

CURRICULUM VITAE

Marcello Lucia Assistant Professor

Mathematics Department
The City University of New York
College of Staten Island, 1S-226
Staten Island NY 10314, USA

Tel: +1 718 982-3624
Fax: +1 718 982-3631
mlucia@math.csi.cuny.edu

Nationality: Italy, Switzerland (and Permanent US citizen)
Language skills: Italian, French, English, German, Spanish, Mandarin (basic)

Research Interests

Nonlinear Partial differential equations and applications to Mathematical physics.

1. Higher Education

- 12/1997 **PhD degree in Mathematics**,
École Polytechnique Fédérale de Lausanne.
Title: *Bifurcation Problems for Special Solutions of Maxwell's Equations*.
Adviser: Prof. C.A. Stuart.
Referees: Prof. J. Pejsachowicz (Politecnico di Torino),
Prof. C.G. Simader (University of Bayreuth).
- 03/1992 **MSc degree in Mathematics** (Faculty prize),
University of Lausanne.
Title: *Two Problems on Algebraically Closed Fields*.
Adviser: Prof. J. Boéchat.
- 10/1989 **BSc degree in Mathematics**,
University of Lausanne.

2. Position and Teaching experience

- From 09/2009 till present, *Assistant professor*, College of Staten Island and CUNY Graduate Center.
- 08/2008 - 08/2009, *Ramón Y Cajal Fellow*, Universitat Politècnica de Catalunya, Spain (one year leave from CUNY).

- 09/2007 - 07/2008, *Assistant professor*, College of Staten Island, City University of New York (CUNY).
- 01/2006 - 07/2007, *Alexander von Humboldt Fellow*, Mathematisches Institut, Universität zu Köln, Germany.
- 07/2005 - 12/2005: *Visiting Assistant Professor*, National Center for Theoretical Sciences, Hsinchu, Taiwan.
- 11/2004 - 06/2005: *Research Fellow*, Tata Institute of Fundamental Research, Bangalore (India).
- 08/2004 - 10/2004: *Research Fellow*, Chinese Academy of Sciences, Beijing (host Prof. D. Cao, Chinese grant).
- 01/2002 - 08/2004: *Visiting Scholar*, Rutgers University (host Prof. Y.Y. Li, Swiss National Foundation grant).
- 11/2001 - 12/2001: *Postdoctoral Fellow*, Tata Institute of Fundamental Research, Bangalore, India (host Prof. M. Ramaswamy, Indian grant).
- 09/2000 - 08/2001: *Postdoctoral Fellow*, Universitat Politècnica de Catalunya, Barcelona, Spain (host Prof. X. Cabré, TMR European grant).
- 09/1999 - 09/2000: *Postdoctoral Fellow* Università di Roma “Tor Vergata” (host Prof. G. Tarantello, Swiss National Foundation grant).
- 12/1998: *Postdoctoral Fellow* Chinese Academy of Sciences, Beijing (host Prof. D. Cao, Chinese grant).
- 09/1998 - 11/1998: *Postdoctoral Fellow*, Università di Roma “Tor Vergata” (host Prof. G. Tarantello, TMR European grant).
- 1992 – 1998: *Teaching Assistant*, Swiss Institute of Technology.
- 1990 – 1994: *Teaching Assistant*, University of Lausanne, Switzerland.

Other Professional Experience

- Development of simulation programs for insurance and bank companies, *Times-Steps Company*, Zürich, Switzerland (01/1999 - 03/1999).

- Mandate from the *Credit Swiss Bank*, Leveling in financial mathematics for their candidates to the Swiss Bankers School of New-York (02/1991 - 05/1991).

