

HARRIS B. DANIELS

- CONTACT INFORMATION** Amherst College
Department of Mathematics & Statistics *Voice:* (413) 542-5656
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Amherst, MA 01002 *Website:* <https://hdaniels.people.amherst.edu>
- RESEARCH INTERESTS** Algebraic Number Theory, Diophantine Equations, Elliptic and Hyperelliptic Curves, Modular Curves, Abelian Varieties, Rational Points on Curves, and Galois Representations Associated to Elliptic Curves.
- EDUCATION** **University of Connecticut**, Storrs, Connecticut
Ph.D., Mathematics, May 2013
• Dissertation Topic: “Siegel Functions, Modular Curves, and Serre’s Uniformity Problem”
Advisor: Álvaro Lozano-Robledo
M.S., Mathematics, May 2009
Trinity College, Hartford, Connecticut
B.S., Mathematics and Philosophy, May, 2006
- EMPLOYMENT** **Amherst College**, Amherst, Massachusetts **July 2016 - Present**
Assistant Professor of Mathematics
Amherst College, Amherst, Massachusetts **July 2013 - June 2016**
Visiting Assistant Professor of Mathematics
- HONORS AND AWARDS** **Amherst College:** Honorary Member of the Class of 2016
University of Connecticut: Louis J. Deluca Memorial Award for Outstanding Teaching Assistant, 2010
Trinity College: The Robert C. Stewart Prize for a student who has demonstrated an interest in a teaching career, 2006
University of Connecticut, Storrs, Connecticut **August 2007 - May 2013**
Teaching Assistant
- PUBLISHED AND ACCEPTED PAPERS** [16] *A group theoretic perspective on entanglements of division fields*,
joint with Jackson S. Morrow.
(To appear in Trans. Amer. Math. Soc. Ser. B, arXiv:2008.09886)
[15] *Coincidences of division fields of elliptic curves*,
joint with Álvaro Lozano-Robledo.
(To appear in Ann. Inst. Fourier, arXiv:1912.05618)
[14] *Corrigendum to: Torsion subgroups of rational elliptic curves over the compositum of all D_4 extensions of the rational numbers*,
J. Algebra 575 (2021), 274–284.
[13] *Torsion groups of elliptic curves over the \mathbf{Z}_p -extensions of \mathbf{Q}* ,
joint with Michael Chou, Ivan Krijan, and Filip Najman.
New York J. Math. 27 (2021) 99–123.
[12] *Bounds of the rank of the Mordell-Weil group of jacobians of hyperelliptic curves*,
joint with Álvaro Lozano-Robledo and Erik Wallace.
J. Théor. Nombres Bordeaux, Volume 32 (2020) no. 1, pp. 231–258.
[11] *Serre’s constant for elliptic curves over the rational numbers*,
joint with Enrique González-Jiménez.
Exp. Math. 0 (2020), no. 0, 1–19
[10] *On the torsion of rational elliptic curves over sextic fields*,
joint with Enrique González-Jiménez.

Math. Comp. 89 (2020), no. 321, 411–435.

- [9] *Groups of generalized G -type and applications to torsion subgroups of rational elliptic curves over infinite extensions of \mathbf{Q}* ,
joint with Maarten Derickx and Jeffrey Hatley.
Trans. London Math. Soc. (2019) 6(1) 22–52
- [8] *Torsion subgroups of rational elliptic curves over the compositum of all D_4 -extensions of the rational numbers*,
J. Algebra 509 (2018), 535–565.
- [7] *Torsion subgroups of rational elliptic curves over the compositum of all cubic fields*,
joint with Álvaro Lozano-Robledo, Filip Najman, and Andrew V. Sutherland. Math. Comp. 87 (2018), no. 309, 425–458.
- [6] *On the ranks of elliptic curves with isogenies*,
joint with Hannah Goodwillie*
Int. J. Number Theory 13 (2017), no. 9, 2215–2227.
- [5] *What is... an Elliptic Curve*,
joint with Álvaro Lozano-Robledo.
Notices of the American Mathematical Society., Vol. 64, Issue 3, March 2017, 241–243.
- [4] *Elliptic curves with maximally disjoint division fields*,
joint with Jeffrey Hatley and James Ricci.
Acta Arith., Vol. 175, No. 3 (2016), 211–223.
- [3] *On the number of isomorphism classes of CM elliptic curves defined over a number field*,
joint with Álvaro Lozano-Robledo.
J. Number Theory, Volume 157 (2015), 367–396.
- [2] *An infinite family of Serre curves*,
J. Number Theory, Vol. 155 (2015), 226–247.
- [1] *Siegel functions, modular curves, and Serre’s uniformity problem*,
Albanian J. Math. Vol. 9, (2015), no. 1, 3–29.

PAPERS UNDER
REVIEW

- 1) *Towards a classification of entanglements of Galois representations attached to elliptic curves*,
joint with Álvaro Lozano-Robledo and Jackson S. Morrow

PAPERS IN
PREPARATION

- *A note on explained entanglements*,
joint with Álvaro Lozano-Robledo and Jackson S. Morrow

SELECTED INVITED
AND CONTRIBUTED
TALKS

- *This talk is Galois-entangled with Álvaro Lozano-Robledo’s talk*, Canadian Mathematical Society Summer Meeting, Ottawa, Canada (Digital), Summer 2021.
- *Entanglements of division fields of elliptic curves*, Western University, Algebra Seminar, London, Ontario, Canada (Digital), Spring 2021.
- *An Introduction to Galois Representations Attached to Elliptic Curves*, Wake Forest University, Department Colloquium, Winston-Salem, NC (Digital), Spring 2021.
- *Entanglements of division fields of elliptic curves*, University of Zagreb, Seminar on Number Theory and Algebra, Zagreb, Croatia (Digital), Fall 2020.
- *Torsion Subgroups of Elliptic Curves over Infinite Extensions*, University of Connecticut, Algebra Seminar, Storrs CT, Fall 2019.
- *Torsion Subgroups of Elliptic Curves over Infinite Extensions*, University of Vermont, unQVNTS Seminar, Burlington VT, Fall 2019.
- *A brief introduction to number theory*, Amherst College Faculty Research Colloquium, Amherst MA, Spring 2019.
- *Groups of generalized G -type and applications to torsion subgroups of rational elliptic curves over infinite extensions of \mathbf{Q}* , University of Connecticut, Storrs CT, Spring 2018.

