

Curriculum Vitae

Jason Michael Starr

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Degrees

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

Positions

Invited Professor, Institut Henri Poincaré, June 2010
Associate Professor, Stony Brook Univ., June 2009 – present
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

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"

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* **2009**, no. **24**, 4626–4641.
22. A. J. de Jong and J. Starr, **Almost proper GIT-stacks and discriminant avoidance**, accepted to *Doc. Math.*

Submitted

23. J. Starr, **Degenerations of rationally connected varieties and PAC fields**, submitted to *Proc. of the Amer. Math. Soc.*, available at <http://arxiv.org/abs/math/0602649>
24. A. J. de Jong, X. He and J. Starr, **Families of rationally simply connected varieties over surfaces and torsors for semisimple groups**, submitted to *Publ. Math. Inst. Hautes Études Sci.*, available at <http://arxiv.org/abs/0809.5224>
25. X. He and J. Starr, **Semi-stable locus of a group compactification**, submitted to *Represent. Theory* available at <http://www.math.sunysb.edu/~jstarr/papers/index.html>
26. J. Starr, **Rational points of rationally connected and rationally simply connected varieties**, submitted as book chapter to *Panor. Synth. (Soc. Math. Fr.)*.

Preprint

27. J. Starr, **The Kodaira dimension of spaces of rational curves on low degree hypersurfaces**, available at <http://arxiv.org/abs/math/0305432>
28. J. Starr, **The maximal free rational quotient**, available at <http://arxiv.org/abs/math/0602640>
29. J. Starr, **Hypersurfaces of low degree are rationally simply-connected**, available at <http://arxiv.org/abs/math/0602641>
30. 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>
31. 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>

- 32. A. J. de Jong and J. Starr, **Very twisting families of pointed lines on Grassmannians**,
available at <http://arxiv.org/abs/math/0602645>
- 33. J. Starr, **Artin's axioms, composition and moduli spaces**,
available at <http://arxiv.org/abs/math/0602646>
- 34. J. Starr, **Fano varieties and linear sections of hypersurfaces**,
available at <http://arxiv.org/abs/math/0607133>
- 35. 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>
- 36. T. Graber and J. Starr, **Restriction of sections for families of Abelian varieties**,
available at <http://www.math.sunysb.edu/~jstarr/papers/index.html>

Professional activities

- Served as Assoc. Director for Undergraduates, Stony Brook University mathematics department, December 2009 – present.
- Served on Simons Lecture Committee, Stony Brook University mathematics department, Fall 2009 – present.
- 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.
- Referee Algebra Number Theory, Adv. Math., Amer. J. Math., Canad. Math. Bull., Compos. Math., Duke Math. J., Indag. Math. (N.S.), Int. Math. Res. Not. IMRN, Invent. Math., J. Algebra, J. Algebraic Geom., 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., 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 "Harvard-MIT Algebraic Geometry Seminar", Fall 2001, Fall 2002–Spring 2006.
- 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.
- Organized the "Mathematics Writing Seminar" at Stony Brook University, Fall 2009.

Research grant reviewer for NSA, Dutch National Science Council

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. Currently advising Ph.D. candidates Rob Findley, Jan Gutt, Zhiyu Tian, and Yi Zhu at Stony Brook U.

Advised 7 undergraduate math majors at MIT.

Served on 8 doctoral qualifying committees at MIT, and 7 doctoral qualifying committees at Stony Brook U.

Served on 6 thesis committees at MIT, 1 at Harvard, 1 at Boston U., 3 at Columbia U., and 4 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. Independent study, MAT698. Stony Brook U.

29. Dissertation research on campus, MAT699. Stony Brook U.

Spring 2009

30. Independent study, MAT698. Stony Brook U.

31. Dissertation research on campus, MAT699. Stony Brook U.

Fall 2009

32. Logic, Language and Proof, MAT 200. Stony Brook U.

33. Algebra I, MAT 534. Stony Brook U.

34. Independent study, MAT 698. Stony Brook U.

35. Dissertation research on campus, MAT699. Stony Brook U.

Spring 2010

36. Algebra II, MAT 535. Stony Brook U.

37. Independent study, MAT 698. Stony Brook U.

38. Dissertation research on campus, MAT699. 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

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.

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

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.

Delivered the M. S. Keeler Lectures at the Univ. Mich. Ann Arbor, February 2009.
Invited professor, Institut Henri Poincaré, June 2010.