

Jesse Leo Kass

University of South Carolina
Columbia, South Carolina

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Employment

University of South Carolina

Associate Professor

Columbia, SC

January 2019-Present

University of South Carolina

Assistant Professor

Columbia, SC

2012-January 2019

(On leave 2012–2013)

Leibniz Universität Hannover

Wissenschaftlicher Mitarbeiter

Hannover, Germany

August 2012-August 2013

University of Michigan

RTG Assistant Professor

Ann Arbor, MI

2009-2012

Education

Harvard University

Ph.D. Mathematics

Cambridge, MA

2009

- Advisor: Joseph Harris
- Dissertation Title: Good completions of Néron models

University of Michigan

- Bachelor of Science With Distinction
- Highest Honors in Mathematics
- Minor in German Studies

Ann Arbor, MI

2003

Journal Publications In Print

1. J. L. Kass (with contributions from N. Knox, H. M. Treadwell, and C. L. Solomon). James L. Solomon and the End of Segregation at the University of South Carolina. **Notices Amer. Math. Soc.**, 67(2):192–200, 2020.
2. J. L. Kass, N. Pagani, The stability space of compactified universal Jacobians. **Transactions of the AMS.** 372, 7 (2019), 4851–4887.
3. J. L. Kass, K. Wickelgren, The class of the Eisenbud–Khimsiashvili–Levine is the local A1-Brouwer degree. **Duke Math. J.** 168 (2019), no. 3, 429–469.
4. D. Holmes, J. L. Kass, N. Pagani, Extending the Double Ramification Cycle using Jacobians. **European Journal of Mathematics** (2018) 1–13.
5. J. L. Kass, Autoduality holds for a degenerating abelian variety. **Research in the Mathematical Sciences** 4 (2017), no. 27, 11 pages.
6. J. L. Kass, N. Pagani, Extensions of the universal theta divisor. **Advances in Mathematics** 321(1) (2017) 221–268.
7. S. Casalaina-Martin, J. L. Kass, F. Viviani, The singularities and birational geometry of the universal compactified Jacobian. **Algebraic Geometry** 4 (2017), no. 3, Pages 353–393.

8. D. Chen, J. L. Kass, Moduli of generalized line bundles on a ribbon. **J. Pure Appl. Algebra**, 220(2) (2016), Pages 822–844.
9. J. L. Kass, The compactified jacobian can be nonreduced. **Bulletin of the London Mathematical Society** 47 (2015), no. 4, Pages 686–692.
10. S. Casalaina-Martin, J. L. Kass, F. Viviani, The local structure of compactified Jacobians. **Proceedings of the London Mathematical Society** (3) 110 (2015), no. 2, Pages 510–542.
11. J. L. Kass, K. Wickelgren, An Abel map to the compactified Picard scheme realizes Poincaré duality. **Algebraic & Geometric Topology**. 15 (2015), no. 1, Pages 319–369.
12. J. L. Kass, An explicit semi-factorial compactification of the Néron model. **C. R. Math. Acad. Sci. Paris** 352 (2014), no. 9, Pages 667–671.
13. S. Casalaina-Martin, J. L. Kass, F. Viviani, The geometry and combinatorics of cographic toric face rings. **Algebra & Number Theory** Volume 7, Number 8, 2013, Pages 1781–1815.
14. J. L. Kass, Two ways to degenerate the Jacobian are the same. **Algebra & Number Theory**, Volume 7, Number 2, 2012, Pages 379–404.
15. J. L. Kass, An explicit non-smoothable component of the compactified Jacobian. **Journal of Algebra**, Volume 370, Number 15, November 2012, Pages 326–343.
16. S. Casalaina-Martin and J. L. Kass, A Riemann singularity theorem for integral curves. **American Journal of Mathematics**, Volume 134, Number 5, October 2012, Pages 1143–1165.

Refereed Conference Proceedings In Print

1. C. Bethea, J. L. Kass, and K. Wickelgren. Examples of wild ramification in an enriched Riemann–Hurwitz formula. In **Motivic Homotopy Theory and Refined Enumerative Geometry**, volume 745 of *Contemp. Math.*, pages 69–82. Amer. Math. Soc., Providence, RI, 2020.
2. J. L. Kass, K. Wickelgren, An étale realization that does not exist. In Nitya Kitchloo; Mona Merling; Jack Morava; Emily Riehl; W. Stephen Wilson (eds.), **New directions in homotopy theory**, volume 707 of *Contemp. Math.*, pages 11–29. Amer. Math. Soc., Providence, RI, 2018.
3. J. L. Kass, Singular curves and their compactified Jacobians. In Brendan Hassett; James McKernan; Jason Starr and Ravi Vakil (eds.), **A celebration of algebraic geometry**. A conference in honor of Joe Harris’ 60th birthday, volume 18 of *Clay Math. Proc.*, pages 391–427. Amer. Math. Soc., Providence, RI, 2013.

