study of Nonlinear Recurrence in Noncommutative Rings
- 2015 University Lecture: Catherine O'Neil
joint with David Constantine and Abigail Hornstein
Allbritton Center for the Study of Public Life
- 2012 Intel Math Program Instructor Training, Travel grant and stipend
Area Cooperative Educational Services, CT State Department of Education.
- 2008 Project Assistant, Arithmetic of values of E - and G -functions
Arizona Winter School, Southwest Center for Arithmetic Geometry.

PUBLICATIONS

Refereed Manuscripts.

1. Malmskog, B. and Rasmussen, C., Picard curves over \mathbb{Q} with good reduction away from 3, *LMS J. Comput. Math.* **19** (2016), no. 2, 382–408. [arXiv:1407.7892](#).
2. Rasmussen, C. and Tamagawa, A., Abelian surfaces good away from 2, *Int. J. Number Theory* **13** (2017), no. 4, 991–1001. [arXiv:1504.03047](#).
3. Rasmussen, C. and Tamagawa, A., Arithmetic of abelian varieties with constrained torsion, *Trans. Amer. Math. Soc.* (2017) no. 4, 2395–2424. [arXiv:1302.1477](#).
4. Moody, D. and Rasmussen, C., Character sums determined by low degree isogenies of elliptic curves, *Rocky Mountain J. Math.*, **45** (2015), no. 2, 623–635. [arXiv:1210.2743](#).
5. McLeman, C. and Rasmussen, C., Class number formulas via 2-isogenies of elliptic curves, *Bull. Lond. Math. Soc.*, **44** (2012), no. 6, 1221–1236. [arXiv:1008.4766](#).
6. Rasmussen, C., An abelian surface with constrained 3-power torsion, *Galois-Teichmüller theory and arithmetic geometry*, H. Nakamura, F. Pop, L. Schneps, A. Tamagawa, eds., *Adv. Stud. Pure Math.* **63**, *Math. Soc. Japan* (2012), 449–456.
7. Rasmussen, C., On elliptic curves of conductor 11^2 and an open question of Ihara, *Algebraic number theory and related topics 2007*, RIMS Kôkyûroku Bessatsu, B12, *Res. Inst. Math. Sci.* (2009), 101–113.
8. Rasmussen, C., and Tamagawa, A., A finiteness conjecture on abelian varieties with constrained prime power torsion, *Math. Res. Lett.* **15** (2008), no. 6, 1223–1231.
9. Papanikolas, M., and Rasmussen, C., On the torsion of Jacobians of principal modular curves of level 3^n , *Arch. Math. (Basel)* **88** (2007), no. 1, 19–28. [arxiv.org:math/0510023](#).
10. Rasmussen, C., On the fields of 2-power torsion of certain elliptic curves, *Math. Res. Lett.* **11** (2004), no. 4, 529–538.

Manuscripts in Preparation.

1. Rasmussen, C. and Tamagawa, A., Cyclic covers and Ihara's question (in preparation).

INVITED TALKS

- 2017 Solving S -Unit Equations
Closing Plenary Lecture
Michigan MAA Section Annual Meeting, April 1.
- 2016 Abelian surfaces good away from 2
Number Theory/Algebraic Geometry Seminar
Research Institute for Mathematical Sciences, Kyoto, December 20.
Elimination and Implicitization – some flavors of algebraic geometry
Undergraduate Mathematics Colloquium
Duquesne University, October 24
Abelian surfaces good away from 2
Special Session on Elliptic Curves,
Southeastern Sectional Meeting of the AMS, March 6
- 2014 Constrained pro-2 torsion in low dimensions
Number Theory/Arithmetic Geometry Seminar
Research Institute for Mathematical Sciences, Kyoto, December 18.
Picard curves with good reduction away from 3
Kyoto University Number Theory Joint Seminar, December 12.
Picard curves with good reduction away from 3
Special Session on Galois Theory and Interactions with Algebra and Number Theory, Southeastern Sectional Meeting of the AMS, November 8.
Picard curves over \mathbb{Q} with good reduction away from 3
University of Rochester Number Theory Seminar, October 21.
Picard curves with good reduction away from 3
Upstate New York Number Theory Conference, SUNY-Buffalo, April 26.
- 2013 Finiteness results for abelian varieties with constrained arithmetic
Algebra Seminar, University of Connecticut, October 23.
Elimination Theory and Implicitization – some flavors of algebraic geometry
Undergraduate Mathematics Seminar, Connecticut College, October 1.
Elimination Theory and Implicitization
University of Connecticut Undergraduate Math Club, September 18.
- 2012 Finiteness of constrained abelian varieties
Algebra Seminar, University of Virginia, April 25.
Symmetry in Arithmetic and Geometry
Gordon Keller Mathematics Major Dinner, University of Virginia, April 25.
Class number formulas from isogenies
Five Colleges Number Theory Seminar, Amherst College, April 3.
- 2011 2-Isogenies and weighted character sums
Kyoto University Number Theory Joint Seminar, January 14.

