

Enrico Valdinoci

CURRICULUM VITAE

Personal data.

Place and date of birth: Rome, April 23, 1974

Citizenship: Italian

Email address: enrico.valdinoci@wias-berlin.de

Qualifications.

High School Degree 60/60, July 1993

Degree in Mathematics 110/110 cum laude, Università degli Studi Roma Tre, February 1998 (all exams passed with grade 30/30 cum laude)

Teaching abilitation in Mathematics, classe A047. Winner of a competition and addressee of a permanent contract conferred by Provveditore agli Studi di Roma from the academic year 2000-2001 (he gave up the position in the school because he won a position as researcher)

Ph.D. in Mathematics, University of Texas at Austin, October 2001

Current academic position. Senior Researcher and ERC Group Leader at the Weierstrass Institute for Applied Analysis and Stochastics, Berlin and Full Professor at Department of Mathematics, University of Milan.

Previous academic positions.

- 12/11–5/13 Full Professor, University of Milan,
- 1/07–11/11 Associate Professor, Università di Roma Tor Vergata,
- 11/02–12/06 Assistant Professor, Università di Roma Tor Vergata,
- 1/02–11/02 PostDoc, Scuola Normale Superiore di Pisa.

Teaching experiences.

1996-1998 Tutoring at Università degli Studi Roma Tre (Mathematical Analysis and Mathematical Analysis 2)

1998-2001 Graduate Research Assistant and Teaching Assistant at University of Texas at Austin. Advanced Calculus and Applications and Real Analysis (PhD course)

2002 Mathematical Analysis 7 (master degree (laurea specialistica)/PhD course), Università degli Studi Roma Tre

2002-2003 Teaching support for Mathematical Analysis 2 (degree in Mathematics), Università degli Studi Roma Tre. Mathematical Analysis 1 (degree in Informatics) and Mathematics (degree in Cell Biology), Università degli Studi di Roma Tor Vergata

2003-2004 Calculus 3 (degree in Physics) and Mathematics (degree in Biotechnology), Università degli Studi di Roma Tor Vergata

2004-2005 Mathematical Analysis 3 (degree in Mathematics), Mathematical Analysis 2 (degree in Chemistry), Phase transitions and elliptic PDE (PhD course), Università degli Studi di Roma Tor Vergata

- 2005-2006** Mathematical Analysis 3 (degree in Mathematics), Mathematical Analysis 1 (degree in Media and Communication Science), Università degli Studi di Roma Tor Vergata
- 2006-2007** Mathematical Analysis 3 (degree in Mathematics), Mathematics (degree in Biotechnology), Università degli Studi di Roma Tor Vergata
- 2007-2008** Mathematical Analysis 2 and Fourier Analysis (degree in Media and Communication Science), Università degli Studi di Roma Tor Vergata
- 2008-2009** Mathematical Analysis 2 and Fourier Analysis (degree in Media and Communication Science), Università degli Studi di Roma Tor Vergata
- 2009-2010** Calculus 2 and Fourier Analysis (degree in Media and Communication Science), Università degli Studi di Roma Tor Vergata, Geometric features of elliptic PDEs, Université Catholique de Louvain, Belgium (master courses and seminars for the Erasmus Project).
- 2010-2011** Fourier Analysis (degree in Media and Communication Science and in Science and Technology for the Media), Mathematical Analysis 1 (degree in Mathematics), Università degli Studi di Roma Tor Vergata. Phase transitions and (non)local minimal surfaces (PhD course), Università degli Studi della Calabria, Cosenza
- 2011-2012** Fourier Analysis (degree in Media and Communication Science and in Science and Technology for the Media) and Differential Equations (master degree (laurea magistrale) in Mathematics), Università degli Studi di Roma Tor Vergata. Nonlocal nonlinear variational problems, SISSA, Trieste. (Non)local phase transition equations, Universitat Politècnica de Catalunya, Barcelona. Advanced topics in partial differential equations, Università degli Studi di Milano.
- 2012-2013** Mathematical Analysis 1 (degree in Physics), Advanced topics in partial differential equations (degree in Mathematics), Continuum Mathematics (degree in Computer Science), Università degli Studi di Milano. Symmetry and rigidity properties for solutions of elliptic PDEs Rencontres d'Analyse, Université Lyon I. Nonlocal equations of elliptic type, Summer School, Cortona. Periodic Structures in Applied Mathematics, Summer School, Georg-August-Universität Göttingen. Nonlocal phase transitions and minimal surfaces, Università degli Studi di Pisa.
- 2013-2014** Nonlocal diffusion and applications, Spring school, INdAM, Roma. Fractional Laplacian and nonlocal minimal surfaces, Universidad de Chile, Santiago.
- 2014-2015** Nonlocal problems in analysis and geometry, Universidad Autónoma, Madrid. Nonlocal problems – theory and applications, Università degli Studi di Bologna. Phase transition problems and nonlinear PDEs, Nonlocal problems and applications, Porquerolles. Corso Intensivo di Calcolo delle Variazioni, Nonlocal problems in analysis and geometry, Catania.

