

# ZHIYU ZHANG

## Curriculum Vitae

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Stanford University  
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📄 Academic Webpage

### Employment

- Chinese University of Hong Kong** Fall 2026-  
Hong Kong, Associate Professor
- Stanford University** Fall 2023-Summer 2026  
Stanford, Szego Assistant Professor, Mentor: Xinwen Zhu
- Simons Laufer Mathematical Sciences Institute** Spring 2023  
Berkeley, Visiting Scholar, Mentor: Benjamin Howard

### Education

- Massachusetts Institute of Technology** Fall 2018-Fall 2022  
Cambridge, Ph.D. in Mathematics, Advisor: Wei Zhang
- Ecole Normale Superieure** Spring 2018  
Paris, Visiting Student, Mentor: Olivier Benoist
- Tsinghua University** Fall 2014-Summer 2018  
Beijing, B.S. in Mathematics, Mentor: Lei Fu, Ye Tian

### Research Interests

Main conjectures in classical number theory, arithmetic geometry, representation theory and applications.  
Topics: L-functions, integrals and (relative) Langlands program; algebraic cycles, curves and moduli spaces; power series, quadratic forms and Kudla program; analogs and local-global compatibilities.  
Methods: spectrum, categorification, harmonic analysis, Hodge, topology, calculus and explicit computations.

### Research publications

#### Publications

- 2026 **Relative Fundamental Lemmas for Spherical Hecke Algebras and Multiplicative Hitchin Fibrations: the Jacquet–Rallis Case**, with X. Griffin Wang, Arxiv:2408.15155, *Compositio Mathematica*.
- 2025 **Non-reductive cycles and twisted arithmetic transfers for Shimura curves**, Arxiv: 2502.16754, RIMS Kôkyûroku, Kyoto University.
- 2025 **Maximal parahoric arithmetic transfers, small resolution and modularity**, ArXiv:2112.11994, *Duke Mathematical Journal*.
- 2022 **Arithmetic transfers, modularity of arithmetic theta series and geometry of local–global Shimura varieties at parahoric levels**, PHD thesis, MIT.

#### Prepublications and preprints

- Locally symmetric spaces and geometric period integrals**, In preparation.
- Higher special cycles and Taylor expansions of orbital integrals**, with X. Griffin Wang and Z. Yun, In preparation.
- 2025 **Central values of Asai L-functions and twisted Gan–Gross–Prasad conjecture**, with Weixiao Lu and Danielle Wang, Arxiv:2509.16356. Submitted.

- 2025 **On unitary Shimura varieties at ramified primes and arithmetic transfer**, with Yu Luo and Andreas Mihatsch, Arxiv:2504.17484. Submitted.
- 2025 **Weighted special cycles on Rapoport–Zink spaces with almost self-dual level**, with Qiao He and Baiqing Zhu, Arxiv:2504.07768v1. Submitted.
- 2024 **Non-reductive special cycles and twisted arithmetic fundamental lemmas**, Arxiv:2406.00986. Submitted.
- 2023 **Kudla-Rapoport conjecture at unramified primes with maximal parahoric level**, with Sungyoon Cho and Qiao He, Arxiv:2312.16906. Submitted.

## Honors and Awards

- 2025 SCPKU Faculty Fellowship, Stanford University.
- 2023 Simons Laufer Mathematical Sciences Institute Postdoctoral Fellowship.
- 2017 1st Award, S.-T. Yau College Student Mathematics Contest, 2017.
- 2016-2018 Tsinghua Xuetang Talents Program.

## Teaching

### Training

An Introduction to Evidence-Based Undergraduate STEM Teaching, the CIRTLL network, Fall 2025.

### Minicourses

Three week lectures, summer undergraduate school in algebraic number theory, Beijing, August 2025.

