

Shiyue Li 李詩樂

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Research interests: algebraic geometry, combinatorics, tropical geometry.

Employment

University of Michigan, Ann Arbor, MI Donald J. Lewis Research Assistant Professor Mentor: David Speyer	2025–present
Institute for Advanced Study, Princeton, NJ Member, School of Mathematics Mentors: Federico Ardila-Mantilla and June Huh	2024–2025
Institute for Advanced Study, Princeton, NJ Member, School of Mathematics Mentors: June Huh and Jacob Lurie	2023–2024

Education

Brown University, Providence, RI Ph.D. and M.Sc. in Mathematics Advisor: Melody Chan Thesis: K -rings and Hodge structures in graphs, matroids, and moduli spaces of curves	2019–2023
Yale University, New Haven, CT M.Sc. in Mathematics Lang Fellow	2017–2019
Harvey Mudd College, 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 and Publications

- 16 Chow polynomials and chain polynomials of matroids are not log-concave
with Gergely Bérczi, Basile Coron, and Christopher Eur
arXiv:2610.17135

- 15 **Magic positivity of Snapper polynomials for matroids**
arXiv:2609.24917
- 14 **Matroid analogues of Gal's conjecture**
with Basile Coron and Luis Ferroni
arXiv:2604.04550
- 13 **Structural properties of nested set complexes**
with Basile Coron and Luis Ferroni
arXiv:2601.05188
- 12 **Chow polynomials of rank-uniform labeled posets**
with Basile Coron and Luis Ferroni
arXiv:2511.13819
- 11 **Kapranov degrees**
with Joshua Brakensiek, Christopher Eur, and Matt Larson
International Mathematics Research Notices (2025)
- 10 **Multimatroids and rational curves with cyclic action**
with Emily Clader, Chiara Damiolini, Christopher Eur, and Daoji Huang
International Mathematics Research Notices (2024)
- 9 **Equivariant log-concavity of independence sequences of claw-free graphs**
Séminaire Lotharingien de Combinatoire 89B (2023)
- 8 **K -rings of wonderful varieties and matroids**
with Matt Larson, Sam Payne, and Nicholas Proudfoot
Advances in Mathematics 441 (2024)
- 7 **Wonderful compactifications and rational curves with cyclic action**
with Emily Clader, Chiara Damiolini, and Rohini Ramadas
Forum of Mathematics, Sigma 11 (2023)
- 6 **Equivariant log-concavity of graph matchings**
Algebraic Combinatorics 6 (2023)
- 5 **Relative Bott–Samelson varieties**
La Matematica 2 (2023)
- 4 **Topology of tropical moduli spaces of weighted stable curves in higher genus**
with Siddarth Kannan, Stefano Serpente, and Claudia He Yun
Advances in Geometry 23 (2023)
- 3 **Permutohedral complexes and rational curves with cyclic action**
with Emily Clader, Chiara Damiolini, Daoji Huang, and Rohini Ramadas
manuscripta mathematica (2022)
- 2 **Intersecting psi-classes on tropical Hassett spaces**
with Marvin Anas Hahn
Combinatorial Theory 2 (2022)

- 1 Chow ring of heavy/light Hassett spaces via tropical geometry
with Siddarth Kannan and Dagan Karp
Journal of Combinatorial Theory, Series A 178 (2021)

Fellowships, Grants and 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
Lang Fellowship, Department of Mathematics, Yale University	2017–2019
Kenneth and Mary Wang Fellowship, Yale University	2017–2018
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 (all semesters), Harvey Mudd College	2013–2017
China National Linguistics Olympiad, 3rd Place	2013
China National Linguistics Olympiad, Team 2nd Place	2013

Invited Talks

Universität Bielefeld LG&TBQ 2027	Aug 2027
Casa Matemática Oaxaca (BIRS–CMO) Collaborative Workshop for Women and Gender-Expansive Individuals in Algebraic Geometry (WIAG 3)	Jul 2027
Joint Mathematics Meetings, Chicago AWM Special Session: Women in Algebraic Geometry	Jan 2027
Mathematisches Forschungsinstitut Oberwolfach Mini-Workshop: Enumerative Geometry of Matroids	Dec 2026
University of Illinois Urbana-Champaign ALGECOM-XXVIII	Nov 2026
University of Michigan Combinatorics Seminar	Sep 2026
Casa Matemática Oaxaca (BIRS–CMO) Algebra and Geometry of Matroids	Sep 2026
Università di Pisa Algebraic Combinatorics in Pisa	Jun 2026

