Isabella Birindelli
Curriculum Vitae et Studiorum

Generalities

Born in Dunkerque (France) 31/03/1963, Nationality: italian.
Married, one child.
Professional Address: Istituto Matematico "G. Castelnuovo".
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Education

- **Ph.D. in Mathematics.**
  Courant Institute of Mathematical Sciences, N.Y.U., New York, U.S.A.
  September 1987-September 1992.
  Thesis :*Second order elliptic equations in general domains:Hopf's lemma and Anti maximum principle* .
  Advisor: Louis Nirenberg.

- **Laurea (Master) in Mathematics**, 110/110 Magna cum Laude.
  Università degli studi di Roma "La Sapienza". January 1987.
  Advisor: Umberto Mosco.

Positions

- March 2007 Professore ordinario (Full professor) Università di Roma "La Sapienza"

- Octobre 2004 Idoneo to position of "Professore Ordinario"

- November '98-March2007:
  Associate Professor at the Università di Roma "La Sapienza" member of the Mathematical Department, confirmed in 2001.

- March '92-November '98:
  Researcher at the Università di Roma "La Sapienza", member of the Mathematical Department

- '90-'92 Teaching Assistant, N.Y.U.

Research field

Fully non linear elliptic PDE, spectral properties, maximum principle, regularity. Elliptic, degenerate elliptic and systems of partial differential equations, in particular I have studied qualitative properties, regularity, existence and non-existence theorems in the semi-linear, quasi-linear and linear cases.

Invited speaker at the following conferences and institutions (last 5 years)

- September 2016, A PDE day with Nirenberg, Haifa, Israel
- August 2016, First Joint meeting Italy-Brazil, Rio de Janeiro, Brazil
- July 2016, Two nonlinear days in Urbino, Italy
- May 2016, 9th European Conference on Elliptic and Parabolic Problems, Gaeta, Italy
- August 2015, Current trends in Analysis and PDE, IMPA, Rio de Janeiro, Brazil
- March 2015, Non linear PDE at the end of the world, Universidad de Magallanes, Punta Arenas, Chile
- February 2015, Spectral theory and shape optimization problems for elliptic PDEs, Milano Bicocca
- November 2014, Numerical methods for PDEs: optimal control, games and image processing, Sapienza, Roma
- Aout 2014, DFDE, Moscow
- Juillet 2014, ICMAT, Madrid
- Juin 2014, A meeting with L. Nirenberg, RISM
- March 2013, Universit de Tours, invited by Barles
- March 2013, EHESS, Paris.
- January 2013, A. Ma.Ca, Rome.
- June 2011, Ecole Normale Supérieure, "Fronts and Nonlinear PDE's" in honor of H.Berestycki
- January 2011, CIRM, "Analyse géométrique" in honor of Rafe Mazzeo

Other recent research-related activities

- Co-Organizer of the conference "Mostly maximum Principle" in Agropoli, september 2015.

- Member of the scientific committee of Gruppo Nazionale Analisi Matematica, Probabilitá e Applicazioni, INDAM
- Scientific Committee "Nonlinear elliptic PDEs at the End of the World" Punta Arenas, March 2015
- Co-Organizer of the conference "Mostly maximum Principle" in Rome, september 2012.
- Co-Organizer of the conference "Positivity: a key to fully-nonlinear equations" in Vietri, May 2010.
- Invited professor in many important universities: Cergy-Pontoise, Paris X, University of Chile, Stanford University, Rutgers University, Berkeley
- Reviewer for the "Mathematical Review"
- Referee for many journals including "Inventiones Matematicae" "Journal IHP, Analyse non linéaire", "Communication in Partial Differential Equations", "Journal of European Mathematical Society", " Proceedings of the Royal Society of Edinburgh", "Pacific Journal","Annali di Pisa", "Non Linear Differential equations and applications", "Nonlinearity" ...
- Responsible of many research grants from Sapienza Univeristy, CNR, and GNAMPA

Scientific pubblications

1. **with F. Demengel** *Existence and regularity results for Fully Non Linear Operators on the model of the pseudo Pucci's operators* submitted.

2. **with F. Demengel** *Fully nonlinear operators with Hamiltonian: Hlder regularity of the gradient* to appear in Nonlinear Differential Equations and Applications NoDEA, 23(4), (2016) 1-17.

3. **with F. Camilli, I. Capuzzo Dolcetta** *On the approximation of the principal eigenvalue for a class of nonlinear elliptic operators*, Communications in Mathematical Sciences to appear.

