

Dragos Oprea

Contact Information:

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RESEARCH Algebraic geometry, mathematical physics. My research focuses on moduli theory, in particular, the moduli spaces of stable morphisms and stable sheaves, Gromov-Witten and Donaldson-type invariants.

EMPLOYMENT *University of California, San Diego.*

- Assistant Professor, 2008 - present.

Stanford University.

- Szegö Assistant Professor, 2006 - 2008.
- Samuelson Fellow, 2005 - 2006.

VISITS *Mathematics Research Science Institute.*

- Postdoctoral Fellow, Winter 2009.

EDUCATION *Massachusetts Institute of Technology.*

- Ph.D. in Mathematics, June 2005. Thesis advisor: Gang Tian.
- Thesis title: The tautological classes of the moduli spaces of stable maps to flag varieties.

Harvard University.

- A. B., June 2000, Summa Cum Laude in Mathematics.

PUBLICATIONS 1. *Divisors on the moduli spaces of stable maps to flag varieties and reconstruction*, Journal für die Reine und Angewandte Mathematik 586 (2005), 169-205.

2. *The tautological rings of the moduli spaces of stable maps*, Journal of Algebraic Geometry 15 (2006), 623-655.

3. *Tautological classes on the moduli spaces of stable maps to projective spaces via torus actions*, Advances in Mathematics 207 (2006), 661-690.

4. *On the intersection theory of the moduli spaces of rank two vector bundles*, with Alina Marian, Topology 45 (2006), 531-541.

5. *Virtual intersections on the Quot scheme and Vafa-Intriligator formulas*, with Alina Marian, Duke Mathematical Journal 136 (2007), 81-131.

6. *Counts of maps to the Grassmannian and intersections on the moduli space of stable bundles*, with Alina Marian, Journal of Differential Geometry 76 (2007), 155-175.

7. *The level-rank duality for non-abelian theta functions*, with Alina Marian, *Inventiones Mathematicae* 168 (2007), 225-247.
8. *A tour of theta dualities on moduli spaces of sheaves*, with Alina Marian, *Curves and abelian varieties*, 175-202, *Contemporary Mathematics*, 465, American Mathematical Society, Providence, Rhode Island (2008).
9. *Sheaves on abelian surfaces and Strange Duality*, with Alina Marian, *Mathematische Annalen*, 343 (2009), 1-33.
10. *A note on the Verlinde bundles on elliptic curves*, accepted to *Transactions of the American Mathematical Society*, <http://math.ucsd.edu/~doprea/publications.html>.
11. *The Verlinde bundles and the semihomogeneous Wirtinger duality*, submitted, available at <http://math.ucsd.edu/~doprea/publications.html>.
12. *On the strange duality conjecture on elliptic K3 surfaces*, with Alina Marian, submitted, available at <http://math.ucsd.edu/~doprea/publications.html>.
13. *The moduli space of stable quotients*, with Alina Marian and Rahul Pandharipande, preprint available at <http://math.ucsd.edu/~doprea/publications.html>.
14. *Tautological relations on Kontsevich spaces*, preliminary version available at <http://math.ucsd.edu/~doprea/publications.html>.

TEACHING
EXPERIENCE

1. University of California, San Diego, Spring 2009, *Math 299* - Supervised Reading and Research, Intersection theory.
2. University of California, San Diego, Fall 2008, *Math 203a* - Algebraic Geometry, Instructor.
3. University of California, San Diego, Fall 2008, *Math 20d* - Differential Equations, Instructor.
4. Stanford University, Spring 2008, *Math 145* - Undergraduate Algebraic Geometry, Instructor.
5. Stanford University, Spring 2008, *Math 244* - Riemann Surfaces and Algebraic Curves, Instructor.
6. Stanford University, Fall 2007, *Math 52* - Integral Calculus of Several Variables, Instructor.
7. Stanford University, Fall 2007, *Math 360* - Supervised Reading and Research, Commutative Algebra.
8. Stanford University, Winter 2007, *Math 51* - Linear Algebra and Multivariable Calculus, Instructor.
9. Stanford University, Fall 2006, *Math 245a* - Topics in Moduli Theory, Instructor.
10. Stanford University, Fall 2006, *Math 106* - Complex Variables, Instructor.
11. Stanford University, Fall 2005, *Math 51* - Linear Algebra and Multivariable Calculus, Instructor.
12. M.I.T., Office of Minority Education, Summer 2004, Summer 2005, *Project Interphase*, *Math E, F* - Multivariable Calculus, Head Instructor.
13. M.I.T., January 2004, *18.02* - Multivariable Calculus, Teaching Assistant.
14. M.I.T., Office of Minority Education, Summer 2003, *Project Interphase*, *Math A, B* - Calculus, Instructor.

