

## Jack Huizenga

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### Employment

- The Pennsylvania State University Assistant Professor Fall 2015-Present
- University of Illinois at Chicago Research Assistant Professor and NSF Postdoctoral Fellow 2012-2015

### Education

- Harvard University Ph.D. in Mathematics, supervised by Joe Harris 2012
- Harvard University S.M. in Mathematics 2008
- The University of Chicago B.A. with Honors in Mathematics 2007

### Research Interests

I am primarily interested in classical algebraic geometry. My research focuses on the geometry of curves and surfaces, with a particular emphasis on moduli spaces of vector bundles and interpolation-type problems.

### Funding, Awards, and Honors

- NSA Young Investigator Grant, \$40,000 2017-2019
- NSF Mathematical Sciences Postdoctoral Research Fellowship (DMS #1204066, \$150,000) 2012-2016
- Derek C. Bok Award for Excellence in Graduate Student Teaching 2011
- NSF Graduate Research Fellowship 2007
- Paul R. Cohen memorial prize for mathematics 2007
- Barry M. Goldwater scholarship for science and mathematics 2005
- Phi Beta Kappa, Beta of Illinois chapter 2006
- Student Marshal at the University of Chicago 2006

## Publications

- J. Huizenga, Birational geometry of moduli spaces of sheaves. Survey article for the proceedings of the Graduate Student Bootcamp for the 2015 Algebraic Geometry Summer Research Institute, Preprint (42 pages)
- I. Coskun and J. Huizenga, The nef cone of the moduli space of sheaves and strong Bogomolov inequalities, preprint. (17 pages)
- B. Bolognese, J. Huizenga, Y. Lin, E. Riedl, B. Schmidt, M. Woolf and X. Zhao, Nef cones of Hilbert schemes of points on surfaces, Algebra Number Theory, to appear. (18 pages)
- I. Coskun, L. Costa, J. Huizenga, R. M. Miró-Roig and M. Woolf, Equivariant Ulrich bundles on flag varieties, preprint. (35 pages)
- I. Coskun and J. Huizenga, The ample cone of moduli spaces of sheaves on the plane, *Algebr. Geom.* **3** (2016), no. 1, 106–136.
- I. Coskun, J. Huizenga and M. Woolf, The effective cone of the moduli space of sheaves on the plane, *J. Eur. Math. Soc.*, to appear. (37 pages)
- I. Coskun and J. Huizenga, The birational geometry of the moduli spaces of sheaves on  $\mathbb{P}^2$ , in *Proceedings of the Gökova Geometry-Topology Conference 2014*, 114–155, Gökova Geometry/Topology Conference (GGT), Gökova.
- Th. Bauer, S. Di Rocco, B. Harbourne, J. Huizenga, A. Lundman, P. Pokora and T. Szemberg, Bounded Negativity and Arrangements of Lines, *Int. Math. Res. Not.* **2015**, no. 19, 9456–9471.
- I. Coskun and J. Huizenga, Interpolation, Bridgeland stability and monomial schemes in the plane, *J. Math. Pures Appl.*, **102** (2014), 930–971.
- J. Huizenga, Effective divisors on the Hilbert scheme of points in the plane and interpolation for stable bundles, *J. Algebraic Geom.* **25** (2016), no. 1, 19–75.
- D. Arcara, A. Bertram, I. Coskun and J. Huizenga, The minimal model program for the Hilbert scheme of points on  $\mathbb{P}^2$  and Bridgeland stability, *Adv. Math.* **235** (2013), 580–626.
- J. Huizenga, Restrictions of Steiner bundles and divisors on the Hilbert scheme of points in the plane, *Int. Math. Res. Not.* **23** (2013), 4829–4873.
- J. Huizenga, *Restrictions of Steiner bundles and divisors on the Hilbert scheme of points in the plane*, Ph.D. Thesis, Harvard University. (2012)
- J. Huizenga, Interpolation on surfaces in  $\mathbb{P}^3$ , *Trans. Amer. Math. Soc.* **365** (2013), no. 2, 623–644.
- J. Huizenga and K. Tapp, Invariant metrics with nonnegative curvature on  $\mathrm{SO}(4)$  and other Lie groups, *Michigan Math. J.* **55** (2007), no. 3, 609–630.
- J. Huizenga, The minimum size of complete caps in  $(\mathbb{Z}/n\mathbb{Z})^2$ , *Electron. J. Combin.* **13** (2006) R58. (19 pages)
- J. Huizenga, Chromatic capacity and graph operations, *Discrete Math.* **308** (2008), no. 11, 2134–2148.

