

Curriculum Vitae

Jason Michael Starr

Business Address:

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Degrees

B.A. Univ. of Calif. Berkeley, May 1996
Ph. D. Harvard University, June 2000, Advisor: Joseph Harris

Positions

Invited Professor, Institut Henri Poincaré, June 2010
Professor, Stony Brook Univ., September 2014 – present
Associate Professor, Stony Brook Univ., June 2009 – August 2014
Assistant Professor, Stony Brook Univ., September 2006 – May 2009
Assistant Professor, M. I. T., July 2003 – June 2007
C. L. E. Moore Instructor, M. I. T., July 2000 – June 2003
MSRI Postdoctoral Fellow, January 2002 – May 2002

Honors

Chancellor's Scholarship, September 1992 – May 1996
W. L. Putnam Competition, Honorable Mention, 1994 Competition
Graduated With Highest Honors, May 1996
N. S. F. Graduate Research Fellowship, Sept. 1996 – Aug. 1999
Alfred P. Sloan Thesis Fellowship, Sept. 1999 – June 2000
N. S. F. Postdoctoral Fellowship – awarded and I declined
Alfred P. Sloan Research Fellowship, Sept. 2005 – Sept. 2009
Simons Fellow in Mathematics, September 2014 – May 2014

Grants

NSF Grant DMS-0353692, "Birational geometry and spaces of rational curves"
NSF Grant DMS-0201423, "Birational geometry and rational connectedness"
NSF Grant DMS-0553921, "Collaborative Research: FRG: Geometry of moduli spaces of rational curves with applications to Diophantine problems over function fields"
NSF Grant DMS-0758521, "Higher rational connectedness and applications"
NSF Grant DMS-0846972, "CAREER: Higher rational connectedness, higher Fano manifolds, and applications"
NSF Grant DMS-1066154, "Collaborative Research: AGNES. Algebraic Geometry North-Eastern Series" Conference Grant.
NSF Grant DMS-1308737, "Integral Points, Rational Curves and Entire Curves on Projective Varieties" Conference Grant.
NSF Grant DMS-1360586, "Collaborative Research: AGNES: Algebraic Geometry North-Eastern Series, April 25-27, 2014" Conference Grant.
NSF Grant DMS-1405709, "Arithmetic of Rationally Simply Connected Varieties"

Publications

1. J. Starr, **Rational curves in hypersurfaces in projective N -space**, Ph.D. thesis, Harvard University, June 2000.
2. A. J. de Jong and J. Starr, **Every rationally connected variety over the function field of a curve has a rational point**, *Amer. J. of Math.*, **125** (2003), 567–580.
3. T. Graber, J. Harris and J. Starr, **Families of rationally connected varieties**, *J. Amer. Math. Soc.*, textbf16 (2003), 57–67, available at <http://arxiv.org/abs/math/0109220>
4. A. J. de Jong and J. Starr, **Cubic fourfolds and spaces of rational curves**, *Illinois J. Math.*, **48** (2004), 415–450, available at <http://www-math.sunysb.edu/~jstarr/papers>.
5. T. Graber, J. Harris, B. Mazur and J. Starr, **Arithmetic questions related to rationally connected varieties**, in *The legacy of Niels Henrik Abel*, 531–542, Springer, Berlin, 2004.
6. T. Graber, J. Harris, B. Mazur and J. Starr, **Jumps in Mordell-Weil rank and arithmetic surjectivity**, in *Arithmetic of higher-dimensional algebraic varieties (Palo Alto, CA, 2002)*, 141–147, Birkhäuser, Boston, 2004.
7. J. Harris, M. Roth, and J. Starr, **Rational curves on hypersurfaces of low degree**, *J. Reine Angew. Math.*, **571** (2004), 73–106, available at <http://arxiv.org/abs/math/0203088>
8. M. Olsson and J. Starr, **Quot functors for Deligne-Mumford stacks. Special issue in honor of Steven L. Kleiman**, *Comm. Algebra*, **31** (2004), 4069–4096, available at <http://arxiv.org/abs/math/0204307>
9. T. Graber, J. Harris, B. Mazur, and J. Starr, **Rational connectivity and sections of families over curves**, *Ann. Sci. Ecole Norm. Sup.(4)*, **38** (2005), 671–692, available at <http://arxiv.org/abs/math/0210225>
10. J. Harris and J. Starr, **Rational curves on hypersurfaces of low degree, II**, *Compos. Math.*, **141** (2005), 35–92, available at <http://arxiv.org/abs/math/0207257>
11. J. Harris, M. Roth, and J. Starr, **Curves of small degree on cubic threefolds**, *Rocky Mountain J. Math.*, **35** (2005), 761–817, available at <http://arxiv.org/abs/math/0202067>
12. I. Coskun and J. Starr, **Divisors on the space of maps to Grassmannians**, *Int. Math. Res. Not.* 2006, Art. ID 35273, 25 pp. available at <http://www-math.sunysb.edu/~jstarr/papers>.
13. T. D. Browning and D. R. Heath-Brown, with an appendix by J. Starr, **The density of rational points on non-singular hypersurfaces. II.**, *Proc. London Math. Soc.*, **93** (2006), 273–303.
14. A. J. de Jong and J. Starr, **Higher Fano manifolds and rational surfaces**, *Duke Math. J.*, **139** (2007), 173–183.
15. R. Beheshti and J. Starr, **Rational surfaces in index-one Fano hypersurfaces**, *J. Algebraic Geom.* **17** (2008), 255–274.
16. **Brauer groups and Galois cohomology of function fields of varieties.** *Publicações Matemáticas do IMPA. [IMPA Mathematical Publications]*, Rio de Janeiro, 2008, 111 pp.

