

Luca Fabrizio Di Cerbo

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Positions

Assistant Professor, *University of Florida*, August 2018 -

S.-S. Chern Senior Postdoctoral Fellow, *International Centre for Theoretical Physics (ICTP)*, September 2016 - August 2018

Visiting Assistant Professor, *Notre Dame University*, August 2014 - May 2015

Simons Postdoctoral Fellow, *Duke University*, August 2011 - July 2014

Research Visits

Stony Brook University, September 2017 - August 2018

Max Planck Institute for Mathematics (MPIM), June 2015 - May 2016

Education

Ph.D. Mathematics, Stony Brook University, NY, USA

September 2006-May 2011

Thesis: *Aspects of the Seiberg-Witten equations on manifolds with cusps*

Advisor: Prof. Claude LeBrun

Laurea Specialistica (M. Sc.) summa cum laude in Mathematics, University of Rome "La Sapienza", Italy

September 2004-July 2006

Laurea Triennale (B. Sc.) summa cum laude in Physics, University of Rome "La Sapienza", Italy

September 2001-November 2004

Research

Publications

1. (with M. Stover) *Punctured spheres in complex hyperbolic surfaces and bielliptic ball quotient compactifications.* **Trans. Amer. Math. Soc.** (DOI: <https://doi.org/10.1090/tran/7650>).
2. (with G. Di Cerbo) *On Seshadri constants of varieties with large fundamental group.* **Ann. Sc. Norm. Super. Pisa Cl. Sci. (5) 19** (2019), 1-10.
3. (with G. Di Brino) *Exceptional collections and the bicanonical map of Keum's fake projective planes.* **Commun. Contemp. Math. 20**, no. 1 (2018) 1650066 (13 pages).

4. (with M. Stover) *Classification and arithmeticity of toroidal compactifications with $3\bar{c}_2 = \bar{c}_1^2 = 3$.* **Geom. Topol.** **22**, no. 4 (2018), 2465-2510.
5. *The Toledo invariant and Seshadri constants of fake projective planes.* **J. Math. Soc. Japan** **69**, no. 4 (2017), 1601-1610
6. (with M. Stover) *Bielliptic ball quotient compactifications and lattices in $PU(2, 1)$ with finitely generated commutator subgroup.* **Ann. Inst. Fourier (Grenoble)** **67**, no. 1 (2017), 315-328.
7. (with G. Di Cerbo) *On the canonical divisor of smooth toroidal compactifications.* **Math. Res. Lett.** **24**, no. 4 (2017), 1005-1022.
8. (with M. Stover) *Multiple realizations of varieties as ball quotient compactifications.* **Michigan Math. J.** **65**, no. 2 (2016), 441-447.
9. (with G. Di Cerbo) *Effective results for complex hyperbolic manifolds.* **J. London Math. Soc.** **91**, no.1 (2015), 89-104.
10. (with G. Di Cerbo) *Positivity in Kähler-Einstein theory.* **Math. Proc. Cambridge Philos. Soc.** **159**, no. 2 (2015), 321-338.
11. (with G. Di Cerbo) *A sharp cusp count for complex hyperbolic surfaces and related results.* **Arch. Math. (Basel).** **103**, no. 1 (2014), 75-85.
12. *On Kähler-Einstein surfaces with edge singularities.* **J. Geom. Phys.** **86** (2014), 414-421.
13. *Generic properties of homogeneous Ricci solitons.* **Adv. Geom.** **14**, no. 2 (2014), 225-237.
14. *Seiberg-Witten equations on surfaces of logarithmic general type.* **Internat. J. Math.** **24**, no. 9 (2013), 1350074, 23 pages.
15. *Finite-volume complex-hyperbolic surfaces, their toroidal compactifications, and geometric applications.* **Pacific J. Math.** **255**, no. 2 (2012), 305-315.
16. *Finite-volume complex surfaces without cuspidal Einstein metrics.* **Ann. Global Anal. Geom.** **41**, no. 3 (2012), 371-380.
17. *Seiberg-Witten equations on certain manifolds with cusps.* **New York J. Math.** **17** (2011), 491-512.
18. *A gap property for the growth of closed 3-manifold groups,* **Geom. Dedicata** **143** (2009), 193-199.
19. (with M. Disconzi) *Yamabe solitons, determinant of the Laplacian and the uniformization theorem for Riemann surfaces.* **Lett. Math. Phys.** **83** (2008), 13-18.
20. *Eigenvalues of the Laplacian under the Ricci flow.* **Rend. Mat. Appl. (7)** **27**, no. 2, (2007), 183-195.
21. (with F. Calogero and R. Droghei) *On isochronous Shabat-Yamilov-Toda lattices: equilibrium configurations, behavior in their neighborhood, Diophantine relations and conjectures.* **Phys. Lett. A** **355** (2006), 262-270.
22. (with F. Calogero and R. Droghei) *On isochronous Bruschi-Ragnisco-Ruijsenaars-Toda lattices: equilibrium configurations, behavior in their neighborhood, Diophantine relations and conjectures.* **J. Phys. A: Math. Gen.** **39** (2006), 313-325.

