

JENNIFER LI

Curriculum Vitae

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EMPLOYMENT

Princeton University

Mathematics Postdoctoral Research Associate
Instructor of Mathematics

Jul. 2024-current
Sep. 2021-Jun. 2024

RESEARCH AREA

Algebraic Geometry

EDUCATION

University of Massachusetts, Amherst

Ph.D., Mathematics

Sep. 2015-May 2021

Thesis: *A cone conjecture for log Calabi-Yau surfaces*

Mar. 26, 2021 (Defense)

Advisor: Paul Hacking

Louisiana State University

M.S., Mathematics

Aug. 2013-May 2015

University of Michigan, Ann Arbor, MI

Ph.D. candidate, Computer Science

Sep. 2011-May 2012

Louisiana State University

B.A., Mathematics and B.S., Computer Science

Aug. 2007-May 2011

PAPERS

J. Kollár, J. Li, The Mordell-Schinzle conjecture for cubic Diophantine equations (<https://arxiv.org/pdf/2412.12080>), 2024.

L. Esser, J. Li, Hypersurfaces with large automorphism groups (<https://arxiv.org/abs/2405.11666>), 2024, to appear in Transactions of the American Mathematical Society.

J. Li, On the cone conjecture for log Calabi-Yau mirrors of Fano 3-folds (<https://arxiv.org/abs/2310.02962>), 2023, submitted.

J. Li, S. Torres, Rational surfaces with a non-arithmetic automorphism group (<https://arxiv.org/abs/2310.08768>), 2023, The Bulletin of the London Mathematical Society.

J. Li, A cone conjecture for log Calabi-Yau surfaces (<https://arxiv.org/abs/2207.12483>), 2022, to appear in Forum of Mathematics, Sigma.

R. Bell, P. Comparin, J. Li, A. Rincón-Hidalgo, A. Sarti, and A. Zannardini, “Automorphisms of $K3$ surfaces”, Journal of Pure and Applied Algebra, Vol.228, Issue 4, April 2024. (<https://www.sciencedirect.com/science/article/abs/pii/S0022404923001998>).

J. Li, A cone conjecture for log Calabi-Yau surfaces (https://scholarworks.umass.edu/dissertations_2/2194), 2021, UMass Amherst Scholarworks, Doctoral Dissertations.

AWARDS, SCHOLARSHIPS, AND FUNDING

NSF summer research funding (PI: Paul Hacking)	<i>Summers 2018, 2019, 2020</i>
UMass Amherst Math Department Fellowship	<i>Fall 2015</i>
LA-STEM Undergraduate Research Scholarship	<i>Fall 2007-Spring 2011</i>
Louisiana Taylor Opportunity for Students Award	<i>Fall 2007-Spring 2011</i>
LSU Chancellor’s Aid: Work-Study Scholarship	<i>Fall 2007-Spring 2011</i>
LSU Centennial Scholarship	<i>Fall 2007-Spring 2011</i>

INVITED TALKS

On the cone conjecture for log Calabi-Yau mirrors of Fano 3-folds

- UPenn Algebraic Geometry Seminar *Dec. 2, 2024*
- The Kinosaki Symposium *Oct. 23, 2024*
- AIM Workshop: Higher dimensional log Calabi-Yau pairs *Oct. 5, 2024*
- Fordham University Math Department Colloquium *Apr. 17, 2024*
- The University of Nottingham Algebraic Geometry Seminar (virtual) *Nov. 30, 2023*
- Joaquín Moraga’s Birational Algebraic Geometry Seminar (virtual) *Nov. 24, 2023*
- Johns Hopkins University Algebraic Geometry Seminar *Sep. 12, 2023*
- Women and Math Program at IAS *May 24, 2023*
- University of Utah Algebraic Geometry Seminar *Mar. 14, 2023*

Rational surfaces with a non-arithmetic automorphism group

- The University of Maryland Algebraic Geometry Seminar *Nov. 25, 2024*
- UIUC Algebraic Geometry Seminar *Nov. 4, 2024*
- The University of Tokyo Algebraic Geometry Seminar *Oct. 18, 2024*

Hypersurfaces with large automorphism groups

- The University of Tokyo Graduate Algebraic Geometry Seminar *Oct. 17, 2024*
- Joaquín Moraga’s Birational Algebraic Geometry Seminar (virtual) *Jun. 28, 2024*

