

# David Stapleton

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## Employment

- 2021–2024 Postdoc, University of Michigan. Mentor: Alexander Perry.
- 2017–2021 Postdoc, UC San Diego. Mentor: James McKernan.

## Education

- 2013–2017 **Ph.D., Mathematics**, *Stony Brook University*, Stony Brook, NY.  
Advisor: Robert Lazarsfeld. Graduated: August 19, 2017.
- 2011–2013 **M.S., Mathematics**, *University of Michigan*, Ann Arbor, MI.
- 2007–2011 **B.S., Mathematics; B.S., Physics**, *Wheaton College*, Wheaton, IL.

## Publications

- *Smooth limits of plane curves, Mori's conjecture, and stable pairs*, with Kristin DeVleming. In preparation.
- *Higher index Fano varieties with finitely many birational automorphisms*, with Nathan Chen. arxiv:2110.09568, (2021). Submitted.
- *Rational endomorphisms of Fano hypersurfaces*, with Nathan Chen. arxiv:2103.12207, (2021). Submitted.
- *A direct proof that toric rank 2 bundles on projective space split*. *Mathematica Scandinavica*. 126, 3 (2020), 493-496.
- *Maximal Chow constant and cohomologically constant fibrations*, with Kristin DeVleming. arXiv:1909.01483. Commun. in Contemporary Math. (2020).
- *Fano hypersurfaces with arbitrarily large degrees of irrationality*, with Nathan Chen. *Forum of Mathematics, Sigma*. 8 e24 (2020).
- *The degree of irrationality of hypersurfaces in various Fano varieties*, with Brooke Ullery. *manuscripta mathematica*. 161 (2020), 377-408.
- *The degree of irrationality of very general hypersurfaces in some homogeneous spaces*, Ph.D. thesis (2017). Stony Brook University.
- *The tangent space of the punctual Hilbert scheme*, with Dori Bejleri. *Michigan Math. J.* 66 (2017), no. 3, 595-610.
- *Geometry and stability of tautological bundles on Hilbert schemes of points*. *Algebra and Number Theory*. 10, 6 (2016), 1173-1190.

## Grants

- 2018–2021 **AMS-Simons Travel Grant**, \$4000.

## Organizational Activities

- **co-Organizer:** *UCSD Alg. Geometry Seminar* (virtual), UCSD. 2020-2021.
- **co-Organizer:** *Old News in Algebraic Geometry Seminar*, UCSD. 2018-2019.
- **co-Organizer:** *RTG Student Geometry Seminar*, Stony Brook. 2016-2017.

- **Founder & President:** *AMS Graduate Student Chapter of the AMS*, Stony Brook. 2016-2017.
- **Organizer:** *Secret equivariant K-theory seminar*, Stony Brook. Spring 2016.
- **Organizer:** *Student Algebraic Geometry Seminar*, Stony Brook. 2014-2016. Topics: Toric varieties (Spring 2016), Rational Curves (Fall 2015), K3 Surfaces (Spring 2015), Arithmetic of Elliptic Curves (Fall 2015).
- **Organizer:** *Secret Summer Abelian Varieties Seminar*, Stony Brook. 2014.
- **co-Organizer:** *Secret Stacks Seminar*, Stony Brook. 2013.

## Refereeing

- ANT, Commun. Algebra, Crelle's Journal, Eur. Jour. Math., IMRN, J. Math. Pures Appl., JPAA, Math. Z., MRL.