17. I. Coskun, J. Harris and J. Starr, **The effective cone of the Kontsevich moduli space**, *Canad. Math. Bull.* **51** (2008), 519–534.
18. I. Coskun, J. Harris and J. Starr, **The ample cone of the Kontsevich moduli space**, *Canad. J. Math.* **61** (2009), 109–123.
19. J. Starr, **Arithmetic over function fields**, in *Arithmetic Geometry*, 375–418, Amer. Math. Soc., Providence, 2009.
20. J. Starr, **A pencil of Enriques surfaces of index one with no section**, *Algebra and Number Theory* **3** (2009), 637–652.
21. I. Coskun and J. Starr, **Rational curves on smooth cubic hypersurfaces**, *Int. Math. Res. Not. IMRN* no. **24** (2009), 4626–4641.
22. A. J. de Jong and J. Starr, **Almost proper GIT-stacks and discriminant avoidance**, *Doc. Math.* **15** (2010), 957–972.
23. A. J. de Jong, X. He and J. Starr, **Families of rationally simply connected varieties over surfaces and torsors for semisimple groups**, *Publ. Math. IHES.* **114** (2011), 1–85.
24. X. He and J. Starr, **Semi-stable locus of a group compactification**, *Represent. Theory* **15** (2011), 574–583.
25. J. Starr, **Rational points of rationally connected and rationally simply connected varieties**, in *Variétés rationnellement connexes: aspects géométriques et arithmétiques*, pp. 155–221, *Panor. Synth.* **31**, Soc. Math. Fr., Paris, 2010.
26. J. Starr, **Degenerations of rationally connected varieties and PAC fields**, in *A Celebration of Algebraic Geometry*, pp. 577–589, *Clay Math. Proc.* **18**, Amer. Math. Soc., Providence, RI, 2013.
available at <http://arxiv.org/abs/math/0602649>
27. T. Graber and J. Starr, **Restriction of sections for families of Abelian varieties**, submitted to proceedings of conference *A Celebration of Algebraic Geometry*, pp. 311–327, *Clay Math. Proc.* **18**, Amer. Math. Soc., Providence, RI, 2013.
available at <http://www.math.sunysb.edu/~jstarr/papers/index.html>

Preprint

28. J. Starr, **The Kodaira dimension of spaces of rational curves on low degree hypersurfaces**,
available at <http://arxiv.org/abs/math/0305432>
29. J. Starr, **The maximal free rational quotient**,
available at <http://arxiv.org/abs/math/0602640>
30. J. Starr, **Hypersurfaces of low degree are rationally simply-connected**,
available at <http://arxiv.org/abs/math/0602641>
31. A. J. de Jong and J. Starr, **Divisor classes and the virtual canonical bundle for genus 0 maps**,
available at <http://arxiv.org/abs/math/0602642>
32. A. J. de Jong and J. Starr, **A note on Fano manifolds whose second Chern character is positive**,
available at <http://arxiv.org/abs/math/0602644>