Automorphisms of $K3$ surfaces

- JMM: AMS-AWM Special Session on Women in Algebraic Geometry *Apr. 8, 2022*

A cone conjecture for log Calabi-Yau surfaces

- Brown University Algebraic Geometry Seminar *Oct. 7, 2022*
- Purdue University Algebraic Geometry Seminar (virtual) *Oct. 5, 2022*
- Stability and Moduli at the Simons Center, Stony Brook University *Aug. 22, 2022*

- Columbia Algebraic Geometry Seminar *Apr. 22, 2022*
- ECOS-ANID Workshop (virtual) *Jul. 19-20, 2021*
- University of Connecticut Algebra Seminar (virtual) *Apr. 28, 2021*
- Princeton Algebraic Geometry Seminar (virtual) *Apr. 27, 2021*
- Boston College Algebraic Geometry and Number Theory Seminar (virtual) *Apr. 1, 2021*

PREPRINT AND LEARNING SEMINAR TALKS

Abstracts and notes for some talks are posted at <https://web.math.princeton.edu/~j15270/>

By Oguiso from Jan. 9, 2024: Fibered Calabi-Yau threefolds with relative automorphisms of positive entropy and c_2 -contractions *Apr. 2, 2024*

- Princeton preprint seminar

By Stenger and Xie from May 17, 2023: Cone of divisors on P^3 blown up at eight very general points *Nov. 21, 2023*

- Princeton preprint seminar

By Oguiso from Nov. 15, 2021: A counterexample of Morrison's cone conjecture for a strict Calabi-Yau 3-fold *Feb. 7, 2023*

- Princeton preprint seminar

By P.M.H. Wilson from Apr. 29, 2022: The topology of Calabi-Yau 3-folds *Sep. 27, 2022*

- Princeton preprint seminar

By Hoff and Stenger from Nov. 26, 2021: On the numerical dimension of Calabi-Yau 3-folds of Picard number two *Feb. 22, 2022*

- Princeton preprint seminar

By Felten, Petracci, Robins from Sep. 1, 2021: Deformations of log Calabi-Yau pairs can be obstructed *Oct. 26, 2021*

- Princeton preprint seminar

By Dinh, Oguiso, and Yu from Jun. 10, 2021: Smooth complex projective rational surfaces with infinitely many real forms *Aug. 10, 2021*

- Princeton preprint seminar (virtual)

An overview of the proof in Birkar-Cascini-Hacon-McKernan (BCHM) *Sep. 17, 2021*

- Presentation on some main theorems and strategies used in the proof in *Existence of minimal models for varieties of log general type* by Birkar, Cascini, Hacon, and McKernan, for the Princeton MMP Learning Seminar

A cone conjecture for log Calabi-Yau surfaces *Dec. 10, 2021*

- Presentation on my research for The Noetherian Ring, a group for women and gender minorities in math at Princeton.

Hurwitz numbers and monodromy representations *Apr. 16, 2021*

- Expository talk for GRASS (graduate student seminar) at UMass Amherst (virtual)

- 10-Minute group presentation on automorphisms of $K3$ Surfaces** *Jul. 31, 2020*
- Collaborative talk on research results from the ICERM Women in Algebraic Geometry Workshop, with Renee Bell, Alejandra Rincón-Hidalgo, and Aline Zanardini and mentors Paola Comparin and Alessandra Sarti (virtual)

- 5-Minute research talks on The Kawamata-Morrison-Totaro cone conjecture**
- ICERM Women in Algebraic Geometry Workshop (virtual) *Jul. 30, 2020*
- New Facets Conference at the University of Michigan *Oct. 18, 2019*
- Women@AGNES at Brown University *Sep. 21, 2018*

- Elliptic fibrations of a $K3$ surface** *Nov. 8, 2019*
- Expository talk for the algebraic geometry reading seminar at UMass Amherst

- The cone theorem for smooth projective varieties** *Apr. 19, 2019*
- Expository talk for the algebraic geometry reading seminar at UMass Amherst

- The ample cone of a $K3$ surface** *Dec. 7, 2018*
- Expository talk for the algebraic geometry reading seminar at UMass Amherst

- Moduli of weighted marked points on curves of genus zero** *Nov. 2, 2018*
- Expository talk for GRASS (graduate student seminar) at UMass Amherst

