

Ryan C. Chen

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Positions **Clay Research Fellow**
 2025 – 2026 Princeton University
 2026 – 2030

Education **Massachusetts Institute of Technology (MIT)**
 2020 – 2025
 Ph.D. in Mathematics
 Advisor: Wei Zhang

University of Cambridge
2019 – 2020
Churchill College
MASt in Mathematics (Part III)

Princeton University
2015 – 2019
A.B. in Mathematics, summa cum laude
Senior thesis advisor: Shou-Wu Zhang

Interests Number theory, arithmetic geometry

Honors and 2025 [Clay Research Fellowship](#)
Awards 2024 [Charles and Holly Housman Award for Excellence in Undergraduate Teaching, MIT](#)
 2020 [MIT Presidential Fellowship](#)
 2019 [NSF Graduate Research Fellowship](#)
 2019 [Churchill Scholarship](#)
 2018 [Barry M. Goldwater Scholarship](#)
 2017 [Shapiro Prize for Academic Excellence, Princeton University](#)
 2016 [Manfred Pyka Memorial Prize in Physics, Princeton University](#)

- Papers* *Faltings heights and the subleading terms of adjoint L-functions*
 with Weixiao Lu and Wei Zhang.
 In preparation. [Abstract](#) (from conference).
- Towards Lang–Vojta via degeneration*
 [Preprint](#), pp. 1–25.
 <https://arxiv.org/abs/2602.06956> (2026).
- Co-rank 1 Arithmetic Siegel–Weil IV: Analytic local-to-global*
 [Preprint](#), pp. 1–69.
 <https://arxiv.org/abs/2405.01429> (2024).
- Co-rank 1 Arithmetic Siegel–Weil III: Geometric local-to-global*
 [Preprint](#), pp. 1–67.
 <https://arxiv.org/abs/2405.01428> (2024).
- Co-rank 1 Arithmetic Siegel–Weil II: Local Archimedean*
 [Preprint](#), pp. 1–29.
 <https://arxiv.org/abs/2405.01427> (2024).
- Co-rank 1 Arithmetic Siegel–Weil I: Local non-Archimedean*
 [Preprint](#), pp. 1–111.
 <https://arxiv.org/abs/2405.01426> (2024).
 Combined I–IV: https://rycchen.github.io/papers/corank1_ASW.pdf (2024).
- A refined conjecture for the variance of Gaussian primes across sectors*
 with Yujin H. Kim, Jared D. Lichtman, Steven J. Miller, Alina Shubina, Shannon Sweitzer,
 Ezra Waxman, Eric Winsor, and Jianing Yang.
 [Experimental Mathematics](#), vol. 32 no. 1 (2023), pp. 33–53.
 <https://arxiv.org/abs/1901.07386> (2019).
- p-adic Properties of Hauptmoduln with Applications to Moonshine*
 with Samuel Marks and Matt Tyler.
 [Symmetry, Integrability, and Geometry: Methods and Applications \(SIGMA\)](#), vol. 15 (2019), pp. 1–35.
 <https://arxiv.org/abs/1809.02913> (2018).
- Lower-Order Biases in the Second Moment of Dirichlet Coefficients in Families of L-functions*
 with Megumi Asada, Eva Fourakis, Yujin Hong Kim, Andrew Kwon, Jared Duker Lichtman,
 Blake Mackall, Steven J. Miller, Eric Winsor, Karl Winsor, Jianing Yang, and Kevin Yang.
 [Experimental Mathematics](#), vol. 32 no. 3 (2023), pp. 431–456.
 <https://arxiv.org/abs/1808.06056> (2018).
- Spectral statistics of non-Hermitian random matrix ensembles*
 with Yujin H. Kim, Jared D. Lichtman, Steven J. Miller, Shannon Sweitzer, and Eric Winsor.
 [Random Matrices: Theory and Applications](#), vol. 8, no. 2 (2019), pp. 1–40.
 <https://arxiv.org/abs/1803.08127> (2018).
- On Reay’s relaxed Tverberg conjecture and generalizations of Conway’s thrackle conjecture*
 with Megumi Asada, Florian Frick, Frederick Huang, Maxwell Pulevsky, David Stoner
 Ling Hei Tsang, and Zoe Wellner.
 [The Electronic Journal of Combinatorics](#), vol. 25, no. 3 (2018), pp. 1–14.
 <https://arxiv.org/abs/1608.04279> (2016).