Students and PostDocs.

Bachelor students.

- *Diego Castellaneta*, Università di Roma Tor Vergata.

Master students.

- *Diego Castellaneta*, Università di Roma Tor Vergata,

- *Matteo Cozzi*, Università di Milano,
- *Davide Piazzoli*, Università di Milano,
- *Claudia Dalia Bucur*, Università di Milano,
- *Luca Lombardini*, Università di Milano.

External referee for the PhD thesis.

- *Hannes Junginger-Gestrich* (advisor Victor Bangert, Albert-Ludwigs-Universität Freiburg, Friburgo),
- *Levon Nurbekian* (advisor Diogo Gomes, Instituto Superior Técnico, Lisbona, Portugal),
- *Gilles Thouroude* (advisor Antonin Chambolle, École Polytechnique Palaiseau, Francia),
- *Begoña Barrios* (advisor Ireneo Peral, Universidad Autónoma, Madrid, Spain),
- *Nicola Soave* (advisors Alberto Farina and Susanna Terracini, Université de Picardie Jules Verne, Amiens, France).

PhD students.

- *Alessio Fiscella*, Università di Milano,
- *Nicola Abatangelo*, Università di Milano,
- *Matteo Cozzi*, Università di Milano,
- *Claudia Dalia Bucur*, Università di Milano.

PostDocs.

- *Giampiero Palatucci*, Università di Roma Tor Vergata.
- *Annalisa Massaccesi*, Università di Milano.
- *Stefania Patrizi*, Weierstrass Institute for Applied Analysis and Stochastics.
- *Jamil Viana Pereira*, Weierstrass Institute for Applied Analysis and Stochastics.
- *Eleonora Cinti*, Weierstrass Institute for Applied Analysis and Stochastics.

SCIENTIFIC ACTIVITIES

Seminars.

- June 1998** Astronomie et Systemes Dynamique, Aussois, France
- May 1999** Giornate di Analisi Nonlineare, SISSA, Trieste
- July 1999** AMS Summer Research Institute on Smooth Ergodic Theory and Applications, University of Washington, Seattle, Washington, D.C.
- March 2000** Spring 2000 Midwest Dynamical Systems Conference, University of Florida, Gainesville, Florida
- March 2000** Spring Topology and Dynamical Systems Conference, University of Texas at San Antonio, Texas
- June 2000** Problemi di trasporto ottimale, Università degli Studi Roma Tre, Roma
- October 2000** Dynamical Systems and Related Topics Workshop, Penn State University, State College, Pennsylvania
- November 2000** Southwestern Regional Workshop in Dynamics, University of Southern California, Los Angeles
- April 2001** Solutions of PDE's in Periodic Media, University of Arkansas, Fayetteville
- May-June 2001** Seminari de sistemes dynamics, Universitat de Barcelona, Spain
- June 2001** CELMEC III Meeting on Celestial Mechanics, Monteporzio Catone (RM)