Université du Québec à Montréal Mini-courses on Geometry and Combinatorics of Moduli Spaces	May 2026
University of Michigan Algebraic Geometry Seminar	Apr 2026
Boston College AMS Sectional Meeting, Special Session on Geometry of Moduli Spaces	Mar 2026
University of Pennsylvania Algebraic Geometry Seminar	Apr 2025
Joint Mathematics Meetings, Seattle AMS Special Session on Cohomology of Arithmetic Groups, Mapping Class Groups, and Moduli Spaces	Jan 2025
Institute for Advanced Study Geometry of Matroids Workshop	Oct 2024
Institute for Advanced Study “What is...?” Seminar	Oct 2024
Institute for Advanced Study Short Talks by Postdoctoral Members	Sep 2024
ETH Zurich Moduli spaces of curves, moduli spaces of graphs and graph complexes	Sep 2024
Banff International Research Station Combinatorics and Geometry of Moduli Spaces of Curves	Jul 2024
Suzhou University 蘇州大學 Suzhou Workshop on Matroid Theory	Jul 2024
Mathematisches Forschungsinstitut Oberwolfach Arrangements, Matroids and Logarithmic Vector Fields	Jun 2024
Columbia University Algebraic Geometry Seminar	Apr 2024
Tufts University Algebra Seminar	Apr 2024
Institute for Advanced Study Mathematical Conversations	Mar 2024
Institute for Advanced Study “What is...?” Seminar	Mar 2024
University of Minnesota Combinatorics Seminar	Feb 2024
Joint Mathematics Meetings, San Francisco AMS Special Session on Combinatorial Perspectives on Algebraic Curves and their Moduli	Jan 2024
Online F_1 World Seminar	Jan 2024

Max-Planck-Institut für Mathematik in den Naturwissenschaften, Leipzig Preparatory lectures for the Chow Lectures	Oct 2023
Institute for Advanced Study Short Talks by Postdoctoral Members	Sep 2023
École polytechnique fédérale de Lausanne Bernoulli Center Workshop: Hodge and K-Theory Meet Combinatorics	Sep 2023
Banff International Research Station Curves: Algebraic, Tropical, and Logarithmic	Aug 2023
University of California, Davis FPSAC 2023	Jul 2023
Brown University AGNES Summer School on Intersection Theory of Moduli Spaces	Jul 2023
American Institute of Mathematics GEMS in Combinatorics Workshop	Mar 2023
Banff International Research Station Algebraic Aspects of Matroids	Mar 2023
Bowdoin College Growing Up in Science	Feb 2023
University of Pittsburgh AWM Student Seminar Series	Feb 2023
University of Michigan Combinatorics Seminar	Feb 2023
Fields Institute Matroids Seminar (online)	Dec 2022
University of Washington Algebra and Algebraic Geometry Seminar	Nov 2022
Harvard University Harvard–MIT Combinatorics Seminar	Nov 2022
University of Massachusetts Amherst AMS Special Session on Combinatorial Algebraic Geometry	Oct 2022
University of Minnesota AWM Research Symposium	Jun 2022
University of Oregon RATCOW	Jun 2022
Brown University BATMOBYLE	May 2022
Joint Mathematics Meetings AWM Special Session (online)	Apr 2022
Brown University Combinatorial and Nonlinear Day	Apr 2022

Canadian Mathematical Society Winter Meeting Session on Combinatorics and Geometry of Moduli Spaces	Dec 2021
Colorado State University Front Range Algebraic Geometry and Number Theory Seminar	Sep 2021
SIAM Conference on Applied Algebraic Geometry (AG21)	Aug 2021
Online Moduli Across the Pandemic	Apr 2021
Goethe-Universität Frankfurt Tropical Geometry in Frankfurt (TGiF) Seminar	Apr 2021
Online AMS Spring Eastern Sectional Meeting, Special Session on Moduli of Curves, Hilbert Schemes, and Tropical Geometry	Mar 2021
Brown University Algebra Seminar	Nov 2020
Online American Graduate Student Algebraic Geometry Seminar	Oct 2020

Service

Referee

Advances in Mathematics
 Algebraic Combinatorics ($\times 2$)
 Duke Mathematical Journal
 European Journal of Combinatorics
 Forum of Mathematics, Sigma ($\times 2$)
 International Mathematics Research Notices ($\times 4$)
 Journal für die reine und angewandte Mathematik (Crelle's Journal)*
 Journal of the London Mathematical Society ($\times 3$)
 Mathematische Zeitschrift[†]
 Proceedings of the American Mathematical Society ($\times 2$)
 Proceedings of the London Mathematical Society
 Séminaire Lotharingien de Combinatoire (FPSAC)[†] ($\times 3$)

*Quick opinions only. [†]Quick opinion and/or detailed report.

