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Employment

Boston University, Clare Boothe Luce Professor of Mathematics 2023 –
Boston University, Clare Boothe Luce Associate Professor of Mathematics 2021 – 2023
Boston University, Clare Boothe Luce Assistant Professor of Mathematics 2016 – 2021
University of Oxford, Mathematical Institute, Titchmarsh Research Fellow 2013 – 2016
University of Oxford, Balliol College, Junior Research Fellow 2013 – 2016
Harvard University, NSF Postdoctoral Fellow (sponsoring scientist: Barry Mazur) 2011 – 2013

Additional affiliations

Society of Fellows, Boston University, Faculty Fellow 2022 – 2024
Hariri Institute for Computing, Boston University, Junior Faculty Fellow 2018 – 2021
Institute for Computational and Experimental Research in Mathematics, Research Fellow Sept. 2015

Education

Massachusetts Institute of Technology, Ph.D., Mathematics 2011
Thesis: *Coleman integration for hyperelliptic curves: algorithms and applications*, advised by Kiran Kedlaya
Harvard University, A.M., Mathematics 2006
Harvard University, A.B., Mathematics *magna cum laude* 2006

Preprints and publications

36. “Ogg’s torsion conjecture: Fifty years later” (with B. Mazur and an appendix by N. Dogra), arXiv:2307.04752.
35. “Quadratic Chabauty for modular curves: Algorithms and examples” (with N. Dogra, J. S. Müller, J. Tuitman, J. Vonk), *Compos. Math.*, **159**, no. 6 (June 2023), 1111 – 1152.
34. “Computational tools for quadratic Chabauty” (with J. S. Müller), lecture notes for the 2020 Arizona Winter School, preprint.
33. “Variants of Lehmer’s speculation for newforms” (with W. Craig, K. Ono, W.-L. Tsai), to appear, *Adv. Math.*.
32. “Even values of Ramanujan’s tau-function” (with K. Ono, W.-L. Tsai), *La Matematica*, **1**, 395–403 (2022).
31. “Variations of Lehmer’s conjecture for Ramanujan’s tau-function” (with W. Craig, K. Ono), *J. Number Theory*, 237 (2022), 3–14.
30. “A tale of three curves,” *Snapshots of modern mathematics from Oberwolfach*, 2022.

29. "Two recent p -adic approaches towards the (effective) Mordell conjecture" (with A. J. Best, F. Bianchi, B. Lawrence, J. S. Müller, N. Triantafyllou, J. Vonk), *Arithmetic L-Functions and Differential Geometric Methods*, P. Charollois, G. Freixas i Montplet, V. Maillot (eds). Progress in Mathematics, vol. 338, Birkhäuser (2021), 31–74.
28. "Explicit quadratic Chabauty over number fields" (with A. Besser, F. Bianchi, J. S. Müller), *Israel J. Math.* 243 (2021), no. 1, 185–232.
27. "Explicit Coleman integration for curves" (with J. Tuitman), *Math. Comp.* 89 (2020), 2965–2984.
26. "Quadratic Chabauty and rational points II: Generalized height functions on Selmer varieties" (with N. Dogra), *Int. Math. Res. Notices* (2020), rnz362.
25. "Explicit Chabauty-Kim for the split Cartan modular curve of level 13" (with N. Dogra, J. S. Müller, J. Tuitman, J. Vonk), *Ann. of Math.*, 189, No. 3 (May 2019), 885–944.
24. "What is...a Coleman integral?" *Notices of the AMS*, 66, no. 5 (2019), 738–740.
23. "An effective Chabauty-Kim theorem" (with N. Dogra) *Compos. Math.*, 155, no. 6 (2019), 1057–1075.
22. "Chabauty-Coleman experiments for genus 3 curves," (with F. Bianchi, V. Cantoral-Farfán, M. Çiperiani, A. Etropolski) *Research Directions in Number Theory*, Association for Women in Mathematics Series, vol 19. Springer, 2019, 67–90.
21. "Quadratic Chabauty and rational points I: p -adic heights" (with N. Dogra and an appendix by J. S. Müller), *Duke Math. J.*, 167, no. 11 (2018), 1981–2038.
20. "A non-abelian conjecture of Tate-Shafarevich type for hyperbolic curves" (with I. Dan-Cohen, M. Kim, S. Wewers), *Math. Ann.*, 372 (2018), no. 1-2, 369–428.
19. "Constructing genus 3 hyperelliptic Jacobians with CM" (with S. Ionica, K. Lauter, C. Vincent), *LMS J. Comput. Math.* 19, Issue A (Algorithmic Number Theory Symposium XII) (2016), 283 – 300.
18. "Databases of elliptic curves ordered by height and distributions of Selmer groups and ranks" (with W. Ho, N. Kaplan, S. Spicer, W. Stein, J. Weigandt), *LMS J. Comput. Math.* 19, Issue A (Algorithmic Number Theory Symposium XII) (2016), 351 – 370.
17. "Computing integral points on hyperelliptic curves using quadratic Chabauty" (with A. Besser, J. S. Müller), *Math. Comp.* 86 (2017), 1403–1434.
16. "Shadow lines in the arithmetic of elliptic curves" (with M. Çiperiani, J. Lang, B. Mirza, R. Newton), *Directions in Number Theory: Proceedings of the WIN3 Workshop*, Springer, 2016, 33 – 55.
15. "Explicit p -adic methods for elliptic and hyperelliptic curves," *Advances on Superelliptic Curves and their Applications*, IOS Press, 2015, 260 – 285.
14. "Quadratic Chabauty: p -adic heights and integral points on hyperelliptic curves" (with A. Besser, J. S. Müller), *J. Reine Angew. Math.* 720 (2016), 51 – 79.
13. "A p -adic Birch and Swinnerton-Dyer conjecture for modular abelian varieties" (with J. S. Müller, W. Stein), *Math. Comp.* 85 (2016), 983 – 1016.
12. "Coleman integration for even degree models of hyperelliptic curves," *LMS J. Comput. Math.* 18 (2015), 258 – 265.
11. "On 3-adic heights on elliptic curves," *J. Number Theory* (Special issue – in honor of Wen-Ching Winnie Li), 161 (2016), 119 – 134.
10. " p -adic heights of Heegner points and Λ -adic regulators" (with M. Çiperiani, W. Stein), *Math. Comp.* 84 (2015), 923 – 954.
9. "Comparing arithmetic intersection formulas for denominators of Igusa class polynomials" (with J. Anderson, K. Lauter, J. Park, B. Viray), *Women in Numbers 2: Research Directions in Number Theory*, *Contemp. Math.* 606, AMS, 2013, 65 – 82.