- 33. A. J. de Jong and J. Starr, **Very twisting families of pointed lines on Grassmannians**,
available at <http://arxiv.org/abs/math/0602645>
- 34. J. Starr, **Artin's axioms, composition and moduli spaces**,
available at <http://arxiv.org/abs/math/0602646>
- 35. J. Starr, **Fano varieties and linear sections of hypersurfaces**,
available at <http://arxiv.org/abs/math/0607133>
- 36. A. J. de Jong and J. Starr, **Low degree complete intersections are rationally simply connected**,
available at <http://www.math.sunysb.edu/~jstarr/papers/index.html>

Professional activities

- Served as Assoc. Director for Graduates, Stony Brook University mathematics department, Fall 2014 – present.
- Served as Assoc. Director for Undergraduates, Stony Brook University mathematics department, December 2009 – December 2012.
- Served on Simons Lecture Committee, Stony Brook University mathematics department, Fall 2009 – Fall 2012.
- Served as director of the Secondary Teacher Option Master's Degree program of the Stony Brook University mathematics department, March 2008 – December 2008.
- Served as departmental senator on University Senate and College of Arts and Sciences Senate, September 2007 – December 2008.
- Chair of Graduate Student Comprehensive Exam committee, August 2010, January 2012, August 2012.
- Served on Simons Lecture Series committee, Fall 2009 – Fall 2012. Served on Strategic Committee, Fall 2011. Served on Chair Search Committee, Fall 2012. Served on four *ad hoc* promotion committees, chaired two.
- Co-editor of conference volume, "A Celebration of Algebraic Geometry", *Clay Math. Proc.* **18**, Amer. Math. Soc., Providence, RI, 2013.
- Referee Acta Arith., Adv. Math., Algebra Number Theory, Amer. J. Math., Canad. Math. Bull., Compos. Math., Duke Math. J., Indag. Math. (N.S.), Illinois J. of Math., Int. Math. Res. Not. IMRN, Invent. Math., J. Algebra, J. Algebraic Geom., J. Amer. Math. Soc., J. Brazilian Math. Soc., J. Number Theory, J. Pure Appl. Algebra, Manuscripta Math., Math. Ann., Math. Z., Michigan Math. J., Pacific J. Math., Proc. Amer. Math. Soc., Trans. Amer. Math. Soc.
- Co-organizer of NSF sponsored workshop, "AGNES: Algebraic Geometry Northeastern Series" at Stony Brook U., April 2014.
- Co-organizer of NSF sponsored workshop, "Integral Points, Rational Curves and Entire Curves on Projective Varieties", June 2013.
- Co-organizer of NSF sponsored workshop, "AGNES: Algebraic Geometry Northeastern Series" at Stony Brook U., October 2011.
- Co-organizer of NSF sponsored workshop, "A Celebration of Algebraic Geometry" on the occasions of the 60th birthday of Joe Harris, August 2011.
- Co-organizer of NSF sponsored workshop, "Moduli spaces and moduli stacks", May 2011.

