Ryosuke Shimada

Department of Mathematics, the University of Hong Kong
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Education

・Doctor, Mathematical Sciences, the University of Tokyo, April 2021-March 2024.
Thesis: Geometric Structure of Affine Deligne-Lusztig Varieties for GL_n
Advisor: Yoichi Mieda
・Master, Mathematical Sciences, the University of Tokyo, April 2019-March 2021.
Thesis: Geometric Structure of Affine Deligne-Lusztig Varieties for GL_3
Advisor: Yoichi Mieda
・Bachelor, Mathematics, the University of Tokyo, April 2015-March 2019.

Academic Positions

・Visiting Scholar, UC Berkeley, April 2025-
・Assistant Professor at Hakubi Center, Kyoto University, April 2025-
・Postdoctoral Fellow, the University of Hong Kong, May 2024-present.
Mentor: Xuhua He
・Project Researcher, the University of Tokyo, April 2024-May 2024.
Mentor: Naoki Imai

Research Interests

Affine Deligne-Lusztig Varieties, Shimura Varieties, Langlands program.

Grants/Fellowships

・JSPS Overseas Research Fellowships, April 2025-March 2027.
・Basic Science Research Projects, the Sumitomo Foundation, November 2024-November 2025.
・JSPS Overseas Challenge Program for Young Researchers, August-November 2023.
・JSPS Research Fellow (DC1), Japan Society for the Promotion of Science (Grant number: JP21J22427), April 2021-March 2024.
・WINGS-FMSP Course Student, World-leading Innovative Graduate Study for Frontiers of Mathematical Sciences and Physics, October 2019-March 2024.
・Study and Visit Abroad Program (SVAP), the Faculty of Science, the University of Tokyo, January 2019-February 2019.

Awards

・Dean's Award (Doctoral program), Graduate School of Mathematical Sciences, the University of Tokyo, March 2024.

・Dean's Award (Master's program), Graduate School of Mathematical Sciences, the University of Tokyo, March 2021.

Scholarships

・The Julius Springer Scholarship, April 2021-March 2024.

・The Daiohs Foundation Scholarship, April 2021-March 2024.

・Dentsu Scholarship, April 2015-March 2021.

Academic Visits

・The University of Duisburg-Essen (U. Görtz), August-November 2023.

・The Chinese University of Hong Kong (X. He), June 2023.

・The University of California, Berkeley (S. W. Shin), February 2023.

・The University of Maryland (T. Haines), November 2022.

・The Technical University of Darmstadt (T. Richarz), October 2022.

・The 2022 Summer School on the Langlands program, IHES, July 2022.

・The University of Chicago (K. Kato), January 2019-February 2019.

Teaching/Research Assistant

・*Senior mathematics seminar,* the University of Hong Kong, 2nd Semester 2024-2025.

・TA, *Algebra I/ Exercise in Algebra I*, the University of Tokyo, Spring 2020.

・TA, *Exercise in Linear Algebra,* the University of Tokyo, Autumn 2020.

・TA, *Algebra I/ Exercise in Algebra I*, the University of Tokyo, Spring 2021.

・TA, *Introduction to Mathematical Science*, the University of Tokyo, Autumn 2021.

・TA, Mathematics Help Room, the University of Tokyo, Spring 2022.

・RA, Computer and Network Management Group, the University of Tokyo, August 2021-March 2024.

Papers

[1] R. Shimada, On the supersingular locus of the GU(2, n-2) Shimura variety, arXiv: 2410.05110 (2024), submitted.

[2] R. Shimada and T. Takamatsu, On the supersingular locus of the Siegel modular variety of genus 3 or 4, arXiv: 2403.19505 (2024), to appear in Ann. Inst. Fourier (Grenoble).

[3] R. Shimada, Basic loci of positive Coxeter type for GL_n, arXiv: 2402.13216 (2024), submitted.

[4] F. Schremmer, R. Shimada and Q. Yu, On affine Weyl group elements of positive Coxeter type, arXiv: 2312.02630 (2023), submitted.

[5] R. Shimada, ピンホールモデルにおける再構成問題と箙多様体, 数理科学実践研究レター2023, LMSR 2023-13.