Accepted for publication in Journals

1. J. L. Kass, K. Wickelgren, A classical proof that the algebraic homotopy class of a rational function is the residue pairing. E-print: arXiv:1602.08129 (February 25, 2016). 18 Pages. Accepted for publication in **Linear Algebra and its Applications**.

Letters to the Editor

1. J. L. Kass with reply by J. Oakes, “When Did Reconstruction End?” Letter to the Editor. **New York Review of Books**, March 12, 2020, p. 45.

Abstracts

1. J. L. Kass, How can a line bundle on a curve degenerate? **Oberwolfach Report** 42(2018) 2615–2617.
2. J. L. Kass, K. Wickelgren, A^1 -Milnor number. **Oberwolfach Report** 35(2016) 2047–2052.

Ph.D Thesis

1. J. L. Kass, Good completions of Néron models. **Thesis (Ph.D.)**. Harvard University. 2009. 121 pp. ISBN: 978-1109-25504-1 ProQuest LLC.

Preprints

1. J. L. Kass, K. Wickelgren, An arithmetic count of the lines on a smooth cubic surface. E-print: arXiv:1708.01175 (August 3, 2017). 31 Pages. Under revision at **Compositio Mathematica**.

External Grants and Awards

- National Science Foundation (DMS-2001565), funding amount \$187,776, 2020–2023 (projected). PI.
- Simons Foundation Collaboration Grants for Mathematicians (#429929), funding amount \$35,000, 2015–2021 (projected). PI.
- National Security Agency Young Investigator Grant (#H98230-15-1-0264), funding amount \$40,000, 2015–2017. PI.
- National Science Foundation Conference Grant (#1343512), funding amount \$14,620, 2013. Co-PI.
- AMS–Simons Travel Grant, funding amount \$4,000, 2012–2015. PI.
- National Science Foundation Graduate Research Fellowship, 2004.

Internal Grants

- ASPIRE Grant, Track 1 (#13060-19-50739), funding amount \$15,000, 2019–2020 (projected). PI.
- SPARC Graduate Research Grant (#13060-18-46652), funding amount \$5,000, 2018–2019. Co-PI.
- SEC Faculty Travel Grant, funding amount \$1,736, 2016–2017. PI.
- SPARC Graduate Research Grant (#13060-16-41369), funding amount \$4,218, 2015–2016. Co-PI.
- Magellan Scholar Grant (#13060-15-38106), funding amount \$3,000, 2014–2015. Co-PI.

Students Advised

- Xiaofei Yi: Ph.D. Student (Current).
- Candace Bethea: Ph.D. Student, thesis *An Equivariant Count of Nodal Orbits in an Invariant Pencil of Conics* (Spring 2020).
- Mohammed Alabbod: Ph.D. Student, thesis *Classification of non-singular cubic surfaces up to e -invariants* (Spring 2019).

- Tyler Lewis: Ph.D. Student, thesis *A family of simple codimension two singularities with infinite Cohen–Macaulay representation type*. (Spring 2017).
- David Galban: honors undergraduate student, thesis *Gröbner bases, resultants, and discriminants: Techniques of elimination theory*. (May 2016).
- Marvin Jones: M.A. student, thesis *On the group of transvections of ADE diagrams*. (Spring 2014).

Selected Research Talks

1. Real Enumerative Geometry and Beyond Shanks Workshop at Vanderbilt University (March 7, 2020).
2. Moduli on Chestnut Hill Conference at Boston College (March 6, 2020).
3. Invited Talk at California State University, Northridge (March 4, 2020).
4. Invited Talk at University of California at Santa Cruz (February 7, 2020).
5. Invited Talk at Emory University (February 3, 2020).
6. Invited Talk at Universiteit Utrecht (April 11, 2019).
7. Geometry & Arithmetic of Surfaces Workshop at the University of Wisconsin (2 lectures; February 9–10, 2019).
8. Carolina Math Seminar at the University of South Carolina (November 2, 2018).
9. Algebraic Geometry Seminar at the Boston College (October 18, 2018).
10. Geometry and Topology Seminar at the University of Waterloo (September 28, 2018).
11. Oberwolfach Workshop Flat Surfaces and Algebraic Curves (September 20, 2018)
12. IMPANGA bis Seminar at Instytut Matematyczny Polskiej Akademii Nauk (Institute of Math Polish Academy of Sciences) (July 27, 2018).
13. Summer school Homotopy Theory and Arithmetic Geometry: Motivic and Diophantine Aspects at Imperial College London (July 13, 2018).
14. Mini-school on Compactified Jacobians and Applications at the University of North Carolina at Chapel Hill (3 lectures; May 1-2, 2018).
15. AMS Special Session on Recent Progress and New Directions in Homotopy Theory (April 15, 2018).
16. Topology and Geometry seminar at the Hebrew University of Jerusalem (April 10, 2018).
17. Clemson Algebraic Geometry and Number Theory Seminar (February 27, 2018).
18. The Georgia Algebraic Geometry Symposium at Georgia Institute of Technology (February 24, 2018).
19. Harvard/MIT Algebraic Geometry Seminar (February 13, 2018).
20. Algebraic Geometry Seminar at the University of Arizona (October 20, 2017).
21. Workshop Moduli of Curves in Gothenburg at Chalmers University of Technology and University of Gothenburg (October 17, 2017).