## Expository Articles and Presentations, available on the web

- J. Huizenga, Steiner bundles and divisors on the Hilbert scheme of points in  $\mathbb{P}^2$ . Poster presented at Joe Harris’ 60th birthday conference.

J. Huizenga, Interpolation on Surfaces in  $\mathbb{P}^3$ . Slides.

J. Huizenga, Rationally connected varieties. This was my minor thesis at Harvard.

J. Huizenga, The Noether-Lefschetz theorem.

## Teaching Experience

- Taught Math 465, Number Theory I, at Penn State Spring 2016
- Taught Math 436, Linear Algebra, at Penn State Fall 2015
- Mentor for the Bridgeland stability group at the Algebraic Geometry Bootcamp preceding the AMS Summer Research Institute at the University of Utah July 2015
- Taught Math 552, Algebraic Geometry I, at UIC Fall 2014
- Taught a minicourse (22 hours) on Moduli at VIASM, Vietnam Fall 2013
- Taught a minicourse (12 hours) on Vector Bundles at UIC Fall 2013
- Taught Math 320, Linear Algebra I, at UIC Fall 2012
- Taught Math 21a, Multivariable Calculus, at Harvard Fall 2010
- Taught Math 21a, Multivariable Calculus, at Harvard Fall 2009
- Recitation leader for Math 232a & 232b, Algebraic Geometry I & II, at Harvard 2009-2010
- Received a Certificate of Distinction in Teaching for both semesters
- Attended teacher training seminar at Harvard Fall 2007
- Course assistant for Math 204-5, Analysis II & III, at the University of Chicago 2007
- Course assistant for Math 161-3, Honors Calculus I, II & III, at U of Chicago 2004-2005

## Advising

- Advising Ph.D. student Daniel Levine in Algebraic Geometry 2015-Present
- Served on Seckin Adali's Ph.D. thesis committee at UIC 2016
- Served on Tim Ryan's Ph.D. thesis committee at UIC 2015-2016
- Served on César Lozano Huerta's Ph.D. thesis committee at UIC 2014

## Service

- Panelist for a discussion on hiring in mathematics for graduate students and postdocs at Penn State 2016
- Panelist for a discussion on hiring in algebraic geometry at the summer graduate student bootcamp in algebraic geometry at Utah 2015
- Mentored a 1-week bootcamp on Bridgeland stability leading up to the 10-year algebraic geometry conference in Utah 2015

- Co-organizer of the UIC Algebraic Geometry Seminar 2014
- Taught a 4-week minicourse for graduate students at VIASM in Vietnam leading up to the workshop on Birational Geometry and Moduli 2014
- Referee for journals including International Math Research Notices, Algebra & Number Theory, the Journal of Algebraic Geometry, Advances in Geometry, Communications in Analysis and Geometry, the Central European Journal of Math, and Discrete Math

## Talks and Upcoming Talks

- Workshop on Arrangements of Subvarieties, Oberwolfach Mar. 2016
- Penn State GAP seminar Oct. 2015
- Penn State Algebra and Number Theory seminar Oct. 2015
- Algebraic Geometry Bootcamp at the University of Utah Jul. 2015
- AMS special session on Geometry of Algebraic Varieties at Michigan State Mar. 2015
- Workshop on Geometry from Stability Conditions, University of Warwick, UK Feb. 2015
- Colloquium at Colorado State Jan. 2015
- Colloquium at Michigan State Jan. 2015
- Colloquium at Penn State Jan. 2015
- Colloquium at Queen's University Jan. 2015
- Colloquium at the University of California, Irvine Jan. 2015
- Colloquium at the University of Toronto Jan. 2015
- Colloquium at Rice University Dec. 2014
- Colloquium at Boston College Nov. 2014
- Colloquium at the University of Waterloo Nov. 2014
- Workshop on Moduli Spaces, Derived Geometry, and Rep. Theory at UNC Nov. 2014
- University of Illinois at Urbana-Champaign Algebraic Geometry Seminar Oct. 2014
- Harvard-MIT Algebraic Geometry Seminar Oct. 2014
- University of Illinois at Chicago Algebraic Geometry Seminar Sep. 2014
- RIMS Kyoto conference on Bridgeland Stability and Birational Geometry Jun. 2014
- UC San Diego Algebraic Geometry Seminar Apr. 2014
- SUNY Stony Brook Algebraic Geometry Seminar Mar. 2014
- Workshop on Negative Curves on Surfaces, Oberwolfach Feb. 2014