8. "Coleman-Gross height pairings and the p -adic sigma function" (with A. Besser), *J. Reine Angew. Math.* **698** (2015), 89 – 104.
7. "Iterated Coleman integration for hyperelliptic curves," *ANTS-X: Proceedings of the Tenth Algorithmic Number Theory Symposium*, Open Book Series **1**, MSP, 2013, 41 – 61.
6. "Computing local p -adic height pairings on hyperelliptic curves" (with A. Besser), *Int. Math. Res. Notices* (2012) **2012** (11): 2405 – 2444.
5. "Appendix and erratum to 'Massey products for elliptic curves of rank 1'" (with K. S. Kedlaya, M. Kim), *J. Amer. Math. Soc.* **24** (2011), 281 – 291.
4. "Explicit Coleman integration for hyperelliptic curves" (with R. Bradshaw, K. S. Kedlaya) in *Algorithmic Number Theory (ANTS-IX)*, LNCS **6197**, Springer, 2010, 16 – 31.
3. "Pairings on hyperelliptic curves" (with J. Belding, S. Chisholm, K. Eisenträger, K. Stange, E. Teske), *WIN – Women in Numbers*, Fields Inst. Comm., **60**, AMS, 2011, 87 – 120.

Volumes edited

2. *Arithmetic Geometry, Number Theory, and Computation*, Edited with Noam Elkies, Brendan Hassett, Bjorn Poonen, Andrew V. Sutherland, and John Voight. *Simons Symposia Series*, Springer, 2021.
1. *Research Directions in Number Theory*. Edited with Amanda Folsom, Matilde Lalín, and Michelle Manes. *Association for Women in Mathematics Series*, Springer, 2019.

Academic honors and grants

US-Israel BSF Grant, 2023 – 2027.

Simons Fellow, 2023.

AMS Joan and Joseph Birman Fellowship, 2023.

Fellow of the AWM, 2023.

Fellow of the AMS, 2022.

AWM-Microsoft Research Prize in Algebra and Number Theory, 2022.

NSF DMS-1945452 CAREER, Algebra and Number Theory, 2020 – 2024.

Sloan Research Fellowship, 2018 – 2022.

Hariri Institute for Computing Junior Faculty Fellowship, 2018.

Simons Collaboration on Arithmetic Geometry, Number Theory, and Computation, 2017 – 2024.

NSF DMS-1702196, Algebra and Number Theory, 2017 – 2021.

Clare Boothe Luce Professorship (Henry Luce Foundation), 2016 – 2024.

AMS-Simons Travel Grant, 2013 – 2016.

NSF Mathematical Sciences Postdoctoral Research Fellowship, 2011 – 2015.

NSF Graduate Research Fellowship, 2006 – 2011.

National Defense Science and Engineering Graduate (NDSEG) Fellowship, 2006 – 2008.

Phi Beta Kappa, Harvard University, 2006.

USA Today All-USA Academic First Team (1 of 20 nationally), 2002.

Intel Science Talent Search Finalist, 2002.

Siemens-Westinghouse Science and Technology Competition Finalist, 2001.

Conference grants

NSF and NSA conference grants (co-PI): *Connecticut Summer School in Number Theory*, 2020.

NSA and NTF conference grants (co-PI): *Connecticut Summer School in Number Theory*, 2018.

NSF conference grant (co-PI): *Workshops in Geometry and Mathematical Physics, Dynamical Systems, and Number Theory*, 2017-2020.

NSF, NTF, Clay Mathematics Institute, Microsoft Research conference grants (co-PI): *Women in Numbers 4*, 2017.

Microsoft Research conference grant: *Women in Sage Days*, 2017.

Clay Mathematics Institute workshop: *Explicit p -adic methods in number theory*, 2015.

Clay Mathematics Institute workshop: *Computational number theory, geometry, physics*, 2013.

Talks

Invited conference and workshop talks

- 212. Oct 2024: AMS Eastern Sectional Meeting (Invited Address), SUNY Albany (planned).
- 211. Jun 2024: CAVARET (Curves, Abelian Varieties, and Related Topics), Universitat de Barcelona, Spain (planned).
- 210. Jun 2024: British Mathematics Colloquium (Morning speaker), Manchester, UK (planned).
- 209. Jun 2024: Canadian Number Theory Association (CNTA) XVI (plenary), Toronto, Canada (planned).
- 208. Dec 2023: Modular Curves and their Arithmetic, Warwick, UK (planned).
- 207. Sept 2023: Rational Points on Modular Curves, ICTS Bengaluru, India.
- 206. Jul 2023: Machine-Checked Mathematics, Lorentz Center, Leiden, Netherlands.
- 205. Jun 2023: Computational number theory workshop (Semi-plenary), Foundations of Computational Mathematics (FoCM) 2023, Paris, France.
- 204. Jun 2023: An Expedition into Arithmetic Geometry, Lorentz Center, Leiden, Netherlands.
- 203. May 2023: Arithmetic Geometry and Algebraic Groups, UVA.
- 202. Feb 2023: Introductory workshop, Diophantine Geometry, MSRI.
- 201. Sept 2022: Computational mathematics in computer assisted proofs, AIM.
- 200. Sept 2022: Heilbronn Institute Annual Conference 2022, Bristol, UK.
- 199. May 2022: Simons Symposium, Periods and L -values of Motives.
- 198. Apr 2022: BJB90 (Bryan Birch 90th Birthday Conference), Heilbronn Institute, UK.
- 197. Oct 2021: Michigan Algebra and Number Theory Intercity Symposium (MANTIS).
- 196. Aug 2021: Branching from number theory: p -adics in the sciences, Max Planck Institute Leipzig, Germany.
- 195. Jul 2021: Explicit methods in number theory, Oberwolfach, Germany.
- 194. Apr 2021: Unlikely intersections, Diophantine geometry, and related fields, Reading, UK.
- 193. Mar 2021: Homotopic and geometric Galois theory, Oberwolfach, Germany.
- 192. ~~Mar 2021: AMS Eastern Sectional Meeting (Invited Address), Brown (planned)~~¹.