- Symplectic toric manifolds and Delzant polytopes** *May 4, 2018*
- Expository talk for a graduate symplectic topology course at UMass Amherst

- Classification of Gorenstein Fano toric varieties** *Feb. 17, 2018*
- Five-minute research talk for the Graduate Workshop in Algebraic Geometry for Women and Mathematicians of Minority Genders, at Harvard and MIT

- Toric surface singularities and their resolutions** *Mar. 9, 2018*
- Expository talk for the algebraic geometry reading seminar at UMass Amherst

- Du Val singularities** *Nov. 30, 2017*
- Expository talk for the algebraic geometry reading seminar at UMass Amherst

- Toric varieties as quotients of affine space** *Apr. 17, 2017*
- Expository talk with Ben Johnson for a graduate moduli spaces course at UMass Amherst

- The Riemann-Hurwitz formula** *Feb. 8, 2016*
- Expository talk for the algebraic geometry reading seminar at UMass Amherst

- Quadratic reciprocity** *May 8, 2015*
- Expository talk for a number theory reading course at LSU

Winding numbers and the Fundamental Theorem of Algebra*Apr. 29, 2014*

- Expository talk for a topology course at LSU

POSTER PRESENTATIONS**On the cone conjecture for log Calabi-Yau mirrors of Fano 3-folds**

- Higher Dimensional Algebraic Geometry Celebrating James McKernan's 60th

*Jan. 9, 2024***Rational surfaces with a non-arithmetic automorphism group**

- AGNES (Algebraic Geometry Northeastern Series) at UPenn

*Oct. 14, 2023***On the cone conjecture for log Calabi-Yau 3-folds**

- Arithmetic, Birational Geometry, and Moduli Spaces at Brown University
- MPS Higher Dimensional Geometry at the Simons Center NYC
- AGNES at UMass Amherst

*Jun. 12-16, 2023**Oct. 24, 2022**Nov. 18, 2022***A cone conjecture for log Calabi-Yau surfaces**

- MPS Higher Dimensional Geometry at the Simons Center NYC
- Special Month on Singularities and K -Stability at University of Utah (virtual)
- AGNES at Stony Brook University (virtual)

*Feb. 24, 2022**Jun. 10-11, 2021**Oct. 24, 2020***The Kawamata-Morrison-Totaro cone conjecture for log Calabi-Yau surfaces**

- Arithmetic and Algebraic Geometry Conference at the University of Michigan
- Ideals, Varieties, and Algorithms: a Celebration of the Influence of David Cox
- AWM Research Symposium at Rice University
- AGNES (Algebraic Geometry Northeastern Series) at UMass Amherst
- MSRI: Birational Geometry, Moduli Spaces, and Derived Categories Workshop

*Aug. 5, 2019**Jun. 11, 2019**Apr. 6, 2019**Mar. 23, 2019**Jan. 29, 2019***WORKSHOPS, SUMMER SCHOOLS, AND CONFERENCES****Workshops and Summer Schools**

- AIM Workshop: Higher Du Bois and higher rational singularities *Oct. 28-30, 2024*
- AIM Workshop: Higher dimensional log Calabi-Yau pairs *Sep. 30-Oct. 4, 2024*
- AGGITatE 2024: Workshop on Moduli Theory at the University of Essex *Jul. 22-26, 2024*
- The Stacks Project Workshop at the University of Michigan *Aug. 7-11, 2023*
- ICERM Women in Algebraic Geometry Workshop (virtual) *Aug. 27-Jul. 31, 2020*
- MSRI Workshop: Derived AG, Birational Geometry, Moduli Spaces *Jan. 31-Feb. 8, 2019*
- Graduate Workshop in AG for Women and Minority Genders, at Harvard and MIT *Feb. 27-18, 2018*
- MSRI Geometry and Analysis Summer Graduate School *Jul. 28-Aug. 8, 2014*

Conferences

- AGNES (Algebraic Geometry Northeastern Series) at Boston College *Mar. 15-17, 2024*
- Higher Dimensional Algebraic Geometry Celebrating James McKernan's 60th *Jan. 10-14, 2024*
- MPS Higher Dimensional Geometry at the Simons Center NYC *Oct. 25-27, 2023*
- AGNES at UPenn *Oct. 13-15, 2023*