### Stanford University, Stanford, CA

Spring 2026	MATH 263C	Topics in Algebraic Geometry (Hodge theory and period maps)
Spring 2026	MATH 210C	Lie theory and Representations: An Elementary Introduction
Fall 2025	MATH 263A	Topics in Representation Theory (theta correspondences)
Fall 2025	MATH 145	Algebraic Geometry
Winter 2025	MATH 145	Algebraic Geometry
Winter 2025	MATH 216B	Graduate Algebraic Geometry
Fall 2024	MATH 216A	Graduate Algebraic Geometry
Fall 2024	MATH 263A	Topics in Representation Theory (function field arithmetic)
Spring 2024	MATH 145	Algebraic Geometry
Spring 2024	MATH 263C	Topics in Representation Theory (relative Langlands duality)

### Massachusetts Institute of Technology (MIT), Cambridge, MA

Spring 2022	TA for 18.706	Algebra II
Spring 2022	TA for 18.726	Algebraic Geometry II
Fall 2021	Recitation Instructor for 18.06	Linear Algebra
Spring 2021	TA for 18.737	Algebraic Groups
Spring 2021	TA for 18.786	Number Theory II
Fall 2020	TA for 18.785	Number Theory I
Spring 2020	TA for 18.102	Introduction to Functional Analysis
Spring 2020	TA for 18.786	Number Theory II
Fall 2019	TA for 18.705	Commutative Algebra

## Mentoring

### Recommendation letters and academic suggestions for undergraduates

- o 2026 Justin Yeo, Stanford Undergraduate Research Institute in Mathematics (SURIM).

- 2025-2026 Rawley Harrison, Stanford Undergraduate Research Institute in Mathematics (SURIM); NSF Fellowship Reference Letter; graduate school applications; DoD NDSEG Fellowship Reference Letter.
- 2025 Ebenezer Lobe, Northwestern University Causeway Postbaccalaureate Certificate Program.
- 2024 Abhishek Vangipuram, Indus Center for Academic Excellence (ICAE) Scholarship.

#### Research projects for undergraduates

- Spring 2024, Winter 2025, Fall 2025 Final topic projects for MATH 145 algebraic curves.
- Summer 2022 "Gelfand-Kirillov dimension of representations of  $GL_n$  over a non-archimedean local field.", Kenta Suzuki, arXiv preprint arXiv:2208.05139.

#### Direct reading with undergraduates

- Summer 2025 Directing Stanford undergraduate Rawley Harrison in reading Katz-Mazur's book (1985).
- Jan 2021 Directing two MIT students in reading *The 1-2-3 of modular forms*, and additional material on singular moduli.
- Jan 2020 Directing two MIT students in reading *Categories for the Working Mathematicians*, and chapter 1 of *Kerodon*.
- Jan 2019 Directing two MIT students in reading *FGA explained*.

#### High school students

- Summer 2019 Math coach of Tsinghua Mathcamp for high school students.

## Service and Seminars

#### Reviewer for mathematical journals

Algebra & Number Theory, Compositio Mathematica, Forum of Mathematics-Sigma, Forum of Mathematics-Pi, International Journal of Number Theory, International Mathematics Research Notices, Journal of the Institute of Mathematics of Jussieu, Mathematische Annalen, PNAS Nexus..

- 2026- Reviewer for Mathematical Reviews / MathSciNet.

#### Reporter for mathematical events

- Mar 2025 Oberwolfach Arbeitsgemeinschaft: Relative Langlands Duality, Germany.
- Jan 2024 Maintaining problem list, arithmetic intersection theory on Shimura varieties, AIM workshop.

#### Organizer for seminars and conferences

- Stanford representation theory seminar, Stanford, 2025-2026.
- Arithmetic geometry preprint seminar, Stanford, Fall 2023.
- Euler System Program Special Seminar, MSRI, Spring 2023.
- Uniform Mordell, STAGE seminar, MIT, Fall 2021.
- Seminar on Rapoport-Zink spaces, MIT, Summer 2021.
- Crystalline cohomology and prismatic cohomology, STAGE seminar, MIT, Spring 2021.
- The Weil conjectures, STAGE seminar, MIT, Fall 2020.
- p-adic modular forms, STAGE seminar, MIT, Spring 2020.
- Learning seminar on Arithmetic Fundamental Lemma, MIT, Fall 2019.

Actively attending and giving talks on Berkeley-Stanford number theory learning seminar, 2023-2026.