## Invited Talks

- **UGA Algebraic Geometry Seminar:** *Studying the birational geometry of Fano varieties using holomorphic forms*, University of Georgia. December 2021.
- **Hannover Algebraic Geometry Seminar:** *Studying the birational geometry of Fano varieties using holomorphic forms*, Hannover. November 2021.
- **Valley Geometry Seminar:** *Studying the birational geometry of Fano varieties using holomorphic forms*, UMass Amherst. October 2021.
- **Michigan Algebraic Geometry Seminar:** *Studying the birational geometry of Fano varieties using holomorphic forms*, University of Michigan. September 2021.
- **Kentucky Algebra Seminar:** *Studying Fano hypersurfaces with holomorphic forms*, University of Kentucky. February 2021.
- **Derived Seminar:** *Studying Fano hypersurfaces with holomorphic forms*. February 2021.
- **UCSD Undergraduate Colloquium:** *The geometry of projective space*, UCSD. November 2020.
- **UIC Algebraic Geometry Seminar:** *Irrationality of Fano hypersurfaces*, UIC. October 2020.
- **UC Santa Barbara Algebraic Geometry Seminar:** *Fano hypersurfaces with large degrees of irrationality*, UC Riverside. June 2020.
- **Miami Algebraic Geometry Seminar:** *Fano hypersurfaces with large degrees of irrationality*, University of Miami. April 2020. (cancelled)
- **Northwestern University Algebraic Geometry Seminar:** *Fano hypersurfaces with large degrees of irrationality*, Northwestern. April 2020. (cancelled)
- **Southern California Algebraic Geometry Seminar:** *Fano hypersurfaces with large degrees of irrationality*, UCSD. February 2020.
- **UC Riverside Algebraic Geometry Seminar:** *Fano hypersurfaces with large degrees of irrationality*, UC Riverside. November 2019.
- **UC Davis Algebraic Geometry Seminar:** *Tautological bundles on Hilbert schemes of points*, UC Davis. December 2018.
- **AMS Sectional Meeting:** *The degree of irrationality of hypersurfaces in various Fano varieties*, San Francisco State. October 2018.
- **UCLA Algebra Seminar:** *The degree of irrationality of hypersurfaces in various Fano varieties*, UCLA. October 2018.
- **Utah Algebraic Geometry Seminar:** *The degree of irrationality of hypersurfaces in various Fano varieties*, University of Utah. December 2017.
- **Georgia Algebraic Geometry Seminar:** *The degree of irrationality of hypersurfaces in various Fano varieties*, UGA. November 2017.

- **UCSD RTG Colloquium:** *Measures of Irrationality of Algebraic Varieties*, UC San Diego. October 2017.
- **UCSD Algebraic Geometry Seminar:** *Tautological bundles on Hilbert schemes of points*, UC San Diego. October 2017.
- **Vector Bundles on Algebraic Curves (VBAC) Conference:** *Tautological bundles on Hilbert schemes of points*, Essen, Germany. September 2017.
- **Harvard-MIT Algebraic Geometry Seminar:** *Tautological bundles on Hilbert schemes of points*, Harvard. March 2017.
- **Wisconsin Algebraic Geometry Seminar:** *Tautological bundles on Hilbert schemes of points*, University of Wisconsin. November 2016.
- **Stony Brook Algebraic Geometry Seminar:** *Tautological bundles on Hilbert schemes of points*, Stony Brook University. November 2016.
- **AMS Graduate Student Conference:** *Hilbert schemes of points and their tautological bundles*, Brown University. April 2016.

## Participation in Special Programs

- Spring 2019 **Birational Geometry and Moduli Spaces**, MSRI.
- May 2018 **Birational Geometry and Arithmetic**, ICERM.
- October 2016 **Rational subvarieties in positive characteristic**, AIM Workshop.
- August 2016 **Positivity of Cycles**, AIM Workshop.

## Teaching

- Fall 2021 **Calculus I**, Math 115, University of Michigan.
- Spring 2021 **Calculus and Analytic Geometry**, Math 20C, UC San Diego.
- Winter 2020 **Calculus and Analytic Geometry**, Math 20C, UC San Diego.
- Winter 2020 **Vector Calculus**, Math 20E, UC San Diego.
- Fall 2019 **Calculus and Analytic Geometry**, Math 20C, UC San Diego.
- Summer 2019 **Modern Algebra 2**, Math 103B, UC San Diego.
- Fall 2018 **Calculus 2 for Science and Engineering**, Math 20B, UC San Diego.
- Winter 2018 **Modern Algebra**, Math 103A, UC San Diego.
- Fall 2017 **Abstract Algebra**, Math 100A, UC San Diego.
- Fall 2015 **Calculus with Applications (TA)**, 2 sections, Stony Brook University.
- Fall 2014 **Calculus I (TA)**, 2 sections, Stony Brook University.
- Fall 2013 **Calculus I (TA)**, Stony Brook University.
- Fall 2013 **Differential Equations with Applications (TA)**, Stony Brook University.
- Spring 2013 **Calculus II**, Math 116, University of Michigan.
- Fall 2012 **Calculus II**, Math 116, University of Michigan.
- Spring 2012 **Calculus I**, Math 115, University of Michigan.
- Fall 2011 **Calculus I**, Math 115, University of Michigan.