Alison Beth Miller

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Mathematical Reviews
416 4th St
Ann Arbor, MI 48103

Employment

Current

Mathematical Reviews
Associate Editor — 2019-present

University of Michigan
Visiting Scholar — 2019-present

Past

Harvard University
Benjamin Peirce Fellow — 2014-2019
NSF Postdoctoral Fellow — 2014-2017

Education

Princeton University
Ph.D. in Mathematics — September 2014
Advisor: Manjul Bhargava
Thesis: Counting simple knots via arithmetic invariants

Cambridge University
Certificate of Advanced Study, with merit — June 2009

Harvard University
A. B., magna cum laude with highest honors in Mathematics — June 2008

Research Interests

Number theory and connections with topology and knot theory, in particular including arithmetic invariant theory, composition laws, arithmetic statistics, arithmetic dynamics, classical knot invariants related to the Seifert and Blanchfield pairings, embeddings of surfaces.

Papers, Preprints, and Works in Preparation

- Alison Beth Miller, *Asymptotic counting of orbits of* $\mathrm{Sp}_{2n}(\mathbb{Z})$ *on* $2n$*-ary quadratic forms, and generalization to other adjoint representations*
  in preparation, draft available on request

- Menny Aka, Peter Feller, Alison Beth Miller, Andreas Wieser, *Seifert surfaces in the four-ball and composition of binary quadratic forms*
  arXiv:2311.17746

- Annie Carter, Matilde Lalín, Michelle Manes, Alison Beth Miller, *Dynamical Mahler Measure: A survey and some recent results*
  arXiv:2204.04101
  to appear in Proceedings of Women in Numbers 5

- Annie Carter, Matilde Lalín, Michelle Manes, Alison Beth Miller, Lucia Mocz, *Two-variable polynomials with dynamical Mahler measure zero*
  Res. Number Theory 8 (2022), no. 2, Paper No. 25, 22 pp.

- Alison Beth Miller and Stanley Yao Xiao, *On the number of binary quadratic forms having discriminant* $1-4p$*,* p *prime*
  arXiv:2011.06559

- Alison Beth Miller, *Asymptotics for the number of Simple* $(4a+1)$*-Knots of Genus 1*
  International Mathematics Research Notices 2022, no. 9, 6742–6769.

- Samit Dasgupta and Alison Miller, *A Shintani-type formula for Gross-Stark units over function fields*
  J. Math. Sci. Univ. Tokyo 16 (2009) 415-440.

- Alison Miller and Aaron Pixton, *Arithmetic traces of non-holomorphic modular invariants*
  Int. J. Number Theory 6 (2010), 69-87.

- Alison Miller, *Asymptotic bounds for permutations containing many different patterns*
  J. Combin. Theory Ser. A 116 (1) (2009), 92-108.

- Carl Erickson, Alison Miller, and Aaron Pixton, *Orders at infinity of modular forms with Heegner divisors*
  Proc. Amer. Math. Soc. 135 (2007), 3115-3126.

Selected Awards

- Harvard Excellence in Teaching Award 2018
- NSF Postdoctoral Fellowship 2014
- NDSEG Graduate Fellowship 2010
- NSF Graduate Fellowship 2008
- Churchill Scholarship 2008
- Hoopes Prize for outstanding senior thesis at Harvard 2008
- Co-Winner, AWM Schafer Prize
  for Excellence in Mathematics by an Undergraduate Woman 2007
- Gold Medal, International Math Olympiad 2004

Invited Talks

- Gauge Fields in Arithmetic, Topology and Physics April 2024
  ICMS, Edinburgh
- Knot Online Seminar [K-OS] February 2024
- AWM Research Symposium 2022 June 2022
- University of Michigan RTG Number Theory seminar January 2022
- AMS Central Sectional Meeting (virtual) September 2020
  Special Session on Low-dimensional topology and knot theory.
- Number Theory Series in Los Angeles February 2020
- Princeton Arithmetic Statistics Seminar November 2019
- Wayne State University Algebra Seminar October 2019
- Boston Unversity/Keio University Workshop June 2019
- AMS Sectional Meeting at University of Connecticut April 2019
  Special Session in Algebraic Number Theory
- University of Michigan Number Theory Seminar November 2018
- MIT Number Theory Seminar May 2017

- Brown Algebra Seminar November 2016
- Fields Medal Symposium in honor of Manjul Bhargava November 2016
- Joint Columbia-CUNY-NYU Number Theory Seminar February 2016
- Palmetto Number Theory Series, Emory University September 2015
- AWM Research Symposium 2015 April 2015
- Brandeis Everytopic Seminar April 2015
- Boston College Geometry/Topology Seminar February 2015
- CRM Workshop on Counting Arithmetic Objects November 2014
- Harvard Number Theory Seminar September 2014

Selected Service

- Referee for *Journal of the London Mathematical Society*, *Research in the Mathematical Sciences*, and *Journal of Combinatorial Theory Series A*.
- Associate Editor/Problem Selection Committee, USA Math Olympiad Editorial Board 2016-2022
- Co-organizer, Harvard Number Theory Seminar 2014-2015, 2018-2019