JENNIFER LI
Curriculum Vitae

Address:
Department of Mathematics
Fine Hall, Office 1009
304 Washington Road
Princeton, NJ 08544, USA
Email: jenniferli@princeton.edu
Website: https://web.math.princeton.edu/~jl5270/
Citizenship: United States

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
Thesis: A cone conjecture for log Calabi-Yau surfaces
Advisor: Paul Hacking
Mar. 26, 2021 (Defense)

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

L. Esser, J. Li, Hypersurfaces with large automorphism groups (https://arxiv.org/abs/2405.11666), 2024, submitted.

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, to appear in 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. Zanardini, “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 (2021). Doctoral Dissertations. 2194. https://scholarworks.umass.edu/dissertations_2/2194

AWARDS, SCHOLARSHIPS, AND FUNDING

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

INVITED TALKS

**Rational surfaces with a non-arithmetic automorphism group**
- 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

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

**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
PREPRINT AND LEARNING SEMINAR TALKS

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

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

Apr. 2, 2024

By Stenger and Xie from May 17, 2023: Cone of divisors on P3 blown up at eight very general points

Nov. 21, 2024

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

Feb. 7, 2023

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

Sep. 27, 2022

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

Feb. 22, 2022

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

Oct. 26, 2021

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

Aug. 10, 2021

An overview of the proof in Birkar-Cascini-Hacon-McKernan (BCHM)

Sep. 17, 2021

A cone conjecture for log Calabi-Yau surfaces

Dec. 10, 2021

Hurwitz numbers and monodromy representations

Apr. 16, 2021

10-Minute group presentation on automorphisms of $K3$ Surfaces

Jul. 31, 2020
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- 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) \( \text{Jul. 30, 2020} \)
- New Facets Conference at the University of Michigan \( \text{Oct. 18, 2019} \)
- Women@AGNES at Brown University \( \text{Sep. 21, 2018} \)

Elliptic fibrations of a K3 surface \( \text{Nov. 8, 2019} \)

- Expository talk for the algebraic geometry reading seminar at UMass Amherst

The cone theorem for smooth projective varieties \( \text{Apr. 19, 2019} \)

- Expository talk for the algebraic geometry reading seminar at UMass Amherst

The ample cone of a K3 surface \( \text{Dec. 7, 2018} \)

- Expository talk for the algebraic geometry reading seminar at UMass Amherst

Moduli of weighted marked points on curves of genus zero \( \text{Nov. 2, 2018} \)

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

Symplectic toric manifolds and Delzant polytopes \( \text{May 4, 2018} \)

- Expository talk for a graduate symplectic topology course at UMass Amherst

Classification of Gorenstein Fano toric varieties \( \text{Feb. 17, 2018} \)

- 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 \( \text{Mar. 9, 2018} \)

- Expository talk for the algebraic geometry reading seminar at UMass Amherst

Du Val singularities \( \text{Nov. 30, 2017} \)

- Expository talk for the algebraic geometry reading seminar at UMass Amherst

Toric varieties as quotients of affine space \( \text{Apr. 17, 2017} \)

- Expository talk with Ben Johnson for a graduate moduli spaces course at UMass Amherst

The Riemann-Hurwitz formula \( \text{Feb. 8, 2016} \)

- Expository talk for the algebraic geometry reading seminar at UMass Amherst

Quadratic reciprocity \( \text{May 8, 2015} \)

- Expository talk for a number theory reading course at LSU

Winding numbers and the Fundamental Theorem of Algebra \( \text{Apr. 29, 2014} \)

- 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 Jun. 12-16, 2023
• MPS Higher Dimensional Geometry at the Simons Center NYC Oct. 24, 2022
• AGNES at UMass Amherst Nov. 18, 2022

A cone conjecture for log Calabi-Yau surfaces
• MPS Higher Dimensional Geometry at the Simons Center NYC Feb. 24, 2022
• Special Month on Singularities and K-Stability at University of Utah (virtual) Jun. 10-11, 2021
• AGNES at Stony Brook University (virtual) Oct. 24, 2020

The Kawamata-Morrison-Totaro cone conjecture for log Calabi-Yau surfaces
• Arithmetic and Algebraic Geometry Conference at the University of Michigan Aug. 5, 2019
• Ideals, Varieties, and Algorithms: a Celebration of the Influence of David Cox Jun. 11, 2019
• AWM Research Symposium at Rice University Apr. 6, 2019
• AGNES (Algebraic Geometry Northeastern Series) at UMass Amherst Mar. 23, 2019
• MSRI: Birational Geometry, Moduli Spaces, and Derived Categories Workshop 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
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- 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/](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*