

Curriculum Vitae

Michael E. Zieve

Homepage: www.math.lsa.umich.edu/~zieve/

Employment and Grants

Professor, University of Michigan, 2012–present.
Associate Professor, University of Michigan, 2009–2012.
NSF SCREMS Grant DMS-1026317 (co-PI), 2010–2013.
NSF Grants DMS-0903420 and DMS-1162181, 2009–2015.
Member, Institute for Advanced Study, 2008–2009.
Visiting Professor, Rutgers University, 2007–2008.
Research Staff, Center for Communications Research (Princeton),
2000–2007.
Stieltjes Visiting Professor, Leiden University, 2000.
MSRI Postdoctoral Research Fellow, 1999.
Assistant Professor, University of Southern California, 1997–1999.
NSF Postdoctoral Research Fellow, 1996–1999.
NSF Graduate Fellow, 1992–1995.

Education

University of California at Berkeley, Ph.D. in Mathematics, 1996.
Harvard University, A.B., 1992.

Graduate Students Supervised at Michigan

Sijun Liu
Alex Mueller
Zach Scherr
Ben Weiss (Ph.D. 2011)
Brian Wyman (Ph.D. 2010)

Undergraduate Research Supervised

Kate Gruher and three others (NSA, summer 2002)
Augie Odena (Michigan, summer 2010)
Alex Carney and Ruthi Hortsch (Michigan, summer 2010)
Molly Logue and Dominic Spadacene (Michigan, summer 2011)
Geoff Iyer and Feiqi Jiang (Michigan, summer 2011)
Notes: Kate won the 2003 Alice T. Schafer prize; Ruthi was the 2011 runner-up. Molly and Dominic won 2nd place at the 2011 OSU Young Mathematicians Conference; Alex won Honorable Mention.

Meetings Organized

ICERM Semester Program (Spring 2012) (co-organizer)
Special Session, AMS Sectional Meeting (10/2011)
Midwest Number Theory Day (11/2010)
Midwest Number Theory Conference for Graduate Students (11/2010)

Service

AMS–Simons Travel Grants Committee (2011–2014)
NSF Grant Review Panelist (2010, 2011)
NSA Grant Review Panelist (2012)
Editor of journal *Involve*
Mathematical Reviews, *Zentralblatt für Mathematik*, *SIAM Review*
Referee for various journals and NSF and NSA grant proposals
(refereed 43 papers since 2008)
At Michigan: Qualifying Exam Committee (2009–2010), Computer Committee (2009–2012), Undergraduate Counseling (2009–2012), Undergraduate Math Club Advisor (2010–2011), Library Committee (2010–2012), Honors Committee (2010–2012), Official Mentor of an Incoming Graduate Student (2010–2012), Undergraduate Research Committee (2011–2012), Science Library Advisory Committee (2010–2012)
Dissertation Committee Member for: Rodrigo Parra (UM), Ricardo Portilla (UM), Drew Shulman (UIC), Qian Yin (UM; reader)
Mentor for Robert Walker in Rackham’s Summer Institute (2011)
Organized Number Theory Working Seminar and Number Theory Learning Seminar at Michigan (2009–present)
Webmaster for Michigan’s Number Theory group
Developed a widely-used webpage at CCR facilitating collaboration
Ran two sessions of Michigan’s Math Circle for high school students, and two for middle school students
Gave the mathematician’s address at the AMS Who Wants to be a Mathematician event in Michigan, March 2010
Problem supporter for the USA Mathematics Talent Search
Guest lecturer and frequent visitor at Thomas Grover Middle School Math Club in 2003

Courses Taught

Explorations in Mathematical Research (Michigan, 2011)
Algebraic Number Theory (Michigan, 2010; evaluation score 4.90/5)
The Arithmetic of Dynamical Systems (Michigan, 2010; evaluation score 4.79/5)
Honors Applied Calculus II (Michigan, 2009; evaluation 4.88/5)
Mathematical Statistics (Rutgers, 2007; evaluation 4.35/5)
Number Theory (USC, 1999; evaluation 4.68/5)
Engineering Calculus (USC, 1998; evaluation 4.38/5)
Engineering Calculus (USC, 1997; evaluation 4.12/5)
Business Calculus (USC, 1997; evaluation 3.47/5)

Selected Invited Addresses

- Central Sectional Meeting, American Mathematical Society (10/11) (plenary speaker)
- Trends in Dynamics, Northwestern University (4/11)
- Information-Theoretic Cryptography, IPAM/UCLA (2/11)
- Algebraic Dynamics, CUNY Graduate Center (6/10) (plenary speaker)
- Midwest Number Theory Conference for Graduate Students (11/09) (plenary speaker)
- Antalya Algebra Days (5/06) (plenary speaker)
- Automorphisms of Curves, Leiden, Netherlands (8/04) (2 talks)
- Finite Fields and Applications, Toulouse, France (5/03) (plenary speaker)
- Dutch Intercity Number Theory Seminar (2/00–5/00) (7 talks)
- Arizona Winter School for Arithmetic Geometry (2/00) (2 talks)