¹Cancelled due to COVID-19

191. Oct 2020: Algebraic Geometry Northeastern Series (AGNES), Stony Brook.
190. Jun 2020: Chicago Number Theory Day.
189. ~~Jun 2020: Canadian Number Theory Association (CNTA) XVI (plenary), Toronto, Canada (planned)².~~
188. Dec 2019: Women in Algebra and Symbolic Computation, Bad Dürkheim, Germany.
187. Oct 2019: Swiss Number Theory Days, ETH Zürich, Switzerland.
186. Oct 2019: Texas Algebraic Geometry Symposium (TAGS), Texas A&M.
185. Sept 2019: p -adic Langlands correspondence: a constructive and algorithmic approach, Rennes.
184. Jul 2019: JNT Biennial, Cetraro, Italy.
183. Jul 2019: Rational Points 2019, Schney, Germany.
182. Jul 2019: Journées Arithmétiques (plenary), Istanbul, Turkey.
181. May 2019: Barrett Memorial Lectures (plenary), University of Tennessee, Knoxville.
180. Apr 2019: Western Algebraic Geometry Symposium (WAGS), UC Berkeley.
179. Mar 2019: Gattaca, Georgia Tech.
178. Mar 2019: Hawaii Number Theory (plenary), Honolulu.
177. Jan 2019: Simons Collaboration Annual Meeting, New York.
176. Sept 2018: Open questions in cryptography and number theory, UC Irvine.
175. Aug 2018: Workshop on Arithmetic Geometry and Quantum Field Theory, Korea Institute for Advanced Study.
174. Jul 2018: Explicit methods in number theory, Oberwolfach, Germany.
173. Jul 2018: Algorithmic Number Theory Symposium (ANTS XIII) (plenary), University of Wisconsin, Madison.
172. Jul 2018: Sage Days 95: Women in Sage, Montréal, Canada.
171. Feb 2018: Numerical methods for curves, Rennes, France.
170. Feb 2018: Graduate workshop in algebraic geometry, Harvard/MIT.
169. Jan 2018: Arithmetic and Arakelov geometry, University of Clermont-Ferrand, France.
168. Dec 2017: Palmetto Number Theory Series (PANTS) XXIX (plenary), Clemson University.
167. Sept 2017: Arithmetic of hyperelliptic curves, ICTP, Trieste, Italy.
166. Aug 2017: Sage Days: Opening Workshop for a Year of Coding Sprints, IMA.
165. Aug 2017: Women in Numbers 4, BIRS, Canada.
164. Jul 2017: Rational points 2017, Schney, Germany.
163. Jun 2017: Arithmetic geometry and computer algebra, Oldenburg, Germany.
162. Jun 2017: Journées Algophantiennes Bordelaises 2017 (plenary), Bordeaux, France.
161. May 2017: Arithmetic aspects of explicit moduli problems, BIRS, Canada.
160. Apr 2017: Sage Days 86, Université du Québec à Montréal, Montréal, Canada.

²Cancelled due to COVID-19

159. Mar 2017: Galois theory of periods and applications, MSRI.
158. Jan 2017: Women in Sage, Institut Henri Poincaré, Paris, France.
157. Nov 2016: Johns Hopkins-University of Maryland Algebra and Number Theory Day.
156. Aug 2016: Number theory and quantum field theory, POSTECH, Korea.
155. Jun 2016: Canadian Number Theory Association (CNTA XIV), Calgary, Canada.
154. May 2016: Arithmetic L -functions and differential geometric methods (Regulators IV), Paris, France.
153. Mar 2016: Explicit p -adic methods in number theory, CMI/Oxford, UK.
152. Jan 2016: Number theory and cryptography, Joint AMS/MAA Meeting, Seattle.
151. Oct 2015: Arithmétique en plat pays, Ghent, Belgium.
150. Sept 2015: Modular forms and curves of low genus: computational aspects, ICERM.
149. Jul 2015: Explicit methods in number theory, Oberwolfach, Germany.
148. Jul 2015: Rational points 2015, Schney, Germany.
147. Jun 2015: Analytic and arithmetic geometry, University of Oxford, UK.
146. Jun 2015: Non-archimedean geometry, University of Michigan.
145. Mar 2015: Recent trends in p -adic cohomology, Imperial College London, UK.
144. Mar 2015: Arithmetic of hyperelliptic curves, AMS Special Session, Michigan State University.
143. Feb 2015: Computational number theory, Kyushu University, Japan.
142. Feb 2015: Mathematical software winter school, Kyushu University, Japan.
141. Jan 2015: Selmer groups, Joint AMS/MAA Meeting, San Antonio.
140. Nov 2014: Across arithmetic, Barcelona Mathematical Days 2014, Barcelona, Spain.
139. Jul 2014: Impact of computation on number theory, NCTS, Taiwan.
138. May 2014: Antalya algebra days XVI, Turkey.
137. Apr 2014: Alberta number theory days VI (plenary), Banff International Research Station, Canada.
136. Apr 2014: Applications of automorphic forms in number theory and combinatorics, LSU.
135. Apr 2014: Number theory workshop, British Mathematical Colloquium 2014, QMUL, UK.
134. Sept 2013: Computational number theory, geometry, and physics, CMI/Oxford, UK.
133. Aug 2013: Number theory and curves, SIAM applied algebraic geometry, Colorado State University.
132. Jul 2013: Rational points 2013, Thurnau, Germany.
131. May 2013: Collaborative Explorations and Developments in Arithmetic Research (CEDAR), UIC.
130. Jan 2013: L -functions and arithmetic geometry, Joint AMS/MAA Meeting, San Diego.
129. Jan 2013: Number theory and geometry, Joint AMS/MAA Meeting, San Diego.
128. Jan 2013: AWM Workshop on number theory, Joint AMS/MAA Meeting, San Diego.
127. Sept 2012: Rational points on curves, University of Oxford, UK.
126. Jul 2012: Algorithmic Number Theory Symposium (ANTS X), University of California, San Diego.
125. Jun 2012: Canadian Number Theory Association (CNTA XII), Lethbridge, Canada.