- December 2001** Sistemi dinamici, geodetiche e superfici minime, Scuola Normale Superiore, Pisa
- February 2002** Metodi geometrici, probabilistici e variazionali in sistemi dinamici, SISSA, Trieste
- March 2002** Research Trimester on Dynamical Systems, Scuola Normale Superiore, Pisa
- March 2002** Plane-like minimizers in periodic media: jet flows and Ginzburg-Landau models, Università degli Studi Roma Tre, Roma
- May 2002** Workshop on Nonlinear Models and Analysis, International Erwin Schrödinger Institute, Vienna, Austria
- June 2002** Advances on Nonlinear PDEs, l'Aquila
- September 2002** International Conference on Dynamical Methods for Differential Equations, Castillo de la Mota, Valladolid, Spain
- January 2003** Winter School on NonLinear Partial Differential Equations, Instituto Superior Técnico, Lisbon, Portugal
- June 2003** Strutture (quasi)periodiche in problemi di fisica matematica, Università degli Studi di Roma La Sapienza, Roma
- June 2003** Conferenza sulla Dinamica in Italia, Scuola Normale Superiore, Pisa
- June 2003** (Quasi)periodic structures in problems arising from mathematical physics, California Institute of Technology, Pasadena
- July 2003** New connections between dynamical systems and PDE's, American Institute of Mathematics, Palo Alto
- July 2003** Equadiff 2003, Hasselt, Belgium
- September 2003** XVII Congresso dell'Unione Matematica Italiana, Milano
- January 2004** Orbitas periodicas y quasi-periodicas en el sistema de los tres cuerpos, Universitat de Barcelona, Spain
- April 2004** Quasi-periodic orbits in the planar many body problem, Instituto Superior Técnico, Lisbon, Portugal
- September 2004** INdAM Workshop on Dissipative models in phase transitions, Cortona
- January 2005** International Symposium on Variational Methods and Nonlinear Differential Equations on the Occasion of the 60th Birthday of Antonio Ambrosetti
- March 2005** Proprietà qualitative di transizioni di fase guidate da equazioni ellittiche, Seminario HaM, Università degli Studi di Roma La Sapienza, Roma
- May 2005** Variational problems in nonlinear analysis, SISSA, Trieste
- May 2005** Geometric features of some models related with phase transitions and fluid jets, Università degli Studi di Pisa
- May 2005** Recent Advances in Homogenization, INdAM, Roma
- June 2005** Proprietà geometriche delle soluzioni di alcuni problemi ellittici, Università degli Studi di Perugia
- February 2005** Proprietà geometriche delle soluzioni di alcune equazioni ellittiche, MeMo-Mat, Università degli Studi di Roma La Sapienza, Roma
- March 2006** Entropy penalization methods for Hamilton-Jacobi equations, Instituto de Sistemas e Robótica, Lisbon, Portugal
- March 2006** Some geometric properties of the solutions of the Allen-Cahn equation, University of Texas at Austin
- April 2006** Ground states and critical points for generalized Aubry-Mather theory, University of Texas at Austin
- June 2006** AIMS Sixth International Conference on Dynamical Systems, Differential Equations and Applications, Université de Poitiers, France

