

Kevin Keating

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Birth Date: June 30, 1960
Fields: Number Theory, Arithmetic Algebraic Geometry, Combinatorics

Education

B.A. Washington University, St. Louis, MO (1982) in Mathematics
M.A. Harvard University (1986) in Mathematics
Ph.D. Harvard University (1987) in Mathematics
Professor Benedict Gross, thesis advisor

Fellowships

NSF Graduate Fellowship (9/82 – 8/85)
NSF/NATO Postdoctoral Fellowship at University of Cambridge (9/90 – 8/91)

Employment

University of Michigan, Department of Mathematics:
H. T. Hildebrandt Research Assistant Professor (9/87 – 8/90)
Johns Hopkins University, Department of Mathematics:
Assistant Professor (9/91 – 8/93)
University of Florida, Department of Mathematics:
Assistant Professor (8/93 – 6/95)
Associate Professor (7/95 – present)

Grants

NSF Postdoctoral Associate, 1988 – 1990.
NSF Individual Investigator Grants, 1992 – 1999.
AIM Square, May 2022, March 2023, October 2024.

Students

Duc Huynh (Ph. D. 2014)
Endrit Fejzullahu (Ph. D. 2020)
Paul Schwartz (Ph. D. 2022)
Recep Celebi (in progress)
Julien Michele (in progress)

Publications

1. The conjunction of Cayley digraphs, *Discrete Math.* **42** (1982), 209–219.
2. Multiple-ply Hamiltonian graphs and digraphs, *Ann. of Discrete Math.* **27** (1985), 81–88.
3. with D. Witte, On Hamilton cycles in Cayley graphs in groups with cyclic commutator subgroup, *Ann. of Discrete Math.* **27** (1985), 89–102.
4. Lifting endomorphisms of formal A -modules, *Compositio Math.* **67** (1988), 211–239.
5. Galois characters attached to formal A -modules, *Compositio Math.* **67** (1988), 241–269.
6. Galois extensions associated to deformations of formal A -modules, *J. Fac. Sci. U. Tokyo (Sec. 1A)* **37** (1990), 151–170.
7. Extensions and automorphisms of $k((t))$, *J. Number Theory* **41** (1992), 314–321.
8. with B. Gross, On the intersection of modular correspondences, *Invent. Math.* **112** (1993), 225–245.
9. An abstract characterization of the Igusa curves, *Amer. J. Math.* **117** (1995), 419–440.
10. with J. King, Shape tiling, *Electron. J. Combin.* **4** (1997), no. 2, R12.
11. with A. Vince, Isohedral polyomino tiling of the plane, *Discrete Comput. Geom.* **21** (1999), 615–630
12. with J. King, Signed tilings with squares, *J. Combin. Theory Ser. A* **85** (1999), 83–91.
13. Signed shape tilings of squares, *Discrete Math.* **215** (2000), 133–145.
14. with D. Drake, Ovals and hyperovals in Desarguesian nets, *Designs, Codes and Cryptography* **31**, (2004), 195–212.
15. with X.-D Hou, Enumeration of isomorphism classes of extensions of p -adic fields *J. Number Theory* **104** (2004), 14–61.
16. How close are p th powers in the Nottingham group?, *Journal of Algebra* **287** (2005), 294–309.
17. Extensions of local fields and truncated power series, *J. Number Theory* **116** (2006), 69–101.

18. with D. Roberts, Intersection numbers of Heegner divisors on Shimura curves, *Pure Appl. Math. Q.* **4** (2008), 1165–1204.
19. Wintenberger’s Functor for Abelian Extensions, *J. Théor. Nombres Bordeaux* **21** (2009), 665–678.
20. Homomorphisms and isogenies of formal group laws, *New York J. Math.* **15** (2009), 435–450.
21. Indices of inseparability for elementary abelian p -extensions, *J. Number Theory* **136** (2014), 233–251.
22. Indices of inseparability and refined ramification breaks, *J. Number Theory* **142** (2014), 1–17.
23. Indices of inseparability in towers of field extensions, *J. Number Theory* **150** (2015), 81–97.
24. with D. Huynh, k -isomorphism classes of local field extensions, *J. Number Theory* **153** (2015), 97–106.
25. On the numerology of ramification data for power series in characteristic p , *J. Number Theory* **195** (2019), 338–357.
26. Extensions of local fields and elementary symmetric polynomials, *J. Théor. Nombres Bordeaux* **30** (2018), 431–448.
27. Perturbing Eisenstein polynomials over local fields, *J. Théor. Nombres Bordeaux* **30** (2018), 681–694.
28. Galois scaffolds and semistable extensions, *J. Number Theory* **207** (2020), 110–121.
29. with G. Elder, Refined ramification breaks in characteristic p , *Acta Arith.* **192** (2020), 371–395.
30. with P. Schwartz, Galois scaffolds and Galois module structure for totally ramified C_{p^2} -extensions in characteristic 0, *J. Number Theory* **239** (2022), 113–136.
31. with E. Fejzullahu, Extensions of local fields given by 3-term Eisenstein polynomials, *J. Number Theory* **240** (2022), 562–592.
32. with G. Elder, Galois scaffolds for cyclic p^n -extensions, *Res. Number Theory* **8** (2022), no. 4, Paper No. 75, 16 pp.
33. with G. Elder, A converse to the Hasse-Arf theorem, *Proc. Amer. Math. Soc., Ser. B* **10** (2023), 326–340.