- 2010 Finiteness results on abelian varieties with constrained torsion
University of Rochester Number Theory Seminar, November 17.
Finiteness results on abelian varieties with constrained torsion
Galois-Theoretic Arithmetic Geometry Satellite Meeting of Joint MSJ-RIMS
Conference, Kyoto, Japan, October 21.
Finiteness results on abelian varieties with constrained torsion
Algebra/Number Theory Seminar, Brown University, March 1.
- 2009 Finiteness results on abelian varieties with constrained torsion
Algebraic Geometry Seminar, SUNY-Stonybrook, March 31.
Shapely Numbers
Undergraduate Mathematics Seminar, University of Portland, January 16.
- 2008 Finiteness results for abelian varieties with constrained torsion
Five Colleges Number Theory Seminar, Amherst College, November 18.
Finiteness results for abelian varieties with constrained torsion
Special Session on Number Theory, AMS Eastern Section, October 12.
Finiteness results of abelian varieties with constrained torsion
7th Annual Number Theory Workshop, Hiroshima University, July 24.
Shapely Numbers, "Science Dialogue"
Akashi Natural College of Technology, July 2.
Finiteness results for abelian varieties with constrained torsion
Mathematics Seminar, Kagawa University, May 10.
Abelian varieties with constrained torsion
Number Theory Workshop, Waseda University, March 10.
- 2007 A finiteness result for abelian varieties with constrained prime power torsion
Conference on Algebraic Number Theory and Related Topics, Research In-
stitute for Mathematical Sciences, Kyoto, December 11.
Abelian varieties with constrained torsion
Number Theory Seminar, University of Tokyo, November 21.
The arithmetic of branched covers
Colloquium, Wesleyan University, March 28.
The arithmetic of branched covers
Colloquium, United States Naval Academy, January 30.
- 2006 A finiteness conjecture for abelian varieties with constrained torsion.
Algebra and Number Theory Seminar, University of Arizona, October 31.
Career advice for graduate students in mathematics
Graduate Student Colloquium, University of Arizona, October 30.
On the arithmetic of Jacobians of modular curves
Front Range Number Theory Colloquium, Colorado State University,
September 14.

- 2006 Arithmetic from geometry on elliptic curves
 Arithmetic Algebraic Geometry Seminar, RIMS, Kyoto, June 2.
 A finiteness conjecture for abelian varieties over number fields
 Special Session on Galois Theory in Arithmetic and Geometry, Eastern Sectional Meeting of the AMS, April 22.
 A finiteness conjecture for abelian varieties over number fields
 Special Session on Arithmetic Geometry and Modular Forms, AMS National Meeting, San Antonio, TX, January 14.
- 2005 On the torsion of Jacobian varieties of $X(p^n)$, $p = 2, 3$
 Okayama Workshop on Arithmetic and Geometry, May 19.
 On the torsion of Jacobian varieties of $X(p^n)$
 ArithmeTexas, Texas A&M University, April 2.
- 2004 Galois representations on fundamental groups
 Number Theory Seminar, Texas A&M University, October 21.
- 2003 Evidence of Ihara's Conjecture
 Number Theory Seminar, University of Texas-Austin, February 27.
- 2002 Galois actions on fundamental groups
 Korea Institute for Advanced Study, Seminar, January 29.

DEPARTMENTAL AND CAMPUS TALKS

- 2016 A (Necessarily Incomplete) Introduction to Frobenioids
 Algebra Seminar, September 20
 Research Soirée on Patterns: Ulam's Spiral
 College of Integrative Sciences, May 4
- 2015 S -unit equations and Diophantine problems
 Natural Sciences and Mathematics Seminar, November 13.
- 2014 Constrained torsion over \mathbb{Q} . The case $g = p = 2$
 Algebra Seminar, October 10.
- 2013 Trigonal curves good away from 3
 Algebra Seminar, September 13.
- 2011 Algebraic Geometry and Figurate Numbers
 Undergraduate Math Club, November 1.
 Class number formulae for isogenies of elliptic curves
 Algebra Seminar, September 23.
- 2009 New conditional finiteness results on abelian varieties, I and II
 Algebra Seminar, October.
 Detecting rational points through Galois action
 Natural Sciences and Mathematics Seminar, February 27.

- 2008 Arithmetic of fundamental groups
Algebra Seminar, October 10.
- 2006 The Congruent Number Problem
Undergraduate Conference (Rice University), February 12.
- 2005 On the torsion of Jacobian varieties of $X(p^n)$
Algebraic Geometry Seminar (Rice University), May.
- 2004 Analysis and Number Theory Seminar (Rice University), September.

