

Luca Schaffler, Curriculum Vitae

University of Massachusetts Amherst
Lederle Graduate Research Tower
Department of Mathematics & Statistics
Amherst, MA 01003

Phone: (706) 255-8905
Office: Lederle Graduate Research Tower, 1434
Email: schaffler@math.umass.edu
Web: <http://people.math.umass.edu/~schaffler/>

Research Interests

Algebraic geometry: compactifications of the moduli spaces of Enriques and K_3 surfaces, compactifications of moduli of line and point arrangements on \mathbb{P}^2 , symplectic automorphisms of K_3 surfaces, effective cycles on moduli spaces of curves, questions in classical projective geometry.

Positions Held

- Marshall H. Stone Visiting Assistant Professor, University of Massachusetts Amherst, 2017 – present

Education

- Ph.D. Mathematics, University of Georgia, 2012 – 2017
Thesis title: The KSBA Compactification of a 4-dimensional Family of Polarized Enriques Surfaces
Advisor: Dr. Valery Alexeev
- M.S. Mathematics, Roma Tre University, 2010 – 2012
Thesis title: Distribution of Rational Points on Algebraic Curves
Advisor: Dr. Lucia Caporaso
Grade: 110/110 cum laude
- B.S. Mathematics, Roma Tre University, 2007 – 2010
Final test: comprehensive exam
Grade: 110/110 cum laude

Publications and Preprints

- "A Pascal's theorem for rational normal curves" (with A. Caminata), (2019). arXiv:1903.00460
- "KSBA compactification of the moduli space of K_3 surfaces with purely non-symplectic automorphism of order four" (with H.-B. Moon), (2018). Submitted. arXiv:1809.05182
- "Equations for point configurations to lie on a rational normal curve" (with A. Caminata, N. Giansiracusa, H.-B. Moon). Adv. Math. 340 (2018), 653–683.
- " K_3 surfaces with \mathbb{Z}_2^2 symplectic action". Rocky Mountain J. Math. 48 (2018), no. 7, 2347–2383.
- "The KSBA compactification of the moduli space of $D_{1,6}$ -polarized Enriques surfaces", (2016). Submitted. arXiv:1608.02564
- "On the cone of effective 2-cycles on $\overline{M}_{0,7}$ ". Eur. J. Math. 1 (2015), no. 4, 669–694.

Last update: March 4, 2019.

Awards and Honors

- Dissertation Completion Award, University of Georgia, May 2016
- William Armor Wills Memorial Scholarship Award, University of Georgia, Department of Mathematics, April 2016
- Outstanding Teaching Assistant Award, University of Georgia, March 2016
- NSF Funding (PI: Valery Alexeev), University of Georgia, Fall 2015, Summer 2016
- RTG Funding, University of Georgia, Spring 2016
- Graduate School Research Assistantship, University of Georgia, Summer 2013, 2014 and 2015
- Graduate Student Teaching Assistantship, University of Georgia, Fall 2012 – Spring 2015

External Talks

- University of Connecticut, Algebra Seminar, Storrs, November 2018
- Universitat de Barcelona, Barcelona Algebraic Geometry Seminar, Barcelona, June 2018
- Yale University, Yale Algebraic and Tropical Geometry Seminar, April 2018
- Northeastern University, Geometry, Physics, and Representation Theory Seminar, April 2018
- Stony Brook University, Algebraic Geometry Seminar, October 2017
- Hodge Theory, Moduli and Representation Theory, Stony Brook University, August 2017
- Colorado State University, FRAGMENT seminar, Fort Collins, May 2017
- Nagoya University, Algebraic Geometry Seminar, Nagoya, April 2017
- Kyoto University, Algebraic Geometry Seminar, Kyoto, April 2017
- Workshop on Algebraic Varieties, Hodge Theory and Motives, Fields Institute, Toronto, March 2017
- Duke University, Algebraic Geometry Seminar, Durham, February 2017
- Focused Research Group on Hodge Theory, Moduli and Representation Theory: Workshop VIII, Washington University in St. Louis, St. Louis, January 2017
- Joint Mathematics Meetings, AMS Contributed Paper Session on Algebraic Geometry, Atlanta, January 2017
- Leibniz Universität Hannover, Research Seminar Algebraic Geometry, "*The KSBA compactification of the moduli space of $D_{1,6}$ -polarized Enriques surfaces*", Hannover, Germany, December 2016
- American Institute of Mathematics, Workshop on Positivity of Cycles, "*On the cone of effective 2-cycles on $\overline{M}_{0,7}$* ", San Jose, California, August 2016
- University of Catania, "Giornate di Geometria Algebraica ed Argomenti Correlati XIII", "*The KSBA compactification of the moduli space of $D_{1,6}$ -polarized Enriques surfaces*", Catania, Italy, May 2016
- University of Utah, Algebraic Geometry Bootcamp, research group talk, "*On the cone of effective 2-cycles on $\overline{M}_{0,7}$* ", Salt Lake City, Utah, July 2015
- Roma Tre University, Algebraic Geometry Seminar, "*On the cone of effective 2-cycles on $\overline{M}_{0,7}$* ", Rome, Italy, June 2015

