

Alina Marian - Curriculum Vitae

Address:

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Education

HARVARD UNIVERSITY.

- Ph.D. in Mathematics 2004. Thesis advisor: Shing-Tung Yau.
- Thesis title: *Intersection theory on the moduli space of stable bundles via morphism spaces.*

HARVARD UNIVERSITY.

- A. B. 1999, Magna Cum Laude with Highest Honors in Mathematics and Physics.

Appointments

- Professor, Northeastern University, since September 2017.
- Associate Professor, Northeastern University, September 2011 - August 2017.
- Assistant Professor, University of Illinois at Chicago, August 2008 - August 2011.
- Visiting Assistant Professor, Harvard University, Fall 2009.
- Member, Institute for Advanced Study, September 2007 - May 2008.
- Postdoctoral Fellow, Stanford University, February 2007 - July 2007.
- Gibbs Assistant Professor, Yale University, July 2004 - January 2007.

Research

- Algebraic geometry, complex geometry, mathematical physics.

Distinctions

- Fellow, Radcliffe Institute for Advanced Study, 2019-2020.
- Research Professor, MSRI, Spring 2018.
- Alfred P. Sloan Foundation Research Fellowship, 2009-2013.
- Invited Address at the AMS Central Section Meeting, Lawrence, Kansas, March 2012.
- Mumford Prize, awarded to the most promising senior concentrator in mathematics, Harvard 1999.

Students

- Barbara Bolognese (PhD Northeastern, 2016), Yinbang Lin (PhD Northeastern, 2016).

Publications

- *On product identities and the Chow rings of holomorphic symplectic varieties*, with I. Barros, L. Flapan, R. Silversmith, arXiv:1912.13419.
- *Higher rank Segre integrals over the Hilbert scheme of points*, with D. Oprea and R. Pandharipande), arXiv:1712.02382v3, submitted.
- *On the group of zero-cycles of holomorphic symplectic varieties*, with X. Zhao, arXiv:1711.10045v2, submitted.
- *The combinatorics of Lehn's conjecture*, with D. Oprea and R. Pandharipande, J. Math. Soc. Japan **71** (2019), 299-308.
- *Segre classes and Hilbert schemes of points*, with D. Oprea and R. Pandharipande, Ann. Sci. ENS **50** (2017), 239 - 267.
- *On the strange duality conjecture for abelian surfaces II*, with B. Bolognese, D. Oprea, K. Yoshioka, Journal of Algebraic Geometry **26** (2017), 475-511.

- *The Chern character of the Verlinde bundle over the moduli space of stable curves*, with D. Oprea, R. Pandharipande, A. Pixton, D. Zvonkine, *J. reine und angew. Math.* **732** (2017), 147 - 163.
- *The first Chern class of the Verlinde bundles*, with D. Oprea and R. Pandharipande, *Proceedings of String-Math, Bonn 2012, Proceedings of Symposia in Pure Mathematics* **90** (2015), 87 - 111.
- *On Verlinde sheaves and strange duality over elliptic Noether-Lefschetz divisors*, with D. Oprea, *Annales de l'Institut Fourier* **64** (2014), 2067 - 2086.
- *On the strange duality conjecture for abelian surfaces*, with D. Oprea, *Journal of the European Math. Society* **16** (2014), 1221 - 1251.
- *Generic strange duality for K3 surfaces*, with D. Oprea and an appendix by K. Yoshioka, *Duke Math. Journal* **162** (2013), 1463 - 1501.
- *The moduli space of stable quotients*, with Dragos Oprea and Rahul Pandharipande, *Geometry and Topology* **15** (2011), 1651-1706.
- *GL Verlinde numbers and the Grassmann TQFT*, with Dragos Oprea, *Proceedings of the Lisbon Geometry Summer School, Port. Math.* **67** (2010), 181-210.
- *Sheaves on abelian surfaces and Strange Duality*, with Dragos Oprea, *Math. Annalen* **343** (2009), 1-33.
- *A tour of theta dualities on moduli spaces of sheaves*, with Dragos Oprea, *Curves and abelian varieties*, 175-202, *Contemporary Mathematics* **465**, American Mathematical Society, Providence, Rhode Island (2008).
- *The level-rank duality for nonabelian theta functions*, with Dragos Oprea, *Invent. Math.* **168** (2007), 225-247.
- *Counts of maps to Grassmannians and intersections on the moduli space of bundles*, with Dragos Oprea, *J. Differential Geom.* **76** (2007), 155-175.
- *On the intersection theory of Quot schemes and moduli of bundles with sections*, *J. reine und angew. Math.* **610** (2007), 13-27.
- *Virtual intersections on the Quot scheme and Vafa-Intriligator formulas*, with Dragos Oprea, *Duke Math. J.* **136** (2007), 81-131.
- *On the intersection theory of the moduli space of rank two bundles*, with Dragos Oprea, *Topology* **45** (2006), 531-541.
- *Intersection theory on the moduli space of stable bundles via morphism spaces*, Harvard University Thesis 2004.
- *On the real moment map*, *Math. Res. Lett.* **8** (2001), no. 5-6, 779-788.