- Mathematisches Forschungsinstitut Oberwolfach, Germany:
 - Coding Theory (5/00, 12/03)
 - Computational Number Theory (5/95)
 - Finite Fields: Theory and Computation (1/97, 1/01, 12/04)
 - Galois Groups and Fundamental Groups (6/97)

- Centre International de Rencontres Mathématiques, Luminy, France:
 - Arithmetic, Geometry and Coding Theory (7/97)
 - Number Theory and Dynamical Systems (7/95)

Additional Recent Invited Addresses

- 5/25/11: Michigan Conference on Inquiry-Based Learning
- 4/19/11: MIT Number Theory Seminar
- 3/9/11: Colloquium, Brown University
- 2/25/11: Rocky Mountain Algebraic Combinatorics Seminar
- 2/17/11: PNYLABS, Princeton
- 1/13/11: Michigan Undergraduate Math Club
- 5/7/10: Conformal Methods in Analysis, Seillac, France
- 11/14/09: OSU/UIC/UM Weekend Algebraic Geometry Workshop
- 11/7/09: Midwest Number Theory Conference for Graduate Students, University of Wisconsin-Madison
- 11/6/09: Midwest Number Theory Day, University of Wisconsin-Madison
- 10/26/09: Group, Lie, and Number Theory Seminar, University of Michigan
- 7/21/09: Dynamical Numbers, Max-Planck-Institute für Mathematik
- 4/17/09: Colloquium, University of Miami
- 4/9/09: Columbia-CUNY-NYU Number Theory Seminar
- 3/5/09: Colloquium, Michigan State University
- 2/3/09: Algebraic Geometry Seminar, Princeton University
- 1/26/09: Number Theory Seminar, University of California at Berkeley
- 1/21/09: Colloquium, University of Illinois

1/20/09: Colloquium, University of Michigan
 1/20/09: What is ...? Seminar, University of Michigan
 1/15/09: Québec-Vermont Number Theory Seminar
 1/14/09: Colloquium, McGill University
 1/12/09: Algebra, Number Theory, and Combinatorics Seminar, University of Texas
 1/7/09: Colloquium, Georgia Tech University
 1/6/09: Colloquium, Emory University
 12/1/08: Colloquium, Rice University
 10/31/08: Algebra Seminar, Wesleyan University
 10/12/08: special session on Number Theory, AMS sectional meeting
 10/10/08: Ontario Research Center for Computer Algebra Seminar, University of Waterloo
 10/9/08: Number Theory Seminar, University of Waterloo
 9/29/08: Computer Science and Discrete Mathematics Seminar, Institute for Advanced Study
 9/22/08: Algebra Seminar, Rutgers University
 5/21/08: Combinatorial and Additive Number Theory conference, CUNY Graduate Center
 5/2/08: Kolchin Seminar, CUNY Graduate Center
 4/18/08: Kolchin Seminar, CUNY Graduate Center
 4/15/08: Colloquium, Center for Communications Research (Princeton)
 4/8/08: Number Theory Seminar, Rutgers University
 4/4/08: Commutative Algebra and Algebraic Geometry Seminar, CUNY Graduate Center
 3/27/08: New York Number Theory Seminar, CUNY Graduate Center
 3/3/08: Algebra Seminar, Brown University
 2/25/08: Gelfand Seminar, Rutgers University
 2/8/08: Computational and Commutative Algebra Seminar, Rutgers
 1/11/08: Discrete Mathematics and Representation Theory Seminar, University of California (Davis)
 1/8/08: special session on Algebraic Dynamics, AMS annual meeting

Research Interests

Algebra
 Number theory and arithmetic geometry
 Dynamical systems
 Algorithms and computational complexity
 Discrete mathematics
 Cryptography

References

Stephen DeBacker (Michigan)
Robert Guralnick (USC)
Hendrik Lenstra (Leiden)
David Saltman (IDA/CCR-P)
Thomas Scanlon (Berkeley)
Joseph Silverman (Brown)
Karen Smith (Michigan)
Felipe Voloch (Texas)
Umberto Zannier (Pisa)

Papers Written

J. Rosen and M. Zieve, Uniform bounds on primitive prime divisors in dynamical sequences, submitted for publication.

A. Shnidman and M. Zieve, Integral points in grand orbits, submitted for publication.

M. Zieve and P. Müller, On Ritt's polynomial decomposition theorems, submitted for publication.

M. Zieve, Decompositions of Laurent polynomials, submitted for publication.

D. Ghioca, T. Tucker and M. Zieve, Linear relations between polynomial orbits, *Duke Math. J.*, to appear.

B. Wyman and M. Zieve, Two questions on polynomial decomposition, *Quarterly Journal of Math. (Oxford)*, to appear.

D. Ghioca, T. Tucker and M. Zieve, The Mordell–Lang question for endomorphisms of semiabelian varieties, *J. Théor. Nombres Bordeaux*, to appear.

