Sachi Hashimoto

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Employment

Brown University, Tamarkin Assistant Professor ..... July 2023 - present

Max Planck Institute for Mathematics in the Sciences, Postdoc ..... June 2022 - June 2023

Education

Boston University ..... May 2022
PhD in Mathematics
Advisor: Jennifer Balakrishnan

University of Chicago ..... June 2014
BA in Mathematics with General and Departmental Honors

Preprints and publications

10. "Local heights on hyperelliptic curves and quadratic Chabauty" (with L. Alexander Betts, Juanita Duque-Rosero, and Pim Spelier), arXiv:2401.05228

9. "Towards a Classification of Isolated j-invariants" (with Abbey Bourdon, Timo Keller, Zev Klagsbrun, David Lowry-Duda, Travis Morrison, Filip Najman, and Himanshu Shukla, and an appendix by Maarten Derickx and Mark van Hoeij), to appear in *Mathematics of Computation*.

8. "Self-dual matroids from canonical curves" (with Alheydis Geiger, Bernd Sturmfels, and Raluca Vlad), to appear in *Experimental Mathematics*.

7. "Geometric quadratic Chabauty and p-adic heights" (with Juanita Duque-Rosero and Pim Spelier), Special Issue in Honor of B. Edixhoven, *Expositiones Mathematicae*, **41** (2023), no. 3, 631–674.

6. "Quadratic Chabauty and p-adic Gross–Zagier", *Transactions of the American Mathematical Society*, **376** (2023), no. 5, 3725-3760.

5. "A geometric linear Chabauty comparison theorem" (with Pim Spelier), *Acta Arithmetica*, **202** (2022), no. 1, 67–88.

4. "A transcendental Brauer–Manin obstruction to weak approximation on a Calabi–Yau threefold" (with Katrina Honigs, Alicia Lamarche, Isabel Vogt, and an appendix by Nicolas Addington), *Research in Number Theory*, **8** (2022), no. 1, Paper No. 12.

3. "384065013593722820639 49 and all that: Monodromy of Fano Problems" (with Borys Kadets), *International Mathematics Research Notices IMRN 2022*, no. 5, 3349–3370.

2. "Chabauty–Coleman computations on rank 1 Picard curves" (with Travis Morrison), *Arithmetic Geometry, Number Theory, and Computation*, Simons Symposia, Springer, 2021, 485-506.

1. "Computing rational points on rank 0 genus 3 hyperelliptic curves" (with María de Frutos-Fernández), *Arithmetic Geometry, Number Theory, and Computation*, Simons Symposia, Springer, 2021, 449-460.

Fellowships and Grants

AMS-Simons Travel Grant, 2023 - 2025.

Directed Reading Program Seed Funding Grant (DRP Network), Fall 2018.

NSF Graduate Research Fellowship, 2018 - 2022.

Clare Boothe Luce Fellowship (Henry Luce Foundation), 2017 - 2019.

Invited talks

Conference and workshop talks

September 2024: Plenary speaker, Palmetto Number Theory Series (PANTS) XXXVIII, Wake Forest University (planned).

June 2024: Problèmes sur l'arithmétique des Petits Points, Cogne, Italy.

June 2024: Plenary speaker, Connecticut Summer School in Number Theory, University of Connecticut, Storrs.

January 2023: Special session on arithmetic geometry with a view toward computation, Joint Mathematics Meetings.

April 2022: Combinatorics & Nonlinear Algebra Day, Brown University.

September 2020: Monodromy and Galois groups in enumerative geometry and applications, ICERM.

April 2019: AMS Graduate Student Conference in Algebraic Geometry and Number Theory, Brown University.

February 2019: Poster and lightning talk, Boston University Data Science Day, Boston University.

Seminar talks

March 2024: Number theory seminar, Dartmouth.

February 2024: Algebra, Geometry, and Number Theory Seminar, Tufts.

February 2024: Number theory seminar, University of Wisconsin - Madison.

October 2023: Algebra seminar, Brown University.

May 2023: International Seminar on Automorphic Forms, online.

May 2023: Number theory seminar, Universität Heidelberg.

March 2023: Séminaire de théorie des nombres, Institut Fourier.

February 2023: Oberseminar Algebra & Number Theory, Universität Ulm.

January 2023: Oberseminar Zahlentheorie und Arithmetische Geometrie, Leibniz Universität Hannover.

December 2022: Number theory seminar, University of Wisconsin - Madison.

November 2022: Algebra, Geometry, and Number Theory seminar, University of Leiden.

November 2022: Number theory seminar, University of Barcelona.

