

CURRICULUM VITAE

Gabriella Tarantello

Personal Data:

Born October 15, 1958 in Pratola Peligna, Italy.

Nationality: Italian

Home address: Via Fidenza n.27, 00182 Rome, Italy

Office address: Università di Roma "Tor Vergata", Dipartimento di Matematica
via della Ricerca Scientifica, 00133 Rome Italy.

Education:

Nov. 1978-Apr. 1982: Undergraduate studies at: University of l'Aquila, Italy, (BS Degree in Mathematics)

Sept. 1982- June 1986: Graduate studies at Courant Institute of Mathematical Sciences, New York University, N.Y. USA.

May 1984: Master of Art and Sciences in Mathematics, Courant Institute of Mathematical Sciences, New York University, N.Y. USA.

June 1986: Ph.D. (Philosophy Doctor) in Mathematics, Courant Inst. of Mathematical Sciences, New York University, N.Y. USA.

June 1986-July 1987: Visiting Member, The Institute for Advanced Study, Princeton, N.J. U.S.A.

Aug. 1987-July 1989: Visiting Assistant Professor, University of California, Berkeley, CA, U.S.A.

Aug.1989-Dec. 1992: Assistant Professor, Carnegie Mellon University, Dept. of Mathematics, Pittsburgh, PA, U.S.A.

January 1993-Oct. 1994: Associate Professor, Università di Roma `Tor Vergata', Rome, Italy.

November 1994-Oct. 1995: Full Professor, Università della Basilicata, Potenza, Italy.

November 1995 - present: Full Professor, Università di Roma `Tor Vergata', Rome, Italy.

Field of Research: Nonlinear Partial Differential Equations, Differential Geometry, Mathematical Physics
Calculus of Variations and Gauge Field Theory.

Visiting positions:

- Forschungsinstitute für Mathematik, E.T.H. -Zurich, Switzerland

-Université Catholique de Louvain-la-Nauve, Belgium

-Tata Institute of Fundamental Research, Bangalore, India

-Field Institute of Mathematical Sciences, Toronto Canada

-Mc Master University, Hamilton, Canada

-Max Planck Institute, Leipzig, Germany

-Max Planck Institute, Bonn, Germany

-The Chinese University of Hong-Kong,

-Peking University and the Academia Sinica, Peking China

-Honhzhou University, China;

-University of Mainz, Germany;

-Isaac Newton Institute Cambridge, UK;

-Pacific Institute for Fundamental Research Vancouver, Canada

-Courant Institute, New York University, N.Y. USA

-Seoul National University, Korea

-Rutgers University Dept. of Math. New Bronswick USA

-Bernoulli Center Lausanne Switzerland,

CRM Université' de Montreal, Montreal Canada

-Banff International Research Station for Mathematical Innovation and Discovery (BIRS), Canada.

-Université' de Paris IV, Paris France

- Université' de Paris Dauphine CEREMADE, Paris France

- Université' de Cergy, Paris France

- SISSA, Trieste, Italy

- Centro Ennio de Giorgi, Pisa Italy.

-Taida Institute of Mathematical Sciences (TIMS), National Taiwan University in Taipei-TAIWAN.

-CUNY, New-York, USA

Symposia and conferences (for the period 2004 - present):