- July 2006** Joint Meeting on Mathematics and its Applications, Torino
- July 2006** New Trends in Viscosity Solutions and Nonlinear PDEs, Instituto Superior Técnico, Lisbon, Portugal
- December 2006** Soluzioni di equilibrio per il modello di Frenkel-Kontorova e generalizzazioni, Università degli Studi di Napoli Federico II, Napoli
- December 2006** Soluzioni di equilibrio per il modello di Frenkel-Kontorova e generalizzazioni, Università degli Studi Roma Tre, Roma
- January 2007** Geometric properties of solutions to some elliptic PDEs, Mathematische Kolloquium, Albert-Ludwigs-Universität Freiburg, Freiburg, Germany
- January 2007** Equilibria and ground states for the Frenkel-Kontorova model, Oberseminar über Differentialgeometrie, Albert-Ludwigs-Universität Freiburg, Freiburg, Germany
- May 2007** Geometric properties of solutions of the Allen-Cahn equation, Gerhard-Mercator-Universität Duisburg-Essen, Duisburg, Germany
- June 2007** Periodic and quasiperiodic motions in the many body planetary problem, Symmetry and Perturbation Theory, Otranto
- October 2007** Dalle eterocline del pendolo alle transizioni di fase, e ritorno, Università degli Studi di Camerino
- November 2007** One-dimensional symmetry for solutions of semilinear and quasilinear elliptic equations, University of Texas at Austin
- February 2008** Risultati di simmetria per alcune equazioni ellittiche, Università degli Studi di Bologna
- February 2008** Workshop GREFI-MEFI: from dynamical systems to statistical mechanics, CIRM, Luminy, Marsiglia, France
- February 2008** Simmetria unidimensionale per soluzioni di equazioni ellittiche, Università degli Studi di Pisa
- April 2008** Qualche osservazione su alcuni problemi di De Giorgi, Moser e Bangert, Università degli Studi Roma Tre, Roma
- April 2008** Un approccio geometrico alle equazioni quasilineari, Università degli Studi di Roma La Sapienza, Roma
- May 2008** One dimensional symmetry for solutions of elliptic PDEs, Universität Zürich, Zurich, Switzerland
- September 2008** 1D symmetry for phase transitions, Primo incontro delle Donne del Laplaciano, Cortona
- September 2008** One dimensional symmetry for solutions of elliptic PDEs, SIMAI Congress, Roma
- October 2008** Geometric properties of semilinear PDEs, Centre de Recerca Matemàtica, Bellaterra, Spain
- October 2008** Simmetria unidimensionale per alcune transizioni di fase, Università degli Studi dell'Aquila
- November 2008** Zwei-Städte Kolloquium Erlangen-Regensburg, Universität Regensburg, Germany
- December 2008** Equations elliptiques non-linéaires: symétrie, singularités et classification, Amiens, France
- February 2009** Nice Weak KAM Methods in Nice, Nizza, France
- April 2009** Geometric features and pointwise bounds of some elliptic PDEs, University of Texas at Austin

- April 2009** Equilibrium solutions for some variational problems with group symmetries, Texas A&M University
- September 2009** Regularity for non-linear PDEs, Centro Ennio De Giorgi, Pisa
- October 2009** Pointwise gradient estimates for solutions of elliptic PDEs, Centre de Mathématiques et d'Informatique, Université de Provence, Marsiglia, France
- October 2009** Lack of compactness in nonlinear problems, CIRM, Luminy, Marsiglia, France
- October 2009** Geometric properties of semilinear PDEs and applications, Carnegie Mellon University, Pittsburgh
- October 2009** A pointwise gradient estimate for solutions of PDEs, University of Texas at Austin
- November 2009** Stime puntuali per equazioni ellittiche in domini con curvatura media non-negativa, Università degli Studi di Padova
- November 2009** Giornata di lavoro in ricordo di Bruno Pini, Accademia delle Scienze e Università degli Studi di Bologna
- December 2009** SIAM Conference on Analysis of Partial Differential Equations, Miami, Florida
- December 2009** Some nonlocal minimal surfaces: asymptotics and regularity results, Columbia University, New York
- May 2010** On some problems posed by De Giorgi, Moser and Bangert, Amiens, France
- May 2010** Geometric properties of elliptic PDEs arising from a variational problem, Instituto Superior Técnico, Lisbon, Portugal
- June 2010** Risultati di rigidità, Gamma-convergenza e densità per transizioni di fase alla Gagliardo, Università degli Studi Roma Tre, Roma
- August 2010** Recent Advances on De Giorgi's Conjecture and the Study of Entire Solutions of Nonlinear Scalar Equations: Interaction of PDEs and Differential Geometry, Banff International Research Station, Canada
- August 2010** Pointwise gradient estimates for solutions of elliptic PDEs, Universidade Estadual de Campinas, Brazil
- October 2010** PDE ellittiche e frazionarie: una rapida motivazione e alcuni recenti risultati, Università degli Studi di Perugia
- October 2010** Simmetria 1D per l'equazione di Allen-Cahn, e questioni collegate, Università degli Studi di Firenze
- November 2010** Problemi frazionari di superfici minime e transizioni di fase, Università degli Studi Roma Tre, Roma
- December 2010** Un approccio geometrico alle transizioni di fase frazionarie, Università degli Studi di Roma La Sapienza, Roma
- January 2011** Variational and perturbative methods for nonlinear differential equations: joint meeting of the research projects, Venezia
- March 2011** Phase Transitions driven by nonlocal operators, University of Texas at Austin
- May 2011** Phase transitions and minimal surfaces in (non)local setting, Amiens, France
- June 2011** Calibrations and Laminations, Albert-Ludwigs-Universität Freiburg, Friburgo, Germany
- June 2011** Nonlinear PDEs workshop, Instituto Superior Técnico, Lisbon, Portugal
- June 2011** Geometric properties for Parabolic and Elliptic PDE's, Cortona
- June 2011** Transizioni di fase e superfici minime (non)locali, Università degli Studi della Calabria, Cosenza

