Masao Oi

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(July 31, 2024)

Education

- Doctor, Mathematical Science, University of Tokyo, April 2016–March 2019
  Thesis: *On depth in the local Langlands correspondence*
  Supervisor: Yoichi Mieda
  　　　　Tasho Kaletha (2018 winter; short-term stay at University of Michigan)

- Master, Mathematical Science, University of Tokyo, April 2014–March 2016
  Thesis: *On the endoscopic lifting of simple supercuspidal representations*
  Supervisor: Naoki Imai (April 2014–September 2014),
  　　　　Yoichi Mieda (October 2014–March 2016)

- Bachelor, Mathematics, University of Tokyo, April 2010–March 2014

Academic Positions

- Assistant Professor (Tenured-track), National Taiwan University, August 2024–

- Assistant Professor (program-specific), Kyoto University, October 2019–July 2024
  Mentor: Atsushi Ichino

- JSPS postdoctorial fellow, Kyoto University, April 2019–September 2019
  Mentor: Atsushi Ichino

Research Interests

- Harmonic analysis and representation theory of reductive groups over local/global fields

- Langlands correspondence and Langlands functoriality

Grants/Fellowships

- JSPS KAKENHI Grant Number: 24K16899, "Generalization of Deligne–Lusztig theory and the local Langlands correspondence", April 2024–March 2028 (4,550,000JPY; suspended since August 2024).

- JSPS KAKENHI Grant Number: 20K14287, "Study of the Langlands functoriality via an explicit local Langlands correspondence", April 2020–March 2024 (4,160,000JPY).

- JSPS Research Fellow (PD) Grant Number: 19J00846, "Study of the Langlands functoriality via twisted harmonic analysis", April 2019–September 2019 (4,030,000JPY).

- JSPS Research Fellow (DC2) Grant Number: 17J05451, "Study of the Langlands functoriality from the viewpoint of harmonic analysis", April 2017–March 2019 (1,900,000JPY).

- FMSP course student, The Leading Graduate Course for Frontiers of Mathematical Sciences and Physics, September 2014–March 2019.

Awards

- Takebe Katahiro Prize for Encouragement of Young Researchers, The Mathematical Society of Japan, September 2019.

- Dean's Award (Doctor's course, valedictorian), Graduate School of Mathematical Sciences, the University of Tokyo, March 2019.

- Dean's Award (Master's course), Graduate School of Mathematical Sciences, the University of Tokyo, March 2016.

Papers

Published or Accepted:

[1] (with Guy Henniart) *On Swan exponents of symmetric and exterior square Galois representations*, Rad Hrvat. Akad. Znan. Umjet. Mat. Znan. 28 (558) (2024) (special issue for the 70th birthday of Marko Tadić), 151–184.

[2] (with Hiraku Atobe and Seidai Yasuda) *Local newforms for generic representations of unramified odd unitary groups and fundamental lemma*, `arXiv:2206.09515`, 25 pages, to appear in Duke Math. J.

[3] (with Charlotte Chan) *Geometric L-packets of Howe-unramified toral supercuspidal representations*, `arXiv:2105.06341`, 55 pages, to appear in J. Eur. Math. Soc. (JEMS).

[4] (with Kazuki Tokimoto) *Local Langlands correspondence for regular supercuspidal representations of* $\mathrm{GL}(n)$, Int. Math. Res. Not. IMRN (2021), no. 3, 2007–2073.

[5] (with Ryotaro Sakamoto and Hiroyoshi Tamori) *Iwahori–Hecke algebra and unramified local L-functions*, Math. Z. 303 (2023), no. 3, Paper No. 59, 42 pp.

[6] *Simple supercuspidal L-packets for quasi-split classical groups*, Mem. Amer. Math. Soc. **297** (2024), no. 1483, v+161.

[7] *Depth preserving property of the local Langlands correspondence for non-quasi-split unitary groups*, Math. Res. Lett. **28** (2021), no. 1, 175–211.

[8] *Depth preserving property of the local Langlands correspondence for quasi-split classical groups in a large residual characteristic*, Manuscripta Math. **171** (2023), no. 3-4, 529–562.

