

Curriculum Vitae

Qiao He

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Employment 08/2023-Now, Ritt Assistant Professor, Columbia University.

Education 09/2017-08/2023, Ph.D., Mathematics,
University of Wisconsin-Madison. Advisor: Tonghai Yang.

09/2015-12/2016, M.A., Mathematics,
University of Wisconsin-Madison.

09/2011-06/2015, B.A., Investment, Statistics (Minor),
Shanghai University of Finance and Economics.

Publications

1. Intersections of Hecke correspondences on Shimura curves and a general conjecture (With Baiqing Zhu), in preparation.
2. On the basic locus of GSpin Shimura varieties with vertex stabilizer level (With Rong Zhou), submitted, 71 pp, 2025.
3. Weighted special cycles on Rapoport-Zink spaces with almost self-dual level (with Zhiyu Zhang and Baiqing Zhu,) submitted, 47pp, 2025.
4. Intersections of Hecke correspondence on modular curves (With Baiqing Zhu), revised for consideration to be published in Forum of Mathematics, Pi, 78 pp, 2025.
5. The basic locus of ramified unitary Rapoport-Zink space at maximal vertex level (With Yu Luo and Yousheng Shi), submitted, 54 pp, 2025.
6. Regular models of ramified unitary Shimura varieties at maximal parahoric level (With Yu Luo and Yousheng Shi), submitted, 47 pp, 2024.
7. Pullback of arithmetic theta series and its modularity for unitary Shimura curves (With Yousheng Shi and Tonghai Yang), revised for publication in *manuscripta mathematica*, 36 pp, 2024.
8. On the Kudla-Rapoport conjecture for unitary Shimura varieties with maximal parahoric level structure at unramified primes (With Sungyoon Cho and Zhiyu Zhang), submitted, 93 pp, 2023.
9. Dihedral long root A-packets of p -adic G_2 via theta correspondence (With Raúl Alonso, Mishty Ray and Martí Roset), *Advances in Mathematics*, volume 453, 2024, article 109845.
10. Just likely intersections on Hilbert modular surface (With Asvin G. and Ananth N. Shankar), *Mathematische Annalen*, 1467-1480, 390, 2024.

11. A proof of the Kudla-Rapoport conjecture for Krämer models
(With Chao Li, Yousheng Shi and Tonghai Yang), *Inventiones Mathematicae*, 234, 721-817 (2023).
This paper wins the ICCM 2025 Best Paper Award (Gold Medal).
12. Kudla-Rapoport conjecture at a ramified prime
(With Yousheng shi and Tonghai Yang), *Compositio Math.*, Volume 159, Issue 8, August 2023, pp. 1673 - 1740.
13. Kudla program for unitary Shimura varieties
(With Yousheng shi and Tonghai Yang),
Sci Sin Math, 2021, 51: 1595–1626, doi: 10.1360/SSM-2021-0002.
14. The Kudla-Rapoport conjecture at a ramified prime for $U(1, 1)$
(With Yousheng Shi and Tonghai Yang), *Trans. of the AMS*, 376 (2023), 2257-2291.
15. On Conjectures of Samart
(With Dongxi Ye), *manuscripta math*, 2022, 167: pages 545-588.

Awards

ICCM Best Paper Award (Gold Medal), 2025.

AMS-Simons Travel Grant, 2025.

Excellent paper award of Science China Mathematics, 2023.

Salgo-Noren Foundation Program Associates Fellowship for visiting MSRI, 2023.

Excellence in Graduate Research Award, Department of Mathematics, UW-Madison, 2021

Teaching experience

“Arizona Winter School 2023: Unlikely Intersections”, Study group leader for Tsiverman’s lecture.

“Arizona Winter Semester 2021: Virtual School in Number Theory”, teaching assistant for Renee Bell.

Supervision of a senior thesis about rigid meromorphic cocycle and real multiplication theory, at Columbia University

Calculus I, Calculus IV, Analysis and Optimization, Linear algebra, at Columbia University as an instructor.

Precalculus, Business Calculus, Calculus I, Calculus II, differential equation and linear algebra, at UW-Madison as a teaching assistant.

Referee experience

Algebra and Number theory, *Duke Mathematical Journal*, *Forum of Math*, *Sigma*, *IMRN*, *Pacific Journal of Mathematics*.

Research Talks

“Basic locus of unitary/orthogonal Shimura varieties with vertex levels”, Number theory seminar, CUNY, Nov. 2025.

“Basic locus of unitary/orthogonal Shimura varieties with vertex levels”, Number theory seminar, Princeton/IAS, Oct. 2025.

“Intersection of Hecke correspondences and a general conjecture”, Number theory seminar, UW-Madison, Oct. 2025.

“Intersection of Hecke correspondences and a general conjecture”, Number theory seminar, Caltech, Oct. 2025.

“Modularity of arithmetic theta series”, MCM lecture, Morningside center of Mathematics, 2025.

“Height pairing on Shimura curve revisited and a general conjecture for GSpin Shimura varieties ”, Westlake math Colloquium, Westlake University, 2025.

“Height pairing on Shimura curve revisited and a general conjecture for GSpin Shimura varieties ”, Number theory seminar, CUHK, 2025.

“Intersection of Modular correspondence with levels”, POSTECH-PMI number theory seminar, 2024.

“Arithmetic Siegel-Weil formula for orthogonal Shimura variety with maximal parahoric level”, 24 hours of Theta, 2024.

“Arithmetic Siegel-Weil formula for orthogonal Shimura variety with maximal parahoric level”, Colloquium, Rutgers University-Newark, 2024.