*Listed in reverse order of first arXiv appearance (with arXiv year also indicated).
 arXiv author ID link: https://arxiv.org/a/chen_r_2.

Research talks	2026	Arithmetic algebraic geometry in Hangzhou TBD
	2026	The Gross–Zagier Formula, 40 Years Later, Cambridge USA TBD
	2026	The Fourth JNT Biennial Conference, Cetraro ITA TBD
	2026	Duke Number Theory Seminar, Durham USA TBD
	2026	Columbia Automorphic Forms and Arithmetic Seminar, New York USA TBD
	2026	Relative Langlands and Arithmetic, Marseille FRA <i>Faltings heights and subleading terms of adjoint L-functions</i>
	2025	Princeton/IAS Number Theory Seminar, Princeton USA <i>Near-center derivatives and arithmetic 1-cycles</i>
	2025	POSTECH-PMI Number Theory Seminar, Pohang KOR (online) <i>Near-center derivatives and arithmetic 1-cycles</i>
	2025	Morningside Center of Mathematics, Beijing CHN <i>Near-center derivatives and arithmetic 1-cycles</i>
	2025	Number theory day at IASM and Zhejiang University, Hangzhou CHN <i>Near-center derivatives and arithmetic 1-cycles</i>
	2025	University of Chicago Number Theory Seminar, Chicago USA <i>Near-center derivatives and arithmetic 1-cycles</i>
	2025	University of Wisconsin–Madison Number Theory Seminar, Madison USA <i>Near-center derivatives and arithmetic 1-cycles</i>
	2025	Dartmouth Algebra and Number Theory Seminar, Hanover USA <i>Near-center derivatives and arithmetic 1-cycles</i>
	2025	University of Michigan Group, Lie and Number Theory Seminar, Ann Arbor USA <i>Near-center derivatives and arithmetic 1-cycles</i>
	2025	Harvard Number Theory Seminar, Cambridge USA <i>Near-center derivatives and arithmetic 1-cycles</i>
	2025	Johns Hopkins Number Theory Seminar, Baltimore USA <i>Near-center derivatives and arithmetic 1-cycles</i>
	2024	The Ohio State University Number Theory Seminar, Columbus USA <i>Fourier coefficients and arithmetic 1-cycles</i>
	2024	Columbia Automorphic Forms and Arithmetic Seminar, New York USA <i>Fourier coefficients, orbital integrals, and arithmetic 1-cycles</i>
	2024	MIT Number Theory Seminar, Cambridge USA <i>Co-rank 1 Arithmetic Siegel–Weil</i>
	2024	Arithmetic intersection theory on Shimura varieties (AIM workshop), Pasadena USA <i>Co-rank 1 Arithmetic Siegel–Weil</i>
	2019	MAA Undergraduate Poster Session at JMM, Baltimore USA <i>p-adic Properties of Hauptmoduln with Applications to Moonshine</i>
	2017	Ohio State Young Mathematicians Conference, Columbus USA <i>Spectral statistics of non-Hermitian random matrix ensembles</i>
	2017	Ohio State Young Mathematicians Conference, Columbus USA <i>Bounds for vanishing of L-functions at the central point</i>
	2017	MAA Undergraduate Poster Session at JMM, Atlanta USA <i>On Reay’s relaxed Tverberg conjecture</i>
Other talks	2025	Spring learning seminar at MIT <i>On the meromorphic continuation of Eisenstein series after Bernstein and Lapid</i>
	2024	Fall learning seminar on arithmetic inner product formula at MIT <i>Beilinson–Bloch height pairing</i>
	2024	HMMT education talk <i>Sphere packing</i>
	2024	Spring learning seminar on Xiao–Zhu at MIT <i>Introduction to “Cycles on Shimura varieties via Geometric Satake” by L. Xiao and X. Zhu</i>
	2024	Spring internal seminar at MIT <i>Co-rank 1 Arithmetic Siegel–Weil</i>