- September 2011** XIX Congresso dell'Unione Matematica Italiana, Bologna
- October 2011** Equazioni semilineari e superfici minime (non)locali, Università degli Studi di Milano
- November 2011** Semilinear equations and (non)local minimal surfaces, Universidad Autónoma, Madrid, Spain
- December 2011** Superfici minime locali e non locali e operatori ellittici frazionari Università degli Studi di Trento
- December 2011** Dynamical Optimization in PDE and Geometry Applications to Hamilton-Jacobi Ergodic Optimization, Weak KAM, Université Bordeaux, France
- January 2012** A week on fractional diffusion, Politecnico di Milano
- February 2012** PDEs in real and complex spaces, Università degli Studi di Padova
- March 2012** Regularity issues for nonlocal minimal surfaces, University of Texas at Austin
- April 2012** Local and nonlocal phase transition interfaces, Instituto Superior Técnico, Lisbon, Portugal
- May 2012** Un risultato generale di monotonia e simmetria, Università degli Studi di Milano–Bicocca
- May 2012** Topics on Nonlinear Partial Differential Equations, POSTECH–Pohang University of Science and Technology, Pohang, Corea
- May 2012** Variational analysis and applications, International school of mathematics “Guido Stampacchia”, Erice
- May 2012** Analisi geometrica di equazioni ellittiche non-locali, Università degli Studi di Milano
- May 2012** Sistemes Dinàmics i Equacions en Derivades Parcials, Universitat Politècnica de Catalunya, Barcelona, Spain
- June 2012** Progress in Nonlinear Partial Differential Equations, Zhejiang University, Hangzhou, China
- June 2012** Fractional Laplacian and partial differential equations, Academy of Mathematics and Systems Science, Chinese Academy of Sciences, Pechino, China
- July 2012** Recent Trends in Nonlinear Diffusion, Centro Ennio De Giorgi, Pisa
- July 2012** Nonlocal Operators: Analysis, Probability, Geometry and Applications, ZiF, Universität Bielefeld, Bielefeld, Germany
- July 2012** Second Sino-Chilean Conference on Nonlinear Partial Differential Equations and Nonlinear Analysis, Pontificia Universidad Católica, Santiago, Chile.
- August 2012** Nonlocal nonlinear problems: integrodifferential equations and fractional perimeters, Universidade Federal do Ceara, Fortaleza, Brazil
- September 2012** Mostly Maximum Principle, Università degli Studi di Roma La Sapienza, Roma
- September 2012** PDEs for multiphase advanced materials, Cortona
- September 2012** New perspectives in nonlinear PDEs, Università degli Studi Roma Tre, Roma
- October 2012** Two Days on Nonlocal Operators and Applications, Università degli Studi di Parma
- November 2012** A fractional framework for perimeters and phase transitions, Seminario Matematico e Fisico di Milano, Politecnico di Milano, Milano
- January 2013** Regularity of nonlocal minimal cones in the plane, SISSA, Trieste