October 2022: Nonlinear algebra seminar, Max Planck Institute for Mathematics in the Sciences.

February 2022: AGNT Seminar, Rice.

February 2022: Algebra seminar, University of Groningen.

April 2021: AMS Invited Talk, graduate student chapter, University of Connecticut, Storrs.

February 2021: Number theory seminar, University of Georgia.

February 2021: Algebra seminar, Brown University.

November 2020: Algebraic geometry & number theory seminar, IST Austria.

September 2020: Algebra seminar, Virginia Tech.

August 2020: POINT, New Developments in Number Theory, online.

May 2020: Experimental Talks in Algebraic Geometry, online.

September 2019: Algebra/Number theory seminar, Wesleyan.

Teaching and outreach

Events and short programs

Canada/USA Mathcamp visitor ..... July 2019

PROMYS Math Circles Field Day, mentor ..... November 2019, February 2022

Harvard GIIM Women in Mathematics and Statistics, panelist ..... April 2018

PROMYS Math Circles Field Day, speaker ..... February 2018, May 2019

Proof School Spring Math Festival, director ..... April 2017

Proof School Love Math! A festival for girls, co-director, co-founder ..... Fall 2016, 2017, 2018, 2019

Canada/USA Mathcamp, instructor ..... Summer 2015, 2016

Northwestern University Splash, teacher 2012, 2013

MIT Splash, teacher ..... November 2009, 2010, 2011, 2012, 2013

Teaching (long-term)

Brown University Linear Algebra with Theory (Math 0540), Instructor ..... Fall 2024

Brown University Abstract Algebra (Math 1530), Instructor ..... Fall 2024

Brown University Linear Algebra (Math 0520 Section 07), Instructor ..... Spring 2023

Brown University Linear Algebra (Math 0520 Section 05), Instructor ..... Fall 2023

Brown University Linear Algebra (Math 0520 Section 04), Instructor ..... Fall 2023

Proof School Mathematics Teacher (secondary school) ..... 2015 - 2017

Courses developed and taught: *Problem Solving 1, Ideals and Varieties, Non-Euclidean Geometry, Algebra 1b, Number Theory, Combinatorics, Ring Theory, Euclidean Geometry, Elliptic Curves.*

Mentoring and outreach (long-term)

Brown University Research Experience for Undergraduates (REU), co-organizer and project mentor with Isabel Vogt ..... Summer 2024

Aidan Hennessey, Mathilde Kermorgant, Andy Zhu, "Explicit computations with Galois actions on torsion of abelian varieties".

Brown University Math Family Lunches, mentor ..... Spring 2024

Boston University Directed Reading Program, co-director and mentor ..... 2018 - 2022

Spring 2022, *Rose Solomon*, Algebraic topology.

Fall 2021, *Anna Yaggi*, Introduction to number theory.

Spring 2021, *Rivkah Moshe*, Knot theory.

Fall 2020, *Alis Acton*, Generating functions.

Fall 2018, *Anthony Ter-Saakov*, Rational points on elliptic curves.

Boston Queer Women in Math Nights co-organizer ..... 2018 - 2019

Boston University Graduate Women in Science and Engineering, mentor, *Lisa Vu*..... 2017 - 2018

University of Chicago Young Scholars Program, problem session leader ..... Winter and Spring 2012

University of Chicago Splash Chicago, teacher and board member..... 2011 - 2014

Professional Service

Spring 2024: *Galois Representations Learning Seminar*, Co-organizer, Brown University.

Fall 2023 - Spring 2024: *Number Theory / Algebra Seminar*, Co-organizer, Brown University.

April 2023: *Number theory meets tropical geometry: Semistable Models of Curves*, Organizer, Max Planck Institute for Mathematics in the Sciences.

Summer 2022: *ICM preparatory seminar*, Co-organizer, Max Planck Institute for Mathematics in the Sciences.

Fall 2019: *Boston University Number Theory Expository Seminar*, Topic: Gross–Zagier, Organizer, Boston University.

June 2019: *Mathematics Research Community: Explicit Methods in Arithmetic Geometry in Characteristic p*, Assistant, Whispering Pines, Rhode Island.

May 2018: *Connecticut Number Theory School*, Graduate Assistant, University of Connecticut, Storrs.

February 2018: *Graduate Workshop in Algebraic Geometry for Women and Mathematicians of Minority Genders*, Teaching Assistant for the course on explicit Coleman integration, MIT.

Refereeing: ANTS XV, ANTS XVI, BIRS, Math. Comp., Trans. Amer. Math. Soc.