“Integral model of Unitary Shimura varieties”, Number theory seminar, Shanghai Center for Mathematical sciences, 2024.

“Kudla–Rapoport conjecture at bad reduction primes”, Algebraic and Arithmetic geometry day, Capital normal University, 2024.

“Kudla–Rapoport conjecture at bad reduction primes”, Number theory seminar, IASM, Zhejiang University, 2024.

“Kudla–Rapoport conjecture at bad reduction primes”, Theta correspondence special session of JMM 2024.

“Kudla–Rapoport conjecture at bad reduction primes”, Number theory seminar, Johns Hopkins University, Nov. 2023.

“Kudla–Rapoport conjecture at bad reduction primes”, Renmin University, Oct. 2023.

“Kudla–Rapoport conjecture for Krämer models II”, Modularity of arithmetic special divisors for unitary Shimura varieties, special session of JMM 2023, Jan 3-7, 2023, planned.

“Local density of hermitian forms”, Modular Forms, Hypergeometric Functions, Character Sums and Galois Representations, special session of JMM 2023, Jan 3-7, 2023, planned.

“A proof of the Kudla–Rapoport conjecture for Krämer models”, Number theory seminar, CUHK, Dec. 2022.

“A proof of the Kudla–Rapoport conjecture for Krämer models”, Number theory

seminar, Tsinghua University, Nov. 2022.

“A proof of the Kudla–Rapoport conjecture for Krämer models”, Number theory seminar, University of Wisconsin-Madison, Nov. 2022.

“A proof of the Kudla–Rapoport conjecture for Krämer models”, Number theory seminar, Oklahoma State University, Oct. 2022.

“A proof of the Kudla–Rapoport conjecture for Krämer models”, GTA: Philly conference, May. 2022.

“A proof of the Kudla–Rapoport conjecture for Krämer models”, Number theory Seminar, University of Arizona, April. 2022.

“Kudla–Rapoport conjecture at a ramified prime”, Number theory Seminar, UW-Madison, Sep. 2021

Expository talks “Does rigid analytic variety has Hodge symmetry?”, GNTS, UW-Madison, April. 2022

“Siegel-Weil formula”, GNTS, UW-Madison, Dec. 2021

“Supersingular locus of Unitary Shimura variety”, GNTS, UW-Madison, Feb. 2021

“Local Arithmetic Siegel-Weil Formula at Ramified Prime”, GNTS, UW-Madison, Sep. 2020

“Kontsevich’s Formula for Rational Plane Curves”, GAGS, UW-Madison, Feb. 2020

“Representation theory and arithmetic geometry”, GNTS, UW-Madison, Jan. 2020

“Modularity theorem for Elliptic curves”, GNTS, UW-Madison, Oct. 2019

“L-functions, Heegner points and Euler systems”, GNTS, UW-Madison, Feb. 2019

“Basics of trace formula”, GNTS, UW-Madison, Oct. 2018

“An elementary introduction to geometric Langlands”, GAGS, UW-Madison, Oct. 2018

“An introduction to automorphic representation II”, GNTS, UW-Madison, Apr. 2018

“An introduction to automorphic representation I”, GNTS, UW-Madison, Apr. 2018

CONFERENCES ATTENDED “Arithmetic intersection theory on Shimura varieties”, AIM workshop, Jan 8-12, 2024

“JMM 2024”, Jan 3-6, 2024

“Arizona Winter School 2023: Unlikely Intersections”, Study group leader for Tsiverman’s lecture, March 4-8, 2023.

“Algebraic Cycles, L-Values, and Euler Systems”, MSRI program, Salgo-Noren Foundation Program Associates, Jan 17 - May 26, 2023.

“JMM 2023”, Jan 4-7, 2023.

“MAGNTS 2022”, Oct 21-23, 2022, at UIC.

“Arithmetic and topology over global fields”, Oct 7-9, 2022, at University of Wisconsin-Madison

“APAW Graduate Graduate Instructional Workshop”, August 25-29, 2022.

“Graduate Student Conference in Algebra, Geometry, and Topology”, May 20-22, 2022.

“Arizona Winter Semester 2022: Automorphic Forms Beyond GL_2 ”, Project group of Wee Teck Gan, March 5-9, 2022.

“Theta Series: Representation Theory, Geometry, and Arithmetic”, July 5-9, 2021, at the Fields Institute (online).

“CMS summer meeting 2021”, June 8-10, hold online.

“Arizona Winter Semester 2021: Virtual School in Number Theory”, hold online, work as an assistant for Renee Bell.

“Madison Moduli Weekend Online“, September 26-27, 2020, at the University of Wisconsin-Madison (online).

“AMS Sectional Meeting”, September 14-15, 2019, at the University of Wisconsin-Madison.

“Hot Topics: Recent progress in Langlands Program”, April 8-12, 2019 at MSRI.

“Arizona Winter School 2019: Topology and Arithmetic”, March 2-6, 2019 at the University of Arizona in Tucson.

“Geometry and Arithmetic of Surfaces Workshop”, February 9-10, 2019, at the University of Wisconsin-Madison.

“Pop-up Conference in Number Theory“, UIC, Nov. 2-4, 2018 at UIC.

“Automorphic Forms and L-functions— A Conference in Celebration of Dorian Goldfeld’s 71st Birthday”, June 18-22, 2018 at Shandong University.

“Arithmetic of Algebraic Curves”, April 6-8, 2018 at the University of Wisconsin-Madison.

“Summer School on Representation Theory and the GGP Conjecture”, June 26-30, 2018, at BICMR

“Arizona Winter School 2018: Iwasawa Theory”, March 3-7, 2018 at the University of Arizona in Tucson.