- 100 Years Noetherian Rings Conference, IAS *Jun. 19-23, 2023*
- Arithmetic, Birational Geometry, and Moduli Spaces at Brown University *Jun. 12-16, 2023*
- FRG Special Month in Ann Arbor *May 25-28, 2023*
- MPS Higher Dimensional Geometry at the Simons Center, Stony Brook University *May 8-12, 2023*
- Explicit Moduli Problems in Higher Dimensions at Banff *Feb. 26-Mar. 3, 2023*
- AGNES at UMass Amherst *Nov. 18-20, 2022*
- MPS Higher Dimensional Geometry at the Simons Center NYC *Oct. 24-28, 2022*
- Stability and Moduli at the Simons Center, Stony Brook *Aug. 22-26, 2022*
- JAMI: Higher Dimensional Algebraic Geometry at Johns Hopkins University *May 3-8, 2022*
- AMS Joint Mathematics Meeting in Seattle (virtual) *Apr. 6-8, 2022*
- MPS Higher Dimensional Geometry at the Simons Center NYC *Feb. 23-25, 2022*
- ECOS-ANID Workshop (virtual) *Jul. 19 - 20, 2021*
- Special Month on Singularities and K -Stability at University of Utah (virtual) *May 17-Jun. 11, 2021*
- Western Algebraic Geometry Symposium (virtual) *Apr. 23-24, 2021*
- AGNES at Stony Brook (virtual) *Oct. 23-25, 2020*
- Facets of Algebraic Geometry at University of Michigan *Oct. 19-20, 2019*
- New Facets Algebraic Geometry Conference at University of Michigan *Oct. 18, 2019*
- AGNES at Boston College *Sep. 20-22, 2019*
- Arithmetic and Algebraic Geometry Conference at the University of Michigan *Aug. 5-9, 2019*
- Ideals, Varieties, and Applications: a Celebration of David Cox, at Amherst College *Jun. 10-14, 2019*
- BATMOBYLE (Bi-annual Algebraic and Tropical Meetings of Brown and Yale) *May 2, 2019*
- AWM Research Symposium at Rice University *Apr. 6-7, 2019*
- AGNES at UMass Amherst *Mar. 22-24, 2019*
- Symposium Celebrating the Mathematical Work of David Mumford, at Harvard *Aug. 20, 2018*
- BATMOBYLE at Yale *Nov. 30, 2018*
- AGNES at Northeastern University *Oct. 13-15, 2017*
- The Georgia Algebraic Geometry Symposium at the University of Georgia *Mar. 3-5, 2017*
- AGNES at UMass Amherst *Nov, 4-6, 2016*
- AGNES at Yale *Apr. 8-10, 2016*
- Discrete Math Days in the Northeast at Smith College *Apr. 30, 2016*
- AGNES at Brown University *Oct. 2-4, 2015*
- BC Northeastern Algebraic Geometry Conference at Northeastern University *Sep. 8, 2015*
- Applications in Automorphic Forms in Number Theory and Combinatorics at LSU *Apr. 12-15, 2014*

CONFERENCE AND SEMINAR ORGANIZATION

Princeton Math Department Colloquium

Fall 2022-current

- Co-organized with Mihalis Dafermos, Casey Kelleher, and Emmy Murphy

American Graduate Student Algebraic Geometry Seminar (AGSAGS) *Fall 2020-Spring 2021*

- Nationwide virtual seminar for graduate students, co-organized with Aline Zanardini, Lena Ji, Samir Canning, and Roberto Albesiano

GRAduate Student Seminar (GRASS)*Fall 2018-Spring 2019*

- Graduate seminar at UMass, co-organized with Tori Day, Tetsuya Nakamura, Cristian Rodriguez, Angelica Simonetti, and Sebastian Torres, at UMass Amherst

Two-part Mini Workshop on Algebraic Varieties, Hypergeometric Series, and Modular Forms*Spring 2015*

- Research workshop at LSU, co-organized with Luca Candelori, Ling Long, and Robert Perlis

TALKS FOR UNDERGRADUATES

Abstracts and notes for all talks are posted at <https://web.math.princeton.edu/~jl5270/>