124. May 2012: Bellairs workshop in number theory: pro-unipotent fundamental groups, Barbados.
123. Apr 2012: Atkin memorial conference, University of Illinois at Chicago.
122. Feb 2012: Complex and arithmetic dynamics program, ICERM (two lectures).
121. Sept 2011: Number theory, AWM celebration, Brown University.
120. Jul 2011: Foundations of Computational Mathematics (FoCM '11), Budapest, Hungary.
119. May 2011: Atkin memorial conference, University of Illinois at Chicago.
118. Nov 2010: Applications of non-archimedean geometry, AMS Special Session, University of Richmond.
117. Jul 2010: Algorithmic Number Theory Symposium (ANTS IX), LORIA, Nancy, France.
116. Mar 2010: Effective methods in p -adic cohomology, University of Oxford, UK.
115. Jun 2008: Workshop on L -functions and modular forms, University of Washington, Seattle.
114. Aug 2006: Graduate workshop in modular forms, MSRI.

Seminars and colloquia

113. Sept 2023: Colloquium, Carnegie Mellon University.
112. Jul 2023: University of Virginia REU, University of Virginia.
111. Jun 2023: Selmer seminar.
110. Feb 2023: Colloquium, University of California, Berkeley.
109. Jul 2022: Number theory seminar, University of Groningen.
108. Jun 2022: University of Virginia REU, University of Virginia.
107. Jun 2022: University of Guam REU, University of Guam.
106. Apr 2022: Number theory seminar, Harvard University.
105. Apr 2022: Number theory seminar, Duke University.
104. Feb 2022: Computational Mathematics Colloquium, University of Waterloo.
103. Oct 2021: Colloquium, University of Utah.
102. Sept 2021: Women Lecture Series Colloquium, Kansas State University.
101. Jun 2021: Séminaire géométrie et algèbre effectives, IRMAR, Université de Rennes I.
100. Jun 2021: Number theory seminar, Istanbul Center for Mathematical Sciences, Istanbul, Turkey.
99. Jun 2021: University of Virginia REU, University of Virginia.
98. Mar 2021: Number theory seminar, University of Rochester.
97. Mar 2021: Colloquium, University of Warwick.
96. Feb 2021: Number theory seminar, University of Virginia.
95. Oct 2020: Colloquium, Brown University.
94. Aug 2020: Diophantine problems, MSRI.
93. Jul 2020: Number theory web seminar.
92. Jun 2020: Heilbronn number theory seminar, University of Bristol.

91. Apr 2020: Number theory seminar, University of Chicago (planned)³.
90. Feb 2020: Colloquium, Rutgers University.
89. Feb 2020: Colloquium, Temple University.
88. Nov 2019: Number theory and algebraic geometry seminar, Boston College.
87. Sept 2019: Joint Athens-Atlanta number theory seminar, University of Georgia.
86. May 2019: London-Paris Number theory seminar, King's College London, UK.
85. Nov 2018: Colloquium, University of Michigan.
84. Nov 2018: Five College Number theory seminar, University of Massachusetts, Amherst.
83. Nov 2018: Colloquium, Tufts University.
82. Apr 2018: Number theory seminar, Harvard University.
81. Jan 2018: Number theory seminar, Stanford University.
80. Nov 2017: Algebra seminar, Brown University.
79. Nov 2017: Joint Columbia-CUNY-NYU Number theory seminar.
78. Oct 2017: Algebra and number theory seminar, University of Rochester.
77. May 2017: Quebec-Vermont Number Theory Seminar.
76. Apr 2017: Galois seminar, University of Pennsylvania.
75. Feb 2017: Colloquium, Washington University in St. Louis.
74. Feb 2017: Number theory seminar, University of California, San Diego.
73. Feb 2017: Seminar, Center for Communications Research, La Jolla.
72. Jan 2017: Colloquium, Pennsylvania State University.
71. Jan 2017: Séminaire de théorie des nombres, Institut de Mathématiques de Jussieu, France.
70. Dec 2016: Number theory seminar, Boston University.
69. Nov 2016: Colloquium, University of Illinois at Chicago.
68. Sept 2016: Number theory seminar, Harvard University.
67. Jun 2016: Belgian-Dutch Intercity Number theory seminar, Leuven, Belgium.
66. Apr 2016: Algebra seminar, Kyushu University, Japan.
65. Mar 2016: Colloquium, Oakland University.
64. Feb 2016: Arithmetic geometry seminar, University of Oxford, UK.
63. Jan 2016: Number theory seminar, Boston University.
62. Jan 2016: Colloquium, University of Washington.
61. Dec 2015: Colloquium, Ohio State University.
60. Dec 2015: London Number theory seminar, Imperial College London, UK.
59. Nov 2015: Colloquium, Rice University.
58. Nov 2015: North-meets-South Colloquium, University of Oxford.