M. Zieve, An equality between two towers over cubic fields, *Bull. Braz. Math. Soc.*, to appear.

J. Rosen, Z. Scherr, B. Weiss and M. Zieve, Chebyshev mappings of finite fields, *Amer. Math. Monthly*, to appear.

R. Guralnick and M. Zieve, Polynomials with $\mathrm{PSL}(2)$ monodromy, *Annals of Math.* **172** (2010), 1321–1365.

R. Guralnick, J. Rosenberg and M. Zieve, A new family of exceptional polynomials in characteristic two, *Annals of Math.* **172** (2010), 1367–1396.

K. Lindahl and M. Zieve, On hyperbolic fixed points in ultrametric dynamics, *p-Adic Numbers, Ultrametric Analysis and Applications* **2** (2010), 232–240.

M. Zieve, Classes of permutation polynomials based on cyclotomy and an additive analogue, in *Additive Number Theory*, Springer–Verlag (2010), 355–361.

- M. Zieve, p^k -torsion of genus two curves over \mathbb{F}_{p^m} , *Math. Comp.* **79** (2010), 1833–1838.
- X. Faber, B. Hutz, P. Ingram, R. Jones, M. Manes, T. Tucker and M. Zieve, Uniform bounds on pre-images under quadratic dynamical systems, *Math. Res. Letters* **16** (2009), 87–101.
- R. Beals, J. Wetherell and M. Zieve, Polynomials with a common composite, *Israel J. Math.* **174** (2009), 93–117.
- A. Masuda and M. Zieve, Permutation binomials over finite fields, *Trans. Amer. Math. Soc.* **361** (2009), 4169–4180.
- M. Zieve, On some permutation polynomials over \mathbb{F}_q of the form $x^r h(x^{(q-1)/d})$, *Proc. Amer. Math. Soc.* **137** (2009), 2209–2216.
- D. Ghioca, T. Tucker and M. Zieve, Intersections of polynomial orbits, and a dynamical Mordell–Lang conjecture, *Inventiones Math.* **171** (2008), 463–488.
- D. Goldstein, R. Guralnick, E. Howe and M. Zieve, Nonisomorphic curves that become isomorphic over extensions of coprime degrees, *J. Algebra* **320** (2008), 2526–2558.
- M. Zieve, Some families of permutation polynomials over finite fields, *Int. J. Number Theory* **4** (2008), 851–857.
- A. Masuda and M. Zieve, Rational functions with linear relations, *Proc. Amer. Math. Soc.* **136** (2008), 1403–1408.
- M. Zieve, On a theorem of Carlitz, arXiv:0810.2834.
- A. Masuda and M. Zieve, Nonexistence of permutation binomials of certain shapes, *Electronic J. Combinatorics* **14** (2007), N12.
- G. Kuperberg, R. Lyons and M. Zieve, Analogues of the Jordan–Hölder theorem for transitive G -sets, arXiv:0712.4142.
- R. Guralnick, T. Tucker and M. Zieve, Exceptional covers and bijections on rational points, *Internat. Math. Res. Notices* **2007**.
- D. Wiedemann and M. Zieve, Equivalence of sparse circulants: the bipartite *Ádám* problem, arXiv:0706.1567.
- I. Duursma, B. Poonen and M. Zieve, Everywhere ramified towers of global function fields, *Finite Fields and Applications*, Springer Lecture Notes in Comput. Sci. **2948** (2004), 148–153.
- S. Ball and M. Zieve, Symplectic spreads and permutation polynomials, *Finite Fields and Applications*, Springer Lecture Notes in Comput. Sci. **2948** (2004), 79–88.
- N. Elkies, E. Howe, A. Kresch, B. Poonen, J. Wetherell and M. Zieve, Curves

- of every genus with many points, II: Asymptotically good families, *Duke Math. J.* **122** (2004), 399–422.
- A. Kresch, J. Wetherell and M. Zieve, Curves of every genus with many points, I: Abelian and toric families, *J. Algebra* **250** (2002), 353–370.
- S. Cohen, H. Niederreiter, I. Shparlinski and M. Zieve, Incomplete character sums and a special class of permutations, *J. Theor. Nombres Bordeaux* **13** (2001), 53–63.
- D. desJardins and M. Zieve, Polynomial mappings mod p^n , arXiv:0103046.
- J. Csirik, J. Wetherell and M. Zieve, On the genera of $X_0(N)$, arXiv:0006096.
- S. Abhyankar, S. Cohen and M. Zieve, Bivariate factorizations connecting Dickson polynomials and Galois theory, *Trans. Amer. Math. Soc.* **352** (2000), 2871–2887.
- M. Bhargava and M. Zieve, Factoring Dickson polynomials over finite fields, *Finite Fields Appl.* **5** (1999), 103–111.
- M. Zieve, Bivariate factorizations via Galois theory, with application to exceptional polynomials, *J. Algebra* **210** (1998), 670–689.
- M. Zieve, A note on the discriminator, *J. Number Theory* **73** (1998), 122–138.
- H. Lenstra and M. Zieve, A new family of exceptional polynomials, *Finite Fields and Applications*, Cambridge Univ. Press (1996), 209–218.
- M. Zieve, Take-away games, *Games of No Chance*, Cambridge Univ. Press (1996), 351–361.
- M. Zieve, Cycles of Polynomial Mappings, Ph.D. thesis, Berkeley, 1996.