- February 2013** A fractional framework for perimeters and phase transitions, Langenbach Seminar, Weierstraß Institut für Angewandte Analysis und Stochastik, Berlin, Germany
- April 2013** Transizioni di fase e superfici minime nonlocali, Università degli Studi di Padova
- August 2013** Bernstein's theorem for fractional minimal surface, Centro de Modelamiento Matemático, Universidad de Chile, Santiago, Chile
- August 2013** Nonlocal minimal surfaces in the plane, Pontificia Universidad Católica, Santiago, Chile
- September 2013** Concentration phenomena for nonlocal equations, Università degli Studi Roma Tre, Roma
- September 2013** Dispersive PDEs: Models and Dynamics, Università degli Studi di Pisa
- October 2013** Phase separation and minimal surfaces: from local to nonlocal, Max-Planck-Institut für Mathematik in den Naturwissenschaften, Leipzig, Germany
- October 2013** Workshop on nonlinear equations, Universidad Carlos III, Madrid, Spain
- November 2013** Local and nonlocal features of some differential equations, African Institute for Mathematical Sciences, Dakar, Senegal
- November 2013** Phase separation and minimal surfaces: from local to nonlocal, Ruhr-Universität Bochum, Germany
- December 2013** Concentration phenomena for a nonlocal Schrödinger equation, Universidad Autónoma de Madrid, Madrid, Spain
- December 2013** Regularity of nonlocal minimal surfaces in low dimension, Università degli Studi di Pisa
- January 2014** Some nonlocal aspects of partial differential equations and free boundary problems, Institutskolloquium, Weierstraß Institut für Angewandte Analysis und Stochastik, Berlin, Germany
- February 2014** Workshop on Partial Differential Equations and Applications, Università degli Studi di Pisa
- March 2014** Nonlinear Phenomena in Biology, Physics and Mechanics, Helmholtz Zentrum, München, Germany
- March 2014** Spring school on nonlinear PDEs, INdAM, Roma
- April 2014** Dislocation dynamics in crystals, Columbia University, New York
- May 2014** Kinetics, non standard diffusion and the mathematics of networks: emerging challenges in the sciences, University of Texas at Austin
- May 2014** Dislocation dynamics in crystals: nonlocal effects and a macroscopic theory in a fractional Laplace setting, Università degli Studi di Padova
- May 2014** Geometric Aspects of Semilinear Elliptic and Parabolic Equations: Recent Advances and Future Perspectives, Banff International Research Station, Canada
- June 2014** Nonlinear partial differential equations and stochastic methods, Jyväskylän yliopiston, Jyväskylä, Finland
- June 2014** Recent advances in non-local and non-linear analysis: theory and applications, ETH Zürich, Zurich, Switzerland
- July 2014** AIMS Conference Series on Dynamical Systems and Differential Equations, Instituto de Ciencias Matemáticas and Universidad Autónoma de Madrid, Madrid, Spain
- August 2014** ICM 2014 Satellite Conference on Variational methods in nonlinear elliptic PDEs, Gyeongju, Corea

- September 2014** Méthodes géométriques et variationnelles pour des EDPs non-linéaires, Université Lyon I.
- October 2014** Dyslocation dynamics and fractional equations, Heriot-Watt University, Edinburgh, UK
- November 2014** Dyslocation dynamics and fractional equations, University of Texas at Austin
- November 2014** Nonlocal equations and applications, Universidad de Granada, Granada, Spain
- December 2014** Dislocation dynamics in crystals, Università di Torino
- March 2015** Nonlocal minimal surfaces, Università degli Studi di Firenze
- March 2015** Minimal surfaces and phase transitions with nonlocal interactions, University of Edinburgh
- May 2015** Perlen-Kolloquium, What is the (fractional) Laplacian?, Universität Basel, Basel, Switzerland
- June 2015** Boundary stickiness of nonlocal minimal surfaces, Universidad Autónoma, Madrid, Spain
- September 2015** Mostly Maximum Principle, Castello di Agropoli, Salerno
- September 2015** Workshop on Trends in Nonlinear Analysis, Università degli Studi di Cagliari

Other seminars. Seminars and series of seminars held at University of Texas at Austin and at Università degli Studi di Roma Tor Vergata.

Participation at various international conferences, like Midwest Dynamical System Seminar (September 1999, Northwestern University, Evanston, Illinois) AMS Meeting (January 2000, San Antonio, Texas), Optimal Transportation and Applications CIME 2001 (September 2001, Martina Franca, Taranto), AMS–UMI Joint International Meeting (June 2002, Pisa), Summer School on Analysis and Applied Mathematics (September 2004, Roma), Summer School on Calculus of Variations (July 2005, Roma).

Fellowships and fundings.