Mathematics in Kaleidoscopes*Dec. 4, 2019*

- Undergraduate Math Club at UMass Amherst

Plabic Graphs and the Totally Nonnegative Grassmannian*Feb. 27, 2019*

- Undergraduate Math Club at UMass Amherst

Convex Reflexive Lattice Polygons and the Number 12*Apr. 18, 2018*

- Undergraduate Math Club at UMass Amherst

Bézout's Theorem*Nov. 30, 2016*

- Undergraduate Math Club at UMass Amherst

An Introduction to SAGE*May 4, 2015*

- Presentation for math summer REU students at LSU

Congruent Numbers and Elliptic Curves*Mar. 2, 2015*

- Undergraduate Math Club at LSU

A Variation on the Four Color Problem*Sep. 21, 2015*

- Presentation for GEAUX (Graduate Education and Acclimation to the University eXperience) Program

COMPUTER SKILLS**Programming Languages**

- SAGE: I wrote SAGE scripts to test cases in my thesis
- MATLAB: I wrote MATLAB scripts for my undergraduate research project in Electrical Engineering
- Java: I programmed in this language for my undergraduate coursework

TEACHING**Instructor (asterik*: was course head)**

- Multivariable Calculus at Princeton

Spring 2024, Fall 2021*

- Linear Algebra and Applications at Princeton *Fall 2023, Spring 2023, Fall 2022*, Spring 2022*
- Introduction to Linear Algebra at UMass Amherst *Spring 2021, 2020; Fall 2019*
- Calculus II at UMass Amherst *Fall 2020*
- Multivariable Calculus at UMass Amherst *Fall 2018*

Teaching Assistant (Discussion Leader)

- Calculus II at UMass Amherst *Spring 2019, 2017*
- Honors Calculus II at UMass Amherst *Fall 2016*
- Calculus I at UMass Amherst *Fall 2017, Spring 2016, Fall 2015*
- Calculus I at LSU *Fall 2015, Spring 2015, Fall 2014*
- Discrete Mathematics at University of Michigan (EECS Department) *Fall 2011, Spring 2012*

Grader

- Theory of Numbers at UMass Amherst *Fall 2020, Spring 2019*
- Discrete Structures at UMass Amherst *Spring 2018*

Other

- Leader of the graduate algebra qualifying exam review *Summer 2018, Summer 2019*
- Discrete mathematics and algebra tutor for Tutor.com *Fall 2013-Fall 2014*

MENTORING

Mentor for Princeton Math REU *Summer 2023*

- Mentored Princeton undergraduate math junior, Cooper Kofron, on Toric Varieties

Mentor for LSU Math REU *Summer 2015*

- Mentored undergraduate math majors from various universities on algebraic varieties, hypergeometric series, and modular forms

LA-STEM Summer Bridge Mentor *Summer 2008*

- Mentored incoming LSU LA-STEM scholars in physics and calculus

COMMUNITY OUTREACH

UIUC AWM Teaching and Diversity Seminar

- Gave a talk for UIUC math graduate students on my graduate and postdoc experiences in math *Nov. 5, 2024*

Association for Women in Mathematics

- Managed the UMass Amherst Chapter website *Fall 2016-Fall 2019*
- Managed the LSU Chapter website *Fall 2013-Spring 2015*

Sonia Kovalevsky Day

- Led a workshop on Tessellations with Maggie Smith at Mt. Holyoke College for elementary and middle school students *Nov. 10, 2018*

Girls' Math Day

- Volunteered at a workshop on knot theory for middle school students

May 2, 2015

PREVIOUS EMPLOYMENT

Undergraduate researcher at Louisiana State University

Fall 2008-Spring 2010

- Advisor: Georgios Veronis, LSU Electrical Engineering and Center for Computation and Technology
- Topic: *Design of efficient grating-assisted organic solar cells using computational electromagnetics*
- Summer REU through LASTEM OSI (Office of Strategic Initiatives)
- LSU SURF (Summer Undergraduate Research Forum) Poster Session

Undergraduate Publication

- C. Min, J. Li, G., Veronis, J-Y. Lee, S. Fan, and P. Peumans, Enhancement of optical absorption in thin-film organic solar cells through the excitation of plasmonic modes in metallic gratings, *Applied Physics Letters*, 96, 133302, 2010.

Undergraduate researcher at UC Berkeley

Summer 2009

- Participant in TRUST (Team for Research in Ubiquitous Secure Technology) REU at UC Berkeley
- Poster presentation at UC Berkeley on *Mining Trends in Network Traffic Data*