

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

- Topology Seminar, JHU Fall 2025*
- Algebra Seminar, University of Georgia Fall 2025*
- Algebra Seminar, Syracuse University 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

EXPOSITORY TALKS

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

VISITS

· Shanghai Center for Mathematical Sciences, Research Assistant	<i>09/2020-06/2021</i>
· MIT, Visiting Student, <i>Supervisor: Prof. Zhiwei Yun</i>	<i>01/2020-03/2020</i>
· UOttawa, Visiting Student Researcher, <i>Supervisor: Prof. Alistair Savage</i>	<i>07/2019-10/2019</i>
· HKUST, Visiting Internship Student, <i>Supervisor: Prof. Jingsong Huang</i>	<i>07/2019-08/2019</i>
· Peking University, Exchange Student	<i>09/2018-01/2019</i>

AWARDS

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

SERVICES AND OUTREACH

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

CONFERENCES ATTENDED

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