3. Academic and Professional Honors

- Ramón Y Cajal Fellow (August 2008)
- Alexander von Humboldt Fellow (January 2006)
- Faculty prize for the Master Thesis (March 1992)

4. Peer-Reviewed Grants

- Simons Foundation Grant
Critical points at infinity for some two-dimensional problems
\$35,000, 07/2011-08/2016, PI
- PSC-CUNY grant
Lack of compactness for some two dimensional problems
Awarded, 06/2011-06/2012, PI
- PSC-CUNY grant
Exact multiplicity of nematics states in an Onsager model
Awarded, 08/2010-08/2011, PI
- Ministerio de Ciencia e Innovación (Spain)
Ecuaciones en derivadas parciales: análisis y aplicaciones
Euro 250,228, 01/2009-01/2011, Co-PI (15 participants)
- Ministerio de Educación y Ciencia (Spain)
Ramón Y Cajal Fellowship
Elliptic problems related to mean field equations
Euro 30,000, 08/2008-08/2009, PI
- PSC-CUNY grant
Symmetry and uniqueness results for chemotaxis system
Awarded, 08/2008-08/2009, PI
- Alexander von Humboldt Foundation
On some problems arising in Chern-Simons theory
Euro 40,000, 01/2006-07/2007, PI

- Swiss National Foundation
Elliptic Problems arising in the Chern-Simons Theory
\$90,000, 01/2002-08/2004, PI
- European Grant
Euro 20,000, 09/2000-06/2001, PI
- Swiss National Science Foundation
Study of vortices in Chern-Simons theory
\$36,000, 09/1999-08/2000, PI
- European Grant
\$10,000, 09/1998-11/1998, PI

5. Refereed Articles

A) Published Papers

- [1] *Multi-bump bound states for a system of nonlinear Schrödinger equations*, J. of Differential Equations, to appear (with Z.W. Tang).
- [2] *Minimal Immersions of Closed Surfaces in Hyperbolic Three-Manifolds*, Geometria Dedicata, to appear (with Z. Huang).
- [3] *Uniqueness and symmetry of equilibria in a chemotaxis system*, J. Reine Angew. Math. **654** (2011), 83–124 (with D. Horstmann).
- [4] *Exact multiplicity of nematic states for an Onsager model*, Nonlinearity **23** (2010), 3157–3185 (with J. Vukadinovic).
- [5] *Numerical solution of the Helmholtz equation in an infinite strip by Wiener-Hopf factorization*, Numer. Methods Partial Differential Equations **26** (2010), 1247–1274 (with F. Magglio and G. Rodriguez).
- [6] *Nonlocal elliptic boundary value problems related to chemotactic movement of mobile species*, Proceedings of the RIMS Conference on “Mathematical Analysis on the Self-organization and Self-similarity”, September 16-18, 2008, in Kyoto, RIMS Kokuroku Bessatsu B15, pp. 39–72, (2009) (with D. Horstmann).
- [7] *Eigenvalue problems with weights in Lorentz spaces*, Calc. Var. Partial Differential Equations **36** (2009), 355–376 (with T.V. Anoop and M. Ramaswamy).

