

Shiyue Li

Department of Mathematics, Brown University
151 Thayer Street, Providence, RI 02912, USA

Research Interests Combinatorial algebraic geometry: tropical geometry, moduli spaces of curves, Schubert calculus, geometric models and invariants of matroids.

Education

Brown University. Providence, RI.
Ph.D. in Mathematics. 2019-Present
M.Sc. in Mathematics. May 2022
Advisor: Melody Chan.

Yale University. New Haven, CT.
M.Sc. in Mathematics. Lang Fellow. May 2019

Harvey Mudd College. Claremont, CA. May 2017
B.Sc. in Mathematics, with Distinction and Honors. Minor in Music.
Thesis: *Tropical derivation of cohomology ring of heavy/light Hassett spaces.*

Publications & Preprints

6. **Equivariant log-concavity of graph matchings** 2022
arxiv 2202.08828. Under revision at *Algebraic Combinatorics*.

5. **Intersecting ψ -classes on $M_{0,w}^{\text{trop}}$** 2021
with Marvin Anas Hahn,
arXiv 2108.00875. Under revision at *Combinatorial Theory*.

4. **Polyhedral complexes and rational curves with cyclic action** 2021
with Emily Clader, Chiara Damiolini, Daoji Huang, Rohini Ramadas,
arXiv 2104.06526. Under revision at *Manuscripta Mathematica*.

3. **Relative Bott-Samelson varieties** 2020
arXiv 2011.04814. Under revision at *La Matematica*.

2. **Topology of tropical moduli spaces of weighted stable curves in higher genus** 2020
with Siddarth Kannan, Stefano Serpente, Claudia Yun.
arXiv 2010.11767. To appear in *Advances in Geometry*.

1. **Chow ring of heavy/light Hassett spaces via tropical geometry** 2019
with Siddarth Kannan, Dagan Karp.
Journal of Combinatorial Theory, Series A. 178C (2021) 105348.

Awards & Fellowships

Coline M. Makepeace Fellowship at Brown 2021-2022
Robert Willets Carle Scholarship at Yale 2018-2019
Kenneth and Mary Wang Fellowship at Yale 2017-2018
Lang Fellowship at Yale 2017-2018
Harvey S. Mudd Merit Award 2013-2017
(Awarded each year to top students who demonstrate superior academic achievement and ability to contribute to the College community.)
Yu Yuen Kit So International Scholarship at Harvey Mudd 2013-2017
(Awarded to one recipient for each entering class based on superior academic performance.)
Dean's List at Harvey Mudd (all semesters) 2013-2017
China National Linguistics Olympiad 3rd Place 2013
China National Linguistics Olympiad Team 2nd Place 2013