³Cancelled due to COVID-19

57. Nov 2015: Number theory seminar, University of Warwick, UK.
56. Nov 2015: Number theory seminar, Max Planck Institute for Mathematics, Bonn, Germany.
55. Oct 2015: Algebra seminar, Brown University.
54. Sept 2015: Joint Boston College-MIT Number theory seminar.
53. Oct 2014: Number theory seminar, University of Cambridge, UK.
52. May 2014: Number theory seminar, University of Sheffield, UK.
51. Apr 2014: Number theory seminar, University of Calgary, Canada.
50. Apr 2014: Number theory seminar, University of Nottingham, UK.
49. Mar 2014: Algebraic geometry and number theory seminar, Ben Gurion University, Israel.
48. Mar 2014: Heilbronn seminar, University of Bristol, UK.
47. Feb 2014: Number theory seminar, University of Cambridge, UK.
46. Nov 2013: Number theory seminar, University of Oxford, UK.
45. Nov 2013: Numerical analysis group internal seminar, University of Oxford, UK.
44. Nov 2013: Number theory seminar, University of Warwick, UK.
43. Jun 2013: Number theory seminar, Tohoku University, Japan.
42. May 2013: Algebra and number theory seminar, UC Irvine.
41. Apr 2013: Algebra seminar, Georgia Institute of Technology.
40. Apr 2013: Number theory seminar, Harvard University.
39. Nov 2012: Five College Number theory seminar, Amherst College.
38. Oct 2012: Number theory seminar, University of Chicago.
37. Oct 2012: Everytopic seminar, Brandeis University.
36. Feb 2012: Number theory and arithmetic geometry seminar, Universität Hamburg, Germany.
35. Dec 2011: Number theory seminar, Arizona State University, Tempe.
34. Nov 2011: Algebra, number theory, and combinatorics seminar, University of Texas, Austin.
33. Oct 2011: Number theory seminar, Boston University.
32. Nov 2010: Algebra/number theory seminar, Brown University.
31. Nov 2010: Number theory seminar, University of Washington, Seattle.
30. Nov 2010: Colloquium, Dartmouth College.
29. Nov 2010: Number theory seminar, Dartmouth College.
28. Oct 2010: Seminar, Center for Communications Research, La Jolla.
27. Oct 2010: Number theory seminar, University of California, San Diego.
26. Jul 2006: Theory group seminar, Microsoft Research, Redmond.
25. Aug 2004: Special seminar, Okayama University, Japan.

Lecture series and mini-courses

24. 13th Swiss–French winter school 2024, Charmey, Switzerland (planned)
Lecture course: *Mock rational points in Chabauty–Kim loci*
23. Rational Points on Modular Curves 2023, ICTS, Bengaluru, India
Lecture course: *Computational aspects of nonabelian Chabauty*
22. PROMYS Advanced Seminar 2021, Boston University
Lecture course: *Finding rational points on hyperelliptic curves* (6 weeks)
21. Inaugural Ruth Moufang Lectures in Algebra and Geometry 2021, Technical University Darmstadt, Goethe University Frankfurt, and University of Heidelberg
Lecture course: *Rational points on curves: from Diophantus to the present day*
20. Berkeley RTG Research Workshop 2021
Lecture course: *Chabauty–Coleman and Chabauty–Kim experiments*
19. Arizona Winter School 2020: Non-abelian Chabauty
Lecture course: *Computational tools for quadratic Chabauty*
18. Alpbach 2018: Galois Representations and Heights, Alpbach, Austria
Lecture course: *Quadratic Chabauty*
17. Eastern Africa Universities Mathematics Programme (EAUMP) 2016: Number Theory, East African Institute of Fundamental Research, University of Rwanda
Lecture course: *Elliptic and hyperelliptic curves*
16. Oxford CoDEC (Computing Databases of Elliptic Curves) Summer 2016, University of Oxford, UK
Lecture course: *Elliptic curves, Sage, and databases*
15. PIMS CRG Explicit Methods for Abelian Varieties Summer School 2016, University of Calgary, Canada
Lecture course: *p -adic heights on Jacobians of hyperelliptic curves*
14. EAUMP 2015: Experimental Pure Mathematics, Makerere University, Uganda
Lecture course: *Experimental number theory with Sage*
13. NATO Advanced Study Institute 2014: Arithmetic of Hyperelliptic Curves, Ohrid, North Macedonia
Lecture course: *Explicit p -adic methods for hyperelliptic curves*

Mathematics community and outreach

12. Oct 2021: University of Utah AWM-RTG career path series.
11. Aug 2021: Lunch in the Time of Covid (panel discussion).
10. Jul 2021: PROMYS Europe, CMI/University of Oxford, UK.
9. Apr 2021: College of Natural & Applied Sciences STEM Conference, University of Guam.
8. ~~Fall 2020: Open neighborhood seminar, Harvard University (planned)⁴.~~
7. Feb 2020: MAA Student Chapter, Boston University.
6. Dec 2018: Mathematics Colloquium (2 lectures), University of Guam.
5. Apr 2017: Keynote speaker at Women in Math and Statistics Conference, Harvard University.
4. Mar 2017: Mathematics Colloquium (2 lectures), University of Guam.
3. Jul 2016: PROMYS Europe, CMI/University of Oxford, UK.
2. Apr 2016: Mathematics Colloquium (3 lectures), University of Guam.
1. May 2015: Invariants Society, University of Oxford, UK.

⁴Cancelled due to COVID-19

Teaching

Boston University

MA 541: Modern algebra I, Fall 2022.

MA 841: Greatest hits in arithmetic geometry (newly developed course), Fall 2021.

MA 841: Greatest hits in number theory (newly developed course), Fall 2020.

MA 124: Calculus II, Spring 2019, Spring 2020.

MA 841: p -adic methods for rational points on curves (newly developed course), Fall 2019.

MA 242: Linear algebra, Spring 2018, Spring 2021.

MA 123: Calculus I, Fall 2016, Fall 2017.

MA 842: Explicit methods for elliptic and hyperelliptic curves (newly developed course), Spring 2017.

University of Oxford

Lecturer, Part A Number Theory, Trinity Term 2015, Trinity Term 2016.

Consultation sessions for B9b/B3.4 Algebraic Number Theory, Trinity Term 2014, Trinity Term 2015.

Consultation sessions for C9.1b Elliptic Curves, Trinity Term 2014.

Intercollegiate classes for B9b/B3.4 Algebraic Number Theory: 3 sections in Hilary Term 2014, 2 sections in Hilary Term 2015.

Intercollegiate classes for B3.1 Galois Theory (2 sections), Michaelmas Term 2014.

Intercollegiate classes for C9.1b Elliptic Curves (1 section), Hilary Term 2014.

Tutor for Analysis I: Sequences and Series, Brasenose College, Michaelmas Term 2013.

Tutor for Algebra I: Linear Algebra, Brasenose College, Michaelmas Term 2013.

Harvard Summer School

Instructor, Mathematics S-Ar (Pre-calculus mathematics), 2005, 2008, 2009, 2011.

