

# Shiyue Li

Research interests: Algebraic Geometry, Combinatorics, Tropical Geometry.

## EMPLOYMENT

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<b>University of Michigan</b> , Ann Arbor, MI Donald J. Lewis Research Assistant Professor (Mentor: David Speyer)	2025–present
<b>Institute for Advanced Study</b> , Princeton, NJ Member (Mentor: June Huh)	2023–2025

## EDUCATION

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<b>Brown University</b> , Providence, RI Ph.D. and M.Sc. in Mathematics (Advisor: Melody Chan) Thesis: <i>K</i> -rings and Hodge structures in graphs, matroids, and moduli spaces of curves	2019–2023
<b>Yale University</b> , New Haven, CT M.Sc. in Mathematics, Lang Fellow	2017–2019
<b>Harvey Mudd College</b> , Claremont, CA B.Sc. in Mathematics with Honors and Distinction (Advisor: Dagan Karp) Thesis: Chow rings of heavy/light Hassett spaces via tropical geometry	2013–2017

## PREPRINTS & PUBLICATIONS

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### Structural properties of nested set complexes

(with Basile Coron, Luis Ferroni)  
*arXiv:2601.05188*

### Chow polynomials of rank-uniform labeled posets

(with Basile Coron, Luis Ferroni)  
*arXiv:2511.13819*

### Kapranov degrees

(with Joshua Brakensiek, Christopher Eur, Matt Larson)  
*International Mathematics Research Notices. 2025 (20)*

### Multimatroids and rational curves with cyclic action

(with Emily Clader, Chiara Damiolini, Christopher Eur, Daoji Huang.)  
*International Mathematics Research Notices. 2024 (12)*

### *K*-rings of wonderful varieties and matroids

(with Matt Larson, Sam Payne, Nicholas Proudfoot.)  
*Advances in Mathematics 441. (2024)*

### Equivariant log-concavity of independence sequences of claw-free graphs

*Séminaire Lotharingien de Combinatoire 89B, 6. (2023)*

**Equivariant log-concavity of graph matchings***Algebraic Combinatorics* **6**(3) (2023)**Relative Bott–Samelson varieties***La Matematica* **2** (2023)**Topology of tropical moduli spaces of weighted stable curves in higher genus**

(with Siddarth Kannan, Stefano Serpente, Claudia Yun)

*Advances in Geometry*, **23**(3) (2023)**Wonderful compactifications and rational curves with cyclic action**

(with Emily Clader, Chiara Damiolini, Rohini Ramadas)

*Forum of Mathematics, Sigma* **11** (2022)**Permutohedral complexes and rational curves with cyclic action**

(with Emily Clader, Chiara Damiolini, Daoji Huang, Rohini Ramadas)

*manuscripta mathematica* (2022)**Intersecting psi-classes on tropical Hassett spaces**

(with Marvin Anas Hahn)

*Combinatorial Theory* **2**(3) (2022)**Chow ring of heavy/light Hassett spaces via tropical geometry**

(with Siddarth Kannan, Dagan Karp)

*Journal of Combinatorial Theory, Series A* **178C** (2021)

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**FELLOWSHIPS, GRANTS & AWARDS**

NSF Grant DMS-1926686, Institute for Advanced Study	2023–2025
Coline M. Makepeace Fellowship, Brown University	2021–2022
Robert Willets Carle Scholarship, Yale University	2018–2019
Kenneth and Mary Wang Fellowship, Yale University	2017–2018
Lang Fellowship, Department of Mathematics, Yale University	2017–2019
Harvey S. Mudd Merit Award (annually), Harvey Mudd College	2013–2017
Yu Yuen Kit So International Scholarship, Harvey Mudd College	2013–2017
Dean’s List, Harvey Mudd College (all semesters)	2013–2017
China National Linguistics Olympiad 3rd Place	2013
China National Linguistics Olympiad Team 2nd Place	2013

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**INVITED TALKS**

Workshop on “ <i>Algebra and Geometry of Matroids</i> ” Banff International Research Station of Casa Matemática Oaxaca, Mexico	Sep 2026
Workshop on “ <i>Algebraic Combinatorics in Pisa</i> ” Università di Pisa	Jun 2026
Institut des Sciences Mini-courses on “ <i>Geometry and Combinatorics of Moduli Spaces</i> ” Université du Québec à Montréal	May 2026
AMS Special Session on “ <i>Geometry of Moduli Spaces</i> ” Boston College	Mar 2026

