

# Kazuma Ohara | Curriculum Vitae

Max Planck Institute for Mathematics,

Vivatsgasse 7, 53111 Bonn, Germany

✉ kazuma@mpim-bonn.mpg.de • Last updated: November 18, 2025

## Education

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- Doctor, Mathematical Sciences, The University of Tokyo, April 2022–September 2024  
Thesis: *Hecke algebra isomorphisms for tame types*  
Supervisor: Noriyuki Abe, Tasho Kaletha (2023 winter; short-term stay at the University of Michigan)
- Master, Mathematical Sciences, The University of Tokyo, April 2020–March 2022  
Thesis: *Hecke algebras for tame supercuspidal types*  
Supervisor: Noriyuki Abe
- Bachelor, Science, The University of Tokyo, April 2016–March 2020

## Academic Positions

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- Postdoctoral fellow, Max Planck Institute for Mathematics, October 2024–present  
Mentor: Jessica Fintzen

## Research Interests

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- Representation theory of Hecke algebras and reductive groups over local fields
- Langlands correspondence and Langlands functoriality

## Grants/Fellowships

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- JSPS Research Fellow (DC1), Japan Society for the Promotion of Science (Grant Number: 22J22712), April 2022–March 2025
- FMSP course student, The Leading Graduate Course for Frontiers of Mathematical Sciences and Physics, September 2020–March 2025

## Award

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- Dean's Award(Doctor's course, valedictorian), Graduate School of Mathematical Sciences, the University of Tokyo, September 2024.
- Dean's Award(Master's course), Graduate School of Mathematical Sciences, the University of Tokyo, March 2022.

## Papers

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### Published or Accepted:

- (1) *A comparison of endomorphism algebras*, Journal of Algebra **659** (2024), 183–343.

- (2) *Hecke algebras for tame supercuspidal types*, Amer. J. Math. **146** (2024), no. 1, 277–293. MR 4691489
- (3) *On the formal degree conjecture for non-singular supercuspidal representations*, Int. Math. Res. Not. IMRN (2023), no. 13, 10997–11034. MR 4609777

**Preprints:**

- (1) (with Jeffrey D. Adler and Jessica Fintzen) *A depth-zero principal-series block whose Hecke algebra has a non-trivial two-cocycle*, arXiv e-prints (2025), arXiv:2510.07391.
- (2) *On parameters of Hecke algebras for  $p$ -adic groups*, arXiv e-prints (2025), arXiv:2505.16040.
- (3) (with Yota Maeda) *Finiteness of Free Algebras of Modular Forms on Unitary Groups*, arXiv e-prints (2025), arXiv:2505.13698.
- (4) (with Jeffrey D. Adler, Jessica Fintzen, and Manish Mishra) *Reduction to depth zero for tame  $p$ -adic groups via Hecke algebra isomorphisms*, arXiv e-prints (2024), arXiv:2408.07805.
- (5) (with Jeffrey D. Adler, Jessica Fintzen, and Manish Mishra) *Structure of Hecke algebras arising from types*, arXiv e-prints (2024), arXiv:2408.07801.

## Talks in Seminars/Workshops/Conferences

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- (1) Seminar in Representation Theory, Academia Sinica, November 18, 2025
- (2) NTU Applied Mathematics Colloquium, National Taiwan University, November 17, 2025
- (3) Conference in honor of Professor George Lusztig, The University of Hong Kong, November 10-12, 2025
- (4) Oberseminar Arithmetic Geometry and Representation Theory, Max Planck Institute For Mathematics, May 30, 2025
- (5) Type theory in Sheffield, University of Sheffield, May 19-23, 2025
- (6) MPI-Oberseminar, Max Planck Institute For Mathematics, January 9, 2025
- (7) Oberwolfach workshop “Representations of  $p$ -adic Groups”, Oberwolfach, December 1-6, 2024
- (8) London number theory seminar, Imperial College London, November 13, 2024
- (9) Oberseminar Arithmetic Geometry and Representation Theory, Max Planck Institute For Mathematics, October 18, 2024
- (10) Tokyo Tech Representation Theory Seminar, Tokyo Institute of Technology, August 30, 2024
- (11) Landscape of Representation Theory, Aoyama Gakuin University, August 1-2, 2024
- (12) Seminar on Number Theory and Automorphic Forms, Osaka University, July 12, 2024
- (13) 23rd Sendai-Hiroshima Workshop on Number theory, Tohoku University, July 9-12, 2024
- (14) Kanazawa Algebra Seminar, Kanazawa University, June 18, 2024
- (15) Expansion in Representation Theory and Harmonic Analysis, RIMS, June 11-14, 2024

- (16) Number theory seminar at Waseda university, Waseda University, May 31, 2024
- (17) Research on automorphic forms, RIMS, January 22-26, 2024
- (18) Symposium on Representation Theory 2023, Okinawa, Japan, November 20-22, 2023
- (19) 24th Autumn Workshop on Number Theory, Hokkaido University, October 30 to November 3, 2023
- (20) Kurashiki Number Theory Meeting 2023, Kurashiki Seaside Hotel, September 11-18, 2023
- (21) Trimester Seminar Series, Hausdorff Institute For Mathematics, May 18, 2023
- (22) Group, Lie and Number Theory Seminar, the University of Michigan, March 27, 2023
- (23) Johns Hopkins Number Theory Seminar, Johns Hopkins University, February 08, 2023
- (24) 9th Kyoto conference on automorphic forms, Kyoto University, June 24-26, 2022
- (25) Algebraic Lie Theory and Representation Theory, online, May 23-27, 2022
- (26) Automorphic form, automorphic  $L$ -functions and related topics, RIMS, January 24-28, 2022
- (27) Colloquium of Algebra, the University of Tokyo, November 24, 2021
- (28) Symposium on Representation Theory 2021, online, November 18-21, 2021

## **Other Activities**

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- (1) Arizona Winter School 2025: Representation theory of  $p$ -adic groups, University of Arizona, March 8-12, 2025 (Project Assistant of Jessica Fintzen group).

## **Teaching Experiences**

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### **Lectures**

Winter 2025, “Representation theory of reductive  $p$ -adic groups”, University of Bonn (With Jessica Fintzen)

### **Teaching Assistant**

- (1) Summer 2024, Teaching assistant, “Foundations of Analysis”, University of Tokyo
- (2) Winter 2022, Teaching assistant, “Algebra and Geometry”, University of Tokyo
- (3) Summer 2022, Teaching assistant, “Foundations of Analysis”, University of Tokyo
- (4) Winter 2021, Teaching assistant, “Algebra and Geometry”, University of Tokyo
- (5) Summer 2021, Teaching assistant, “Foundations of Analysis”, University of Tokyo
- (6) Winter 2020, Teaching assistant, “Algebra and Geometry”, University of Tokyo
- (7) Summer 2020, Teaching assistant, “Foundations of Analysis”, University of Tokyo