*Amherst College undergraduate coauthor

- *Mini Course: Computational Number Theory*, Connecticut Summer School in Number Theory, University of Connecticut, Storrs CT, Summer 2018.
- *Groups of generalized G -type and applications to torsion subgroups of rational elliptic curves over infinite extensions of \mathbf{Q}* , University of Buffalo, Buffalo NY, Spring 2018.
- *Torsion subgroups of rational elliptic curves over the compositum of all extensions of generalized D_4 -type*, Algebra, Geometry, and Number Theory Seminar, Tufts University, Medford MA, Fall 2017.
- *Torsion subgroups of rational elliptic curves over infinite extensions of \mathbf{Q}* , Maine-Quebec Number Theory Conference, University of Maine, Orono ME, Fall 2017.
- *Torsion subgroups of rational elliptic curves over infinite extensions of \mathbf{Q}* , AMS Fall Sectional Meeting Special Session on algebraic curves, University of Central Florida, Orlando FL, Fall 2017.
- *A Brief Introduction to Elliptic Curves*, Math Department Colloquium, Union College, Schenectady NY, Winter 2017.
- *A Brief Introduction to Elliptic Curves*, Math Department Colloquium, Amherst College, Amherst MA, Fall 2015.
- *Torsion Points on Rational Elliptic Curves Over the Compositum of All Cubic Fields*, Maine-Quebec Number Theory Conference, University of Maine, Orono ME, Fall 2015.
- *An Infinite Family of Serre Curves*, Upstate Number Theory Conference, Cornell University, Ithaca NY, Spring 2015.
- *An Infinite Family of Serre Curves*, AMS Spring Sectional Meeting Special Session on Hyperelliptic curves, Michigan State University, East Lansing MI, Spring 2015.
- *On the Number of CM Elliptic Curves Defined Over a Number Field*, Number Theory Seminar, Boston University, Boston MA, Fall 2014.
- *Geometric Constructions in Number Theory*, Math Club, University of Connecticut, Storrs CT, Spring 2014.
- *Siegel Functions, Modular Curves, and Serre's Uniformity Problem*, Quebec-Maine Number Theory Conference, Université Laval, Quebec City Canada, Fall 2012.
- *Siegel Functions, Modular Curves, and Serre's Uniformity Problem*, Number Theory Seminar, Boston University, Boston MA, Fall 2012.
- *Siegel Functions, Modular Curves, and Serre's Uniformity Problem*, Number Theory Seminar, University of Massachusetts, Amherst MA, Fall 2012.
- *Siegel Functions, Modular Curves, and Serre's Uniformity Problem*, Algebra Seminar, Wesleyan University, Middletown CT, Fall 2012.
- *A Brief Survey of Elliptic Curves*, G.R.A.S.S., University of Massachusetts, Amherst MA, Spring 2012.
- *What is an Elliptic Curve?*, S.I.G.M.A. Seminar, University of Connecticut, Storrs CT, Spring 2012.
- *The Method of Chabauty and Coleman*, Algebra Seminar, University of Connecticut, Storrs CT, Spring 2012.

HONORS THESES
ADVISED

- Shannon Young – Class of 2015 (Interdisciplinary)
Title: *The warp of the weave*
- Hannah Goodwillie – Class of 2016 – Breusch Prize Co-Winner
Title: *The ranks of elliptic curves with n -isogenies*
- Seong Eun Jung – Class of 2018
Title: *Galois representations associated to torsion points of elliptic curves*
- Katherine Finnerty – Class of 2019
Title: *Representability of primes as sums of squares: A class field theory approach*

DEPARTMENT AND
COLLEGE SERVICE

- Math Fellows Coordinator - Fall 2021 to present
- Department Budget Committee - Spring 2021
- Orientation Committee - Fall 2020 to present
- Library Liaison - Fall 2020 to Spring 2021

- Faculty Computer Committee - Fall 2017 to Spring 2019
- Mathematics Comprehensive Co-Advisor - Fall 2016 to Spring 2019
Organized the logistics related to administering, grading, and reporting on both rounds of the Mathematics Comprehensive and Honors Qualifying Exams as well as any subsequent oral examinations. The exam averaged around 90 participants a year during the years I have been involved.
- New Faculty Support Team
One of two points of contact for new math faculty for information about the department and college.
- Academic Advisor - Fall 2016 to present
Advising an average of 30 students per year
- Member of mathematics lecturer search committee – Spring 2018
- Member of mathematics VAP search committee – Spring 2019
- Member of the department’s Mellon grant working group – Fall 2018
- Speaker at new faculty orientation – Fall 2017, Fall 2018

MATHEMATICAL
COMMUNITY
SERVICE AND
ENGAGEMENT

- Referee for the Minnesota Journal for Undergraduate Mathematics
- Referee for the Journal of Number Theory
- Referee for the Mathematics of Computation
- Reviewer for Mathematical Reviews (MathSciNet)
- Regular participant of the Five College Number Theory Seminar
Meets most weeks during the academic year.

PROFESSIONAL
MEMBERSHIPS

- American Mathematical Society (AMS)
- Mathematical Association of America (MAA)