

MENGWEI HU

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EDUCATION

Ph.D. in Mathematics, Yale University *2020 - 2026*
Advisor: Prof. Ivan Losev

B.Sc. (Honor) in Mathematics, Sichuan University *2016 - 2020*

INTERESTS

Geometric representation theory, specifically on symmetric pairs and nilpotent orbits, Nakajima quiver varieties, deformation quantizations and Harish-Chandra (\mathfrak{g}, K) -modules.

RESEARCH

- *On certain Lagrangian subvarieties in minimal resolutions of Kleinian singularities.* Submitted.
arXiv:2504.08717
- *Presentations of diagram categories.* PUMP J. Undergrad. Res., 3:1-25, 2020.

TALKS AND PRESENTATIONS

Seminar Talks

- Algebra Seminar, Syracuse University *Fall 2025**
- Algebra Seminar, University of Georgia *Fall 2025**
- Algebra Seminar, University of Oregon *Mar 2025*
- Algebra Seminar, UCLA *Mar 2025*
- Geometry, Symmetry and Physics Seminar, Yale *Jan 2025*

Conference Talks

- AWM Research Symposium Special Session, UW-Madison *May 2025*
- Southeastern Lie Theory Workshop XV, College of Charleston *May 2025*
- AMS Fall Western Sectional Meeting Special Session, UCR *Oct 2024*
- AMS Fall Eastern Sectional Meeting Special Session, UAlbany *Oct 2024*

Poster and Short Talks

- Categorification and Symplectic Duality Workshop, NEU (presented a poster) *Jun 2025*
- Women in Mathematics in New England, Smith College (15-min student talk) *Sep 2024*
- Representation Theory and Related Geometry: Progress and Prospects, UGA (12-min talk) *May 2024*
- MSRI New Directions in Representation Theory, Hawaii (3-min participant talk) *Jun 2022*

TEACHING AND MENTORING

At Yale University

- REU Co-mentor: Superalgebras and Polynomial Spaces *Summer 2025*
- Instructor: Multivariable Calculus and Linear Algebra for Econ, Syllabus *Summer 2024*
- Graduate Instructor: Calculus I, II, *Fall 2022, 2023, 2024, Spring 2026*
- Teaching Assistant: Linear Algebra, Calculus *Spring, Summer, Fall 2021, Summer 2023*

EXPOSITORY TALKS

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| · Kleinian singularities and Nakajima quiver varieties, I-III, <i>Yale Topics in Rep Theory</i> | Nov 2024 |
| · Anti-Poisson involutions of Kleinian singularities, <i>Yale Graduate Student Seminar</i> | Oct 2024 |
| · Derived Koszul duality, I-III, <i>Yale Koszul Duality Reading Group</i> | Mar 2024 |
| · The six functors, I-III, <i>Yale Learning Seminar on D-modules</i> | Oct-Nov 2023 |
| · Harish-Chandra bimodules over quantum algebras, I-II <i>Yale W-algebras Reading Group</i> | Mar 2023 |
| · Borel-Moore homology I-II, <i>Joint Yale-Columbia Representation Seminar</i> | Sep 2022 |
| · Schur-Weyl duality and its generalizations, <i>Yale Graduate Student Seminar</i> | Feb 2022 |
| · Derived categories and derived functors. <i>Yale Perverse Sheaf Reading Group</i> | Oct 2021 |

VISITS

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| · Shanghai Center for Mathematical Sciences, Research Assistant | 09/2020-06/2021 |
| · MIT, Visiting Student, <i>Supervisor: Prof. Zhiwei Yun</i> | |
| · UOttawa, Visiting Student Researcher, <i>Supervisor: Prof. Alistair Savage</i> | 07/2019-10/2019 |
| · HKUST, Visiting Internship Student, <i>Supervisor: Prof. Jingsong Huang</i> | 07/2019-08/2019 |
| · Peking University, Exchange Student | 09/2018-01/2019 |

AWARDS

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| · Fan Family Fellowship Endowment, <i>awarded by Yale University</i> | 2020 |
| · China National Scholarship, <i>awarded by the Ministry of Education of China</i> | 2017, 2019 |
| · Gold Medal in Chinese Mathematics Competition for College Students | 2019 |

SERVICES AND OUTREACH

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| · Women in Mathematics in New England, <i>Graduate School Panelist</i> | Sep 2024 |
| · Lang Teaching Seminar at Yale, <i>Graduate Instructor Panelist.</i> | Mar 2024 |
| · Yale Graduate Student Advisory Committee, <i>Cohort Representative.</i> | 2023 - present |
| · Certificate of College Mathematics Teaching Preparation, <i>In Preparation</i> | 2023 - present |
| · Joint Yale-Columbia Representation Seminar, <i>Co-organizer</i> | Fall 2022 |
| · Yale Math Graduate Student Seminar, <i>Co-organizer</i> | Spring 2022 |
| · Yale Take an Undergraduate to School, <i>Mentor</i> | Spring 2022 |

CONFERENCES ATTENDED

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| · Workshop on Cluster Algebras and Braid Varieties, UO | Aug 2025 |
| · 7th Canada-USA-Mexico Meeting, USC | Jul 2025 |
| · Representation Theory Days, MIT | Nov 2024 |
| · Poisson Gone Fishing 2024, Northwestern University, | Apr 2024 |
| · Summer School on Coulomb Branches and Knot Homology, MIT | Jun 2023 |
| · Summer School on Quantized Symplectic Singularities and Applications to Lie Theory, MIT | Jun 2022 |
| · 4th Canada-USA-Mexico Meeting, NEU | Jun 2022 |
| · From Representation Theory to Mathematical Physics and Back, SCGP | Jun 2022 |
| · On the Crossroads of Algebra, Geometry and Physics, Yale | May 2022 |