

Robert POLLACK

(updated February 27, 2026)

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EMPLOYMENT

2024–present	University of Arizona , Professor
2015–2025	Boston University , Professor
2009–2015	Boston University , Associate Professor
2004–2009	Boston University , Assistant Professor
2002–2004	University of Chicago , VIGRE Dickson Instructor
2003–2004	University of Chicago , NSF Postdoctoral Fellow
2001–2002	University of Washington , NSF Postdoctoral Fellow

RESEARCH INTERESTS

- ★ Elliptic curves and modular forms
- ★ p -adic L -functions and Iwasawa theory
- ★ p -adic variation of automorphic forms
- ★ $\mathcal{L}$ -invariants and slopes of modular forms

EDUCATION

June 2001	Harvard University , Ph.D.
June 1997	Harvard University , M.A.
May 1996	Washington University , B.S.

VISITING POSITIONS

2023–2024	Max Planck Institute for Mathematics (Bonn) , Visiting Scientist
July 2021	Max Planck Institute for Mathematics (Bonn) , Visiting Scientist
2016–2018	Max Planck Institute for Mathematics (Bonn) , Visiting Scientist

AWARDS

2016–2017	Simons Fellowship in Mathematics
2010	Gitner Award for Distinguished Teaching (BU College-wide award)
2006–2007	Sloan Research Fellowship

RESEARCH GRANTS

2023–2026	NSF grant DMS-2302285/2535755 (joint with John Bergdall) Slopes of modular forms and moduli stacks of Galois representations
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2023–2028	Simons Travel Support for Mathematicians Slopes and congruences of modular forms
2017–2021	NSF grant DMS-1702178 Iwasawa theory of extended eigenvarieties
2013–2017	NSF grant DMS-1303302 p -adic variation in Iwasawa theory
2010–2013	NSF grant DMS-1001768 p -adic local Langlands and Iwasawa theory
2007–2010	NSF grant DMS-0701153 Overconvergent cohomology of higher rank groups
2004–2007	NSF grant DMS-0439264 (joint with Tom Weston) p -adic variation of supersingular Iwasawa invariants
2001–2004	NSF postdoctoral fellowship DMS-0102036 p -adic L -series of modular forms at supersingular primes

OTHER GRANTS

2016–2017	NSF conference grant DMS-1601028 (co-PI) L -functions and Arithmetic
2014–2015	NSF conference grant DMS-1404999 (co-PI) p -adic Variation and Number Theory
2013–2016	NSF grant DMS-1404999 (co-PI) Boston University/Keio University Workshops
2005	NSF conference grant DMS-0509836 Open Questions and Recent Developments in Iwasawa Theory

PAPERS ACCEPTED IN PEER REVIEWED JOURNALS

- ★ On the Iwasawa invariants of Mazur–Tate elements of elliptic curves at additive primes,
to appear in *The Quarterly Journal of Mathematics*
joint with Antonio Lei and Naman Pratap
- ★ Non-vanishing of critical L -values in Hida families,
Mathematical Research Letters, 33 (2026), no. 1, 57–81.
joint with Vlad Serban
- ★ New phenomena arising from $\mathcal{L}$ -invariants of modular forms,
to appear in *Algebra and Number Theory*
joint with John Bergdall
- ★ Explicit reciprocity laws and Iwasawa theory for modular forms,
Duke Mathematical Journal, 174 (2025), no. 11, 2133–2202
joint with Matthew Emerton and Tom Weston
- ★ Iwasawa invariants in residually reducible Hida families,
Tunisian Journal of Mathematics, 7 (2025), no. 3–4, 755–790.
joint with Preston Wake

