

Kenneth Ascher

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Academic Positions

UC Irvine

Assistant Professor

2021 - Pres.

Princeton University

Instructor & NSF Postdoctoral Fellow

2018 - 2021

MSRI

Postdoc Research Member

Berkeley, CA

Spring 2019

Massachusetts Institute of Technology

NSF Postdoctoral Fellow

2017-2018

Visiting Positions

University of Sydney & UNSW

Visiting Researcher at the Sydney Mathematical Research Institute

8/22 - 9/22

Education

Brown University

Ph.D. Mathematics

2017

Stony Brook University

B.S. Mathematics

2012

Research Interests

Algebraic & Arithmetic Geometry – moduli of higher dimensional varieties, birational geometry, K-stability, logarithmic geometry, and applications to arithmetic

Publications and Preprints

20. Wall crossing for moduli of stable log varieties (with Dori Bejleri, Giovanni Inchiostro, and Zsolt Patakfalvi), (2021). *Submitted*.
19. K-stability and birational models of moduli of quartic K3 surfaces (with Kristin DeVleming and Yuchen Liu), (2021). **Inventiones Mathematicae**, *to appear*.
18. Smoothability of relative stable maps to stacky curves (with Dori Bejleri), **Épjournal de Géométrie Algébrique**, *to appear*.
17. Moduli of curves on a quadric surface and K3 surfaces (with Kristin DeVleming and Yuchen Liu). **Journal of the Institute of Mathematics of Jussieu**, *to appear*.
16. Hyperbolicity of varieties of log general type (with Amos Turchet). **Arithmetic geometry of logarithmic pairs and hyperbolicity of moduli spaces – hyperbolicity in Montréal**, 197-247, CRM Short Courses, Springer, Cham, 2020.
15. Moduli of double covers and degree one del Pezzo surfaces (with Dori Bejleri). **European Journal of Mathematics**, 7, 557-569 (2021).

14. Wall crossings for K-moduli spaces of plane curves (with Kristin DeVleming and Yuchen Liu), (2019). *Submitted*.
13. Compact moduli of elliptic K3 surfaces (with Dori Bejleri). **Geometry & Topology**, *to appear*.
12. The Erdős-Ulam problem, Lang's conjecture, and uniformity (with Lucas Braune and Amos Turchet). **Bulletin of the London Mathematical Society**, 52 issue 6, 1053-1063 (2020).
11. Hyperbolicity and uniformity of varieties of log general type (with Kristin DeVleming and Amos Turchet). **International Mathematics Research Notices**, Vol 2022, 4, 2532-2581 (2022).
10. Moduli of degree one del Pezzo surfaces (with Dori Bejleri). **Mathematische Annalen**, *to appear*.
9. Enumerating Hassett's wall and chamber decomposition of the moduli space of weighted stable curves (with Connor Dubé, Daniel Gershenson, Elaine Hou) **Experimental Mathematics**, Vol 29 (2020) 36-53.
8. Moduli of weighted stable elliptic surfaces and invariance of log plurigenera (with Dori Bejleri). **Proceedings of the London Mathematical Society**, 122: 617-677 (2021).
7. Moduli of fibered surface pairs from twisted stable maps (with Dori Bejleri). **Mathematische Annalen** Vol 374 (2019) 1007-1032.
6. Log canonical models of elliptic surfaces (with Dori Bejleri). **Advances in Mathematics** Vol 320 (2017) 210-243.
5. Bounding heights uniformly in families of hyperbolic varieties (with Ariyan Javanpeykar). **New York Journal of Mathematics** Volume 23 (2017) 1791-1808.
4. A generic slice of the moduli space of line arrangements (with Patricio Gallardo). **Algebra and Number Theory**, 12-4 (2018), 751-778.
3. A fibered power theorem for varieties of log general type (with Amos Turchet). **Algebra and Number Theory**, 10-7 (2016), 1581-1600.
2. Twisted derived equivalence and rational points on K3 surfaces (with K. Dasaratha, A. Perry, R. Zhou). **Brauer groups and obstruction problems: Moduli and arithmetic**.
1. Logarithmic stable toric varieties and their moduli (with Sam Molcho). **Algebraic Geometry** (3) 2016, 296-319.

Grants

2020-2023: NSF grant DMS-2140781 (formerly DMS-2001408)

2017-2020: NSF Postdoctoral Fellowship

Conference Talks

2022:

- o Oppenheim Lecture 2022 @ National University of Singapore – Recent Progress in Algebraic Geometry supporting lecture for Caucher Birkar.

2021:

- Geometry via arithmetic Banff

2020:

- Geometry and Arithmetic of Algebraic Varieties (AMS sectional) @ Penn State University (Online)

2019:

- Fall 2019 Algebraic Geometry Northeastern Series (AGNES) @ Boston College
- Topics on Nevanlinna Theory and Complex Hyperbolicities @ Shanghai Center for Mathematical Sciences at Fudan University [China]
- Discrete groups and moduli @ Nagoya University [Japan]
- Diophantine Approximation and Value Distribution Theory @ UQAM [Montreal, Canada]
- Arithmetic geometry and its connections (AMS sectional) @ University of Hawaii

2018:

- Special session on algebraic geometry (AMS sectional) @ Portland State Univ.
- Workshop on algebraic surfaces and related topics @ Xiamen University [China]

2016:

- Moduli of Curves workshop @ CIMAT [Guanajuato, Mexico]

2015:

- Workshop on Higher Dimensional Algebraic Geometry @ IMPA [Brazil]