Papers submitted and preprints

1. (with M. Stern) *Price inequality and Betti numbers growth on manifolds without conjugate points,* arXiv:1704.06354v1[math.DG].

Undergraduate Students Supervised

Farnaz Ghanbari - *Spring / Summer 2017*, **ICTP Diploma Thesis**. Title: Introduction to General Relativity and Positive Energy Theorem (supervised jointly with C. Arezzo).

Teaching Services

September 2016 - Served on the ICTP Entrance Exam Committee for the 2016/2017 Diploma Student Class.

January - February 2017 - Served on the ICTP Selection Committee for the 2017/2018 Diploma Student Class.

September 2017 - Contributed to the writing of the ICTP Entrance Diploma Exam for the 2017/2018 Class.

Teaching Experience

Department of Mathematics, **Stony Brook University**, NY.

Instructor for Undergraduate Classes

Spring 2018 - MAT 126, Calculus B

Fall 2017 - MAT 132, Calculus II

Mathematics Section, **International Centre for Theoretical Physics** (ICTP).

Instructor for both Graduate and Undergraduate Classes

Summer 2017 - ICTP - EAUMP School on Modern Functional Analysis, Nairobi - Kenya:
The Laplacian on Riemannian Manifolds (jointly with C. Arezzo)

Fall 2016 - Diploma Course: Curves and Surfaces (Single Instructor)

Fall 2016 - Weekly Reading Course: Symplectic Geometry (jointly with C. Arezzo)

Department of Mathematics, **Notre Dame University**, IN.

Instructor for Undergraduate Classes

Spring 2015 - MAT 10360, Calculus B

Spring 2015 - MAT 20580, Introduction to Linear Algebra and Differential Equations

Fall 2014 - MAT 10250, Elements of Calculus I

Fall 2014 - MAT 10350, Calculus A for the Life and Social Sciences

Department of Mathematics, **Duke University**, NC.

Instructor for both Graduate and Undergraduate Classes

Spring 2014 - MAT 790-90.05, Positive Currents and Lelong Numbers (Advanced Graduate Level Class)

Fall 2013 - MAT 625.01, Riemann Surfaces (Graduate Level Course)

Spring 2013 - MAT 633.01, Complex Analysis (Graduate Level Course)

Spring 2012 - MAT 790-03.02, Theorems of Bombieri and Reider (Advanced Graduate Level Class)

Fall 2011 - MAT 353.02, Ordinary and Partial Differential Equations

Department of Mathematics, **Stony Brook University**, NY.

Teaching Assistant for Undergraduate Classes

Spring 2011 - MAT 303, Calculus IV with Applications

Fall 2010 - MAT 123, Introduction to Calculus

Spring 2010 - MAT 205, Calculus III

Fall 2009 - MAT 132, Calculus II

Spring 2009 - MAT 305, Calculus IV

Fall 2008 - MAT 126, Calculus B

Spring 2008 - MAT 126, Calculus B

Fall 2007 - MAT 132 Calculus II

Spring 2007 - MAT 126 Calculus B

Fall 2006 - MAT 125 Calculus A (Grader)

Honors, Awards, & Fellowships

International Centre for Theoretical Physics (ICTP), **S.-S. Chern Senior Postdoctoral Fellowship** (with Travel Grant), 2016-2018.

Max Planck Institute for Mathematics (MPIM), **Fellowship** (with Travel Grant), 2015-2016.

Duke University, **Simons Postdoctoral Fellowship** (with Travel Grant), 2011-2014.

SUNY Stony Brook, **Renaissance Technologies Fellowship** (From the Simons Foundation), 2006-2009.

Institut Henri Poincaré (IHP), **Marie Curie Fellowship** (From the European Commission), April-June, 2008.

SUNY Stony Brook, Research Assistantship plus Tuition Scholarship, 2010-2011.

SUNY Stony Brook, Research Fellowship, 2009-2010.

SUNY Stony Brook, Teaching Assistantship with half duties plus Tuition Scholarship, 2006-2010.

University of Rome "La Sapienza", Tuition Scholarship, 2004-2006.

University of Perugia, Scholarship, summer 2004.

University of Rome "La Sapienza", Tuition Scholarship, 2001-2004.

Colloquia and Conference Presentations

1. *Colloquium*, **University of Florida**, February 2nd, 2018.
2. *Colloquium*, **University of Kansas**, January 23th, 2018.
3. *Colloquium*, **UC Riverside**, January 19th, 2018.
4. *Colloquium*, **Centre for Quantum Geometry of Moduli Spaces** (Aarhus University), May 26th, 2017.
5. *Special Colloquium*, **Stockholm University**, September 26th, 2016.
6. *Conference on Differential Geometry celebrating Claude LeBrun's 60th birthday*, **Montréal, Canada**, July 5-9, 2016.
7. *Oberseminar*, **Max Planck Institute for Mathematics**, August 6th, 2015.