- Speaker at the conference: Variational Methods and the Nonlinear Schrödinger Equation, Feb. 9-13 2004, Bernoulli Center Lausanne Switzerland.
- Speaker at the International Conference on elliptic and Parabolic Problems, Recent Advances, Feb. 16-20, 2004 National Center for Theoretical Sciences, Hsinchu, Taiwan.
- Speaker at the Analysis Seminar SISSA April 2004, Trieste, Italy.
- Speaker at the Differential Equations Seminar, University of Granada May 2004, Granada, Spain.
- Organizer of the International Symposium on Variational methods and Nonlinear differential Equations, Jan. 10-14, 2005 Rome Italy.
- Speaker at the Workshop on Variational Methods in Nonlinear Analysis, April 14-22 2005, Erice Italy.
- Speaker at the Topological and Variational Methods in Partial Differential Equations, December 5-9 2005, Guanajuato Mexico.
- Speaker at the TMS and AMS joint international meeting December 14-19 2005, Tunghai University, Taiwan.
- Speaker at the Workshop on Singularities in PDE and the Calculus of Variations, July 17-21 2006, Montreal Canada.
- Speaker at the Workshop Nonlinear Differential Equations, September 11-15 2006, Como Italy.
- Speaker at the Workshop: Recent Advances in Hyperbolic Systems, Nov. 23-25 2006, Bertinoro, Italy.
- Speaker at the Workshop: Some Topics in Nonlinear Analysis and Applications to PDE, Jan.29-Feb. 1 2007, Rome Italy.
- Speaker at the CIME Summer School Geometric Analysis and PDE, June 11-16, 2007 Cetraro Italy
- Speaker at the VII Americas School in Differential Equations and Nonlinear Analysis July 23-27, 2007, Cartagena, Columbia,.
- Organizer of the workshop s: Loss of compactness in nonlinear PDE: Recent trends, August 26 -31, 2007, held at Banff International Research Station for Mathematical Innovation and Discovery (BIRS), Canada.
- Speaker at the PDE seminar in the Department of Mathematics of Rutgers University, September 4th 2008, New Brunswick, USA.
- Speaker at the Workshop: Variational Methods for Nonlinear PDE and their Applications Technion Haifa, (Israel) March 5-10, 2008.
- Invited speaker at the Special Session on : Isoperimetric Problems and PDE. AMS Eastern Sectional meeting, March 15-16, 2008 held at the Courant Institute in New York.
- Speaker at the Workshop: Variational and Topological Methods in Nonlinear Phenomena, Otranto, Italy May 1-5, 2008.
- Invited at the meeting: Calculus of Variation, Mathematisches Forschungsinstitut Oberwolfach, Germany; July 6-12, 2008.
- Speaker at the meeting: Lack of compactness in nonlinear problems : prospects and applications, CIRM-Luminy, Maseille France October 5-9, 2009.
- Speaker at the meeting: VIII Americas Conferente opn Differential Equations, Veracruz-Mexico Oct. 18-23, 2009.
- Speaker: Optimal Constants in the Theory of Sobolev Spaces and PDEs Mathematisches Forschungsinstitut Oberwolfach, Germany; Feb. 7-12, 2010.
- Organizer: Differential and topological problems in modern theoretical physics, SISSA Triesta Italy, April 26-30, 2010.
- Speakers: Women of Laplacian, Monopoli Italy, June 3rd-6th, 2010.
- Speaker: Variational and Topological Methods in Nonlinear Phenomena , Cortona (Italy) Sept. 20- 23, 2010.
- Speaker: Nonlinear Differential Equations, Verbania (Italy), Sept. 26-Oct. 1st, 2010.
- Organizer: Nonlinear phenomena: a view from Mathematics and Physics TIMS-National Taiwan University Taipei (Taiwan) January 10th -14th , 2011 .
- Speaker: Geometric and Nonlinear Analysis: meeting in Lorraine, Nancy (France), June 12-17, 2011.

- Speaker: A conferente in Honor of the 60th birthday of Chang-Shoy Lin, National Taiwan University Taipei, July 8-9, 2011.
- Speaker: International Conferente on Nonlinear Partial Differential Equations, Hefei (China) August 1-6, 2011.
- Speaker: Nonlinear PDE Days – Variatio Delectat Koln (Germany) October 4-5, 2011.

Forthcoming:

- Invited Speaker: School and Workshop on CoCompact Imbeddings, Profile decompositions and their applications to PDE, TATA Institute of Fundamental Research Bangalore (India) January 3-12, 2012.
- Invited Speaker: "Fifteenth Riviere-Fabes Symposium on Analysis and PDE", Minneapolis Minnesota (USA) April 20-22, 2012.
- Invited Speaker: "Sino-Chilean Conference on Nonlinear Elliptic and Parabolic PDE" Santiago, Chile, July 17-20, 2012.
- Invited Speaker:
[12th International Congress Mathematical Physics \(section: PDE and Relativity\)](#)
[Aalborg, \(Denmark\) 6-11 August 2012.](#)

PH.D Students:

Roselli Paolo, Ricciardi Tonia, Bartolucci Daniele, Esposito Pierpaolo, Carosi Massimiliano, Roberto Fortini.

List of Publications:

1. Tarantello G., Some result on the minimal period problem for nonlinear vibrating Strings and Hamiltonian systems: and on the number of solutions for semilinear elliptic equations. Ph.D. Thesis. Courant Institute of Mathematical Sciences (1986).
2. Cafagna V., Tarantello G., Multiple solutions for semilinear elliptic Equations, Math. Ann. 276 (1987). 643-656.
3. Tarantello G., Solutions with prescribed minimal period for non linear vibrating strings. Comm. P.D.E. n. 9 12 (1987), 1071-1094.
4. Michalek R., Tarantello G., Subharmonic solutions with prescribed minimal period for nonautonomous Hamiltonian systems. J. Diff.Equ. 72 (1988). 28-55.
5. Michalek R., Tarantello G., Subharmonics with prescribed minimal period for Hamiltonian systems. Proc. Inter. Conf. (1986), Recent Advances in Hamiltonian Systems. Dell'Antonio-D'Onofrio. L'Aquila, 205-211.
6. Tarantello G., Subharmonics for Hamiltonian systems via a Z_p -pseudoinde index theory. Ann. Sc. Normale Pisa Sc.Fis. Mat. XV fasc. III (1988), 357-409.
7. Leon J.F., Tarantello G., Breaking of symmetry for a minimization problem. Nonlinear Analysis T.M.A. n. 13 (1989) 579-587.
8. Tarantello G., On the number of solutions for the forced Pendulum Equations. J. Diff. Eqq n.1 80 (1989), 79-93.
9. Tarantello G., Remarks on forced equations of the double pendulum-type. Trans. A.M.S. n.1 326 (1991) 441-452.
10. Tarantello G., Multiple forced oscillations for the N-pendulum equation. Comm. Math. Physics n.3 132 (1990) 499-517.
11. Tarantello G., Solution d'equations elliptiques avec exposant critique qui changent de signe. C. R. Acad. Sci. Paris series I n.7 (1991) 441-445.
12. Tarantello G. Nodal solutions of semilinear elliptic equations with

- critical exponent. *Differential and Integral Equations*, n.1 5 (1992) 25-42.
13. Tarantello G., A note on a semilinear elliptic equation. *Differential and Integral Equations* n.3 5 (1992) 561-565.
14. Tarantello G. On nonhomogeneous elliptic equations involving critical exponent, *Ann. I.H.P. Analyse Nonlineaire* n.3 9 (1992) 281-304.
15. Comte M., Tarantello G., A Neumann problem with critical exponent. *Houston J. Math.* N.2 18 (1992) 279-294.
16. Alama S., Tarantello G., On semilinear elliptic equations with indefinite nonlinearities. *Calc. of Var. and P.D.E.* n.4 1 (1993) 439-475.
17. Tarantello G., Multiplicity results for an inhomogeneous Neumann problem with critical exponent, *Manuscripta Mathematica* 81 (1993) 57-58.
18. Tarantello G., Morse index versus concentrations for elliptic problems with Sobolev exponent. *Comm. P.D.E.* 19 (1994) 1165-1169.
19. Alama S., Tarantello G., Some remarks on C^1 versus H^1 minimizers, *C.R. Acad.Sci. Paris t.319 SÈrie I* (1994) 1165-1169.
20. Alama S., Tarantello G., On the solvability of a semilinear elliptic equation via an associated eigenvalue problem. *Math Zeit.* Vol 221, (1996) 467-493.
21. Alama S., Tarantello G., Elliptic problems with nonlinearities indefinite in sign. *J. Funct. Anal.* 141 n. 1 (1996) 159-215.
22. Tarantello G., Multiple condensate solutions for the Chern-Simons-Higgs theory. *J. Math. Phys.* 37 n.8 (1996) 3769-3796.
23. Tarantello G., Vortex Condensations for a non relativistic Maxwell-Chern-Simons Theory, *J. Diff. Eqs.* N.141 (1997) 295-309.
24. Struwe M., Tarantello G., On multivortex solutions in the Chern-Simons gauge Theory. *Boll. U.M.I. nuova serie* (8) 1-B (1998) 109-121.
25. Badiale M., Tarantello G., Existence and Multiplicity results for elliptic problems with critical growth and discontinuous nonlinearities, *Nonlinear Analysis T.M.A.*, vol. 29 (1997) 639-667.
26. Ricciardi T., Tarantello G., On a periodic boundary value problem with exponential nonlinearities. *Differential and Integral Equations* 11 (5) (1998) 745-753.
27. Nolasco M., Tarantello G., On a sharp Sobolev type inequality on two dimensional compact manifolds, *Arch. Rational Mech.*, 145 (1998) 161-195.
28. Nolasco M., Tarantello G., Double vortex-condensates in the Chern-Simons-Higgs theory, *Calc. Var. PDE* 9 (1999) 31-94.
29. Ricciardi T., Tarantello G., Selfdual vortices in the Maxwell-Chern-Simons-Higgs theory, *Comm.Pure Appl. Math.* 53 (2000) 811-841.
30. Nolasco M., Tarantello G., Vortex Condensates for the $SU(3)$ Chern-Simons theory. *Comm. Math. Physics* 213 (2000) 599-639.
31. Prajapat J., Tarantello G., On a class of elliptic problems in R^2 : symmetry and uniqueness results, *Proc. Royal Soc. Edinburgh* 131A, (2001) 967-985.
32. Tarantello G.: On Chern-Simons Theory, *Nonlinear PDE's in Condensed Matter and Reactive Flows* (2002) 507-526; H. Berysticki and Y. Pomeau (eds) Kluwer Academic Publisher, Netherlands.
33. M. Badiale, Tarantello G.: A Sobolev-Hardy inequality with applications to a nonlinear elliptic equation arising in astrophysics. *Archive Rational Mech. Anal.* 163 (2002), no. 4, 259-293.
34. D. Bartolucci, Tarantello G.: Liouville type equations with singular data and their applications to periodic multivortices for the Electroweak theory. *Comm. Math. Physics* 229 (2002), 3-47.
35. D. Bartolucci, Tarantello G.: The Liouville equation with singular data: a concentration -compactness principle. *J. Diff. Eq.* 185 (2002), 161-180.
36. D. Chae, Tarantello G.: On planar selfdual Electroweak vortices. *Annales I.H.P. Analyse NonLineaire* 21 (2004) 187-207.
37. D. Bartolucci, C.C. Chen, C.S. Lin, Tarantello G.: Profile of blow-up