- [8] *A Minimax Theorem in the presence of unbounded Palais-Smale sequences*, Israel J. Math. **172** (2009), 125–143 (with J. Horák).
- [9] *Isoperimetric profile and uniqueness for Neumann problems*, Ann. Inst. H. Poincaré Anal. Non Linéaire, **26** (2009), 81–100.
- [10] *Gradient theory of phase transitions with a rapidly oscillating forcing term*, Asym. Analysis **60** (2008), 29–59 (with N. Dirr and M. Novaga).
- [11] *Global bifurcation for semilinear elliptic problems*, Recent Advances in Nonlinear Analysis, Edited by M. Chipot, C.-S. Lin, D.H. Tsai, World Scientific, 2008, 197–216. (with M. Ramaswamy).
- [12] *Laplacian eigenvalues for mean zero functions with constant Dirichlet data*, Forum Math. **20** (2008), 763–782 (with A. Greco).
- [13] *Best constant in some exponential Sobolev inequalities*, Indiana Univ. Math. J. **57** (2008), 1907–1928 (with B. Kawohl).
- [14] *Existence of traveling wave solutions of invasion for Ginzburg-Landau-type problems in infinite cylinders*, Arch. Ration. Mech. Anal. **188** (2008), 475–508 (with C. Muratov and M. Novaga).
- [15] *A deformation Lemma with an application to a mean field equation*, Topol. Methods Nonlinear Anal. **30** (2007), 113–138.
- [16] *One-dimensional symmetry of periodic minimizers for a mean field equation*, Ann. Scuola Norm. Sup. Pisa Cl. Sci. **6** (2007), 269–290 (with C.-S. Lin).
- [17] *Simplicity of the principal eigenvalue for indefinite quasilinear problems*, Adv. Differential Equations **12** (2007), 407–434 (with B. Kawohl and S. Prashanth).
- [18] *Uniqueness of solutions for a mean field equation on torus*, J. Differential Equations **229** (2006), 172–185 (with C.S. Lin).
- [19] *A blowing-up branch of solutions for a mean field equation*, Calc. Var. Partial Differential Equations **26** (2006), 313–330.
- [20] *Γ -convergence of the Allen-Cahn energy with a rapidly oscillating forcing term*, Interfaces Free Bound **8** (2006), 47–78 (with N. Dirr and M. Novaga).

- [21] *Simplicity of principal eigenvalue for p -Laplace operator with singular indefinite weight*, Arch. Math. (Basel) **86** (2006), 79–89 (with S. Prashanth).
- [22] *On the uniqueness and simplicity of the principal eigenvalue*, Rend. Accad. Naz. Sci. XL Mem. Mat. Appl. **16** (2005), 132–142.
- [23] *A mean field equation on a torus: one-dimensional symmetry of solutions*, Comm. PDE **30** (2005), 1315–1330 (with X. Cabré and M. Sanchón).
- [24] *A priori estimates and uniqueness for some mean field equations*, J. Differential Equations **217** (2005), 154–178 (with L. Zhang).
- [25] *A Mountain Pass Theorem without Palais-Smale condition*, C. R. Acad. Sci. Paris Ser. I Math. **341** (2005), 287–291.
- [26] *A Deformation Lemma for a Moser-Trudinger type functional*, Nonlinear Anal. **63** (2005), 282–299.
- [27] *Gamma-star-shapedness for semilinear elliptic equations*, Comm. Pure Appl. Anal. **4** (2005), 93–99 (with A. Greco).
- [28] *Some elliptic semilinear indefinite problems on \mathbb{R}^N* , Proc. Roy. Soc. Edinburgh **134** (2004), 333–361 (with J. Giacomoni and M. Ramaswamy).
- [29] *Linear vs. nonlinear selection for the propagation speed of solutions of scalar reaction-diffusion equations invading an unstable equilibrium*, Comm. Pure Appl. Math. **57** (2004), 616–636 (with C. Muratov and M. Novaga).
- [30] *Strong comparison principle for solutions of quasilinear equations*, Proc. AMS **132** (2004), 1005–1011 (with S. Prashanth).
- [31] *A Dirichlet problem with asymptotically linear and sign changing nonlinearity*, Rev. Mat. Complut. **16** (2003), 465–481 (with P. Magrone and H.S. Zhou).
- [32] *$SU(3)$ Chern-Simons vortex theory and Toda systems*, J. Differential Equations **184** (2002), 443–474 (with M. Nolasco).
- [33] *A Neumann problem in exterior domain*, Manuscripta Math. **106** (2001), 63–74 (with D. Cao and H.S. Zhou).

- [34] *An application of the Artin-Schreier Theorem*, Comm. Algebra **29** (2001), 4421–4424 (with J. Boéchat).
- [35] *Branches of solutions to a semilinear elliptic equations with singular coefficients on \mathbb{R}^N* , Rend. Mat. Appl. **19** (1999), 489–506.
- [36] *The branch of positive solutions to a semilinear elliptic equation on \mathbb{R}^N* , Rend. Sem. Mat. Univ. Padova **101** (1999), 229–262 (with H. Jeanjean and C.A. Stuart).
- [37] *Branches of solutions to semilinear elliptic equations on \mathbb{R}^N* , Math. Z. **230** (1999), 79–105 (with H. Jeanjean and C.A. Stuart).