<i>Algebraic Geometry Seminar</i> University of Pennsylvania	Apr 2025
AMS Special Session on “ <i>Cohomology of Arithmetic Groups, Mapping Class Groups, and Moduli Spaces</i> ” Joint Mathematics Meetings, Seattle, USA	Jan 2025
Workshop on “ <i>Geometry of Matroids</i> ” Institute for Advanced Study	Oct 2024
“ <i>What is...?</i> ” Seminar Institute for Advanced Study	Oct 2024
Workshop on “ <i>Moduli spaces of curves, moduli spaces of graphs and graph complexes</i> ” ETH Zürich, Switzerland	Sep 2024
Workshop on “ <i>Matroid Theory</i> ” Suzhou University, Suzhou, China	Jul 2024
Workshop on “ <i>Arrangements, Matroids and Logarithmic Vector Fields</i> ”, Oberwolfach, Germany	Jun 2024
<i>Algebraic Geometry Seminar</i> Columbia University	Apr 2024
<i>Algebra Seminar</i> Tufts University	Apr 2024
“ <i>What is...?</i> ” Seminar Institute for Advanced Study	Mar 2024
<i>Mathematical Conversations</i> Institute for Advanced Study	Mar 2024
<i>Combinatorics Seminar</i> (online) University of Minnesota	Feb 2024
<i>F<sub>1</sub> World Seminar (online)</i>	Jan 2024
Special Session on “ <i>Combinatorial perspectives on algebraic curves and their moduli</i> ” Joint Mathematics Meetings, San Francisco, USA	Jan 2024
Preparatory Lectures for <i>Chow Lectures</i> Max Planck Institute, Leipzig, Germany	Oct 2023
Workshop on “ <i>Curves: Algebraic, Tropical, and Logarithmic</i> ” Banff International Research Station, Canada	Aug 2023
<i>The 35th Formal Power Series and Algebraic Combinatorics (FPSAC 2023)</i> University of California, Davis	Jul 2023
Workshop on “ <i>GEMS in Combinatorics</i> ” American Institute of Mathematics, USA	Mar 2023
Workshop on “ <i>Algebraic Aspects of Matroids</i> ” Banff, Canada Banff International Research Station, Canada	Mar 2023
Lecture series on “ <i>Growing up in Sciences</i> ” Bowdoin College	Feb 2023
Association of Women in Mathematics Student Seminar (online) University of Pittsburgh	Feb 2023
<i>Combinatorics Seminar</i> University of Michigan	Feb 2023
<i>Matroid Seminar (online)</i> Fields Institute	Dec 2022
<i>Algebra and Algebraic Geometry Seminar</i> University of Washington	Nov 2022

<i>MIT-Harvard-MSR Combinatorics Seminar</i> Harvard University	Nov 2022
<i>AMS Special Session on “Combinatorial Algebraic Geometry”</i> University of Massachusetts, Amherst	Oct 2022
<i>AWM Research Symposium</i> University of Minnesota	Jun 2022
<i>RATCOW Seminar</i> University of Oregon	Jun 2022
<i>BATMOBILE</i> Brown University	Jun 2022
<i>Combinatorial and Nonlinear Day</i> Brown University	Apr 2022
<i>Joint Mathematics Meetings AWM Special Session (online)</i>	Apr 2022
<i>Canadian Math Society: Combinatorics and Geometry of Moduli Spaces (online)</i>	Dec 2021
<i>Front Range Algebraic Geometry and Number Theory</i> Colorado State University	Sep 2021
<i>SIAM Conference on Applied Algebraic Geometry (online)</i>	Aug 2021
<i>Moduli Across the Pandemic (online)</i>	Apr 2021
<i>Tropical Geometry in Frankfurt (TGiF) Seminar (online)</i>	Apr 2021
<i>AMS Spring Eastern Sectional Meeting on “Moduli of Curves” (online)</i>	Mar 2021
<i>Algebra Seminar (online)</i> Brown University	Nov 2020
<i>American Graduate Student Algebraic Geometry Seminar (online)</i>	Oct 2020

## SERVICE

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### Referee for

Algebraic Combinatorics  
 Duke Mathematical Journal  
 European Journal of Combinatorics  
 Forum of Mathematics, Sigma (×2)  
 International Mathematics Research Notices (×3)  
 Journal of the London Mathematical Society (×2)  
 Journal für die reine und angewandte Mathematik (Crelle’s Journal)\*  
 Mathematische Zeitschrift  
 Proceedings of the American Mathematical Society (×2)  
 Proceedings of the London Mathematical Society  
 Séminaire Lotharingien de Combinatoire (Proceedings of FPSAC Conferences) (×3)

(\* means quick opinions only.)