- ★ Slopes of modular forms and reducible Galois reps: an oversight in the ghost conjecture
Proceedings of the AMS, Series B, 9 (2022), 432–444.
joint with John Bergdall
- ★ On μ -invariants and congruences with Eisenstein series
Compositio Mathematica, 155 (2019), no. 5, 863–901.
joint with Joël Bellaïche
- ★ Slopes of modular forms and the ghost conjecture, II
Transactions of the AMS, 372 (2019), no. 1, 357–388.
joint with John Bergdall
- ★ Slopes of modular forms and the ghost conjecture
IMRN, (2019), no. 4, 1125–1144.
joint with John Bergdall
- ★ A remark on non-integral p -adic slopes for modular forms
Comptes Rendus Mathématique, 355 (2017), no. 3, 260–262.
joint with John Bergdall
- ★ On the freeness of anticyclotomic Selmer groups of modular forms
International Journal of Number Theory, 13 (2017), no. 6, 1443–1455.
joint with Chan-Ho Kim and Tom Weston
- ★ Explicit computations of Hida families via overconvergent modular symbols
Research in Number Theory, 2 (2016), Art. 25, 54 pp.
joint with Evan Dummit, Marton Hablicsek, Robert Harron, Lalit Jain, Daniel Ross
- ★ Arithmetic properties of Fredholm series for p -adic modular forms
Proceedings of the London Mathematical Society, (2016) 113 (4) 419–444
joint with John Bergdall
- ★ Overconvergent modular symbols
Computations with Modular Forms (Heidelberg 2011), *Contributions in Mathematical and Computational Sciences*, Vol. 6, Springer, 2014, 69–105
- ★ Critical slope p -adic L -functions
Journal of the London Mathematical Society, 87 (2013), no. 2, 428–452
joint with Glenn Stevens
- ★ Hilbert modular forms and the Gross-Stark conjecture
Annals of Mathematics, (2) 174 (2011), no. 1, 439–484
joint with Samit Dasgupta (lead author) and Henri Darmon
- ★ Mazur-Tate elements of non-ordinary modular forms
Duke Mathematical Journal, 156 (2011), no. 3, 349–385
joint with Tom Weston
- ★ On anticyclotomic μ -invariants of modular forms
Compositio Mathematica, 147 (2011), no. 5, 1353–1381
joint with Tom Weston
- ★ Overconvergent modular symbols and p -adic L -functions
Annales Scientifiques de l'École Normale Supérieure, (4) 44 (2011), no. 1, 1–42
joint with Glenn Stevens
- ★ A construction of rigid analytic cohomology classes for congruence subgroups of $SL_3(\mathbb{Z})$
Canadian Journal of Mathematics 61 (2009) no. 3, 674–690
joint with David Pollack

- ★ Two p -adic L -functions and the weak Birch and Swinnerton-Dyer conjecture
L-Functions & Galois Representations, London Math Society LNS 320 (2007), 300–332
 joint with Masato Kurihara
- ★ Kida’s formula and congruences of modular forms
Documenta Mathematica, 2006, Extra volume (in honor of J. Coates), 615–630
 joint with Tom Weston
- ★ Iwasawa theory of elliptic curves at supersingular primes over number fields
Journal für die Reine und Angewandte Mathematik, 598 (2006), 71–103
 joint with Adrian Iovita
- ★ Variation of Iwasawa invariants in Hida families
Inventiones Mathematicae, 163 (2006), no. 3, 523–580
 joint with Matthew Emerton and Tom Weston
- ★ The efficient calculation of Stark-Heegner points via overconvergent modular symbols
Israel Journal of Mathematics, 153 (2006), 319–354
 joint with Henri Darmon
- ★ An algebraic version of a theorem of Kurihara
Journal of Number Theory, 110 (2005) no. 1, 164–177
- ★ The main conjecture for CM elliptic curves at supersingular primes
Annals of Mathematics, (2) 159 (2004), no. 1, 447–464
 joint with Karl Rubin
- ★ On the p -adic L -function of a modular form at a supersingular prime
Duke Mathematical Journal, 118 (2003) no. 3, 523–558

PAPERS CURRENTLY UNDER REVIEW

- ★ On the variation of slopes over moduli stacks of Galois representations, arXiv:2609.12281
 joint with John Bergdall
- ★ Counting level-raising congruences using modular representation theory,
 arXiv:2609.05144
 joint with Jaclyn Lang and Preston Wake
- ★ Dedekind zeta functions of non-Galois torsion fields of elliptic curves, arXiv:2604.08776
 joint with Tom Weston
- ★ On the maximality of the λ -invariants of Mazur–Tate elements, arXiv:2512.00525
 joint with Antonio Lei and Naman Pratap
- ★ The refined Tamagawa number conjectures for GL_2 , arXiv:2505.09121
 this paper is by Chan-Ho Kim. I co-wrote an appendix with him.
- ★ p -adic Gross-Zagier at critical slope & a conjecture of Perrin-Riou, arXiv:1811.08216
 joint with Kazim Büyükboduk and Shu Sasaki

GRADUATE STUDENT ADVISING

Kâzım Büyükboduk	visiting graduate student from Stanford (Fall 2006)
Myoungil Kim	PhD received Spring 2011
Cong Xue	visiting graduate student from Ecole Polytechnique (Spring 2013)
Chan-Ho Kim	PhD received Spring 2013