Course Assistant and Grader, Mathematics 1-ab (Calculus I, II), 2007.

Math Question Center Tutor, 2007.

Advising and mentoring

Undergraduate research

Summer 2016: Director, Oxford CoDEC

Participants: Henrique Aguiar, Samuel Banks, William Biggs, Stephanie Chan, Miguel Pereira Torres da Costa, Aashraya Jha, Shati Patel, Thomas Perry, Carl Mackintosh, Jay Swar, Yao Yao

Summer 2015: Stephanie Chan (Oxford), p -adic cohomology

Undergraduate theses

2016: Oana (Adascalitei) Pădurariu, MMath (Mathematics Part C Dissertation), Oxford.
Dissertation: *Torsion subgroups of elliptic curves over low degree number fields*

2016: Stephanie Chan, MMath (Mathematics Part C Dissertation), Oxford.
Dissertation: *Topics in the theory of zeta functions of curves*

2016: David Fitzpatrick, MMath (Mathematics Part C Dissertation), Oxford.
Dissertation: *p -adic zeta and L -functions*

2016: Andrew Kirk, MMath (Mathematics Part C Dissertation), Oxford.
Dissertation: *Local class field theory via Lubin-Tate theory*

2015: John Musson, MMath (Mathematics Part C Dissertation), Oxford.
Dissertation: *Bounded gaps between consecutive primes*

2015: Samuel Porritt, MMath (Mathematics Part C Dissertation), Oxford.
Dissertation: *p -adic analysis and rational points on curves*

2015: Florence Walton, MMathPhil (Mathematics Part C Dissertation), Oxford.
Dissertation: *The congruent number problem and the Birch and Swinnerton-Dyer conjecture*

Graduate research and supervised reading

Fall 2022: MA 943, Katherine Finnerty, PhD candidate, Boston University.

Spring – Summer 2022: Tomás Seguel Carreño, PhD candidate (student of Natalia García Fritz), Pontificia Universidad Católica de Chile.

2020 – 2023: Brice Miayoka, PhD candidate (student of Tony Ezome and Régis Babindamana), Marien Ngouabi University, Republic of the Congo.

Fall 2019: Stevan Gajović, PhD candidate (student of Steffen Müller), University of Groningen.

Fall 2019: MA 943, Oana (Adascalitei) Pădurariu, PhD candidate, Boston University.

Spring 2019: MA 944, Oana (Adascalitei) Pădurariu, Asra Ali, Sachi Hashimoto, PhD candidates, Boston University.

Spring 2019: MA 942, Aashraya Jha, PhD candidate, Boston University.

Spring 2018: MA 944, Oana (Adascalitei) Pădurariu and Berke Karagoz, PhD candidates, Boston University.

Spring 2018: MA 946, Sachi Hashimoto, PhD candidate, Boston University.

2016 – 2017: Nicholas Triantafillou, PhD candidate (student of Bjorn Poonen), MIT.

Graduate theses

2022 – present: Katherine Finnerty, PhD candidate, Boston University.

2021 – present: Aashraya Jha, PhD candidate, Boston University.

2023: Oana Pădurariu, PhD, Boston University.

Dissertation: *Rational points on curves with extra structure*

Next position: Postdoctoral researcher, Max Planck Institute for Mathematics, Bonn, Germany and Universität Bonn, Germany

2022: Sachi Hashimoto, PhD, Boston University.

Dissertation: *Geometric and analytic methods for quadratic Chabauty*

Next position: Postdoctoral researcher, Max Planck Institute for Mathematics in the Sciences, Leipzig, Germany and Tamarkin Assistant Professor, Brown University

2021: Alexander Best, PhD, Boston University.

Dissertation: *Tools and techniques for rational points on curves*

Next position: Postdoctoral researcher, VU Amsterdam and Heilbronn Fellow, King's College London

2019: Francesca Bianchi, DPhil, Oxford (co-supervised by Alan Lauder).

Dissertation: *Topics in the theory of p -adic heights on elliptic curves*

Next position: Postdoctoral researcher, University of Groningen

2015: Michelle Kovesi, MSc (Mathematics and the Foundations of Computer Science), Oxford.

Dissertation: *Proving the weak BSD conjecture for elliptic curves in the Cremona database*

2015: Bo Schmidt, MSc (Mathematics and the Foundations of Computer Science), Oxford.

Dissertation: *Solutions to systems of multivariate p -adic power series*

2014: Charlene Soh, MSc (Mathematics and the Foundations of Computer Science), Oxford.

Dissertation: *Explicit methods for the Birch and Swinnerton-Dyer conjecture*

2014: Haikal Yeo, MSc (Mathematics and the Foundations of Computer Science), Oxford.

Dissertation: *Computations motivated by the p -adic Birch and Swinnerton-Dyer conjecture*

Visiting researchers and postdoctoral fellows

2023 – 2026: Juanita Duque-Rosero, Research Assistant Professor, Boston University.

2023 – 2024: Jerson Caro, Simons Collaboration Postdoctoral Associate, Boston University.

2023 – 2024: Jun Lau, Simons Collaboration Postdoctoral Associate, Boston University.

2023: Wanlin Li, Assistant Professor, Washington University in St. Louis (AWM-NSF Mentoring Grant).

2022 – 2024: Barinder Banwait, Simons Collaboration Postdoctoral Associate, Boston University.

2019 – 2023: Daniel Hast, Simons Collaboration Postdoctoral Associate, Boston University.

2019 – 2022: Benjamin Matschke, Simons Collaboration Research Assistant Professor, Boston University.

2018 – 2020: Céline Maistret, Postdoctoral Faculty Fellow, Boston University.

Next position: Royal Society Dorothy Hodgkin Fellow and Lecturer, University of Bristol

Professional service

Conference and workshop leadership

Organizer

42. GeMsGetMath@BU (for high school students), Boston, 2024 (with M. Beck).

41. The Mordell conjecture 100 years later, MIT, 2024 (with P. Habegger, B. Poonen, A. Sutherland, W. Zhang).

40. ANTS XVI, MIT, 2024 (with A. Sutherland, J. Voight).

39. Connecticut Summer School and Conference in Number Theory, 2024 (with K. Conrad, Á. Lozano-Robledo, C. Vincent).

38. GeMsGetMath@BU (for high school students), Boston, 2023 (with M. Beck).

37. MSRI semester program on Diophantine Geometry, MSRI, 2023 (with M. Çiperiani, P. Habegger, W. Ho, H. Pasten, Y. Tang, S. Zhang).