[9] *Unramified base change of simple supercuspidal L-packets of quasi-split classical groups*, Algebraic Number Theory and Related Topics 2017, RIMS Kôkyûroku Bessatsu B83 (2020), 061-081.

[10] *Endoscopic lifting of simple supercuspidal representations of unramified* $\mathrm{U}(N)$ *to* $\mathrm{GL}(N)$, Publ. Res. Inst. Math. Sci. 55 (2019), 895-938.

[11] *Endoscopic lifting of simple supercuspidal representations of* $\mathrm{SO}(2n+1)$ *to* $\mathrm{GL}(2n)$, Amer. J. Math., 141 (2019), 169-217.

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Preprints:

[12] *Twisted endoscopic character relation for toral supercuspidal L-packets of classical groups*, 127 pages, preprint, available at `https://www.math.kyoto-u.ac.jp/~masaooi/TECR.pdf`.

[13] (with Moshe Adrian, Guy Henniart, and Eyal Kaplan) *Simple supercuspidal L-packets of split special orthogonal groups over dyadic fields*, `arXiv:2305.09076`, 52 pages, preprint (submitted).

[14] (with Charlotte Chan) *Characterization of supercuspidal representations and very regular elements*, `arXiv:2301.09812`, 75 pages, preprint (submitted).

[15] (with Alexander Bertoloni Meli) *The $B(G)$-parametrization of the local Langlands correspondence*, `arXiv:2211.13864`, 40 pages, preprint (submitted).

[16] (with Guy Henniart) *Simple supercuspidal L-packets of symplectic groups over dyadic fields*, `arXiv:2207.12985`, 26 pages, preprint (submitted).

Talks in Seminars/Workshops/Conferences

(1) Pan Asia Number Theory Conference 2024, VIASM (Vietnam), July 15-19, 2024.

(2) Kagura-zaka algebra seminar, Tokyo University of Science, May 23, 2024.

(3) NTU Mathematics Colloquium, December 27, 2023.

(4) Algebraic Number Theory and Related Topics 2023, RIMS, December 12, 2023.

(5) BIRS-IASM workshop "Arthur packets", Hangzhou, China, November 7, 2023.

(6) Representations of reductive p-adic groups, L-functions and relative matters: a conference in honor of Guy Henniart, Amiens University, France, September 13, 2023.

(7) The 5th Japan-Taiwan Number theory conference, Penghu University of Science and Technology (PUST), August 22, 2023.

(8) RIMS workshop "Recent developments in representation theory and related topics", RIMS, June 20, 2023.

(9) Ehime University Algebra Seminar (online), June 24, 2023.

(10) Number Theory in Tokyo, Tokyo Institute of Technology, March 24, 2023.

(11) Mini-workshop on the geometrization of the local Langlands correspondences and related topics, Kyoto University, December 23, 2022.

(12) Group, Lie and Number Theory, University of Michigan, October 24, 2022.

(13) 11th Kurashiki Number Theory Meeting, Kurashiki Seaside Hotel, September 11-12, 2022.

(14) Revisiting Some Aspects of the Works of Harish-Chandra and Weil, NUS, Singapore, July 5, 2022.

(15) The 7th KTGU Mathematics Workshop for Young Researchers, Kyoto University (online), February 14, 2022.

(16) RIMS conference: Automorphic forms, automorphic L-functions, and its related topics, RIMS (online), January 27, 2022.

(17) POSTECH-PMI number theory seminar, online, December 23, 2021.

(18) The 9th East Asia Number Theory Conference, online, August 26, 2021.

(19) Keio algebra seminar, Keio University (online), August 2, 2021.

(20) Automorphic Project & Research Seminar, online, May 14, 2021.

(21) RIMS conference: Automorphic forms, automorphic representations, Galois representations, and its related topics, RIMS (online), January 29, 2021.

(22) MIT Lie Groups Seminar, MIT (online), December 2, 2020.

(23) Kobe number theory mini-workshop, Kobe University (online), November 19, 2020.

(24) 65th Symposium of Algebra, Chiba University (online), September 4, 2020.

(25) Number theory seminar, Kyoto University (online), May 22, 2020.

(26) Kyoto University Colloquium, Kyoto University, January 15, 2020.