22. Geometry Seminar at Vanderbilt University (September 29, 2017).
23. Vector Bundles on Algebraic Curves 2017 conference at Universität Duisburg–Essen (September 7, 2017).
24. Conference on aspects of the algebraic and analytic theory of quadratic forms (CAAATQuafs) at the University of Georgia (July 26, 2017).
25. FIRST Seminar at the University of Georgia (February 6, 2017).
26. Palmetto Number Theory Series XXVII at the University of South Carolina (December 4, 2016).
27. Algebra Seminar at the University of Pennsylvania (October 11, 2016).
28. Algebraic Geometry Seminar at the University of Liverpool (June 29, 2016).
29. Algebraic Geometry Seminar at the Ohio State University (February 14, 2016).
30. GASC Seminar at the Northeastern University (February 9, 2016).
31. Algebraic Geometry Seminar at Columbia University (January 31, 2016).
32. Workshop on New Developments in Moduli and Geometric Invariant Theory at the University of North Carolina at Chapel-Hill (November 21, 2015).
33. Algebraic Geometry Seminar at University of Wisconsin (October 23, 2015).
34. Algebraic Geometry Seminar at New York University (October 13, 2015).
35. Contributed talk at AMS Summer Institute in Algebraic Geometry (July 23, 2015).
36. Algebra Seminar at IMPA in Rio de Janeiro (May 27, 2015).
37. Algebraic Geometry Seminar at the University of Chicago (May 6, 2015).
38. Algebra Seminar at the University of Tennessee (February 7, 2015).
39. Palmetto Number Theory Series XXIII at the University of South Carolina (December 6, 2014).
40. Algebraic Geometry Seminar at the University of Georgia (November 14, 2014).
41. Algebraic Geometry Seminar at the University of Utah (November 4, 2014).
42. Algebraic Geometry Seminar at Duke University (October 22, 2014).
43. Algebra and Number Theory Seminar at Emory University (September 2, 2014).
44. Symposium on Singularities And Their Topology at Leibniz Universität Hannover (July 16, 2014).
45. Humboldt Universität Berlin Forschungsseminar Algebraische Geometrie (June 25, 2014).
46. Leibniz Universität Hannover Algebraische Geometrie Oberseminar (June 10, 2014).
47. IMPANGA Seminar at Instytut Matematyczny Polskiej Akademii Nauk (Institute of Math Polish Academy of Sciences) (May 23, 2014).
48. Harvard/MIT Algebraic Geometry Seminar (May 6, 2014).
49. Conference on Specialization of Linear Series for Algebraic and Tropical Curves at the Banff International Research Station (April 1, 2014).

