Shiyue Li

Research interests: Algebraic geometry, Combinatorics.

Employment

Institute for Advanced Study　　　　　　　　　　　　　　　　　　　2023–2024
Member. Mentor: June Huh.

Education

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

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.

Premutohedral 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 $\mathbf{2}$(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. $\mathbf{178}$C (2021) 105348.

Preprints

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

Relative Bott-Samelson varieties
arXiv: 2011.04814.

Fellowships and Awards

- 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, Departmeent 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

- Accompanying sessions for Chow Lectures, Max Planck Institute, Leipzig, Germany   Oct 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

- **Referee**
  International Mathematics Research Notices, IMRN.
- **Organizational**
  AMS Student Chapter at Brown University, Chair   2019–2021
  Diversity and Inclusiveness Committee at Brown University, Member,   2019–2020
  AMS Graduate Coneferences 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

- **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
  Math 100 Calculus Part II   Spring 2019
- **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
  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

- **Summer Undergraduate Math Research at Yale**   Summer 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** — Fall 2018
  Alara Değirmenci.

OUTREACH

- 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

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).