4. **with F. Leoni, F. Pacella** *Symmetry and spectral properties for viscosity solutions of fully nonlinear equations* , Jour. de Math. Appl. to appear.

5. **with I. Capuzzo Dolcetta, A. Vitolo** *ABP and global Hlder estimates for fully nonlinear elliptic equations in unbounded domains* Communications in Contemporary Mathematics (2016).

6. with **F. Leoni** *Symmetry minimizes the principal eigenvalue: an example for the Pucci's sup operator*, Mathematical Research Letters (2014).

7. with **F. Demengel** *Hölder regularity of the gradient for solutions of fully nonlinear equations with sublinear first order terms*, COCV (2014)

8. with **F. Demengel** Overdetermined problems for some fully non linear operators. Comm. Partial Differential Equations 38 (2013), no. 4, 608-628.

9. with **F. Demengel** Regularity for radial solutions of degenerate fully nonlinear equations. Nonlinear Anal. 75 (2012), no. 17, 6237-6249.

10. with **E. Valdinoci** *On the Allen-Cahn equation in the Grushin plane: a monotone entire solution that is not one-dimensional.* Discrete Contin. Dyn. Syst. 29 (2011), no. 3, 823-838.

11. with **F. Demengel** One-dimensional symmetry for solutions of Allen Cahn fully nonlinear equations. Symmetry for elliptic PDEs, 115, Contemp. Math., 528, Amer. Math. Soc., Providence, RI, 2010

12. with **S. Patrizi***A Neumann eigenvalue problem for fully nonlinear operatos* Discrete and Continous Dynamical Systems, volume speciale (2010) special volume for L. Nirenberg.

13. with **F. Demengel** *Eigenfunctions for singular fully nonlinear equations in unbounded domains* Nonlinear Diff. Equations. and Appl. (2010)

14. with **F. Demengel** *Regularity and uniqueness of the first eigenfunction for singular fully non linear operators* Journal of Differential Equations (2010)

15. with **F. Demengel** *Uniqueness of the first eigenfunction for fully nonlinear equations: the radial case* Zeitschrift fur Analysis und Ihre Anwendungen, vol. 29, (2010) p. 77-90.

16. with **F. Ferrari, E. Valdinoci** *Semilinear PDEs in the Heisenberg group: the role of the right invariant vector fields.* Nonlinear Analysis vol. 72 (2010) p. 987-997.

17. with **F. Demengel** *Eigenvalue and Dirichlet problem for fully-nonlinear operators in non smooth domains* Journal of mathematical Analysis and its applications, vol. 352 (2009) p. 822-835,

18. with **R. Mazzeo** *Symmetry for solutions of two-phase semilinear elliptic equations on hyperbolic space*, Indiana University Mathematical Journal, vol 58 (2009).

19. with **E. Valdinoci** *The Ginzburg-Landau equation in the Heisenberg group*, Communications in Contemporary Mathematics (2009).

20. with **F. Demengel**, *The Dirichlet problem for singular fully nonlinear operators.* Discrete Contin. Dyn. Syst. 2007, Dynamical Systems and Differential Equations. Proceedings of the 6th AIMS International Conference, suppl.,

21. with **B. Stroffolini**, *Existence theorems for fully nonlinear equations in the Heisenberg group.* Subelliptic PDE's and applications to geometry and finance, 49–55, Lect. Notes Semin. Interdiscip. Mat., 6, Semin. Interdiscip. Mat. (S.I.M.), Potenza, 2007.

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22. with **F. Demengel,** *Eigenvalue, maximum principle and regularity for fully non linear homogeneous operators.* Commun. Pure Appl. Anal. 6 (2007), no. 2, 335–366.

23. with **F. Demengel** *First eigenvalue and maximum principle for fully nonlinear singular operators.* Adv. Differential Equations 11 (2006), no. 1, 91–119.

24. with **F. Demengel** *Comparison principle and Liouville type results for singular fully nonlinear operators.* Annales de Toulouses (2004)

25. *Homogenization of Hamilton-Jacobi equations in the Heisenberg group* con J. Wigniolle, Comm. in Pure and Applied Analysis (2003)

26. with **F. Demengel** *Existence of solutions for semi-linear equations involving the p-Laplacien : the non coercive case* Calculus of Variation (2004)

27. with **F. Demengel** *Sur les équations de Lane-Emden avec opérateurs non linéaires.* (French) [Lane-Emden equations with fully nonlinear operators] , C. R. Math. Acad. Sci. Paris 336 (2003), no. 9, 725–730.