36. COUNT (COmputations and their Uses in Number Theory), CIRM, Luminy, France, 2023 (with B. Allombert, S. Anni, P. Bruin, P. Kılıçer, M. Streng).

35. Arithmetic Geometry Informed by Computation at JMM, Boston, 2023 (with B. Poonen, A. Sutherland).

34. CoDER (Computing Databases Enriching Research), University of Guam, 2022 (with H. Nagahashi, H. Oh).
33. Park City Mathematics Institute: Number Theory Informed by Computation, Park City, 2022 (with B. Poonen, A. Venkatesh).
32. GirlsGetMath at BU (for high school students), Boston, 2022 (with M. Beck).
31. Connecticut Summer School and Conference in Number Theory, 2022 (with K. Conrad, Á. Lozano-Robledo, C. Vincent).
30. Modular Curves Workshops I and II, MIT, 2022 (with E. Costa, N. Elkies, D. Roe, A. Sutherland, J. Voight).
29. Park City Mathematics Institute Virtual Graduate Summer School in Number Theory, 2021 (with B. Poonen, A. Venkatesh).
28. Rational Points and Galois Representations, Pittsburgh, 2021 (with N. Dogra and C. Wang-Erickson; JSB and B. Lawrence as scientific organizers).
27. AI and Inequalities: Creating Change, Hariri Institute, Boston University, 2021 (with E. Nsoesie).
26. Arithmetic Geometry, Number Theory, and Computation III, ICERM, 2020 (with N. Elkies, B. Hassett, B. Poonen, A. Sutherland, J. Voight).
25. Connecticut Summer School and Conference in Number Theory, 2020 (with K. Conrad, Á. Lozano-Robledo, C. Vincent).
24. CMI-HIMR Summer School in Computational Number Theory, Bristol, UK, 2019 (with T. Dokchitser).
23. BU-Keio Workshop in Number Theory, Boston, 2019 (with A. Altug, K. Bannai, S. Rosenberg).
22. Arithmetic of Low-Dimensional Abelian Varieties, ICERM, 2019 (with N. Elkies, B. Hassett, B. Poonen, A. Sutherland, J. Voight).
21. Arithmetic Geometry, Number Theory, and Computation, MIT, 2018 (with N. Elkies, B. Hassett, B. Poonen, A. Sutherland, J. Voight).
20. Connecticut Summer School and Conference in Number Theory, 2018 (with K. Conrad, Á. Lozano-Robledo, L. Xiao).
19. Sage Days: Opening Workshop, IMA, 2017 (with B. Brubaker, M. Koeppe, G. Musiker).
18. WIN4: Women in Numbers 4, Banff International Research Station, 2017 (with C. David, M. Manes, B. Viray).
17. Sage Days 87: p -adics+, Vermont, 2017 (with X. Caruso, E. Costa, T. Dupuy, D. Roe, W. Stein, C. Vincent).
16. Sage Days 82: Women in Sage, Paris, 2017 (with V. Pons, J. Striker).
15. Sage Days 81: Improving SageMath, Hawaii, 2016 (with T. Clemans, A. Deines, J. Jeng, W. Stein).
14. Explicit p -adic Methods in Number Theory (Sage Days 71), CMI/Oxford, 2016 (with D. Roe).
13. Sage Days 69: Women in Sage 6, San Diego, 2015 (with A. Deines).
12. Sage Days 68: Bug Days, Seattle, 2015 (with A. Deines, W. Stein).
11. Sage Days 64.25: Bug Days, San Diego, 2015 (with A. Deines, W. Stein).
10. It All Adds Up (LMS Women in Mathematics), Oxford, 2015 (with R. Cotton-Barratt, A. Etheridge, E. Hunsicker, F. Kirwan, U. Martin, V. Neale, A. Pilot).
9. Sage Days 56: Computational Number Theory and the Cloud, Hawaii, 2014 (with A. Deines, W. Stein).
8. Computational Number Theory, Geometry, and Physics (Sage Days 53), CMI/Oxford, 2013 (with V. Braun).
7. Sage Days 50: Women in Sage 4, Seattle, 2013 (with A. Deines).

6. Sage Days 46: Computational Number Theory, Hawaii, 2013 (with A. Deines, X. Faber, M. Manes, W. Stein).
5. Arithmetic Statistics at Joint AMS/MAA Meeting (JMM), San Diego, 2013 (with K. McGown, E. Smith).
4. Sage Days 42: Women in Sage 3, Seattle, 2012 (with A. Deines, L. Thompson).
3. Rational Points on Varieties at JMM, Boston, 2012 (with B. Poonen, B. Viray, K. Wickelgren).
2. Sage Days 33: Women in Sage 2, Seattle, 2011 (with A. Deines, W. Stein).
1. Sage Days 26: Women in Sage, Seattle, 2010 (with A. Deines, W. Stein).

Scientific committees

Rational Points, Schney, Germany, 2023.

SAGA (Symposium on Arithmetic Geometry and its Applications), CIRM, Luminy, France, 2023.

Program committee, Algorithmic Number Theory Symposium XV (ANTS XV), Bristol, UK 2022.

A Tour of Arithmetic Geometry (Edixhoven 60th), Schiermonnikoog, Netherlands, 2022.

Rational Points, Schney, Germany, 2022.

Advisory board, AMS MRC on Explicit Methods in Arithmetic Geometry in Characteristic p , 2019.

Mathématiques Expérimentales: Méthodes et Pratiques (École Jeunes Chercheurs), Saint-Flour, France, 2018.

IMA Review Board for SageMath development workshops, 2017 – 2018.

Program committee, Algorithmic Number Theory Symposium XII (ANTS XII), Kaiserslautern, Germany, 2016.

NATO Advanced Study Institute: Arithmetic of Hyperelliptic Curves, Ohrid, Macedonia, 2014.