Talks at the University of Massachusetts Amherst

- Reading Seminar in Algebraic Geometry, "*Introduction to toric varieties*", February 2019
- Valley Geometry Seminar, "*Compactifications of the moduli space of K_3 surfaces with order 4 purely non-symplectic automorphism*", February 2019
- Reading Seminar in Algebraic Geometry, "*The Mukai lattice of the Kuznetsov component*", October 2018
- Reading Seminar in Algebraic Geometry, "*The moduli space of 8 points on \mathbb{P}^1 and automorphic forms, following S. Kondo*", February 2018
- Valley Geometry Seminar, "*Equations for points to lie on a rational normal curve*", February 2018
- Reading Seminar in Algebraic Geometry, " *\mathbb{Q} -Gorenstein deformations of surface singularities*", October 2017
- Valley Geometry Seminar, "*Toward a compactification of the moduli space of Enriques surfaces by KSBA stable pairs*", October 2017

Talks at the University of Georgia

- Graduate Student Summer Conference, "*Hyperbolic spaces and reflections*", July 2017
- FIRST Seminar, "*Looijenga semitoric compactifications*", February 2016
- FIRST Seminar, "*Singular K_3 surfaces*", October 2016
- Graduate Students Seminar, "*The arithmetic of Enriques surfaces*", September 2016
- Mock AMS Conference, "*The polyhedral subdivisions of the unit cube*", July 2016
- Algebraic Geometry Seminar, "*The KSBA compactification of the moduli space of $D_{1,6}$ -polarized Enriques surfaces*", May 2016
- Graduate Students Seminar, "*Fiber polytopes*", October 2015
- Mock AMS Conference, "*The secondary polytope*", July 2015
- Tuesday Algebraic Geometry Student Seminar, "*Introduction to Enriques surfaces and their moduli*", April 2015
- Algebraic Geometry Seminar, "*On the cone of effective 2-cycles on $\overline{M}_{0,7}$* ", November 2014
- VIGRE group talk, "*Witten conjecture*", Spring 2014
- VIGRE group talk, "*Algebraic geometry and analytic geometry*", Fall 2013
- VIGRE group talk, "*Riemann surfaces*", Fall 2013
- Mock AMS Conference, "*Moduli spaces and the Hilbert scheme*", July 2013
- VIGRE group talk, "*Blow up of affine schemes, fat points and universal property of the blow up*", Spring 2013
- VIGRE group talk, "*Blowing up subvarieties*", Spring 2013

Poster Presentations

- "Compactifications of moduli of points and lines". Presented at
 - AGNES, Brown University, Providence, September 2018
 - Birational Geometry and Moduli Spaces, INdAM, June 2018
- AGNES, Northeastern University, " K_3 surfaces with \mathbb{Z}_2^2 symplectic action", October 2017
- "The KSBA compactification of the moduli space of $D_{1,6}$ -polarized Enriques surfaces". Presented at
 - AGNES, University of Massachusetts Amherst, November 2016
 - WAGS, Colorado State University, October 2016
- AGNES, Brown University, "On the cone of effective 2-cycles on $\overline{M}_{0,7}$ ", October 2015

Conferences/Workshops Attended

- AGNES, Brown University, Providence, September 2018
- Combinatorial Algebraic Geometry Retrospective Workshop, Fields Institute, Toronto, June 2018
- Birational Geometry and Moduli Spaces, INdAM, Rome, June 2018
- AGNES, Rutgers University, New Brunswick, April 2018
- Georgia Algebraic Geometry Symposium, Georgia Institute of Technology, Atlanta, February 2018
- AGNES, Northeastern University, Boston, October 2017
- Conference on Birational Geometry, Simons Foundation, New York, August 2017
- Hodge Theory, Moduli and Representation Theory, Stony Brook University, August 2017
- Workshop on Algebraic Varieties, Hodge Theory and Motives, Fields Institute, Toronto, March 2017
- Georgia Algebraic Geometry Symposium, University of Georgia, Athens, March 2017
- Joint Mathematics Meetings, Atlanta, January 2017
- Combinatorial Algebraic Geometry, Combinatorial Moduli Spaces, Fields Institute, Toronto, December 2016
- AGNES, University of Massachusetts Amherst, Amherst, November 2016
- WAGS, Colorado State University, Fort Collins, October 2016
- Georgia Summer Workshop in Algebraic Geometry, University of Georgia, Athens, August 2016
- Positivity of Cycles, American Institute of Mathematics, San Jose, California, August 2016
- Combinatorial Algebraic Geometry, Graduate Summer School, Fields Institute, Toronto, July 2016
- "Giornate di Geometria Algebrica ed Argomenti Correlati XIII", University of Catania, Italy, May 2016
- Spring Southeastern Sectional Meeting, University of Georgia, Athens, March 2016
- Georgia Algebraic Geometry Symposium, Emory University, Atlanta, October 2015