15. M.I.T., Spring 2003, Spring 2004, 18.03 -Differential Equations, Teaching Assistant.
16. M.I.T., Fall 2001, Spring 2002, 18.965, 18.966 - Differential Geometry, Course Assistant.
17. M.I.T., Summer 2002, Mentor in the *Summer Program in Undergraduate Research*. Undergraduate research projects supervised:
 - (i) Jason Chiu, *On the area of two-dimensional lattice polytopes*.
 - (ii) Pavlo Pylyavskyy, *The Euler characteristics of some Betti moduli spaces*.
18. M.I.T., Summer 2001, Mentor in the *Research Science Institute (RSI)*. Research project supervised:
 - (i) Peter Kevei, *Arithmetic properties of Bell and Stirling numbers*.
19. Boston University, Summer 1998, Summer 1999, Mentor in the *PROMYS* Program.
20. Harvard University, 1997-2000, *Math 55ab* - Honors Advanced Calculus and Linear algebra, *Math 112* - Real Analysis, *Math 115* - Differential Equations and Complex Analysis, *Math 124* - Number Theory, *Math 129* - Advanced Number Theory; Course Assistant.

AWARDS AND FELLOWSHIPS

- NSF Grant for the project *Moduli Spaces of Morphisms and Sheaves*, DMS-0701114, DMS-0852468.
- *Housman Award* for Excellence in Teaching, May 2005.
- *Harvard College Research Program Grant*, Summer 1998, 1999.
- *Putnam Mathematical Competition*, Putnam Fellow 1996; ranked top 25, 1997, 1998.
- *Cue Certificate* for Distinction in Teaching, Harvard University, 1997.
- *International Mathematical Olympiad* - 4 medals, *Balkan Mathematical Olympiad* - 2 medals.

SERVICE

- Editorial Board of *International Mathematics Research Notices*.
- Refereed papers for journals such as *Sigma*, *Communications in Analysis and Geometry*, *Journal of Algebraic Geometry*, *International Mathematics Research Notices*, *Advances in Mathematics*, *Journal of the London Mathematical Society*, *Annals of Mathematics*.
- Reviewer, *Math Reviews* and *Zentralblatt Math*.
- Co-organized the *UCSD Algebraic Geometry Seminar*.
- Co-organized the *Stanford Algebraic Geometry Seminar* and *Berkeley-Stanford Algebraic Geometry Colloquium*.
- University of California, San Diego, *Advancement Committee* of Dan Budreau, Karl Fredricson.
- Stanford University, *Doctoral Committee* of Jarod Alper, Robert Easton, Huai-Lian Chang, Baosen Wu, Asimina Arvanitaki (Physics).
- Stanford University, *Qualifying Committe* of Nicola Penev, Huai-Lian Chang, Jack Hall, Baosen Wu, Yu-jong Tzeng, Ziyu Zhang.
- Stanford University, *Undergraduate Advising*.

INVITED TALKS

- *Modern Moduli Theory*, MSRI, February 2009.

- *Conference on vector bundles in honor of S. Ramanan*, Madrid, June 2008.
- *Department Colloquium*, University of California, Santa Cruz, April 2008.
- *Algebraic Geometry Seminar*, University of California, Davis, March 2008.
- *Algebraic Geometry Seminar*, Caltech, March 2008.
- *Complex Geometry Seminar*, Johns Hopkins University, February 2008.
- *Algebraic Geometry Seminar*, Princeton University, February 2008.
- *Department Colloquium*, Duke University, January 2008.
- *Department Colloquium*, Rutgers University, January 2008.
- *Department Colloquium*, University of Pittsburgh, January 2008.
- *Department Colloquium*, University of Wisconsin, Madison, January 2008.
- *Department Colloquium*, University of California, San Diego, January 2008.
- *Department Colloquium*, University of Illinois, Urbana-Champaign, January 2008.
- *Department Colloquium*, University of California, Santa Cruz, January 2008.
- *Department Colloquium*, University of Southern California, December 2007.
- *Department Colloquium*, Rice University, December 2007.
- *Department Colloquium*, University of California, Irvine, November 2007.
- *Western Algebraic Geometry Seminar*, University of Washington, April 2007.
- *A.M.S. Sectional Meeting*, University of Arizona, April 2007.
- *Department Colloquium*, University of California, Davis, April 2007.
- *Algebraic Geometry Seminar*, University of Illinois, November 2006.
- *Algebraic Geometry Seminar*, University of Chicago, November 2006.
- *Workshop on Moduli Spaces and Arcs*, Cologne University, August 2006.
- *Symplectic Geometry Seminar*, Stanford University, June 2006.
- *Algebraic Geometry Seminar*, Stanford University, March 2006.
- *Algebraic Geometry Seminar*, University of California, Berkeley, February 2006.
- *Algebraic Geometry Seminar*, Rice University, October 2005.
- *Algebraic Geometry Seminar*, Stanford University, October 2005.
- *Summer Research Institute in Algebraic Geometry*, Seattle, July 2005.
- *Algebraic Geometry Seminar*, Boston University, May 2005.
- *Algebraic Geometry Seminar*, Yale University, April 2005.
- *Algebraic Geometry Seminar*, University of Pennsylvania, March 2005.
- *Complex Geometry Seminar*, Johns Hopkins University, October 2004.
- *Geometry Seminar*, Harvard University, May 2004.