DANIEL CRISTOFARO-GARDINER

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Department Address:

Mathematics Department
Harvard University
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RESEARCH INTERESTS:

Contact, symplectic, and low-dimensional topology and geometry, connections with gauge theory

EMPLOYMENT:

National Science Foundation Postdoctoral Fellow, 2014 - Present
Benjamin Peirce Postdoctoral Fellow, Harvard University, 2013 - Present (on leave 2013)
Member, Institute for Advanced Study, 2013-2014

EDUCATION:

Ph.D, University of California, Berkeley, 2013
A.B., Harvard University, 2007

PUBLICATIONS AND PREPRINTS:

Research articles:

1. *The absolute gradings on embedded contact homology and Seiberg-Witten Floer cohomology,* Alg. and Geom. Topl. 13 (2013) 2239-2260
2. *The asymptotics of ECH capacities* [with M. Hutchings and V. Ramos], Invent. Math. 199.1 (2015), 187-214
3. *From one Reeb orbit to two* [with M. Hutchings], to appear in Journ. of Diff. Geom.
4. *Symplectic embeddings into four-dimensional concave toric domains* [with K. Choi, D. Frenkel, M. Hutchings, and V. Ramos], to appear in Journ. of Topol.
5. *Symplectic embeddings from concave toric domains into convex ones,* arXiv:1409.4378
6. *Ehrhart polynomials and symplectic embeddings of ellipsoids* [with A. Kleinman], arXiv: 1307.5493
7. *Symplectic embeddings of products* [with R. Hind], arXiv:1508.02659
8. *New examples of period collapse* [with T. Li and R. Stanley], arXiv:1509.01887

Articles on math education:

1. "*The Berkeley Summer Research Program for Undergraduates": One model for an undergraduate summer research program at a doctorate-granting university* [article on education], to appear in "The REU in Mathematics: New Directions"

SERVICE:

Workshops organized:

1. "Summer school on moduli problems in symplectic geometry", IHÉS, 2015
2. "UC Berkeley Geometry, Topology, and Operator Algebras RTG Summer Research Program 2012", UC Berkeley, 2012
3. "UC Berkeley Geometry, Topology, and Operator Algebras RTG Summer Research Program 2013", UC Berkeley, 2013

Departmental service:

1. Qualifying exam committee, Harvard, 2015
2. Undergraduate math colloquium organizer, Harvard, 2015

INVITED TALKS:

Minicourses given:

1. "Symplectic embedding problems", Madrid, 2015

Conference talks:

1. "Symplectic embeddings of concave toric domains into convex ones", Simons Center, 2014
2. "Involving graduate students in undergraduate research: the UC Berkeley summer research program for undergraduates", Mount Holyoke, 2013
3. "Symplectic embeddings of four-dimensional toric domains", Geometry and Topology conference, Princeton, 2015
4. "Symplectic embeddings of four-dimensional toric domains", AMS sectional meeting, 2015
5. "Higher dimensional symplectic embeddings and the Fibonacci staircase", Georgia Topology Conference, 2015
6. "From one Reeb orbit to two", Oberwolfach, 2015
7. "Symplectic embeddings of products", IHES, 2015
8. "Volume in Seiberg-Witten theory", Pisa, 2015

Seminar talks:

1. "From one Reeb orbit to two", UC Berkeley, 2012
2. "Asymptotics of embedded contact homology capacities and the existence of two orbits", Northern California Symplectic Geometry Seminar, 2012
3. "Volume in Seiberg-Witten theory and the asymptotics of ECH capacities", Harvard, 2013
4. "Counting lattice points in triangles and the Fibonacci staircase", Bard, 2013
5. "Embedded contact homology and its applications", Bryn Mawr, 2013
6. "Reeb dynamics in dimension 3", IAS, 2013.
7. "Volume in Seiberg-Witten theory and the existence of two Reeb orbits", IAS, 2013
8. "Volume in Seiberg-Witten theory and the existence of two Reeb orbits", Columbia, 2013

9. “Volume in Seiberg-Witten theory and the existence of two Reeb orbits”, UMass, 2013
10. “Volume in Seiberg-Witten theory and the existence of two Reeb orbits”, MIT, 2014
11. “Length, volume, and the existence of two Reeb orbits”, UVA, 2014
12. “Length and volume in Seiberg-Witten theory”, Simons Center, 2014
13. “Length, volume, and the existence of two Reeb orbits”, Notre Dame, 2014
14. “Counting lattice points in triangles and the Fibonacci staircase”, Notre Dame, 2014
15. “Some open questions about Reeb flows in dimension 3”, National Taiwan University, 2014
16. “From one Reeb orbit to two”, Neuchâtel, 2014
17. “Symplectic embeddings of concave toric domains into convex ones”, IAS, 2014
18. “Ehrhart quasi-polynomials and symplectic embeddings”, MIT, 2014
19. “From one Reeb orbit to two”, UPenn, 2014
20. “From symplectic geometry to combinatorics and back”, Notre Dame, 2014
21. “From one Reeb orbit to two”, Cal Tech, 2015
22. “Symplectic embeddings and lattice point enumeration”, Harvard, 2015
23. “Higher dimensional symplectic embeddings and the Fibonacci staircase”, IMPA, 2015
24. “Length and volume on contact three-manifolds”, Harvard, 2015

TEACHING:

1. Multivariable calculus, UC Berkeley, 2009
2. Multivariable calculus, UC Berkeley, 2010
3. Introduction to research through combinatorial game theory, UC Berkeley, 2010
4. Introduction to research through knot theory, UC Berkeley, 2012
5. Honors linear algebra and real analysis II, Harvard, 2015
6. Topology II: Smooth manifolds, Harvard, 2015
7. Analysis II: Measure, Integration, and Banach Spaces, Harvard, 2015

HONORS:

National Science Foundation Postdoctoral Fellow (2014)
Phi Beta Kappa (2007)
Harvard University Certificate of Distinction in Teaching (2005, 2006, 2007)