Invited Lecture Series / Minicourses

2021: AGNES goes to school (virtual, mini-course on hyperbolicity in algebraic geometry)

2018: Geometry & arithmetic of orbifolds @ UQAM [Montreal, Canada] (Dec. 2018) – Minicourse on hyperbolicity and birational geometry of log pairs

Seminar Talks

2022:

- UCSB Geometry & Arithmetic seminar (May)
- UCI Differential Geometry Seminar (Mar)
- Utah Algebraic Geometry seminar (Mar)

2021:

- UC Davis algebraic geometry seminar
- ZAG (Zoom algebraic geometry) seminar
- Unicamp (Brazil) AG seminar

2020:

- UIC Algebraic Geometry Seminar (Feb)

2019:

- Northwestern Algebraic Geometry Seminar (April)

2018:

- Princeton Algebraic Geometry Seminar (September)
- UCLA Algebra Seminar (June)
- UCSB Algebraic Geometry Seminar (June)
- Stony Brook Algebraic Geometry Seminar (April)

2017:

- University of Massachusetts (Amherst) Algebraic Geometry Seminar (Nov.)
- UCSD Algebraic Geometry Seminar (Nov.)
- University of Washington (Seattle) Algebra Seminar (Oct.)
- Washington University (St. Louis) Algebraic Geometry Seminar (Sep.)

- Princeton University Algebraic Geometry Seminar (Feb.)
- Yale Algebraic Geometry Seminar (Jan.)
- Brown Algebraic Geometry Seminar (Jan.)

2016:

- New York University Algebraic Geometry Seminar (Nov.)
- Harvard/MIT Algebraic Geometry Seminar (Nov.)
- Yale Number Theory Seminar (Nov.)
- University of Washington (Seattle) Algebra Seminar (Oct.)
- EPFL (Lausanne) Algebraic Geometry Seminar (Sep.)

2015:

- University of Georgia Algebraic Geometry Seminar (Oct.)
- Brown University Algebraic Geometry Seminar (Oct.)
- Chalmers University (Sweden) Algebraic Geometry Seminar (Mar.)

Colloquium Talks

1. SMRI (Sydney Math Research Institute Uni. of Sydney) What is...? Seminar (Aug 2022)
2. UNSW Pure Maths Seminar (Sydney, Australia – Aug 2022)
3. UC Irvine (Jan 2020)
4. Rice University (Dec 2019)

Mentoring

Summer 2017: SUMRY (Summer Research for Yale Undergraduates) Mentor – Mentored 3 Yale Undergraduates on an algebraic geometry research project. (resulted in a published paper in **Exper. Math.**) One student now in the math Ph.D. program at UC Berkeley

Outreach Activities

Jan 22 - Pres : Mentor for Math CEO high school program – outreach to underserved communities in Southern California

Mar 2022: Orange County Science & Engineering Fair Judge (Final round, Math and related fields)

Mar 2022: Orange County Science & Engineering Fair Judge (Seniors, Math & Computers division)

Fall 2021: Coffee with undergrads participant

Summer 2018, 2019: Special lecturer for the SIMUW program at the University of Washington (high school summer math program)

2014-2017: Brown Math CoOp (discuss, prepare, and deliver presentations on mathematics and their applications for K-12 students in the Boston & Providence area).

Teaching

2021-2022: Graduate algebra sequence, UC Irvine

Spring 2022: Honors Linear Algebra (for math majors), Princeton University (Course Head & Instructor)

Fall 2021: Linear Algebra, Princeton University (Course Head & Instructor)

Fall 2019, 2020: Linear Algebra, Princeton University (Course Head & Instructor)

Fall 2018: Linear Algebra, Princeton University (Instructor)

Fall 2016: Calculus I, Brown University (Instructor)

Fall 2015: Linear Algebra, Brown University (Instructor)

Fall 2014: Calculus II, Brown University (Instructor)

Fall 2013: Calculus II, Brown University (TA)

Fall 2011: Proficiency Algebra, Stony Brook University (Instructor)

Fall 2010: Proficiency Algebra, Stony Brook University (Instructor)

Fall 2009: Precalculus, Stony Brook University (TA)

Conference Organization

Spring 2023: Explicit higher dimensional moduli @ Banff

Fall 2018: Organizer of Workshop in algebraic geometry @ Princeton

2016-2018: Co-organizer BATMOBYLE conference (Brown & Yale Tropical Geometry)

2014-2016: Cofounder and Organizer of (5) AMS Grad Student Conferences @ Brown University

Service

Fall 22: Advancement Committee Member (Maureen Zhang)

Spring 22: Thesis Committee Member (Alex Sutherland)

Spring 22: Thesis Reader (David Villalobos Paz – Princeton)

Spring 22: Advancement Committee Member (Yasmeen Baki)

Spring 22: Advancement Committee Member (Ashley Shade)

F 21 - S 22: Member of math dept. inclusive excellence committee

F 21 - S 22: Grad studies committee

F 21, S 22: Algebra qualifying exam committee member

2021: Member of NSF Panel Review

2013-2016: Cofounder and officer of AMS Graduate Student Chapter @ Brown University

2013-2016: Sheridan Center Certificates I & IV, (Certified Brown University Teaching Consultant)

Awards

2019: Stony Brook University Honors College Commencement Speaker & Alumni Recognition Award

2017: Joukowsky Outstanding Dissertation Prize (Given to 1 PhD graduate in the physical sciences)

2017: Outstanding Teaching Award – Brown Department of Mathematics

Last updated: November 10, 2022