B) Preprints

- [38] *A class of degenerate elliptic eigenvalue problems*, preprint (with F. Schuricht).
- [39] *Odd symmetry of solutions to some weighted elliptic problems*, preprint (with X. Cabré, M. Sanchón, S. Villegas).

C) Other Publications

- [40] *Two problems on algebraically closed fields*, Université de Lausanne, Master Thesis, 1992, 80pp.
- [41] *Bifurcation Problems for Special Solutions of Maxwell's Equations*, PhD Thesis, École polytechnique fédérale de Lausanne, no 1748 (1997), 200pp.

LECTURES AND PAPERS PRESENTED (from 2009):

2011

- December 2011 - Universitat Politecnica de Catalunya,
A deformation lemma and application to some nonlocal semilinear problem.
- July 2011 - Dresden University
Principal eigenvalue for linear operators
- July 2011 - Cologne University
Uniqueness and antisymmetry of solutions for semilinear Problems

- May 2011 - Mississippi State University,
Colloquium, *Eigenvalue problems with weights*
- May 2011 - Mississippi State University,
Differential Equations Weekend Conference, *antisymmetry of solutions
for some semilinear problems*
- March 2011 - Bronx Community College
*Uniqueness and antisymmetry of Solutions for Some Semilinear Prob-
lems*
- January 2011 - Giessen University
Uniqueness and antisymmetry of solutions for some elliptic problems
- January 2011 - Chinese Academy of Science (Beijing), and Beijing Nor-
mal University
Uniqueness and antisymmetry of solutions for semilinear Problems
- January 2011 - National Taiwan University, Contribution talk
Nonlinear Phenomena: A View From Mathematics And Physics
(Organizers: C.S. Lin, G. Tarantello)

2010

- October 2010 - Oaxaca, Mexico, Planary Talk
Workshop on Variational Methods in Nonlinear Differential Equations
(Organizers: Monica Clapp and *al.*)
- August 2010 - University of Giessen (Germany), *Uniqueness and exist-
ence results for some two dimensional variational problems*
- August 2010 - ICM Satellite conference (PDE) (India), *Uniqueness and
existence results for some two dimensional problems*
- March 2010 - American University of Sharja (Emirates), *Uniqueness
results for a chemotaxis model*

PROFESSIONAL ORGANIZATION OF CONFERENCES AND SYMPOSIA, CURATORIAL ACTIVITIES

1. January 2012 - Symposium on “Recent developments in minimal sur-
faces”, held at the Graduate Center at CUNY and sponsored by the
ITS at CUNY (organized with Z. Huang).

2. October 2011 - Symposium on “Recent advances in 3D Euler and Navier-Stokes equations”, held at the Graduate Center at CUNY and sponsored by the ITS at CUNY (organized with J. Vukadinovic).
3. September 2011 - Symposium on “Recent Trends in Nonlinear PDE’s”, held at the Graduate Center at CUNY and sponsored by the ITS at CUNY (organized with Z. Huang).
4. March 2011 - Symposium on “Vortex Dynamics & Non-equilibrium Mechanics”, held at the Graduate Center at CUNY and sponsored by the ITS at CUNY (organized with A. Poje).
5. March 2010 - Organization of a Special Session for the first International Conference on Mathematics and Statistics, American University of Sharjah (E.U.A.), “Existence and geometric properties of solutions to PDE” (with J. Prajapat).
6. March 2010 - Workshop on “Bubbling Phenomena and lack of compactness”, Graduate Center (with J. Dodziuk, B. Santoro, C. Sormani).
7. August 2008 - Workshop on “isoperimetric inequalities”, Graduate Center, New York (with C. Sormani).
8. March 2008 - Organization of a Special Session for AMS Meeting, New York (with B. Kawohl).