[6] R. Shimada, The Ekedahl-Oort stratification and the semi-module stratification, arXiv:2309.03371 (2023), to appear in Canad. J. Math.

[7] R. Shimada, Semi-modules and crystal bases via affine Deligne-Lusztig varieties, Adv. Math. 441(2024), Paper no. 109565.

[8] R. Shimada, On some simple geometric structure of affine Deligne-Lusztig varieties for GL_n, Manuscripta Math. 173(2024), no.3-4, 977-1001.

[9] R. Shimada, Geometric structure of affine Deligne-Lusztig varieties for GL_3, J. Algebra 623 (2023), 86-126.

Invited Talks in Seminars

[1] On the Chen-Zhu conjecture, Workshop on Affine Deligne-Lusztig varieties and Related topics, SCMS, March 6, 2025.

[2] On the Supersingular Locus of the GU(2, n-2) Shimura Variety, Algebraic Number Theory and Related Topics 2024, RIMS, January 9, 2025.

[3] On the Supersingular Locus of the GU(2, n-2) Shimura Variety, Workshop on arithmetic geometry, the University of Hong Kong, December 5, 2024.

[4] On a group-theoretic approach to the supersingular locus of Shimura varieties, Theory and Applications of Supersingular Curves and Supersingular Abelian Varieties II, RIMS, November 8, 2024.

[5] Basic loci of positive Coxeter type, the 23rd Sendai-Hiroshima Workshop on Number Theory, Tohoku University, July 9, 2024.

[6] Beyond the cases of Coxeter type, Mathematical Society of Japan Spring Meeting 2024, Osaka Metropolitan University, March 18, 2024.

[7] Beyond the cases of Coxeter type, Mittagsseminar zur Arithmetik, the University of Münster, November 7, 2023.

[8] Beyond the cases of Coxeter type, Research Training Group Seminar, the University of Duisburg-Essen, October 26, 2023.

[9] Crystal bases and affine Deligne-Lusztig varieties, the 22th Hiroshima-Sendai Workshop on Number Theory, Hiroshima University, July 14, 2023.

[10] Crystal bases and affine Deligne-Lusztig varieties, Algebraic Lie Theory and

Representation Theory 2023, Tokyo Institute of Technology, May 14, 2023.

[11] Semi-modules and crystal bases via affine Deligne-Lusztig varieties, the 19th Mathematics Conference for Young Researchers, Hokkaido University, March 7, 2023.

[12] Semi-modules and crystal bases via affine Deligne-Lusztig varieties, Berkeley Number Theory Colloquium, University of California, Berkeley, February 15, 2023.

[13] Semi-modules and crystal bases via affine Deligne-Lusztig varieties, Lie Groups and Representation Theory Seminar, the University of Maryland, November 16, 2022.

[14] Semi-modules and crystal bases via affine Deligne-Lusztig varieties, GAUS-Seminar, Technischen Universität Darmstadt, October 20, 2022.

[15] Semi-modules and crystal bases via affine Deligne-Lusztig varieties, Number Theory Seminar, Hokkaido University, September 21, 2022.

[16] On some simple geometric structure of affine Deligne-Lusztig varieties for GL_n, Mathematical Society of Japan Autumn Meeting 2022, Hokkaido University, September 15, 2022.

[17] On some simple geometric structure of affine Deligne-Lusztig varieties for GL_n, Number Theory Seminar, Kyoto University, May 27, 2022.

[18] Geometric structure of affine Deligne-Lusztig varieties for GL_3, Mathematical Society of Japan Spring Meeting 2022, Saitama University(online), March 31, 2022.

[19] Geometric structure of affine Deligne-Lusztig varieties, the 18th Mathematics Conference for Young Researchers, Hokkaido University (online), March 3, 2022.

[20] Geometric structure of affine Deligne-Lusztig varieties for GL_3, the 20th Hiroshima-Sendai Workshop on Number Theory, Hiroshima University (online), July 13, 2021.

[21] Geometric structure of affine Deligne-Lusztig varieties for GL_3, Number Theory Seminar, the University of Tokyo (online), May 26, 2021.