(27) Mathematics seminar, KIAS, January 6, 2020.

(28) 22nd Hakuba Autumn Workshop on Number Theory "Application of Arthur's multiplicity formula to Siegel modular forms", November 2, 2019.

(29) Oberwolfach workshop "New Developments in Representation Theory of p-adic Groups", Oberwolfach, October 1, 2019.

(30) Regulators in Niseko 2019, Hilton Niseko Village, Hokkaido, September 9, 2019.

(31) 10th Kurashiki Number Theory Meeting, Kurashiki Seaside Hotel, July 26, 2019.

(32) Workshop on Shimura varieties, representation theory, and related topics, Hokkaido University, July 18, 2019.

(33) Number theory seminar, Kyoto University, April 12, 2019.

(34) Workshop on arithmetic geometry, Tokyo-Princeton at Komaba, the University of Tokyo, March 20, 2019.

(35) On the Langlands Program: Endoscopy and Beyond, National University of Singapore, December 26, 2018.

(36) Kagawa Seminar, Kagawa university, October 21, 2018.

(37) 9th Kurashiki Number Theory Meeting, Kurashiki Seaside Hotel, September 19, 2018.

(38) The 4th Japan-Taiwan Joint Conference on Number Theory, Campina Hotel, Fukue, Goto-city, September 3, 2018.

(39) 17th Sendai-Hiroshima Workshop on Number theory, Tohoku University, July 13, 2018.

(40) 5th Kyoto conference on automorphic forms, Kyoto University, June 29, 2018.

(41) Mathematical Society of Japan Spring Meeting 2018, the University of Tokyo, March 18, 2018.

(42) Algebraic Number Theory and Related Topics 2017, RIMS, December 6, 2017.

(43) 8th Kurashiki Number Theory Meeting, Kurashiki Seaside Hotel, July 24-25, 2017.

(44) 4th Kyoto conference on automorphic forms, Kyoto University, June 17, 2017.

(45) On the endoscopic character relation, Kinosaki seminar 2017, Kinosaki, Japan, February 15, 2017.

(46) Automorphic forms and related topics, RIMS, February 10, 2017.

(47) Number theory seminar, Waseda University, January 20, 2017.

(48) Representation theory seminar, Hokkaido University, January 17, 2017.

(49) Workshop on Shimura varieties, representation theory and related topics, Kyoto University, November 22, 2016.

(50) 7th Kurashiki Number Theory Meeting, Kurashiki Seaside Hotel, July 21-22, 2016.

(51) 15th Sendai-Hiroshima Workshop on Number theory, Tohoku University, July 14, 2016.

(52) Number theory seminar, Kyoto University, May 13, 2016.

(53) Number theory seminar, the University of Tokyo, April 27, 2016.

(54) Algebra seminar, Tohoku University, April 21, 2016.

(55) Langlands and Harmonic Analysis, Kyushu University, March 7, 2016.

Conferences/Workshops I have co-organized

(1) "Arithmetic Geometry and Representation Theory", Toyama, Japan, December 16–18, 2019.

Teaching Experiences

Lectures

(1) Fall 2024, "Representation theory of finite groups of Lie type", National Taiwan University.

(2) Winter 2023, "Linear Algebra B", Kyoto University.

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Teaching Assistant

(3) Winter 2018, Teaching assistant, "Algebra (Representation Theory)", University of Tokyo.

(4) Winter 2017, Teaching assistant, "Algebra (Representation Theory)", University of Tokyo.

(5) Winter 2016, Teaching assistant, "Calculus", University of Tokyo.

(6) Summer 2016, Teaching assistant, "Calculus", University of Tokyo.

(7) Summer 2016, Teaching assistant, "Linear Algebra", University of Tokyo.

(8) Winter 2014, Teaching assistant, "Algebra III (Galois Theory)", University of Tokyo.

(9) Summer 2014, Teaching assistant, "Algebra I (Group Theory)", University of Tokyo.

References

- Atsushi Ichino (Kyoto University)
- Tamotsu Ikeda (Kyoto University)
- Tasho Kaletha (University of Michigan)
- Yoichi Mieda (University of Tokyo)
- Sug Woo Shin (UC Berkeley)