- AGNES, Brown University, Providence, October 2015
- Summer Research Institute on Algebraic Geometry, University of Utah, Salt Lake City, July 2015
- The Graduate Students Bootcamp for the 2015 Algebraic Geometry Summer Research Institute, University of Utah, Salt Lake City, July 2015
- Georgia Algebraic Geometry Symposium, University of Georgia, Athens, October 2014
- Graduate Workshop on Moduli of Curves, Simons Center, Stony Brook University, July 2014
- Georgia Algebraic Geometry Symposium, University of Georgia, Athens, October 2013
- Advanced Course "Compactifying Moduli Spaces", Centre de Recerca Matemàtica, Barcelona, May 2013

Teaching Experience

- University of Massachusetts Amherst
 - Instructor of record
 - Introduction to Abstract Algebra I, MATH 411, two sections, Fall 2018
 - Fundamental Concepts of Mathematics, MATH 300, Spring 2018
 - Multivariate Calculus, MATH 233, two sections, Fall 2017
- University of Georgia
 - I taught four classes of the graduate level class Introduction to Algebraic Geometry, MATH 8300, Fall 2016
 - I taught four classes of Multivariable Calculus, MATH 2500, Fall 2016
 - Instructor of record
 - Calculus I for Science and Engineering, MATH 2250, Spring 2015
 - Precalculus, MATH 1113, Fall 2014
 - Recitation instructor
 - Analytic Geometry and Calculus, MATH 2200, Fall 2013
 - Grader
 - Real Analysis I, MATH 8100, Fall 2014
 - Graph Theory, MATH 4690/6690, Spring 2014
 - Modern Algebra and Geometry I, MATH 4000/6000, Fall 2013
 - Point Set Topology, MATH 4200/6200, Spring 2013
 - Algebraic Topology, MATH 8200, Spring 2013, Spring 2014
 - Combinatorics, MATH 4670/6670, Fall 2012
 - Real Analysis, MATH 4100/6100, Fall 2012
 - Tutor
 - Precalculus and Calculus (Study Hall)
- Roma Tre University
 - Tutor
 - Complex Analysis, AC310, Fall 2010
 - Mathematical Physics, FM1, Spring 2010

Outreach

- Undergraduate Math Club Talk, University of Massachusetts Amherst, "*Precalculus of lines and conics in the projective plane*", October 2018.
- REU at the University of Massachusetts Amherst, Summer 2018. Student: Patrick Lei.
 - For the background we covered Miles Reid's "*Undergraduate algebraic geometry*".
 - The research project was related to the paper: arXiv:1711.06286
- UGA High School Math Tournament, 2016.
 - The day of the tournament I helped with registration, proctoring, and grading.
 - I designed the picture on the tournament T-shirt.
 - I drew most of the pictures for the tournament problems.
 - I helped with writing test problems and solutions.
- UGA High School Math Tournament, 2015. I helped with writing test problems and solutions.

Service at the University of Georgia

- I helped with hospitality and whiteboard maintenance for the "Georgia Algebraic Geometry Symposium", March 2017
- I helped with hospitality for the UGA conferences "Georgia Summer Workshop in Algebraic Geometry" and "Topological Approaches to Algebra and Arithmetic Geometry", August, September 2016
- Seminar talk, Professional Development Summer, UGA Math Department Bootcamp, "*Programming for mathematical research*", July 2016
- Panelist, Professional Development, making the transition after qualifying exams, 2016
- Panelist, Graduate Visitation Day, for prospective graduate students, 2016, 2017
- Panelist, The Graduate Student Boot Camp, for first and second year graduate students, 2014

Programming Languages/Mathematics Software

C, Python/Mathematica, Porta, LRS, Macaulay2

Languages

- Italian, native language
- English, second language
- French, reading proficiency