28. with **E. Lanconelli** *A negative answer to a one-dimensional symmetry problem in the Heisenberg group* Calculus of Variation.(2005)

29. with **F. Demengel** *Existence of solutions for semi-linear equations involving the p-Laplacien : the non coercive case* , Calculus of Variation (2004).

30. with **F. Demengel** *Some Liouville theorems for the p-Laplacian* Proceedings of the 2001 Luminy Conference on Quasilinear Elliptic and Parabolic Equations and System, 35–46 (electronic), Electron. J. Differ. Equ. Conf., 8.

31. with **F. Demengel** *On some partial differential equation for non coercive functional and critical Sobolev exponent.* Differential and Integral Equations 15 (2002), no. 7, 823–837.

32. with **E. Lanconelli** *A note on one dimensional symmetry in Carnot Groups* , Atti Accad. Naz. Lincei Cl. Sci. Fis. Mat. Natur. Rend. Lincei (9) Mat. Appl. 13 (2002), no. 1, 17–22.

33. *Superharmonic functions in the Heisenberg group: estimates and Liouville theorems* NoDEA Nonlinear Differential Equations Appl. 10 (2003), no. 2, 171–185.

34. *One dimensional symmetry in the Heisenberg group* with J. Prajapat Annali della Scuola Normale Superiore di Pisa, 2001

35. *A note on one-dimensional symmetry in Carnot groups* with E. Lanconelli, to appear Rendiconti Accademia Nazionale Lincei.

36. *Monotonicity results for Nilpotent stratified groups* with J. Prajapat, Pacific Journal. Pacific J. Math. 204 (2002), no. 1, 1–17

37. *Bifurcation problems for superlinear elliptic indefinite equations* with J. Giacomoni, Topological Methods in Nonlinear Analysis (2000)

38. *Morse Index and Liouville Property for Superlinear Elliptic Equations on the Heisenberg group* with I. Capuzzo Dolcetta, Contributions in honor of the memory of Ennio De Giorgi (Italian). Ricerche Mat. 49 (2000), suppl., 1–15.

39. *Nonlinear Liouville theorems in the Heisenberg group via the moving plane method* with J. Prajapat, Comm. Partial Differential Equations (1999)

40. *Existence and numerical approximation results for a class of quasi-linear elliptic system arising in image segmentation* with S. Finzi Vita, No DEA(1998).

41. *Existence of the principal eigenvalue for cooperative elliptic systems in a general domain,* with E. Mitidieri e G. Sweers, Differential Equations-Differentil'nye Uravnenija (1998)

42. *Liouville theorems for elliptic inequalities and applications,* with E. Mitidieri, Proceedings of the Royal Society of Edinburgh, vol 128A (1998)

43. *Indefinite semi-linear equations on the Heisenberg group: a priori bounds and existence,* with I. Capuzzo Dolcetta e A. Cutrí, Communications in Partial Differential Equations, **23**, (1998).

44. *Nonlinear Liouville theorems,* Proceedings of the Meeting Reaction Diffusion Systems, Lecture Notes in Pure and Applied Mathematics, Marcel Dekker Inc.(1997)

45. *Liouville theorems for semilinear equations on the Heisenberg group,* with I. Capuzzo Dolcetta and A. Cutrí, Annales de l'Institut Henri Poincaré-Analyse non linéaire,**vol 14**, 3 (1997).

46. *Periodic solutions for a class of second order systems with a small forcing term,* Nonlinear Analysis **Vol 27** (1996).

47. *A semi-linear problem for the Heisenberg Laplacian,* with A. Cutrí, Rendiconti del Seminario dell'Università di Padova **Vol.** , (1996).

48. *Hopf's lemma and Anti-maximum Principle in General Domains,* Journal of Differential Equations, **Vol. 119,** (1995).

49. *Non linear two-obstacles problems: Pointwise regularity,* with M.A. Vivaldi, Rendiconti di Matematica, Serie VII **Vol. 14** , (1994).

50. Ph.D. thesis at the Courant Institute: *Second order elliptic equations in general domains:Hopf's lemma and Anti maximum principle* (1992)

51. *Energy decay for Dirichlet problems in irregular domains with quadratic Hamiltonian,* Integral and differential equations, **Vol 8,** (1992).

Preprints

1. **with F. Demengel** Fully nonlinear operators with Hamiltonian: Hölder regularity of the gradient.

2. **with G. Galise, H. Ishii** A family of degenerate elliptic operators: maximum principle and its consequences.