- May 1997** Fellowship CNR for undergraduates (second in the classification)
- July 1998** Fellowship INdAM for abroad (first in the classification)
- January 2002** Post-Doc Fellowship at Scuola Normale Superiore di Pisa (first in the classification)
- April 2005** SISSA Spring School fellowship
- Oden Visiting Professor at University of Texas at Austin.
- Chercheur Associé en Mathématiques et Intéraction Centre National de la Recherche Scientifique at l'Université de Picardie Jules Verne at Amiens.
- Participation as a member of PRIN, Gnampa and FIRB projects.
- PI Gnampa projects 2009 and 2010 *Nonlinear equations on manifolds: qualitative properties and classification of solutions.*
- PI ERC grant 2011-2015 277749 € *Elliptic Pde's and Symmetry of Interfaces and Layers for Odd Nonlinearities.*
- Coordinator for the PRIN project 2012 *Critical Point Theory and Perturbative Methods for Nonlinear Differential Equations* for the University of Milan unit.

Research area.

- *Partial differential equations:* geometric properties of the solutions to elliptic equations, plane-like minimizers in periodic media, degenerate/singular

elliptic equations, homogenization in phase transitions and fluid jets, regularity of the level sets, unidimensional symmetry, free boundary problems.

- *Hamiltonian systems*: constructive and variational methods in KAM theory, Arnold diffusion, stability, diffusion times, three bodies problem, N bodies problem.

Organizational activities. Organization of the *analysis mathematical seminars* and of the *junior mathematics seminars* at Università degli Studi di Roma Tor Vergata.

Organization of mathematics competitions and lessons for the project *Progetto Olimpiadi*.

Member of the Committee of *Premio di Divulgazione Scientifica 2015*.

Organizer or supporter of the following events:

- *Indam School on symmetry for elliptic PDEs: 30 years after a conjecture of De Giorgi and related problems*, Rome, 2009,
<http://www.mat.uniroma2.it/valdinoc/scuola-indam.html>
- *Three days in PDEs*, Rome, 2011,
http://www.mat.uniroma2.it/pdes/Three_days_in_PDEs/Home.html
- *Variational and geometric methods in PDE's*, Ancona, 2012,
<http://dipmat.univpm.it/lectures-in-ancona/contacts.php>
- *ERC Workshop on Geometric Partial Differential Equations*, Pisa, 2012,
<http://www.crm.sns.it/event/244/>
- *Spring School on Rate-independent evolutions and hysteresis modelling*, Milan, 2013
<http://www.mat.unimi.it/users/eleuteri/hystri2013.html>
- *Recent advances in partial differential equations and applications*, Milan, 2013,
<http://www.mat.unimi.it/users/rocca/AdvPDE>
- *Conference on qualitative and geometric aspects of elliptic PDE's*, Barcelona, 2013,
<http://www.crm.cat/en/Activities/Pages/ActivityFoldersAndPages/Curs%202013-2014/cellipticpdes.aspx>
- *Workshop on nonlinear equations*, Madrid, 2013,
<https://sites.google.com/site/nonlinearmadri2013/>
- *Workshop on Partial Differential Equations and Applications*, Pisa, 2014,
<http://palatucci.altervista.org/pisa2014/contact/index.html>
- *Partial Differential Equations and Geometric Measure Theory*, Cetraro, 2014,
<http://web.math.unifi.it/users/cime/>

- *Méthodes géométriques et variationnelles pour des EDPs non-linéaires*, Lyon, 2014,
<http://www.ma.utexas.edu/users/enrico/webpage.pdf>
- *Special Session at the 11th AIMS Conference on Dynamical Systems, Differential Equations and Applications*, Orlando, 2016,
<http://www.aims.org/conferences/2016/>

Member of the Scientific Committee of the 11th AIMS Conference on Dynamical Systems, Differential Equations and Applications, Orlando, 2016
<http://aims.org/conferences/2016/index.html>

Speaker of popular and technical conferences at high-schools and at *ScienzaOrienta* (Università degli Studi di Roma Tor Vergata).

Member of the Scientific Committee of the Department (Università degli Studi di Roma Tor Vergata and Università degli Studi di Milano) and of the Math Olympic Committee (Università degli Studi di Roma Tor Vergata), of the Graduate College for the PhD course (Università degli Studi di Roma Tor Vergata, Università degli Studi Roma Tre and Università degli Studi di Milano), of the “Commissione per la Valutazione Quinquennale della Ricerca” and of the “Commissione ALGANT”
<http://www.algant.eu> (Università degli Studi di Milano).