- Co-organizer of NSF sponsored workshop, “AGNES: Algebraic Geometry Northeastern Series” at Stony Brook U., November 2009.
- Co-organizer of Amer. Inst. Math. Workshop, “Rational curves and A1-homotopy theory”, October 2009.
- Co-organizer of NSF Focused Research Group Conference, “Spaces of curves and their interaction with diophantine problems”, Summer 2009.
- Co-organizer of NSF Focused Research Group Workshop, “Algebraic and Symplectic Geometry of Uniruled and Rationally Connected Manifolds”, Spring 2008.
- Co-organizer of Clay Mathematics Workshop, “Rational Curves and Diophantine Problems over Function Fields”, Fall 2007.
- Co-organized “Algebra, Geometry and Physics Seminar” at Stony Brook University, Fall 2006–present.
- Organized the “Student Algebraic Geometry Seminar” at Stony Brook University, Spring 2009, Summer 2009, Spring 2010. Co-organized, Spring 2011 – Fall 2012.
- Organized the “Mathematics Writing Seminar” at Stony Brook University, Fall of 2009, 2010, 2011, 2012, 2014.
- Co-organized MIT math department colloquium, Fall 2004 – Spring 2006.
- Co-organized “Harvard-MIT Algebraic Geometry Seminar”, Fall 2001, Fall 2002–Spring 2006.
- Research grant reviewer for NSA, NSF, Dutch National Science Council, Royal Society (London).
- Co-advised Ph.D. candidate Rebecca Lehman at MIT (with I. Coskun); thesis completed Fall 2007. Advised Ph.D. candidate Yusuf Mustopa at Stony Brook U.; thesis completed Fall 2008. Advised Ph.D. candidate Robert Findley at Stony Brook U.; thesis completed Fall 2010. Advised Ph.D. candidate Zhiyu Tian at Stony Brook U.; thesis completed Spring 2011. Advised Ph.D. candidate Yi Zhu at Stony Brook U.; thesis completed Spring 2012. Advised Ph.D. candidate Jan Gutt at Stony Brook U.; thesis completed Spring 2013. Advised Ph.D. candidate Lloyd Smith at Stony Brook U.; thesis completed Spring 2014. Currently advising Ph.D. candidates Dingxin Zhang and Cristian Minoccheri at Stony Brook U.
- Major advisor of 7 undergraduate math majors at MIT.
- Not including my own advisees, I served on 8 doctoral qualifying committees at MIT, and 10 doctoral qualifying committees at Stony Brook U.
- Not including my own advisees, I served on 6 thesis committees at MIT, 1 at Harvard, 1 at Boston U., 4 at Columbia U., and 9 at Stony Brook U. Served as thesis committee “opponent” at KTH, Stockholm.

Teaching experience

Summer 1999

Calculus I. Recitation Instructor. Harvard Summer School.

Fall 1999

1. Graduate Algebraic Geometry, 260A. Recitation Instructor. Harvard.

Fall 2000

2. Multivariable Calculus, 18.01. Recitation Instructor. MIT.

Spring 2001

3. Honors Differential Equations, 18.034. Recitation Instructor. MIT.

4. Measure theory and Fourier analysis, 18.103. Instructor. MIT.
Fall 2001
5. Linear algebra, 18.700. Instructor. MIT.
6. Undergraduate seminar in algebra and number theory, 18.704. Instructor. MIT.
Fall 2002
7. Undergraduate seminar in algebra and number theory, 18.704. Instructor. MIT.
8. Graduate Algebraic Geometry, 18.725. Instructor. MIT.
Spring 2003
9. Differential Equations, 18.03. Recitation Instructor. MIT.
Fall 2003
10. Single variable calculus, 18.01. Instructor and course head. MIT.
Spring 2004
11. Honors Differential Equations, 18.034. Instructor. MIT.
Fall 2004
12. Linear algebra, 18.700. Instructor. MIT.
13. Graduate Algebraic Geometry, 18.725. Instructor. MIT.
Spring 2005
14. Topics in algebraic geometry: quantum cohomology, 18.727. Instructor. MIT.
Fall 2005
15. Single variable calculus, 18.01. Instructor and course head. MIT.
Spring 2006
16. Graduate Algebraic Geometry, second semester, 18.726. Instructor. MIT.
17. Independent activities, 18.099. MIT.
Fall 2006
18. Algebra III: Commutative algebra, MAT536. Instructor. Stony Brook U.
19. Calculus I, MAT131. Instructor (not head instructor). Stony Brook U.
Spring 2007
20. Independent study in special topics, MAT487. Stony Brook U.
21. Independent study, MAT698. Stony Brook U.
22. Dissertation research on campus, MAT699. Stony Brook U.
Fall 2007
23. Calculus I, MAT131. Head instructor. Stony Brook U.
24. Introduction to linear algebra, MAT211. Instructor. Stony Brook U.
Spring 2008
25. Dissertation research on campus, MAT699. Stony Brook U.
Fall 2008
26. Calculus I, MAT131. Head instructor. Stony Brook U.
27. Algebra III, MAT536. Stony Brook U.
28. Masters Research, MAT 599. Stony Brook U.
29. Independent study, MAT698. Stony Brook U.
30. Dissertation research on campus, MAT699. Stony Brook U.
Spring 2009
31. Independent study, MAT698. Stony Brook U.
32. Dissertation research on campus, MAT699. Stony Brook U.

Fall 2009

- 33. Logic, Language and Proof, MAT 200. Stony Brook U.
- 34. Algebra I, MAT 534. Stony Brook U.
- 35. Independent study, MAT 698. Stony Brook U.
- 36. Dissertation research on campus, MAT699. Stony Brook U.