- Workshop on Positivity of Linear Series and Vector Bundles, Banff Feb. 2014
- Colloquium at the University of Georgia Jan. 2014
- Minicourse on Moduli at VIASM, Vietnam Dec. 2013
- Workshop on Arith. and Geometry of Rational Curves, Rice University Sep. 2013
- Conference on Moduli and Birational Geometry, Pohang, South Korea Aug. 2013
- Géométrie Algébrique en Liberté conference, KTH Stockholm Jun. 2013
- University of Illinois at Chicago Algebraic Geometry Seminar May 2013
- University of Wisconsin-Madison Algebraic Geometry Seminar Apr. 2013
- Purdue University Algebraic Geometry Seminar Mar. 2013
- Ohio State University Algebraic Geometry Seminar Feb. 2013
- RIMS Kyoto conference on Stability Conditions and Related Topics (3 hour lecture series) Dec. 2012
- University of Illinois at Chicago Algebraic Geometry Seminar Nov. 2012
- Texas A&M Workshop on Applications of Algebraic Geometry to Science Apr. 2012
- University of Michigan Algebraic Geometry Seminar Apr. 2012
- Harvard-MIT Algebraic Geometry Seminar Sep. 2011
- Rice University Algebraic Geometry Seminar Apr. 2011
- University of Illinois at Chicago Algebraic Geometry Seminar Mar. 2011
- Harvard-MIT Baby Algebraic Geometry Seminar Feb. 2011
- Invited special session speaker at the Joint Meetings of the MAA/AMS Jan. 2011
- Problems in Algebraic Geometry seminar, Harvard Oct. 2009
- Harvard-MIT Baby Algebraic Geometry Seminar Sep. 2009
- Harvard Trivial Notions Seminar Sep. 2009
- Harvard Trivial Notions Seminar Nov. 2008

### **Conferences Attended and Upcoming Conferences**

- Lawrence Ein's 60th birthday conference May 2016
- Workshop on Arrangements of Subvarieties, Oberwolfach Feb. 2016
- AMS Summer Research Institute on Algebraic Geometry Jul. 2015
- Algebraic Geometry Bootcamp at the University of Utah (mentor) Jul. 2015

- AMS sectional meeting at Michigan State Mar. 2015
- Workshop on Geometry from Stability Conditions, University of Warwick, UK Feb. 2015
- Workshop on Moduli Spaces, Derived Geometry, and Rep. Theory at UNC Nov. 2014
- Workshop on Newton-Okounkov bodies at UIC Oct. 2014
- RIMS Kyoto conference on Bridgeland Stability and Birational Geometry Jun. 2014
- Workshop on Negative Curves on Surfaces, Oberwolfach Feb. 2014
- Workshop on Positivity of Linear Series and Vector Bundles, Banff Feb. 2014
- Workshop on Birational Geometry and Moduli, VIASM Vietnam Dec. 2013 - Jan. 2014
- Workshop on Arith. and Geometry of Rational Curves, Rice University Sep. 2013
- Conference on Moduli and Birational Geometry, Pohang, South Korea Aug. 2013
- Géométrie Algébrique en Liberté conference, KTH Stockholm Jun. 2013
- Rob Lazarsfeld's 60th birthday conference, University of Michigan May 2013
- Workshop on Bridgeland Stability at UIC Apr. 2013
- RIMS Kyoto conference on Stability Conditions and Related Topics Dec. 2012
- Texas Algebraic Geometry Symposium Apr. 2012
- Joe Harris' 60th birthday conference at Harvard Aug. 2011
- Joint meetings of the MAA/AMS in New Orleans Jan. 2011
- MRC workshop on Birational Geometry and Moduli Spaces, Snowbird, Utah Jun. 2010
- Birational Geometry and Moduli Spaces summer school, University of Utah Jun. 2010

## References

- Izzet Coskun, University of Illinois at Chicago
- Joe Harris, Harvard University (thesis advisor)
- Brendan Hassett, Rice University
- Lawrence Ein, University of Illinois at Chicago
- Daniel Groves, University of Illinois at Chicago (teaching reference)