

Haochen Cheng

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EDUCATION

- **Northwestern University** Evanston, Illinois
• *Department of Mathematics, Doctor of Philosophy, Mathematics* 09/2023 - Present
- **University of Wisconsin-Madison** Madison, Wisconsin
• *Department of Mathematics, Master of Arts* 09/2021 - 05/2023
- **Beijing Normal University** Beijing, China
• *School of Mathematical Sciences, Bachelor of Science* 09/2018 - 06/2022
Thesis: An Algebraic Number Theoretical Approach to Riemann-Roch Theorem and Its Applications

PAPERS AND PREPRINTS

- *Non-liftability of families of abelian varieties with small l -adic local system.* arXiv:2604.17059. Submitted.
- *Positivity of Hodge bundles of abelian schemes.* In Progression
- *Rigidity and monodromy results of subvarieties in $\mathcal{A}_{g, \overline{\mathbb{F}}_p}$.* In Progression

SELECTED HONORS AND AWARDS

- Best Preliminary Exam, Northwestern University. 2024
- The VISP-MA Scholarship, University of Wisconsin-Madison. 2021-2022
- The Outstanding Thesis Award, Beijing Normal University. 2022

TEACHING AND SERVICE EXPERIENCE

- Teaching Assistant of Math 230-2, Multivariable Integral Calculus, Northwestern University. Spring, 2026
- Teaching Assistant of Math 226-0, Sequences and Series, Northwestern University. Spring, 2026
- Teaching Assistant of Math 218-2 (2 lectures), Calculus with Precalculus, Northwestern University. Winter, 2026
- Teaching Assistant of Math 240-0 (2 lectures), Linear Algebra, Northwestern University. Spring, 2025
- Teaching Assistant of Math 218-2 (2 lectures), Calculus with Precalculus, Northwestern University. Winter, 2025
- Teaching Assistant of Math 218-1 (2 lectures), Calculus with Precalculus, Northwestern University. Fall, 2024
- Grader of Math 341, Linear Algebra, University of Wisconsin - Madison. Spring, 2023
- Teaching Assistant of Math 741, Abstract Algebra, University of Wisconsin - Madison. Fall, 2022
- Grader of Math 340, Linear Algebra, University of Wisconsin - Madison. Spring, 2022

CONFERENCES ATTENDED

- The Australian Direction, University of Utah. 08/2026
- Workshop on Arakelov and Diophantine Geometry, Brown University. 08/2026
- The Fourth JNT Biennial Conference, Cetraro, Italy. 07/2026
- The CTNT 2026 Conference, University of Connecticut. 06/2026
- Workshop on Recent Developments in Hodge Theory and O-minimality, IAS. 03/2026
- Maine-Québec Conference on Number Theory, UMaine. 10/2025
- 2025 Summer Research Institute in Algebraic Geometry, Colorado State University. 07/2025
- CMND 2025 Thematic Program: Discrete Groups in Topology and Algebraic Geometry, Notre Dame. 06/2025
- Workshop on Local Systems and Monodromy, the University of Chicago. 04/2025
- The Legacy of John Tate, and Beyond, Harvard. 03/2025
- 2024 Jingrun Chen Prize Conference, Beijing. 07/2024
- The Mordell Conjecture 100 Years Later, MIT. 07/2024
- Sixteenth Algorithmic Number Theory Symposium (ANTS XVI), MIT. 07/2024
- The 3rd Cross Strait Workshop on Arithmetic Geometry, University of Science and Technology of China. 08/2023
- International Workshop on Algebraic Topology, Peking University. 07/2023
- Arithmetic and Topology over Global Fields, University of Wisconsin-Madison. 10/2022
- The CTNT 2022 Conference, University of Connecticut. 06/2022

SELECTED TALKS

- Nonliftability of abelian schemes, Graduate Number Theory Seminar, University of Arizona. 02/2026
- Nonliftability of abelian schemes, Informal Algebraic Geometry Oberseminar, Northwestern University. 01/2026
- Introduction to Riemann-Hilbert correspondence, Graduate Student Seminar, Northwestern University. 09/2025
- A generalization of Chebotarev density theorem and its applications, Graduate Number Theory Seminar, Northwestern University. 09/2025
- An explicit proof of Ogus-Vologodsky theorem, Informal Algebraic Geometry Seminar, Northwestern University. 09/2025
- Semistable reduction and the unipotent criterion, Graduate Number Theory Seminar, Northwestern University. 05/2025
- Introduction to Mumford-Tate conjecture, Informal Algebraic Geometry Oberseminar, Northwestern University. 04/2025
- Hecke orbit conjecture and proof of Siegel case, Graduate Number Theory Seminar, Northwestern University. 04/2025
- Introduction to descent theory, Graduate Number Theory Seminar, Northwestern University. 01/2025
- Introduction to p -adic Hodge theory, Graduate Number Theory Seminar, Northwestern University. 01/2025
- Mumford-Tate groups, Shimura variety and special subvarieties, Hodge Seminar, Northwestern University. 11/2024
- Newton polygon and its applications in arithmetic geometry, Graduate Student Seminar, Northwestern University. 11/2024
- Duality, Theta Groups and Representation of Heisenberg Groups, Theta Functions and Abelian Varieties Seminar. 07/2023
- Tate Curves and p -adic Theta Functions, Theta Functions and Abelian Varieties Seminar. 06/2023
- Prime Spectrum of Boolean Algebras, Algebra Seminar, Beijing Normal University. 06/2021

EXTRA-CURRICULAR

- **Graduate Algebraic Geometry/Arithmetic Geometry Seminar** Northwestern University
Organizer 04/2026-Present
- **Graduate-Postdoc Week of CMND 2025 Thematic Program** University of Notre Dame
Discrete Groups in Topology and Algebraic Geometry 06/2025
- **Graduate Number Theory Seminar** Northwestern University
Organizer 01/2025-Present
- **Arizona Winter School 2025** Tucson, Arizona
 p -adic Representations. 03/2025
- **Arizona Winter School 2024** Tucson, Arizona
Abelian Varieties. 03/2024
- **Preliminary Arizona Winter School 2023** Online
Elliptic Curves with Complex Multiplication 10/2023-11/2023
- **Preliminary Arizona Winter School 2022** Online
Heights in Diophantine geometry 10/2022-11/2022
- **Connecticut Summer School in Number Theory** Storrs, Connecticut
Fund by CTNT 2022; 06/2022
- **College of William & Mary** Williamsburg, Virginia
Department of Mathematics, Summer Semester; 06/2019 - 08/2019