

# Shiyue Li

Research interests: Algebraic geometry, Combinatorics.

## EMPLOYMENT

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### **Institute for Advanced Study**

2023–

Member. Mentor: June Huh.

## EDUCATION

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### **Brown University**

2019–2023

Ph.D. in Mathematics. Advisor: Melody Chan.

### **Yale University**

2017–2019

M.Sc. in Mathematics. Lang Fellow.

### **Harvey Mudd College**

2013–2017

B.Sc. in Mathematics with Distinction and Honors. Advisor: Dagan Karp.

## PUBLICATIONS

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### **Relative Bott–Samelson varieties**

La Matematica, to appear. arXiv: 2011.04814.

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

Proceedings of FPSAC 2023, to appear.

### **Wonderful compactifications and rational curves with cyclic action**

with Emily Clader, Chiara Damiolini, Rohini Ramadas.

Forum of Mathematics, Sigma. DOI:10.1017/fms.2023.26.

### **Equivariant log-concavity of graph matchings**

Algebraic Combinatorics, to appear. arXiv: 2202.08828.

### **Permutohedral complexes and rational curves with cyclic action**

with Emily Clader, Chiara Damiolini, Daoji Huang, Rohini Ramadas.

manuscripta mathematica. DOI:10.1007/s00229-022-01419-6.

### **Intersecting psi-classes on tropical Hassett spaces**

with Marvin Anas Hahn.

Combinatorial Theory **2**(3). DOI:10.5070/C62359165.

### **Topology of tropical moduli spaces of weighted stable curves in higher genus**

with Siddarth Kannan, Stefano Serpente, Claudia Yun.

Advances in Geometry, to appear. arXiv:2010.11767.

### **Chow ring of heavy/light Hassett spaces via tropical geometry**

with Siddarth Kannan, Dagan Karp.

Journal of Combinatorial Theory, Series A. **178C** (2021) 105348.

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

with Matt Larson, Sam Payne, Nicholas Proudfoot.

arXiv 2210.03169.

## FELLOWSHIPS AND AWARDS

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• 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

## INVITED TALKS

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• $F_1$ World Seminar (online)	Nov 2023
• Accompanying sessions for June Huh’s Chow Lectures, Max Planck Institute, Leipzig, Germany	Oct 2023
• Bernoulli Center Workshop “Hodge theory and $K$ -theory in Combinatorics”, EPFL, Switzerland	Sep 2023
• BIRS Workshop – Curves: Algebraic, Tropical, and Logarithmic, Banff, Canada	Aug 2023
• The 35th Formal Power Series and Algebraic Combinatorics (FPSAC 2023), UC Davis	Jul 2023
• AIM Workshop – GEMS in Combinatorics	Mar 2023
• BIRS Workshop – Algebraic Aspects of Matroids, Banff, Canada	Mar 2023
• Growing up in Sciences, Bowdoin College	Feb 2023
• AWM Student Seminar (online), University of Pittsburgh	Feb 2023
• Combinatorics Seminar, University of Michigan	Feb 2023
• Fields Institute Matroid Seminar (online)	Dec 2022
• Algebra and Algebraic Geometry Seminar, University of Washington	Nov 2022
• MIT-Harvard-MSR Combinatorics Seminar, Harvard University	Nov 2022
• AMS Special Session on Combinatorial Algebraic Geometry, UMass Amherst	Oct 2022
• Research Symposium, University of Minnesota	Jun 2022
• RATCOW, University of Oregon	Jun 2022
• BATMOBILE, Brown University	Jun 2022
• Combinatorial and Nonlinear Day, Brown University	Apr 2022
• Joint Mathematics Meetings AWM Special Session	Apr 2022
• Canadian Math Society: Combinatorics and Geometry of Moduli Spaces	Dec 2021
• Front Range Algebraic Geometry and Number Theory, Colorado State University	Sep 2021
• SIAM Conference on Applied Algebraic Geometry	Aug 2021
• Moduli Across the Pandemic, Boston College	Apr 2021

• Tropical Geometry in Frankfurt (TGiF) Seminar	Apr 2021
• AMS Spring Eastern Sectional Meeting on Moduli of Curves	Mar 2021
• Algebra Seminar, Brown University	Nov 2020
• American Graduate Student Algebraic Geometry Seminar	Oct 2020
• AMS Spring Eastern Sectional on Moduli of Curves (cancelled)	Mar 2020

## SERVICE

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• <b>Referee</b> International Mathematics Research Notices, IMRN.	
• <b>Organizational</b> AMS Student Chapter at Brown University, Chair	2019–2021
Diversity and Inclusiveness Committee at Brown University, Member,	2019–2020
AMS Graduate Conferences at Brown University, Organizer	2020
Directed Reading Program at Brown University, Organizer	2019–2020
Womxn in Mathematics at Yale University, Co-organizer	2018
Yale Graduate and Professional Student Senate, Senator	2017–2018
Harvey Mudd College Math Club, President	2016–2017
Caltech-Harvey Mudd Math Competition, Organizer	2015–2016

## TEACHING

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• <b>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
Math 100 Calculus Part II	Spring 2019
• <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	
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>	Summer 2020
Dawit Mengesha, Robert Miranda, Brian Sun. Co-mentor: Max Kutler.	
<i>Topological zeta functions of matroids.</i>	

- **Canada/USA Mathcamp Learning Projects** Summer 2019  
 Ilaria Seigal.  
 Alice Jenkins, Jeremy Zhou. *Schubert calculus*.  
 Reed Jacobs. *Primes of the form  $x^2 + ny^2$* .  
 Simran Khunger, Rupert Li. *Enumerative Geometry and Young Tableaux*  
 Serena An. *Group actions and Sylow's theorems*.
- **Brown Mathematics Directed Reading Program** 2019  
 Deven Carmichael, Joseph Hlavinka. *Ideals, Varieties and Algorithms*.  
 Dominick Joo, Elliott Lehrer, Joshua Lebo. *Foundations of Algebraic Geometry*.
- **Women in Sciences at Yale** Fall 2018  
 Alara Değirmenci.

## OUTREACH

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- 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
- Johns Hopkins Center for Talented Youth Colloquium (canceled) Mar 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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- Google Research.** Mountain View, CA. Summer 2016  
 Research Intern. Mentors: Caroline Pantofaru, Malcolm Slaney
- Howard Hughes Medical Institute.** Pomona, CA. Summer 2014  
 Research Assistant. Mentor: Blerta Shtylla.
- Summer Science Program.** Socorro, NM. Summer 2012  
 Orbit determination of Asteroid 1998QS52 (Harvard-Smithsonian Center for Astrophysics archived).