Ian Sprung	PhD received Spring 2013 (unofficial PhD student; official advisor was J. Silverman at Brown)
Ben Fischer	PhD received Spring 2016
Jiawei An	visiting graduate student from Peking (Fall 2022–Spring 2023)
Vishakh Vasu	current PhD student (2025–current)
Nicholas Pilotti	current PhD student (2025–present)

POSTDOCTORAL ADVISING

Mihir Deo	University of Arizona department postdoc (2026–current)
Jinyue Luo	University of Arizona department postdoc (2025–current)
Peter Gräf	DFG fellowship (2022–2023)
John Bergdall	NSF postdoctoral fellowship (2014–2016)
Rob Harron	BU Postdoctoral Faculty Fellow (2009–2011)

CONFERENCES ORGANIZED

October 2022	2022 AMS Sectional Meeting on Iwasawa theory at UMass Amherst
June 2016	<i>L</i> -functions and arithmetic, Harvard University (in honor of Karl Rubin’s 60 th birthday)
September 2015	Boston-Keio summer workshop, Boston University
June 2014	<i>p</i> -adic variation in number theory, Boston University (in honor of Glenn Stevens’ 60 th birthday)
September 2011	Boston-Keio summer workshop, Boston University
June 2005	Open questions and recent developments in Iwasawa theory, Boston University (in honor of Ralph Greenberg’s 60 th birthday)
October 2004	Midwest number theory conference, University of Chicago

LECTURE SERIES PRESENTED

August 2011	Overconvergent modular symbols (5 lectures) Computations with Modular Forms, Heidelberg, Germany
March 2011	Overconvergent modular symbols (3 lectures) Arizona Winter School, Tucson
August 2007	Iwasawa theory of elliptic curves (4 lectures) Summer School on Iwasawa Theory, McMaster, Canada

SELECT CONFERENCE TALKS

June 2024	Joël Bellaïche memorial conference, Paris, France
November 2023	DIAMANT Symposium Autumn 2023, Eindhoven, Netherlands
August 2023	Galois Representations and Automorphic Forms, Bedlewo, Poland

Jan 2023	JMM-AMS special session on arithmetic geometry, Boston
June 2018	Math. is a long conversation: a celebration of Barry Mazur, Harvard
May 2018	Iwasawa Theory and Related Topics, Heidelberg, Germany
November 2017	3rd Japanese-German NT Workshop, MPI, Bonn, Germany
February 2017	p -adic Methods for Galois Rep's & Modular Forms, Barcelona, Spain
September 2016	Automorphic Forms: theory and computation, Kings College, London
September 2015	p -adic Hodge theory & Iwasawa theory, Bielefeld University, Germany
May 2013	XV-ième colloque pan-québécois des étudiants de l'ISM, McGill
April 2013	AMS Spring Eastern Sectional Meeting, Boston College
February 2013	Sage Day 44: Overconvergent Modular Forms, University of Wisconsin
September 2012	Rational points on curves, Oxford, England
May 2011	Upstate number theory conference, Cornell
July 2010	Iwasawa 2010, Toronto, Canada
December 2009	Cycles and special values of L -series, CRM, Barcelona, Spain
July 2009	PCMI 2009: Arithmetic of L -functions, Park City, Utah
July 2008	Iwasawa 2008, Irsee, Germany
July 2006	p -adic modular forms and applications, Luminy, France
August 2005	Cryptography and related math, Chuo University, Tokyo, Japan
June 2005	Open questions and recent developments in Iwasawa theory, BU
January 2004	Far Hills 2004 workshop, Far Hills, Canada
July 2004	Iwasawa 2004, Besançon, France
November 2003	Birch and Swinnerton-Dyer conference, Princeton
September 2003	Cryptography and related math, Chuo University, Tokyo, Japan
August 2003	Current trends in arithmetic geometry, Banff, Canada
June 2002	XIII Rencontres arithmétiques, Caen, France
May 2002	Canadian Number Theory Association VII, Montreal, Canada

SELECT SEMINAR TALKS

April 2025	Number theory seminar, University of Texas at Austin
September 2024	Algebra and Number Theory Seminar, University of Arizona
May 2024	Max Planck Institute, Bonn, Germany
May 2024	Munich, Germany
Feb 2024	UC Dublin, Ireland
Dec 2023	Köln number theory seminar, Germany
March 2023	Michigan State Colloquium