8. *Colloquium*, **Queens College CUNY**, April 27th, 2015.
9. *Colloquium*, **Queen's University, Canada**, February 4th, 2015.
10. *Colloquium*, **University of Arizona**, January 21st, 2015.
11. *Colloquium*, **UC Davis**, December 15th, 2014.
12. *Conference "Giornate di Geometria Algebrica e Argomenti Correlati"*, **Torino, Italy**, June 7th, 2014.
13. *Conference "Geometria Algebrica nella Capitale"*, **Rome, Italy**, July 5th, 2013.
14. *Conference "Algebraic & Hyperbolic Geometry-New Connections"*, **Cabo Frio, Brazil**, June 18th, 2013.
15. *American Mathematical Society Eastern Section Meeting "Complex Geometry and Microlocal Analysis"*, **Boston College**, April 6th, 2013.
16. *Shanks Workshop "Kähler geometry on the edge"*, **Vanderbilt University**, March 22nd, 2013.
17. *Simons Postdoctoral Fellows Meeting*, **Simons Center for Geometry and Physics**, April 11th, 2012.
18. *Conference "Progressi Recenti in Geometria Reale e Complessa"*, **Levico Terme (Trento), Italy**, October 20th, 2010.

Seminars

1. *Geometric Analysis Seminar*, **CUNY Graduate Center**, December 7th, 2017.
2. *Geometry-Topology Seminar*, **Temple University**, October 25th, 2017.
3. *Algebraic Geometry Seminar*, **Washington University in St. Louis**, October 16th, 2017.
4. *Geometry-Topology Seminar*, **Stony Brook University**, October 10th, 2017.
5. *Geometry Seminar*, **Centre for Quantum Geometry of Moduli Spaces** (Aarhus University), May 26th, 2017.
6. *Geometry Seminar*, **Florence University**, May 24th, 2017.
7. *Geometry Seminar*, **Texas A&M University**, May 12th, 2017.
8. *Geometry-Topology Seminar*, **Stony Brook University**, May 9th, 2017.
9. *Geometry Seminar*, **Rome III University**, April 20th, 2017.
10. *Geometric Analysis Seminar*, **ICTP-SISSA**, March 23rd, 2017.
11. *Geometry-Topology seminar*, **Warwick University**, November 3rd, 2016.
12. *Waterloo Geometry Summer School*, **Waterloo University**, June 30th, 2016.
13. *Waterloo Geometry Summer School*, **Waterloo University**, June 29th, 2016.
14. *Differential Geometry & Geometric Analysis Seminar*, **Max Planck Institute for Mathematics**, January 12th, 2016.
15. *General Mathematics Seminar*, **University of Luxembourg**, November 3rd, 2015.
16. *Felix Klein Seminar*, **Notre Dame University**, October 30th, 2014.
17. *Topology-Analysis-Geometry Seminar*, **Notre Dame University**, October 9th, 2014.
18. *Complex Geometry seminar*, **Columbia University**, April 3rd, 2014.

19. *Algebraic Geometry Seminar*, **Princeton University**, October 24th, 2013.
20. *Complex Geometry Seminar*, **John Hopkins University & University of Maryland**, October 22nd, 2013.
21. *Geometry-Topology Seminar*, **Stony Brook University**, September 24th, 2013.
22. *Geometry-Topology Seminar*, **Duke University**, March 19th, 2013.
23. *Geometry-Topology Seminar*, **Stony Brook University**, October 9th, 2012.
24. *Differential Geometry & Geometric Analysis Seminar*, **Princeton University**, October 5th, 2012.
25. *Geometry Seminar*, **Universita' di Roma "La Sapienza"**, June 19th, 2012.
26. *Geometry Seminar*, **Universita' di Roma "La Sapienza"**, June 14th, 2012.
27. *Topology Seminar*, **University of California at Riverside**, May 1st, 2012.
28. *Graduate-Faculty Seminar*, **Duke University**, January 20th, 2012.
29. *Geometry-Topology Seminar*, **Duke University**, December 6th, 2011.
30. *Symplectic and Differential Geometry Seminar*, **Vanderbilt University**, November 30th, 2011.
31. *Geometry-Topology Seminar*, **Duke University**, March 29th, 2011.
32. *Geometry Seminar*, **Simons Center for Geometry and Physics**, January 24th, 2011.
33. *Geometry-Topology Seminar*, **University of Pennsylvania**, January 12th, 2011.
34. *Geometry Seminar*, **Universita' di Roma "La Sapienza"**, June 8th, 2010.
35. *Geometry Seminar*, **Universita' di Roma "La Sapienza"**, June 7th, 2010.
36. *Graduate Student Seminar*, **Stony Brook**, March 2010.
37. *Séminaire de jeunes mathématiciens (Organized by P. Pansu)*, **Institut Henri Poincaré**, May 2008.

Service to the Mathematical Community

Co-organizer, **AMS Special Session** on “Geometry and Topology of Ball Quotients and Related Topics” at the Spring Eastern Sectional Meeting Hunter College, City University of New York, New York, NY May 6-7, 2017.

Co-organizer, **Geometry-Topology seminar**, Duke University, Fall 2011- Spring 2014.

Co-organizer, **27th Geometry Festival**, Duke University, April 27th-29th, 2012.

Referee for several journals, since 2011.

Reviewer for Math Reviews.