CONFERENCES ORGANIZED

- 2017 *with Beth Malmskog*
Collaboration Workshop: Solving S -unit equations in SAGE
ICERM, Brown University, January 9–13.
- 2006 *with Brendan Hassett and Bob Hardt*
Algebraic Geometry: A Conference for Undergraduate Mathematics Majors
Rice University, February 10–12.

TEACHING EXPERIENCE

Recognition/Honors.

- 2009 Honored by the creation of a scholarship by the Weinrott family to recognize
“extraordinary teaching.”

Current Graduate Student.

Ryan Karpisz

Theses Supervised.

- 2015 Nathaniel Josephs, MA Mathematics
Thesis: *Finding rational solutions on a nonsingular cubic surface in \mathbb{P}^3*
- 2014 Abbey Bourdon, PhD Mathematics
Thesis: *A uniform version of a finiteness conjecture for elliptic curves with complex multiplication*
Postdoctoral Teaching and Research Associate, University of Georgia

Graduate Courses.

Algebra (2010, 2010, 2014, 2016)
Topics in Algebra: Affine Group Schemes (2013)
Topics in Algebra: Algebraic Geometry (2009, 2016)
Topics in Algebra: Elliptic Curves (2006 [Rice University], 2011)
Topology (2012)

Undergraduate Mentoring.

- 2016 Honors Advisor, Elizabeth Paquette
- 2013 Honors Advisor, Jeremy Fehr
- 2011 Honors Advisor, Qianqian Lin

Undergraduate Courses. *A † indicates a course taught in an Inquiry-Based Learning format.*

Abstract Algebra (2009, 2013, 2013, 2015[†])
Algebraic Geometry (2011)
Calculus I (2011)
Complex Analysis (2008, 2010)
Discrete Mathematics (2013, 2014, 2016, 2016)
Linear Algebra (2014, 2015)
Multivariable Calculus (2008, 2009, 2010, 2011, 2014)
Number Theory and Cryptography (2016[†])

Professional Development Courses.

Intel Math Program (2012, 2013, 2014, 2015, August 2016)

Tutorials.

Algebraic Geometry (2011, 2014, 2015, 2016)
Commutative Algebra (2008)
Differential Geometry (2009)
Elliptic Curves (2013)

SERVICE TO PROFESSION**Service as Referee.**

Experimental Mathematics
International Journal of Number Theory
Journal of Number Theory
London Mathematical Society Lecture Note Series
Proceedings of the American Mathematical Society
Proceedings of the Japan Academy, Series A
Research in Number Theory

Professional Memberships.

American Mathematical Society
Mathematics Association of America
JSPS Alumni Association

CAMPUS SERVICE**University Service.**

2017 Meeting with University Assessment Task Force (March 1).
2014–2017 University Major Subcommittee of Educational Policy Committee.
2010–2012 Tenure-Track Representative to Academic Council.

Department Service.

2015–2016 Undergraduate Prizes and Examination Committee
2014–2017 Department Recorder
2008–2017 Co-organizer, Algebra Seminar
2013–2014 Graduate Education Committee
2010–2013 Undergraduate Prizes and Examination Committee
2010–2012 Web Site Committee
2010–2012 Creator and Maintainer of Department Weblog
2008–2010 Department Advisory Committee

Graduate Examinations.

2017 Preliminary Examination, Freda Li
Reader, PhD Defense, Alicia Marino
Reader, MA Defense, Joshua Murphy
Preliminary Examination, Ryan Karpisz
2016 Preliminary Examination, Miriam Parmes
2016 Reader, PhD Defense, Jingbo Liu
2015 Reader, PhD Defense, Gabriel Valenzuela
Reader, MA Defense, John Bergan
2014 Preliminary Examination, Alicia Marino
Reader, PhD Defense, James Ricci
Reader, PhD Defense, Bonita Graham
2013 Reader, PhD Defense, Anna Haensch
2012 Preliminary Examination, Jingbo Liu
Preliminary Examination, Bonita Graham
Preliminary Examination, James Ricci
Preliminary Examination, Abbey Bourdon
2011 Reader, MA Defense, Juan Pablo Francisco
2010 Preliminary Examination, Anna Haensch
2009 Preliminary Examination, Indika Gamage
Reader, PhD Defense, Becky Hall
Reader, MA Defense, Anna Radlowski
2008 Preliminary Examination, Glenn Henshaw
2007 Preliminary Examination, Shuijing Li (Rice University)
Preliminary Examination, Bradley Duesler (Rice University)

Undergraduate Examinations.

- 2016 Honors Reader, Yael Davidov
 Honors Reader, Olakumbi Kuti
- 2015 Honors Reader, Sangsan Warakkagun
- 2013 Honors Reader, Brenna Sansom
 Honors Reader, Randy Linder
 Honors Reader, Grace Collins-Hovey
- 2011 Honors Reader, Bethany Berkowitz
 Honors Reader, Michael Chou
 Honors Reader, Jonas Mishara-Blomberger
 Honors Reader, David Puelz
 Honors Reader, Joel Specter