Nov 2022	Columbia Automorphic forms and Arithmetic seminar
May 2022	MIT number theory seminar
April 2022	Harvard University
February 2021	KIAS, Korea (online)
October 2020	UC Dublin, Ireland (online)
January 2018	Köln number theory seminar, Germany
November 2017	Heidelberg Oberseminar, Germany
October 2017	University Paris Sud (Orsay) number theory seminar
March 2016	Stanford University
February 2014	University of Chicago
May 2013	McGill University, Montreal, Canada
March 2010	Harvard University
December 2009	Koç University, Istanbul, Turkey
May 2008	University of Washington
December 2006	Steklov Institute, Moscow, Russia
August 2005	Keio University, Tokyo, Japan
February 2004	University of Toronto, Canada
September 2003	University of Tokyo, Japan
February 2002	Stanford University
January 2001	Princeton University

COURSES TAUGHT

Spring 2026	Math 415B/515B – Abstract Algebra
Fall 2025	Math 415A/515A – Abstract Algebra
Spring 2025	Math 313 – Linear Algebra
Fall 2024	Math 313 – Linear Algebra
Spring 2023	MA124 – Calculus II (1 section plus course coordinator)
Fall 2022	MA741 – Graduate Algebra 1
Spring 2022	MA542 – Undergraduate Algebra II
Fall 2021	MA124 – Calculus II (course coordinator)
Spring 2021	MA124 – Calculus II (1 section plus discussion section coordinator)
Spring 2020	MA842 – Pseudo-deformation theory
Spring 2019	MA542 – Undergraduate Algebra II
Fall 2018	MA123 – Calculus I
Fall 2018	MA511 – Real Analysis

Spring 2016	MA124 – Calculus II (1 section plus course coordinator)
Fall 2015	MA124 – Calculus II
Spring 2015	MA124 – Calculus II (discussion section coordinator)
Spring 2015	MA564 – Introduction to Topology
Fall 2014	MA841 – Euler systems
Spring 2014	MA844 – Algebraic Number Theory
Fall 2013	MA124 – Calculus II
Spring 2013	MA124 – Calculus II (1 section plus discussion section coordinator)
Spring 2012	MA124 – Calculus II (1 section plus discussion section coordinator)
Fall 2011	MA124 – Calculus II
Fall 2011	MA511 – Real Analysis
Spring 2011	MA242 – Linear Algebra
Fall 2010	MA129 – Honors Calculus
Fall 2010	MA741 – Graduate Algebra
Spring 2010	MA242 – Linear Algebra
Fall 2009	MA129 – Honors Calculus
Fall 2009	MA541 – Undergraduate Algebra I
Fall 2008	MA124 – Calculus II
Spring 2008	MA542 – Undergraduate Algebra II
Spring 2007	MA542 – Undergraduate Algebra II
Spring 2007	MA844 – Iwasawa Theory
Spring 2006	MA742 – Graduate Algebra II
Fall 2005	MA123 – Calculus I
Fall 2005	MA741 – Graduate Algebra I
Spring 2005	MA242 – Linear Algebra
Spring 2005	MA341 – Number Theory
Fall 2004	MA242 – Linear Algebra
2002-2003	203/204/205 – Analysis (University of Chicago)

EDUCATIONAL OUTREACH

Teachers	Focus on Mathematics, Boston University -mentored teachers' research projects, Fall 2005, Fall 2007 Ross Program for Teachers, Ohio State University -worked with teachers for 1 week on number theory, Summer 2005 SESAME for teachers, University of Chicago -instructor of weekly course on unique factorization, Spring 2004
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- High school students PROMYS, Boston University
 -taught 6 week course on representation theory, Summers 2008, 2013
 -research lab mentor, Summers 2005, 2007

 Summer Institute of Mathematics, University of Washington
 -instructor of 3 week course on elliptic curves, Summers 2003, 2005
 -instructor of 3 week course on sums of squares, Summer 2004

 Ross program, Ohio State University
 -instructor of 1 week course on class numbers, Summer 2004
- Elementary students Math Circle, Baldwin Elementary school
 -meeting weekly with 3rd-5th graders covering enrichment topics in
 mathematics, 2022–2023

 Math activities, Morse Elementary school
 -met with 2nd and 3rd graders in this elementary school and led them
 through enrichment math activities, 2019, 2021

 Math Circle, Tobin Elementary school
 -co-ran and created a weekly math circle for children (ages 5-9) in this
 elementary school, 2015-2016

 The Math Circle, Harvard University
 -instructor of weekly course on modular arithmetic, Spring 1999

CODE DEVELOPMENT

- ★ developed number theory packages in Sage, Magma
- ★ code for the following available at <https://github.com/rpollack9974>
 - slopes of modular forms sorted by residual representation
 - $\mathcal{L}$ -invariants of modular forms sorted by residual representation
 - Iwasawa invariants of elliptic curves
 - Overconvergent modular symbols (also intrinsically available in SAGE)