Grants

- NSF grant DMS 1902310, July 2019 - July 2022, *Universal Series, Chow Rings, and Dualities in the Moduli Theory of Sheaves*.
- NSF grant DMS 1601605, September 2016 - September 2019, *Moduli Theory of Sheaves Over Low-Dimensional Varieties*.
- NSF conference grant DMS 1650462, March 2017 - February 2020, *Collaborative Research: AGNES: Algebraic Geometry Northeastern Series* (one of several PIs).
- Participating scientist for NSF grant DMS 1645877, August 2017 - July 2022, *RTG: Algebraic Geometry and Representation Theory*.
- NSF grant DMS 1303389, August 2013 - July 2016, *Aspects of the moduli theory of sheaves and varieties*.
- NSF grant DMS 1001604, July 2010 - July 2013, *Topics in the moduli theory of sheaves*.
- NSF grant DMS 0700742, August 2007-July 2010, *The geometry of moduli spaces of sheaves*.
- NSF grant DMS 0401670, June 2006-June 2007, *Intersection theory and geometric dualities on moduli spaces of sheaves*.

Teaching

- Northeastern University, RTG Graduate Seminar: Moduli theory of sheaves and Vafa-Witten theory, Spring 2019.
- Northeastern University, Undergraduate Differential Geometry, Fall 2018.
- Northeastern University, Linear Algebra, Summer 2018.
- Northeastern University, Algebra II: Rings and Fields, Spring 2017.
- Northeastern University, Topics in Algebraic Geometry: Hilbert schemes of points and holomorphic symplectic geometry, Fall 2015.
- Northeastern University, Fourier Series and PDEs, Fall 2014.
- Northeastern University, Intro to Math Reasoning, Fall 2014.
- Northeastern University, Topics in Algebraic Geometry: Intersection Theory, Fall 2013.
- Northeastern University, Complex Analysis, Summer 2013.
- Northeastern University, Readings in Algebraic Geometry: Gromov-Witten Theory, Spring 2012.
- Northeastern University, Multivariable Calculus, Fall 2011.
- University of Illinois at Chicago, Algebraic Geometry II, Spring 2011 (one of 5 lecturers).
- University of Illinois at Chicago, Multivariable Calculus, two sections, Fall 2010.
- University of Illinois at Chicago, Topics in Algebraic Geometry, Spring 2010.
- Harvard University, Topics in the Moduli Theory of Sheaves, Fall 2009.
- University of Illinois at Chicago, Calculus I, two sections, Fall 2008.
- Yale University, Graduate Algebra I, Fall 2006.
- Yale University, Calculus II, Fall 2006.
- Yale University, Riemann Surfaces, Spring 2006.
- Yale University, Calculus II, two sections, Fall 2005.
- Yale University, Moduli of Sheaves, Spring 2005.
- Yale University, Multivariable Calculus and Linear Algebra for Economics, two sections, Fall 2004.
- Harvard University, Course Assistant for Graduate Topology II, Spring 2004.
- Harvard University, Holomorphic Vector Bundles on Riemann Surfaces Undergraduate Tutorial, Fall 2002.
- Harvard University, Calculus II, Fall 2000, Fall 2001, Spring 2004.
- Harvard University, Course Assistant for Introduction to Higher Mathematics, Advanced Calculus and Linear Algebra, Riemannian Geometry, Differential Topology, 1997-1999.