Spring 2010

- 37. Algebra II, MAT 535. Stony Brook U.
- 38. Independent study, MAT 698. Stony Brook U.
- 39. Dissertation research on campus, MAT 699. Stony Brook U.

Fall 2010

- 40. Calculus I, MAT 131. Head instructor. Stony Brook U.
- 41. Independent study, MAT 487. Stony Brook U.
- 42. Dissertation research on campus, MAT 699. Stony Brook U.

Spring 2011

- 43. Number theory, MAT 311. Stony Brook U.
- 44. Independent study, MAT 698. Stony Brook U.
- 45. Dissertation research on campus, MAT 699. Stony Brook U.

Fall 2011

- 46. Real Analysis I, MAT 544. Stony Brook U.
- 47. Independent study, MAT 698. Stony Brook U.
- 48. Dissertation research on campus, MAT 699. Stony Brook U.

Spring 2012

- 49. Mathematical Thinking, MAT 118. Stony Brook U.
- 50. Independent study, MAT 698. Stony Brook U.
- 51. Dissertation research on campus, MAT 699. Stony Brook U.

Fall 2012

- 52. Topics in Algebraic Geometry, MAT 614. Stony Brook U.
- 53. Masters research, MAT 599. Stony Brook U.
- 54. Dissertation research on campus, MAT 699. Stony Brook U.

Spring 2013

- 55. Analysis for teachers, MAT 513. Stony Brook U.
- 56. Dissertation research on campus, MAT 699. Stony Brook U.

Fall 2013 (Sabbatical term)

- 57. M.A. research, MAT 599. Stony Brook U.

Spring 2014 (Sabbatical term)

- 58. Independent study, MAT 698. Stony Brook U.
- 59. Dissertation research on campus, MAT 699. Stony Brook U.

Fall 2014

- 60. Topics in algebraic geometry, MAT 614. Stony Brook U.
- 61. Independent study in special topics, MAT 487. Stony Brook U.
- 62. M.A. research, MAT 599. Stony Brook U.
- 63. Independent study, MAT 698. Stony Brook U.

Spring 2015

- 64. Introduction to calculus, MAT 123. Stony Brook U.
- 65. Introduction to analysis, MAT 320. Stony Brook U.
- 66. Dissertation research on campus, MAT 699. Stony Brook U.

Talks

Seminar talks at Harvard, Univ. Mich. Ann Arbor, Princeton, U. C. Berkeley, Cornell, Columbia, Stanford, Ohio State U., Univ. Ill. Urbana-Champaign, Univ. Quebec á Montreal, Rice Univ., Brown, Inst. de Math. Jussieu, Ecole Norm. Sup., Stony Brook U., Univ. of Md., Caltech., U. C. Davis, Queen's U., U. British Columbia, UPenn, UNC.

Colloquium talks at Princeton, U. Mass. Amherst, Rutgers, Univ. Wisc. Madison., Washington U., U. of Utah., Hong Kong Univ. of Sci. and Tech., Chinese Univ. of Hong Kong, Hong Kong Univ., CRM in Montreal, U. Alabama Birmingham, U. Waterloo.

Invited speaker in conferences at Math. Forsch. Oberwolfach, MSRI, Austr. Natl. Univ., Rice Univ., Univ. Mich. Ann Arbor, Univ. of Miami, Colorado State U., Univ. de Nice, Univ. of Washington, Johns Hopkins Univ., CRM Montreal, Natl. Taiwan U., Levico Terme., Univ. of Mo., Banff Int. Res. Sta., Ohio State U., U. T. Austin, Inst. Henri Poincaré., Simons Symposium on USVI, Univ. Zurich, Harvard, Yale, U. Maryland, UC Davis.

Delivered mini-courses at Inst. Math. Pure and Applied in Rio de Janeiro, Brazil, Clay Math. Inst. Summer School in Göttingen, Germany, Soc. Math. de France workshop in Strasbourg, France, Zhejiang Univ. in Hangzhou, China, Inst. Fourier "École d'été" in Grenoble, France, Summer School on Alg. Geom. at R.I.M.S. in Kyoto, Japan, CRM Montreal.

Delivered the M. S. Keeler Lectures at the Univ. Mich. Ann Arbor, February 2009.

Invited professor, Institut Henri Poincaré, June 2010.