Organizer for group sessions of the WIAS Day 2015 <http://www.wias-berlin.de>

Referee for Anvur (Italian board of research quality evaluation), Prin, Furb and Sir (Italian board of research grants).

Referee for the allocation of research funds in Chile (National Research Funding Competition), Switzerland (Swiss National Science Foundation), Croatia (Croatian Science Foundation), France (Aix-Marseille Excellence Initiative), Germany (Freiburg Institute for Advanced Studies) Kazakhstan (National Center for Science and Technology Evaluation) and Poland (National Science Centre), for the Marie Curie fellowships, for the Swiss National Science Foundation, for the Freiburg Institute for Advanced Studies COFUND Fellowships, for the PISCOPIA-COFUND Fellowships, and for the proposal at the Fields Institute.

Referee for tenure and promotion assessment at Barnard College and Columbia University.

Referee for several international mathematical journals, such as: *Boletín de la Sociedad Mexicana*, *Nonlinearity*, *Inverse Problems*, *Mathematical Modelling and Numerical Analysis*, *Journal of the European Mathematical Society*, *Applied Mathematical Modelling*, *Information Sciences*, *Discrete and Continuous Dynamical Systems (Series A)*, *Calculus of Variations and Partial Differential Equations*, *Potential Analysis*, *Acta Applicanda Mathematica*, *Journal of Mathematical Analysis and Applications*, *Communications in Contemporary Mathematics*, *Indian Journal of Mathematics*, *Contemporary Mathematics*, *Monatshefte für Mathematik*, *Nonlinear Differential Equations and Applications NoDea*, *Manuscripta Mathematica*, *Boundary Value Problems*, *Nonlinear Analysis Series A: Theory, Methods & Applications*, *Abstract and Applied Analysis*, *Communications in Mathematical Physics*, *Journal of Inequalities and Applications*, *Advances in Mathematics*, *Communications on Pure and Applied Analysis*, *Mathematische Nachrichten*, *ISRN Mathematical Analysis*, *Journal of Advanced Research in Dynamical and Control Systems*, *Journal for Analysis and Applications*, *Transactions of the American Mathematical*

Society, Journal of Mathematical Physics, Journal of Functional Analysis, Milan Journal of Mathematics, Geometric and Functional Analysis, Journal of Abstract Differential Equations and Applications, SIAM Journal on Mathematical Analysis, Proceedings of the American Mathematical Society, Journal of Convex Analysis, Networks and Heterogeneous Media, Journal of Geometric Analysis, Topological Methods in Nonlinear Analysis, Nonlinear Analysis Series B: Real World Applications, Analysis & PDE, Proceedings of the London Mathematical Society, Journal of the London Mathematical Society, Communications on Pure and Applied Mathematics, Annali di Matematica Pura ed Applicata, Annales Polonici Mathematici, Journal of Differential Equations, Ann. Inst. H. Poincaré Anal. Non Linéaire, Indian Journal of Pure and Applied Mathematics, Advances in Nonlinear Analysis, Duke Mathematical Journal, Advanced Nonlinear Studies, Rivista di Matematica della Università di Parma, Mathematical Research Letters, Rendiconti del Seminario Matematico della Università di Padova, Proceedings of the Edinburgh Mathematical Society, Ergodic Theory and Dynamical Systems, Archive for Rational Mechanics and Analysis, Constructive Approximations, Ann. Henri Poincaré, Applicable Analysis, Zeitschrift für angewandte Mathematik und Physik, Mathematical Communications, Acta Mathematica Scientia, Journal of the American Mathematical Society, Annali della Scuola Normale Superiore di Pisa, Journal of Statistical Physics, Arabian Journal of Mathematics, ESAIM: Control, Optimisation and Calculus of Variations, Proceedings of the Royal Society of Edinburgh Section A, Applied Mathematics, Electronic Journal of Differential Equations, Publicacions Matemàtiques, Journal d'Analyse Mathématique, Revista de la Real Academia de Ciencias Exactas, Físicas y Naturales, Revista Matemática Iberoamericana, Applied Mathematics Letters, American Journal of Mathematics, Mathematische Zeitschrift, Journal of Differential Geometry, Communications in Partial Differential Equations.

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