Organization

University of Michigan, Combinatorics Lunch Co-organizer	2025–present
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University of Michigan, AWM Advisory Board	2025–2026
Institute for Advanced Study, Graph Complexes Learning Seminar Organizer	Fall 2024
Institute for Advanced Study, “What is...?” Seminar Co-organizer	2023–2025
Institute for Advanced Study, School of Mathematics Women’s Lunch (monthly) Co-organizer	2023–2025
Brown University, AMS Student Chapter Chair	2019–2021
Brown University, Directed Reading Program Organizer	2019–2021
Brown University, Diversity and Inclusiveness Committee Member	2019–2020
Yale University, Intersection: Womxn in Mathematics Co-organizer	2018
Yale University, Directed Reading Program Co-organizer with Fernando Al Assal	2017–2018
Yale University, Graduate and Professional Student Senate Senator	2017–2018
Harvey Mudd College, Math Club President	2016–2017

Teaching

University of Michigan, instructor

Math 565, Combinatorics and Graph Theory (graduate)	Fall 2026
Math 566, Combinatorial Theory (graduate)	Winter 2026
Math 275, Introduction to Cryptography (inquiry-based learning)	Fall 2025

Brown University, teaching assistant

Math 90, Introduction to Calculus	Spring 2023
Math 100, Calculus Part II Fall 2020, Spring 2021, Spring 2022, Fall 2022	2020–2022
Sheridan Teaching Certificate I	Fall 2021

Canada/USA Mathcamp, mentor

Introduction to Group Theory Summer 2019

Young Tableaux and Representation Theory

Young Tableaux and Combinatorics

Young Tableaux and Probability

Algebraic Number Theory Summer 2018

Geometric Group Theory

Introduction to Modular Forms

Tropical Plane Curves

Rational Points on Elliptic Curves

Yale University, teaching assistant

Math 225, Linear Algebra and Matrix Theory Fall 2018

Math 112, Single Variable Calculus Spring 2018

Mentoring

Women in Algebraic Geometry, Collaborative Workshop, Casa Matemática Oaxaca Jul 2027

Co-mentor: Chiara Damiolini

Project: Symmetric functions and conformal blocks on $\overline{\mathcal{M}}_{g,n}$

Independent study, University of Michigan Fall 2026

Edward (Weizhen) Tong

Co-mentor: Bailee Zacovic

Project: Chow functions of unbounded posets

Reading course, University of Michigan Summer 2026

Yijie Guo and Kate Krotkov

Co-mentor: Sam Payne

Topic: Introduction to toric varieties

Summer Undergraduate Math Research at Yale (SUMRY) Summer 2020

Dawit Mengesha, Robert Miranda, and Brian Sun

Co-mentor: Max Kutler

Project: Topological zeta functions of matroids (arXiv:2605.07077)

Learning projects, Canada/USA Mathcamp Summer 2019

Alice Jenkins and Jeremy Zhou: Schubert calculus

Reed Jacobs: Primes of the form $x^2 + ny^2$

Simran Khunger and Rupert Li: Enumerative geometry and Young tableaux

Serena An: Group actions and Sylow's theorems

Ilaria Seidel

Directed Reading Program, Brown University Deven Carmichael and Joseph Hlavinka: Ideals, Varieties, and Algorithms Dominick Joo, Elliott Lehrer, and Joshua Lebo: Foundations of Algebraic Geometry	2019
Women in Sciences at Yale Alara Degirmenci	2018

Outreach

Princeton University Noetherian Rings Seminar	Apr 2024
Brown University Math Slam	Apr 2023
Bowdoin College Growing Up in Science lecture series	Feb 2023
Yale University SUMRY Colloquium	Jul 2020
Yale University Yale Undergraduate Mathematics Society (YUMS) Colloquium	Nov 2019
Brown University Department Undergraduate Group (DUG) Colloquium	Oct 2019

Other Research Positions

Google Research, Mountain View, CA Research intern Mentors: Caroline Pantofaru and Malcolm Slaney	Summer 2016
Howard Hughes Medical Institute, Pomona, CA Research assistant Mentor: Blerta Shtylla	Summer 2014
Summer Science Program, Socorro, NM Orbit determination of asteroid 1998 QS52 Archived by the Harvard–Smithsonian Center for Astrophysics	Summer 2012