## Selected Talks

- June 2026 FrontierMath: Open Problems workshop, Epoic AI, Berkeley.
- Apr 2026 Stable Bernstein center (after Hansen, Kaletha-Hansen-Weinstein), Joint Berkeley-Stanford Algebraic Number Theory Learning seminar.
- Mar 2026 The 2026 Gainesville International Number Theory Conference, Florida.
- Feb 2026 Colloquium talk, Hetao Institute of Mathematics and Interdisciplinary Sciences, Shenzhen.
- Jan 2026 Relative Langlands Program, Institute for Mathematical Sciences, NUS.
- Dec 2025 International Seminar on Automorphic Forms (Zoom).
- Dec 2025 Kronecker limit formulas, Joint Berkeley-Stanford Algebraic Number Theory Learning seminar.
- Nov 2025 Arithmetic Geometry in Shenzhen, Shenzhen.

July 2025 HO#T day workshop, Institute for Advanced Study in Mathematics, Hangzhou.  
 May 2025 37th Automorphic Forms Workshop, University of North Texas, Denton, Texas.  
 April 2025 Colloquium at Rutgers University-Newark.  
 April 2025 Number Theory Seminar, University of Michigan.  
 Jan 2025 Arithmetic aspects of automorphic forms and automorphic representations, Kyoto University.  
 Nov 2024 Colloquium talk at Faculty Area Research Seminar, Stanford University.  
 Nov 2024 Arithmetic Geometry and Number Theory RTG Seminar, UC Berkeley.  
 Nov 2024 POSTECH-PMI Number Theory Seminar, Korea.  
 Oct 2024 Rational approximations, Joint Berkeley-Stanford Algebraic Number Theory Learning seminar.  
 Sep 2024 Number Theory / Representation Theory Seminar, University of Wisconsin-Madison.  
 July 2024 BIRS workshop Branching Problems for Representations of Real, p-Adic and Adelic Groups, Kelowna.  
 June 2024 Simons Symposium: Periods and L-values of Motives (2024), Krün, Germany.  
 Apr 2024 UCSB Number Theory seminar, Santa Barbara.  
 Apr 2024 Stanford Number Theory seminar, Stanford University,  
 Apr 2024 AMS Sectional Meetings, Howard University, Washington, DC.  
 Mar 2024 Johns Hopkins Number Theory Seminar, Baltimore.  
 Mar 2024 Canonical subgroups, Joint Berkeley-Stanford Algebraic Number Theory Learning semina.  
 Feb 2024 BIMSA-YMSC Tsinghua Number Theory Seminar.  
 Feb 2024 Number Theory / Representation Theory Seminar, University of Wisconsin - Madison.  
 Jan 2024 Automorphic Forms and Arithmetic Seminar, Columbia University.  
 Nov 2023 Caltech Number Theory Seminar.  
 Oct 2023 Absolute Hodge cycles, Joint Berkeley-Stanford Algebraic Number Theory Learning seminar.  
 Oct 2023 Arithmetic Algebraic Geometry, on the occasion of Michael Rapoport's 75th birthday, Münster.  
 Aug 2024, Conference Talk, Capital Normal University, Beijing.  
 July 2023 Minicourse on arithmetic geometry, hermitian lattices and theta correspondences, Peking University.  
 July 2023 Conference at Tianyuan Mathematics Research Center, Kunming.  
 June 2023 Arithmetic Algebraic Geometry conference, the Chinese University of Hong Kong, Hong Kong.  
 Mar 2023 Euler System Program Special Seminar, MSRI, Berkeley  
 Mar 2023 the Fukaya-Kato method, ES Learning Seminar, MSRI, Berkeley.  
 Jan 2023 Joint Mathematics Meetings 2023, Boston.  
 Nov 2022 Number Theory Seminar, University of Wisconsin-Madison.  
 Aug 2022 CLAP conference, Bonn University.  
 May 2022 Number theory sminear, University of Maryland  
 Apr 2022 Number theory seminar, Boston College.  
 Apr 2022 Number theory seminar, Yale University.  
 Apr 2022 Number theory seminar, Arizona University.  
 Sep 2021 Number theory seminar, Morningside center of mathematics, Beijing.  
 Apr 2021 *Almost modularity of arithmetic theta series*, Séminaire Mathjeunes, Paris.  
 Apr 2021 *Derived category of mixed complexes and Weil II*, BBDG learning Seminar, University of Michigan.  
 Apr 2021 *Spherical varieties and L-functions*, Numebr theory working group, MIT.  
 Mar 2021 *Special cycles and the Kudla-Rapoport conjecture*, Current Notion Seminar, Harvard.

