

# MENGWEI HU

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## EDUCATION

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**Ph.D. in Mathematics**, Yale University *2020 - 2026*

Advisor: Prof. Ivan Losev

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

## INTERESTS

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

## RESEARCH

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- *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

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### 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

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

## VISITS

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

## AWARDS

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- Fan Family Fellowship Endowment, *awarded by Yale University* *2020*
  - China National Scholarship, *awarded by the Ministry of Education of China* *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, *Graduate School Panelist* *Sep 2024*
  - Lang Teaching Seminar at Yale, *Graduate Instructor Panelist* *Mar 2024*
  - Yale Graduate Student Advisory Committee, *Cohort Representative* *2023 - present*
  - Certificate of College Mathematics Teaching Preparation, *In Preparation* *2023 - present*
  - Joint Yale-Columbia Representation Seminar, *Co-organizer* *Fall 2022*
  - Yale Graduate Student Seminar, *Co-organizer* *Spring 2022*
  - Yale Take an Undergraduate to School, *Mentor* *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*