- solutions to mean field equations with singular data. *Comm. PDE* 29 n. 7-8 (2004), 1241-1265.
38. Tarantello G.: Analytical aspects of Liouville-type equations with singular sources, In *HANDBOOK OF DIFFERENTIAL EQUATIONS*, Volume 1, M. Chipot, and P. Quittner (eds) Elsevier publ. (2004), 491-592.
39. Tarantello G.: Selfdual Maxwell-Chern-Simons vortices, *Milan Journal Math.* 72 (2004), 29-80.
40. Tarantello G.: An Harnack inequality for Liouville-type equations. *Indiana Univ. Math J.* vol. 54 n.2 (2005), 599-615.
41. Tarantello G.: A quantization property for blow-up solutions of singular Liouville-type equations. *J. Func. Anal.* 219 (2005), 368-399.
42. D. Chae, Tarantello G.: Selfgravitating Electroweak Strings. *J. Diff Eq.* 213 (2005), 146-170.
43. Tarantello G. Uniqueness of selfdual periodic Chern-Simons vortices of topological type, *Calc. of Var. and PDE* 29 (2007), 191-217.
44. Tarantello G. Selfdual Gauge Field Vortices: an analytical approach. *PNLDE* 72, Birkhauser Boston, Inc. Boston MA 2008.
45. J. Dalbeault, M.J. Esteban, G. Tarantello: The role of Onofri type inequalities in the symmetry properties of extremals for the Caffarelli-Kohn-Nirenberg inequality in two space dimensions. *Ann. Sc. Normale Pisa* 5 vol. VII(2008), 313-341.
46. Tarantello G. On some elliptic problems in the study of selfdual Chern-Simons vortices, in *Geometric Analysis and PDE CIME-lectures*, Cetraro June 10-16, 2007; Springer Lecture Notes in Mathematics Ed. A. Ambrosetti, S.Y. Chang, A. Malchiodi 1977 (2009).
47. J. Dalbeault, M.J. Esteban, G. Tarantello: Multiplicity results for the assigned Gauss curvature problem in $\mathbb{R}^2$, *Non-linear Analysis* 70 (2009), 2870-2881.
48. J. Dalbeault, M.J. Esteban, M. Loss, G. Tarantello: On the symmetry of extremals for the Caffarelli-Kohn-Nirenberg inequalities, *Advances Nonlinear Studies* 9 n.4 (2009), 713-726.
49. Tarantello G. "Analytical, Geometrica and Topological aspects of mean field equations on surfaces", issue dedicated to Professor Louis Nirenberg on the occasion of his 85th birthday" part II, *Discr. Cont. Dyn. Syst. A* 28 n. 3, (2010), 931-973.
50. J. Dalbeault, M. Esteban, A. Tertikas, G. Tarantello "Radial symmetry and symmetry breaking for some interpolation inequalities " *Calculus of Variations and Partial Differential Equations* 42 (2011), 461-485.
51. D. Bartolucci, C.S. Lin, Tarantello G.: A Uniqueness result for a singular mean field equation on the sphere via blow-up. *Comm. Pure Appl. Math.*, 64 (2011), 1677-1730.
52. Tarantello G. Nonabelian vortices: existence, uniqueness and asymptotics, *Milan J. Math.* 79 (2011) 343-356.
53. A. Poliakovsky, G. Tarantello On a planar Liouville-type problem in the study of self-gravitating strings, *JDE* to appear.