Invited Talks	AMS Special Section on Combinatorial Algebraic Geometry, UMass Amherst	Oct 2022
	AWM Research Symposium, University of Minnesota	Jun 2022
	RATCOW, University of Oregon	Jun 2022
	BATMOBILE, Brown University	May 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	Sep 2021
	SIAM Conference on Applied Algebraic Geometry	Aug 2021
	Moduli Across the Pandemic	Apr 2021
	Tropical Geometry in Frankfurt (TGiF) Seminar	Apr 2021
	AMS Spring Eastern Sectional Meeting on Moduli of Curves	Mar 2021
	Algebra Seminar, Brown	Nov 2020
	American Graduate Student Algebraic Geometry Seminar	Oct 2020
	AMS Spring Eastern Sectional Meeting on Moduli of Curves (cancelled)	Mar 2020
Outreach Talks	Summer Undergraduate Mathematics Research at Yale (SUMRY) Colloquium	Jul 2020
	Johns Hopkins Center for Talented Youth Colloquium	Mar 2020
	Yale Undergraduate Mathematics Society (YUMS) Colloquium	Nov 2019
	Department Undergraduate Group (DUG) Colloquium at Brown University	Oct 2019
Scientific Professional Positions	Google Research , Mountain View, CA	Summer 2016
	Mentors: Caroline Pantofaru, Malcolm Slaney.	
	Designed pipelines and algorithms using deep learning models and computer vision techniques on synchronized audio and video signals to solve a saliency detection problem.	
	Howard Hughes Medical Institute , Pomona, CA	Summer 2014
	Mentors: Blerita Shtylla.	
	Mathematical modeling on parA and parB proteins in bacterial DNA segregation.	
Teaching	Summer Science Program , Socorro, NM	Summer 2012
	Research on orbit determination of solar-system body. Implemented programs in Python using iterative Gaussian method to determine the orbit elements based on the observation data of Asteroid 1998QS52 in Etschorn Observatory.	
	Paper and results archived in Harvard-Smithsonian Center for Astrophysics.	
	Sherdian Teaching Certificate I	Fall 2021
	Brown University , Providence, RI	
	Math 100 Introductory Calculus, Part II, TA	Spring 2022
	Math 100 Introductory Calculus, Part II, TA	Spring 2021
	Math 100 Introductory Calculus, Part II, TA	Fall 2020
	Canada/USA Mathcamp 2019 , Portland, OR	Summer 2019
	Introduction to Group Theory	
	Young tableaux and Representation Theory	
	Young tableaux and Combinatorics	
	Young tableaux and Probability	
	Canada/USA Mathcamp 2018 , Golden, CO	Summer 2018
	Algebraic Number Theory	
	Geometric Group Theory	
	Modular Forms	

	Tropical Plane Curves Rational Points on Elliptic Curves	
	Yale University , New Haven, CT	
	Math 225 Linear Algebra and Matrix Theory, TA	Fall 2018
	Math 112 Calculus, TA	Spring 2018
Mentoring	Summer Undergraduate Math Research at Yale	
	1. Topological zeta functions of matroids	Summer 2020
	Co-mentor: Max Kutler.	
	Mentees: Dawit Mengesha, Robert Miranda, Brian Sun.	
	Canada/USA Mathcamp Projects	
	1. Research project.	Summer 2019
	Mentee: Ilaria Seigal.	
	2. Schubert calculus.	Summer 2019
	Mentees: Alice Jenkins, Jeremy Zhou.	
	3. Primes of the form $x^2 + ny^2$.	Summer 2018
	Mentee: Reed Jacobs.	
	4. Enumerative geometry.	Summer 2018
	Mentees: Simran Khunger, Rupert Li.	
	5. Group actions and Sylow's theorems.	Summer 2018
	Mentees: Serena An.	
	Brown Mathematics Directed Reading Program.	
	1. Ideals, Varieties and Algorithms.	Fall 2020
	Mentees: Deven Carmichael, Joseph Hlavinka.	
	2. Foundations of Algebraic Geometry.	Spring 2020
	Mentees: Dominick Joo, Elliott Lehrer, Joshua Lebo.	
	Women in Sciences at Yale.	
	1. Mentee: Alara Değirmenci.	Fall 2018
Professional Service	<i>Brown Horizons Seminar</i> , Organizer	2021-2022
	<i>American Mathematics Society Student Chapter</i> , Chair	2019-2021
	<i>Brown Math Diversity and Inclusiveness Committee</i> , Member	2019-2020
	<i>Brown University ACCRIP</i> , Graduate Representative	2019-2020
	<i>AMS Graduate Conferences</i> , Organizer	2020
	<i>Brown Math Directed Reading Program</i> , Organizer	2019-2020
	<i>Yale University Womxn in Mathematics (Intersections)</i> , Co-organizer	2018
	<i>Yale Math Directed Reading Program</i> , Organizer	2018
	<i>Yale Graduate and Professional Student Senate</i> , Senator	2017-2018
	<i>Harvey Mudd College Math Club</i> , President	2016-2017
	<i>Caltech Harvey Mudd Math Competition</i> , Organizer	2015-2016
Languages	Mandarin Chinese (Native), English (Bilingual), French (Conversational).	