34. with G. Elder, Galois scaffolds for p -extensions in characteristic p , to appear in Ann. Inst. Fourier (Grenoble).

Invited Talks

1. 50 minute conference talk: “Intersection numbers and Fourier coefficients of modular forms” (Number Theory, with an Emphasis in Iwasawa Theory, Arizona State University, March 1993).
2. 20 minute talk in a special session on arithmetic geometry: “Arithmetic intersection numbers of Heegner points on Shimura curves” (AMS sectional meeting, Chicago, IL, March 1995).
3. 20 minute talk in a special session on algebraic geometry: “An application of commutative algebra to tiling theory” (AMS sectional meeting, Charlotte, NC, October 1999).
4. 50 minute colloquium talk: “Signed Shape Tilings” (Wright State University, March 2000).
5. 30 minute conference talk (Conference on Galois Theory in honor of John Thompson’s 70th birthday, Gainesville, FL, November 2002).
6. 50 minute colloquium talk: “The Nottingham Group” (University of South Florida, January 2004).
7. 60 minute seminar talk: “Indices of Inseparability and Class Field Theory” (University of Pisa, March 2012).
8. 20 minute talk in a special session on finite fields and their applications: “Indices of inseparability in extensions of power series fields” (AMS sectional meeting, Tampa, FL, March 2012).
9. 50 minute conference talk: “The Field of Norms” (Ramification & Hopf-Galois Module Theory, University of Nebraska at Omaha, May 2013).
10. 50 minute conference talk: “Indices of Inseparability and New Ramification Breaks” (Ramification & Hopf-Galois Module Theory, University of Nebraska at Omaha, May 2013).
11. 50 minute conference talk: “Parametrizing Extensions of Local Fields” (Ramification & Galois Module Theory: Omaha 2014, May 2014).
12. 50 minute colloquium talk: “Galois Modules and Ramification Theory” (University of Nebraska at Omaha, November 2015).
13. 20 minute conference talk: “Extensions of local fields and elementary symmetric polynomials” (Gainesville International Number Theory Conference, March 2016).

14. 30 minute conference talk: “What is a refined ramification break?” (Hopf Algebras and Galois Module Theory, University of Nebraska at Omaha, May 2016).
15. 60 minute conference talk: “Trace, Norm, etc.” (Hopf Algebras and Galois Module Theory, University of Nebraska at Omaha, May 2016).
16. 60 minute conference talk: “Perturbing Eisenstein polynomials over local fields” (Hopf Algebras and Galois Module Theory, University of Nebraska at Omaha, May 2017).
17. A series of three 60 minute conference talks: “Bondarko’s work on local additive Galois module theory” (Hopf Algebras and Galois Module Theory, University of Nebraska at Omaha, May 2018).
18. 20 minute talk in a special session on Hopf algebras and their applications: “Galois scaffolds and semistable extensions” (AMS sectional meeting, Auburn, AL, March 2019).
19. 60 minute conference talk: “Galois scaffolds and semistable extensions” (Hopf Algebras and Galois Module Theory, University of Nebraska at Omaha, May 2019).
20. 60 minute conference talk: “Stable and semistable Hopf-Galois extensions” (Hopf Algebras and Galois Module Theory, University of Nebraska at Omaha, May 2019).
21. 60 minute conference talk: “Generic p -extensions in characteristic p ” (Hopf algebras and Galois module theory, online, May 2020).
22. 60 minute conference talk: “The Hasse-Arf Theorem and Nonabelian Extensions” (Hopf algebras and Galois module theory, online, May 2021).
23. 50 minute conference talk: “A converse to the Hasse-Arf theorem” (Hopf algebras and Galois module theory, University of Nebraska at Omaha, May 2022).
24. 50 minute conference talk: “A converse to the Hasse-Arf theorem” (Hopf algebras and Galois module theory, University of Nebraska at Omaha, May 2023).