50. Clemson University Algebraic Geometry and Number Theory Seminar (March 26, 2014).
51. AMS Special Session on Arithmetic of Algebraic Curves (March 23, 2014).
52. Palmetto Number Theory Series XXI at Clemson University (December 8, 2013).
53. Algebra Seminar at the Georgia Institute of Technology (November 25, 2013).
54. Geometric Methods in Representation Theory Seminar at the University of North Carolina at Chapel Hill (November 15, 2013).
55. Workshop on Perspectives and Emerging Topics in Algebra and Combinatorics in Bergkranz, Austria (March 18, 2013).
56. Jagiellonian University Seminarium Geometria Analityczna i Algebraiczna (March 11, 2013).
57. Università Roma Tre Seminari di Geometria (February 21, 2013).
58. Warwick Algebraic Geometry Seminar (February 6, 2013).
59. Bath Geometry Seminar (February 5, 2013).
60. North German Algebraic Geometry Seminar (December 7, 2012).
61. IMPANGA Seminar at Instytut Matematyczny Polskiej Akademii Nauk (Institute of Math Polish Academy of Sciences) (October 19, 2012).
62. Leibniz Universität Hannover Algebraische Geometrie Oberseminar (October 8, 2012).
63. University of Illinois at Urbana-Champaign Algebraic Geometry Seminar (November 9, 2011).
64. Colorado State University FRAGMENT Seminar (October 13, 2011).
65. Caltech Algebraic Geometry Seminar (October 3, 2011).
66. University of Georgia Algebraic Geometry Seminar (August 31, 2011).
67. Rice University Algebraic Geometry Seminar (April 5, 2011).
68. Harvard/MIT Algebraic Geometry Seminar (March 29, 2011).
69. University of Colorado FRAGMENT Seminar (February 17, 2011).
70. AMS Special Session on Birational Geometry and Moduli Spaces (January 7, 2011).
71. 10th ALGA Conference at IMPA in Rio de Janeiro (July 5-9, 2010).
72. University of Michigan Algebraic Geometry Seminar (November 11, 2009).
73. University of Colorado FRAGMENT Seminar (November 5, 2009).
74. Harvard/MIT Algebraic Geometry Seminar (April 28, 2009).
75. University of Michigan Algebraic Geometry Seminar (January 21, 2009).
76. Brown Algebraic Geometry Seminar (November 14, 2008).
77. University of Illinois at Chicago Algebraic Geometry Seminar (November 7, 2008).

Selected Outreach Talks

- University of South Carolina Graduate Colloquium (September 15, October 27, 2015, September 16, 2016, January 30, 2018, March 21, 2019).
- University of South Carolina Honors College Honors Week presentation (April 7, 2017).
- South Carolina Math Circle (December 3, 2016).
- University of Michigan Math Circle for high-school students (September 29 and October 6, 2011).
- University of Georgia VIGRE Graduate Student Seminar (August 31, 2011).
- Rice Graduate Student Working Seminar (April 5, 2011).
- University of Michigan Undergraduate Math Club (September 30, 2010).
- Ross Summer Program for high-school students at the Ohio State University (August 5, 2010).
- University of Michigan Math Circle for high-school students (November 11 and 18, 2010).
- University of Connecticut Undergraduate Math Club (November 1, 2006).
- Boston Math Circle for grade-school students (Spring 2004).

Academic Service

- Chair of the Committee of Tenured Faculty 2019–2020.
- USC Faculty Senator 2016–2019.
- Chair of James L. Solomon, Jr. Recognition Ad-hoc Committee, 2018–2019. (Solomon is a former math graduate student and one of the first students to desegregate the University of South Carolina in 1963. We received approval from the Board of Trustees to install a plaque in LeConte College honoring him and hosted a reception and invited lecture commemoration.)
- Mentor for Grace Jordan McFadden Professors Program (formerly African American Professors Program) at the University of South Carolina. (Mentee Candace Bethea) 2017–2018.
- Chair of PhD Qualifying Exam Committee (2013).
- Member of algebra PhD Qualifying Exam Committee (2014–2015).
- Member of PhD Thesis Committee for Cameron Atkins (2017), Tyler Lewis (2017), Blake Farman (2018), Thomas Schnibben (2018), Mohammed Alabood (2019).
- Member of PhD Comprehensive Exam Committee for Cameron Atkins, Blake Farman, Tyler Lewis, Thomas Schnibben (2014), Harsh Mehta, Xiaofei Yi (2016), Candace Bethea, Mohammed Alabood (2017).
- Reviewer for Zentralblatt Math and MathSciNet.
- Co-Organizer, Georgia Summer Workshop in Algebraic Geometry (August 26–August 29, 2016).
- Co-Organizer, AMS Special Session Interactions Between Algebraic and Tropical Geometry (March 5–6, 2016).

- Co-Organizer, South Carolina Algebraic Geometry, Commutative Algebra, and Number Theory Seminar (Fall 2013–Present).
- Co-Organizer, Institute of Math Polish Academy of Sciences Seminar on Vector Bundles on Abelian Varieties (July–August, 2014).
- Co-Organizer, Commutative Algebra–Algebraic Geometry in the Southeast Conference at the University of South Carolina (November 8–10, 2013).
- Organizer, Leibniz Universität Hannover Abelian Varieties Seminar (Fall 2012–Summer 2013).
- Assistant Organizer, University of Michigan Algebraic Geometry Seminar (Fall 2009–Winter 2010).
- Co-organizer, University of Michigan Algebraic Geometry Post-Doc Seminar (Fall 2009–Winter 2012).

Consulting

- Mathematical consulting for law firm of D.J. and J.A. Cirando, Esqs on Syracuse antifreeze poisoning case (August 5, 2010).