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## Conferences and Workshops

Aug 2026 The Australian Direction, Salt Lake City.  
 Aug 2026 The Gross-Zagier formula, 40 years later, Cambridge, MA.  
 July 2026 International Congress of Mathematicians (ICM) 2026 , Philadelphia, USA.  
 June 2026 Summer Workshop on Character Sheaves on Loop Groups, University of Minnesota, MN.  
 May 2026 AIM workshop, AI and number theory.  
 May 2026 The Eisenstein ideal and Galois representations, looking forward after 50 years, New York.  
 May 2026 Future of Mathematics Symposium, Stanford.  
 Apr 2026 Hot Topics: Geometric Langlands Conjecture, SLMSI, Berkeley.  
 Mar 2026 AIM workshop, New p-adic perspectives on canonical integral models for Shimura varieties.

Feb 2026 Around the Langlands program, CIRM, Marseille, France.  
 July 2025 New Tools in the Local and Global Langlands Programs, Hangzhou.  
 July 2025 Beijing-Shanghai Summer School in Mathematics, SIMIS, Shanghai.  
 Mar 2025 Oberwolfach Arbeitsgemeinschaft: Relative Langlands Duality, Germany.  
 Oct 2024 Oberwolfach Seminar: Reduction of Arithmetic Varieties, Germany.  
 Sep 2024 New Advances in the Langlands Program, Clay Mathematical Institute, Oxford.  
 July 2024 Conference on "Arithmetic Geometry" in Honour of Gerd Faltings' 70th Birthday, Bonn, Germany.  
 June 2024 Summer School and Workshop on Relative Langlands Duality, University of Minnesota.  
 Mar 2024 Arizona Winter School 2024: Abelian Varieties, Arizona.  
 Jan 2024 AIM workshop, arithmetic intersection theory on Shimura varieties, Pasadena, California.  
 Sep 2023 Conference Arithmétique des formes automorphes, Paris,  
 Mar 2023 Shimura Varieties and L-functions (in honor of Shouwu Zhang), MSRI, Berkeley.  
 Mar 2023 Arizona Winter School 2023: Unlikely Intersections.  
 July 2022 Langlands Summer School, IHES, France.  
 Mar 2022 Arizona Winter School 2022: Automorphic Forms Beyond GL<sub>2</sub>.  
 Nov 2021 BIRS workshop, Basic Functions, Orbital Integrals, and Beyond Endoscopy.  
 July 2021 Theta Series: Representation Theory, Geometry, and Arithmetic, Toronto, Canada.  
 May 2021 Relative Aspects of the Langlands Program, L-Functions and Beyond Endoscopy, CIRM conference.  
 Apr 2021 Arbeitsgemeinschaft: Derived Galois Deformation Rings and Cohomology of Arithmetic Groups.  
 Jan 2021 AIM workshop, Arithmetic intersection theory on Shimura varieties.  
 Nov 2020 Masterclass in Condensed Mathematics, University of Copenhagen.  
 Mar 2020 Arizona Winter School 2020: Nonabelian Chabauty, University of Arizona.  
 Mar 2019 Arizona Winter School 2019: Topology and Arithmetic, Southwest Center for Arithmetic Geometry  
 Mar 2019 Conference on Arithmetic Geometry (in honor of M. Rapoport's 71th birthday), Beijing.  
 Dec 2017 Master Lectures on Quotients, Stability and InvariantsDecWorkshop, Sanya, China.

## Other Experience

Spring 2022 Reviewing comments and updating the Stacks Project on algebraic geometry.  
 2017-2018 Chief editor of *Hesi* (a mathematical magazine run by undergraduates in Tsinghua University).  
 Aug 2016 Volunteer in Strings 2016, Beijing  
 Dec 2013 Silver medal, 29th Chinese Mathematical Olympiad, Nanjing.

## Languages

Chinese, English, French (technical reading), Japanese (technical reading).

## Referees

### Benjamin Howard

*Professor, Department of Mathematics*  
 Boston College  
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### Richard Taylor

*Professor, Department of Mathematics*  
 Stanford University  
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### Michael Rapoport

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*Mathematisches Institut Universität Bonn*  
 ✉ rapoport@math.uni-bonn.de.

### Zhiwei Yun

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 MIT  
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