### Organization

University of Michigan AWM Board	2025-
University of Michigan Combinatorics Lunch, co-organizer	2025-
IAS Graph Complexes Learning Seminar, Organizer	Fall 2024
IAS School of Mathematics Monthly Women’s Lunch, co-organizer	2023–2025
IAS “What is...?” Seminar, Co-organizer	2023–2025
AMS Student Chapter at Brown University, Chair	2019–2021
Diversity and Inclusiveness Committee at Brown University, Member	2019–2020
Directed Reading Program at Brown University, Organizer	2019–2021
Directed Reading Program at Yale University, Co-organizer with Fernando Al Assal	2017–2018
Intersection: Womxn in Mathematics at Yale University, Co-organizer	2018

## TEACHING

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<b>University of Michigan, Instructor</b>		
Math 566 Combinatorial Theory	Winter 2026	
Math 275 Introduction to Cryptography (Inquiry-Based Learning)	Fall 2025	
<b>Brown University Sheridan Teaching Certificate I</b>		Fall 2021
<b>Brown University, Teaching Assistant</b>		
Math 90 Introduction to Calculus	Spring 2023	
Math 100 Calculus Part II	Fall 2022	
Math 100 Calculus Part II	Spring 2022	
Math 100 Calculus Part II	Spring 2021	
Math 100 Calculus Part II	Fall 2020	
<b>Canada/USA Mathcamp, Mentor</b>		Summer 2019
Introduction to Group Theory		
Young tableaux and Representation Theory		
Young tableaux and Combinatorics		
Young tableaux and Probability		
<b>Canada/USA Mathcamp, Mentor</b>		Summer 2018
Algebraic Number Theory		
Geometric Group Theory		
Introduction to Modular Forms		
Tropical Plane Curves		
Rational Points on Elliptic Curves		
<b>Yale University, Teaching Assistant</b>		
Math 225 Linear Algebra and Matrix Theory	Fall 2018	
Math 112 Single Variable Calculus	Spring 2018	

## MENTORING

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<b>Summer Undergraduate Math Research at Yale</b>	2020
Dawit Mengesha, Robert Miranda, Brian Sun. Co-mentor: Max Kutler. <i>Topological zeta functions of matroids.</i>	
<b>Canada/USA Mathcamp Learning Projects</b>	Summer 2019
Ilaria Seidel. Alice Jenkins, Jeremy Zhou. <i>Schubert calculus.</i> Reed Jacobs. <i>Primes of the form <math>x^2 + ny^2</math>.</i> Simran Khunger, Rupert Li. <i>Enumerative Geometry and Young Tableaux</i> Serena An. <i>Group actions and Sylow's theorems.</i>	
<b>Brown Mathematics Directed Reading Program</b>	2019
Deven Carmichael, Joseph Hlavinka. <i>Ideals, Varieties and Algorithms.</i> Dominick Joo, Elliott Lehrer, Joshua Lebo. <i>Foundations of Algebraic Geometry.</i>	
<b>Women in Sciences at Yale</b>	2018
Alara Değirmenci.	

## OUTREACH

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Princeton Noetherian Rings Seminar	Apr 2024
Brown Math Slam	Apr 2023

Growing up in Sciences Lecture Series, Bowdoin College	Feb 2023
Summer Undergraduate Math Research at Yale (SUMRY) Colloquium	Jul 2020
Yale Undergraduate Mathematics Society (YUMS) Colloquium	Nov 2019
Department Undergraduate Group (DUG) Colloquium at Brown	Oct 2019

## OTHER SCIENTIFIC POSITIONS

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<b>Google Research.</b> Mountain View, CA. Research Intern. Mentors: Caroline Pantofaru, Malcolm Slaney	Summer 2016
<b>Howard Hughes Medical Institute.</b> Pomona, CA. Research Assistant. Mentor: Blerta Shtylla.	Summer 2014
<b>Summer Science Program.</b> Socorro, NM. Asteroid 1998QS52 Orbit Determination (Harvard-Smithsonian Center archived).	Summer 2012