Project leader

Curves and L -functions Summer School (co-leader: S. Chan), ICTP, Italy, 2017.

Women in Numbers 4 (co-leader: M. Çiperiani), BIRS, Canada, 2017.

Women in Numbers 3 (co-leader: M. Çiperiani), BIRS, Canada, 2014.

Professional committees

Advisory Council, Clare Boothe Luce Program, Luce Foundation, 2023 – present.

AWM Publications and Research Communities Portfolio Committee, 2023 – 2026.

Advisory Board, African Women in Algebra, 2023 – present.

Scientific Advisory Board, ICERM, 2021 – 2024.

Board of Directors, Number Theory Foundation, 2020 – present.

AMS Short Course Subcommittee (Chair, 2021 – 2022), 2019 – 2022.

Women in Numbers Steering Committee, 2015 – present.

Editorial and review activities

Editor-in-chief

Research in Number Theory, 2022 – present.

Editorial board

Mathematics of Computation, Associate Editor, 2021 – present.

Quarterly Journal of Mathematics, 2020 – present.

Journal de Théorie des Nombres de Bordeaux, 2020 – present.

Expositiones Mathematicae, Guest Editor for special issue in memory of Bas Edixhoven, 2022 – 2023.

Experimental Mathematics, Associate Editor, 2020 – 2022.

Research in Number Theory, 2017 – 2022.

Refereeing (publisher)

American Mathematical Society, Springer

Refereeing (journals and conference proceedings)

Algebra and Number Theory, *American Journal of Mathematics*, *Annals of Mathematics**, *Compositio Mathematica**, *European Journal of Mathematics*, *Forum of Mathematics*, *Sigma**, *Indian Journal of Pure and Applied Mathematics*, *International Mathematics Research Notices*, *Journal für die reine und angewandte Mathematik**, *Journal of Symbolic Computation*, *Mathematical Proceedings of the Cambridge Philosophical Society**, *Proceedings of the London Mathematical Society**, *Mathematical Research Letters**, *Mathematics of Computation**, *Mathematische Annalen*, *Mathematische Zeitschrift**, *New York Journal of Mathematics*, *Quarterly Journal of Mathematics*, *Research in Number Theory*, *SIAM Journal on Applied Algebra and Geometry (SIAGA)*, *Transactions of the AMS**, *AMS Proceedings of Symposia in Pure Mathematics*, *Algorithmic Number Theory Symposium XI (ANTS XI)*, *International Symposium on Symbolic and Algebraic Computation 2015 (ISSAC 2015)*, *Algorithmic Number Theory Symposium XII (ANTS XII)*

(* = quick opinion)

Refereeing (grants)

BIRS (Banff International Research Station), DFG (German Research Foundation), ERC (European Research Council), Fields Institute, NSA Mathematical Sciences Program, NSF, NWO (Dutch Research Council), Simons Foundation, Swiss National Science Foundation

*Departmental and university service***Boston University**

Steering Committee, Hariri Institute for Computing & Computational Science and Engineering, 2023 – 2026.

Merit Committee, Mathematics & Statistics, 2023.

Hiring Committee, Assistant Professor in Number Theory, Mathematics & Statistics, 2022 – 2023.

Selection Committee, Clare Boothe Luce graduate fellowships, Boston University, 2022, 2023.

Antiracism and Social Justice Committee, Mathematics & Statistics, 2021 – present.

Selection Committee, Society of Fellows, Boston University, 2021 – 2023.

Hiring Committee, Assistant Professor in Geometry, Mathematics & Statistics, 2021 – 2022.

Faculty Taskforce on the Mathematical & Computational Sciences, CAS, 2020 – 2021.

Distinguished Speaker Series Committee, Hariri Institute, 2020 – 2021.

Graduate Student Fellowship Committee, Hariri Institute, 2020, 2021.

Graduate Committee, Mathematics & Statistics, 2016 – present.

Hiring Committee, Postdoctoral Faculty Fellow in Number Theory, Mathematics & Statistics, 2016 – 2017.

University of Oxford

Examiner, Confirmation of status viva of Francesca Balestrieri, 2016.

Assessor, Part C dissertation, 2016.

Examiner, Transfer dissertation viva of Christopher Nicholls, 2015.

MSc general supervisor, Javier Silva Velón, 2015 – 2016.

MSc general supervisor, Trevor van Loon, 2014 – 2015.

MSc general supervisor, Bo Schmidt, 2014 – 2015.

Developed materials for Computational Mathematics course, 2013, 2014, 2015.

Examiner, Transfer dissertation viva of Francesca Balestrieri, 2014.

Hiring committee member, EPSRC-funded postdoctoral fellowship, 2014.

Member of Good Practice Committee, 2013 – 2016.

MIT

Mathematics Cofactor (mentoring incoming graduate students), 2007 – 2011.

Organizer of STAGE (Seminar on Topics in Arithmetic, Geometry, Etc.), with B. Poonen, J. Suh, 2009 – 2011.

Math Transfer Credit Examiner (Calculus, Differential Equations, Linear Algebra), Fall 2008, Spring 2009.

Other activities

PhD assessment committee and defense committee member, Stevan Gajović, University of Groningen, 2022.

Senior thesis assessment committee, Steve Huang, Boston University, 2022.

PhD assessment committee and defense committee member, Enis Kaya, University of Groningen, 2021.

PhD thesis examiner and defense committee member, Elie Eid, Université de Rennes I, 2021.

Mentor, Math Alliance, 2021 – present.

Hiring committee member, APTF, University of Oxford, 2020.

Masters thesis examiner, University of New South Wales, 2018.

Question Reviewer, National Science Bowl, 2017.

PhD defense committee, Lubjana Beshaj, Oakland University, 2016.

Reviewer, *AMS Mathematical Reviews*, 2011 – 2016.

Non-resident tutor in mathematics at Cabot House, Harvard University, 2010 – 2013.

Girls' Angle mentor, 2010 – 2012.

MIT Friends of the Arts, co-founder and organizer, 2007 – 2011.

Research Science Institute (2005 TA, 2007 judging panel, minicourses in Sage/Magma), 2003 – 2008.