Ryan C. Chen

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Education	Massachusetts Institute of Technology				
	Ph.D. in Mathematics (expected 2025) 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				
Interests	Number theory, arithmetic geometry				
Papers*	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.

 $[\]verb+https://arxiv.org/abs/1808.06056~(2018).$

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

$Sp\epsilon$	ectral sta with Yu Ran http	atistics of non-Hermitian random matrix ensembles ajin H. Kim, Jared D. Lichtman, Steven J. Miller, Shannon Sweitzer, and Eric Winsor. adom Matrices: Theory and Applications, vol. 8, no. 2 (2019), pp. 1–40. pp://arxiv.org/abs/1803.08127 (2018).
On	Reay's with Me Li: The http	relaxed Tverberg conjecture and generalizations of Conway's thrackle conjecture egumi Asada, Florian Frick, Frederick Huang, Maxwell Polevy, David Stoner ng Hei Tsang, and Zoe Wellner. e Electronic Journal of Combinatorics, vol. 25, no. 3 (2018), pp. 1–14. ps://arxiv.org/abs/1608.04279 (2016).
Honors and Awards	2019	MIT Presidential Fellowship
Awarus	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
Research talks	2024	MIT number theory seminar Co-rank 1 Arithmetic Siegel–Weil
	2024	Arithmetic intersection theory on Shimura varieties (AIM workshop) Co-rank 1 Arithmetic Siegel–Weil
	2019	MAA Undergraduate Poster Session at JMM p-adic Properties of Hauptmoduln with Applications to Moonshine
	2017	Ohio State Young Mathematicians Conference Spectral statistics of non-Hermitian random matrix ensembles
	2017	Ohio State Young Mathematicians Conference Bounds for vanishing of L-functions at the central point
	2017	MAA Undergraduate Poster Session at JMM On Reay's relaxed Tverberg conjecture

Other talks	2024	Spring learning seminar on Xiao–Zhu at MIT			
		Introduction to "Cycles on Shimura varieties via Geometric Satake" by L. Xiao and X. Zhu			

- 2024 Spring internal seminar at MIT Co-rank 1 Arithmetic Siegel-Weil
- 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 cyclexs
- 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
- 2020 University of Cambridge Part III Seminar Series Integer points, rationality, and moduli spaces
- 2019 Princeton Undergraduate Colloquium Integer points, Diophantine geometry, and moduli spaces
- 2019 Arithmetic geometry internal seminar at Princeton Diophantine problems and p-adic period mappings

Undergradute Research	Princeton undergraduate work 2018–2019 Advisor for undergraduate senior thesis: Shou-Wu Zhang				
	Integer points on complements of dual curves and on genus one modular curves				
	 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				
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, 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 – present				
Conferences,	2024 AIM workshop: Arithmetic intersection theory on Shimura varieties				
Workshops	2023 Conference on Global Langlands, Shimura varieties, and shtukas				
	2023 Coates Memorial Conference (Iwasawa 2023)				
	2023 SLMath/MSRI program: Algebraic Cycles, L-values, and Euler Systems				
	2022 Arizona Winter School: Automorphic forms beyond GL ₂				
	2021 Theta Series: Representation Theory, Geometry, and Arithmetic (Kudla 70th)				