- 2023 Fall learning seminar at MIT
Integral canonical models of orthogonal Shimura varieties
- 2023 Fall learning seminar at MIT
Integral models of orthogonal Shimura varieties and K3 surfaces
- 2022 Program associate seminar at SLMath/MSRI
Rapoport-Zink uniformization and Kudla-Rapoport cycles
- 2022 Fall internal learning seminar at MIT
Introduction to Kudla's program
- 2022 Summer learning seminar on Gross-Zagier at MIT
Archimedean local heights
- 2022 MIT graduate student seminar (PUMAGRASS)
Polytopes and toric varieties
- 2021 Seminar on Topics in Arithmetic, Geometry, etc. (STAGE) at MIT
Moduli spaces of curves and abelian varieties
- 2021 Fall learning seminar on p -adic shtukas at MIT
Perfectoid spaces
- 2021 Summer learning seminar on moduli of p -divisible groups at MIT
Local models for Rapoport-Zink spaces
- 2021 Polymath Jr. number theory student seminar series
Diophantine equations and geometry
- 2020 University of Cambridge Part III Seminar Series
Integer points, rationality, and moduli spaces
- 2019 Princeton undergraduate math colloquium
Integer points, Diophantine geometry, and moduli spaces
- 2019 Arithmetic geometry internal seminar at Princeton
Diophantine problems and p -adic period mappings

Mentoring

2021 Polymath Jr. Mentor

Co-mentored two undergraduate student projects in number theory,
 with Steven J. Miller and Ezra Waxman.

One-level density for a family of L-functions associated to super-even characters over function fields.
 Dang Dang, Hari Iyer, Sanford Lu, Steven J. Miller, and Ezra Waxman. In preparation.

A Hardy-Littlewood Conjecture for Artin Primes.
 Mengzhen Liu and Ezra Waxman. In preparation.

Mentor, Grad-Undergrad Math Mentoring Initiative (GUMMI) at MIT

2020 – 2025

Teaching

Massachusetts Institute of Technology (MIT)

2025 Spring Teaching Assistant for 18.102 (Functional analysis)
 2024 Fall Teaching Assistant for 18.112 (Complex analysis)
 2024 Spring Recitation instructor for 18.06 (Linear algebra)

Princeton University

2016 Fall Undergraduate Course Assistant/Grader for MAT 350 (Differential Manifolds)

Other Service and Organization

2024 Spring	Co-organizer for internal number theory student seminar at MIT
2023 Fall	Co-organizer for internal number theory student seminar at MIT
2023 Spring	Social co-chair for program associates at SLMath/MSRI

Undergraduate Work	Princeton undergraduate work
	2018 – 2019 Advisor for undergraduate senior thesis: Shou-Wu Zhang <i>Integer points on complements of dual curves and on genus one modular curves</i>
	2018 Advisor for undergraduate junior paper: Christopher Skinner
	2018 Emory REU in mathematics
	Advisors: Ken Ono and John F. R. Duncan
	2017 SMALL REU in mathematics at Williams College Advisors: Steven J. Miller and Ezra Waxman
	2016 Summer Program for Undergraduate Research in mathematics at Cornell University Advisor: Florian Frick
Conference, Program, and Workshop Attendance	<p>2026 Arithmetic algebraic geometry in Hangzhou, Hangzhou CHN</p> <p>2026 The Gross–Zagier formula, 40 years later, Cambridge USA</p> <p>2026 The Fourth JNT Biennial Conference, Cetraro ITA</p> <p>2026 Relative Langlands and Arithmetic, Marseille FRA</p> <p>2025 Arithmetic and Diophantine Geometry ... (Ullmo 60th), Bures-sur-Yvette FRA</p> <p>2025 The Legacy of John Tate, and Beyond, Cambridge USA</p> <p>2024 Representation theory days (Lusztig conference), Cambridge USA</p> <p>2024 The Mordell conjecture 100 years later, Cambridge USA</p> <p>2024 AIM workshop: Arithmetic intersection theory on Shimura varieties, Pasadena USA</p> <p>2023 Conference on Global Langlands, Shimura varieties, and shtukas, Bonn DEU</p> <p>2023 Coates Memorial Conference (Iwasawa 2023), Cambridge UK</p> <p>2023 SLMath/MSRI semester program: Algebraic Cycles, L-values, and Euler Systems, Berkeley USA</p> <p>2022 Arizona Winter School: Automorphic forms beyond GL_2, Tucson USA</p> <p>2021 Theta Series: Representation Theory, Geometry, and Arithmetic (Kudla 70th), Toronto CAN (virtual)</p>