Shiyue Li

Simonyi Hall 208
1 Einstein Drive
Institute for Advanced Study
Princeton, NJ 08540

Research interests: Algebraic Geometry, Combinatorics, Tropical Geometry.

EMPLOYMENT

Institute for Advanced Study, Member   2023–2025
Mentor: June Huh.

EDUCATION

Brown University, Ph.D. in Mathematics   2019–2023
Advisor: Melody Chan.

Yale University, M.Sc. in Mathematics   2017–2019
Lang Fellow.

Harvey Mudd College, B.Sc. in Mathematics with Honors and Distinction   2013–2017
Advisor: Dagan Karp.

PUBLICATIONS

Equivariant log-concavity of independence sequences of claw-free graphs
Séminaire Lotharingien de Combinatoire **89**B. (2023)

Wonderful compactifications and rational curves with cyclic action
with Emily Clader, Chiara Damiolini, Rohini Ramadas.
Forum of Mathematics, Sigma **11**. (2022)

Equivariant log-concavity of graph matchings
Algebraic Combinatorics **6**(3). (2023)

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)

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)

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

Preprints

Multimatroids and rational curves with cyclic action
with Emily Clader, Chiara Damiolini, Christopher Eur, Daoji Huang.
arXiv:2311.09314.

Kapranov degrees
with Joshua Brakensiek, Christopher Eur, Matt Larson.
arXiv 2308.12285.

K-rings of wonderful varieties and matroids
with Matt Larson, Sam Payne, Nicholas Proudfoot.
arXiv 2210.03169.

Fellowships, Grants and Awards

NSF Grant DMS-1926686	2023–2024
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

Workshop on "*Moduli spaces of curves, moduli spaces of graphs and graph complexes*" ETH Zürich, Switzerland	Sep 2024
Workshop on "*Combinatorics and Moduli Spaces of Curves*" Banff International Research Station, Canada	Jul 2024
Workshop on "*Matroid Theory*" Suzhou University, Suzhou, China	Jul 2024
Workshop on "*Arrangements, Matroids and Logarithmic Vector Fields*", Oberwolfach, Germany	Jun 2024
Algebra Seminar Tufts University	Apr 2024
Algebraic Geometry Seminar Columbia University	Apr 2024
Mathematical Conversations Institute for Advanced Study	Mar 2024
Combinatorics Seminar (online) University of Minnesota	Feb 2024
F_1 *World Seminar (online)*	Jan 2024
Special Session on "*Combinatorial perspectives on algebraic curves and their moduli*" Joint Mathematics Meetings, San Francisco, USA	Jan 2024

Preparatory Lectures for *Chow Lectures* — Oct 2023
    Max Planck Institute, Leipzig, Germany

Workshop on "*Curves: Algebraic, Tropical, and Logarithmic*" — Aug 2023
    Banff International Research Station, Canada

The 35th Formal Power Series and Algebraic Combinatorics (FPSAC 2023) — Jul 2023
    University of California, Davis

Workshop on "*GEMS in Combinatorics*" — Mar 2023
    American Institute of Mathematics, USA

Workshop on "*Algebraic Aspects of Matroids*" Banff, Canada — Mar 2023
    Banff International Research Station, Canada

Lecture series on "*Growing up in Sciences*" — Feb 2023
    Bowdoin College

Association of Women in Mathematics Student Seminar (online) — Feb 2023
    University of Pittsburgh

Combinatorics Seminar — Feb 2023
    University of Michigan

Matroid Seminar (online) — Dec 2022
    Fields Institute

Algebra and Algebraic Geometry Seminar — Nov 2022
    University of Washington

MIT-Harvard-MSR Combinatorics Seminar — Nov 2022
    Harvard University

AMS Special Session on "*Combinatorial Algebraic Geometry*" — Oct 2022
    University of Massachusetts, Amherst

AWM Research Symposium — Jun 2022
    University of Minnesota

RATCOW Seminar — Jun 2022
    University of Oregon

BATMOBILE — Jun 2022
    Brown University

Combinatorial and Nonlinear Day — Apr 2022
    Brown University

Joint Mathematics Meetings AWM Special Session (online) — Apr 2022

Canadian Math Society: Combinatorics and Geometry of Moduli Spaces (online) — Dec 2021

Front Range Algebraic Geometry and Number Theory — Sep 2021
    Colorado State University

SIAM Conference on Applied Algebraic Geometry (online) — Aug 2021

Moduli Across the Pandemic (online) — Apr 2021

Tropical Geometry in Frankfurt (TGiF) Seminar (online) — Apr 2021

AMS Spring Eastern Sectional Meeting on "*Moduli of Curves*" (online) — Mar 2021

Algebra Seminar (online) — Nov 2020
    Brown University

American Graduate Student Algebraic Geometry Seminar (online) — Oct 2020

Service

Referee for:
International Mathematics Research Notices.
Séminaire Lotharingien de Combinatoire.

Reviewer for:
Mathematical Reviews/MathSciNet.

Organizational:

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
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

Teaching

Sheridan Teaching Certificate I	Fall 2021

Brown University, Teaching Assistant

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

Canada/USA Mathcamp, Mentor	Summer 2019

Introduction to Group Theory
Young tableaux and Representation Theory
Young tableaux and Combinatorics
Young tabelaux and Probability

Canada/USA Mathcamp, Mentor	Summer 2018

Algebraic Number Theory
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

Princeton University

Cooper Kofron, *Undergraduate Thesis*	2024

Summer Undergraduate Math Research at Yale	2020

Dawit Mengesha, Robert Miranda, Brian Sun. Co-mentor: Max Kutler.
Topological zeta functions of matroids.

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 2018
   Alara Değirmenci.

Outreach

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

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
   (archived at Harvard–Smithonian Center for Astrophysics)