

SHENGGKAI MAO

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Work

Morningside center of Mathematics (MCM), AMSS, CAS

Postdoc

Beijing, China

2024 - 2027

Education

University of Minnesota–Twin cities

Ph.D. candidate in Mathematics

Minneapolis, MN, USA

2018 - 2024

- **Advisor:** Kai-Wen Lan
- **Thesis:** Compactifications of Closed subschemes of Hodge-type Shimura varieties with Parahoric level Structures

University of Chinese Academy of Sciences

B.S. in Mathematics

Beijing, China

2014 - 2018

Research Interest

Number theory, Shimura varieties, p-adic Hodge theory and related topics in Arithmetic geometry.

Published Papers

- Isogenies and Congruence subgroups, **Journal of Algebra, Volume 691, 2026, Pages 781-810**

Preprints

- Canonical extensions of p-adic shtukas on toroidal compactifications of Shimura varieties. (Joint work with Peihang Wu.)
- Compactifications of closed subschemes of Hodge-type Shimura varieties with Parahoric Level Structures.
- Boundary structure of integral models of Hodge type Shimura varieties.

Talks

Canonical extensions of p-adic shtukas on toroidal compactifications of Shimura varieties.

- HKU-MCM HongKong number theory conference, Mar.03, 2026.

Compactifications of closed subschemes of Hodge-type Shimura varieties with Parahoric Level Structures.

- BIMSA-YMSC Tsinghua Number Theory Seminar, Dec. 02, 2024,
- Tianyuan workshop: Recent advances on p-adic Geometry, Mar. 13, 2025,
- The Second Joint Academic Conference of the Beijing–Tianjin–Hebei Mathematical Societies, Algebra Section, Mar. 30, 2025,
- Number theory and Representation theory, Zhejiang University, Apr. 30, 2025.

Service

Algebra and Number Theory Summer School in Beijing

[LINK](#)

Mentor

2025 Summer

Direct Reading Program in UMN

[LINK](#)

Mentor

2021 Spring

Teaching at University of Minnesota – Twin Cities

MATH 1271 Calculus I <i>Discussion 072, 074</i>	Teaching Assistant <i>2018 Fall</i>
MATH 2263 Multivariable Calculus <i>Discussion 023, 025</i>	Teaching Assistant <i>2019 Spring</i>
MATH 2263 Multivariable Calculus <i>Discussion 022, 023</i>	Teaching Assistant <i>2019 Fall</i>
MATH 2263 Multivariable Calculus <i>Teaching Assistant</i>	Teaching Assistant <i>2020 Fall</i>
MATH 2243 Linear Algebra and Differential Equations <i>Discussion 011, 022</i>	Teaching Assistant <i>2021 Spring</i>
MATH 2243 Linear Algebra and Differential Equations <i>Lecture 022</i>	Instructor <i>2021 Summer</i>
MATH 2243 Linear Algebra and Differential Equations <i>Discussion 021, 023, 024</i>	Teaching Assistant <i>2021 Fall</i>
MATH 2243 Linear Algebra and Differential Equations <i>Discussion 013, 014</i>	Teaching Assistant <i>2022 Spring</i>
MATH 2243 Linear Algebra and Differential Equations <i>Lecture 001</i>	Instructor <i>2022 Summer</i>
MATH 2243 Linear Algebra and Differential Equations <i>Discussion 031, 034</i>	Teaching Assistant <i>2022 Fall</i>
MATH 1372 CSE Calculus II <i>Discussion 031, 033</i>	Teaching Assistant <i>2023 Spring</i>
MATH 2243 Linear Algebra and Differential Equations <i>Lecture 001</i>	Instructor <i>2023 Summer</i>
MATH 2263 Multivariable Calculus <i>Discussion 022, 024</i>	Teaching Assistant <i>2023 Fall</i>