Isabella Ianni **(updated November 2019)**

Personal Information

name and surname	Isabella Ianni
nationality	Italian
date of birth	January 29, 1982
place of birth	Frosinone, Italy
gender	female
status	single

Contact

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Current Position

November 2019 - present: **Associate Professor** (*Professore Associato*)
in Mathematical Analysis
Sapienza Università di Roma, Roma, Italy
SBAI Department.

Previous Positions

December 2010 - October 2019: **Tenured Assistant Professor** (*Ricercatore Universitario T.I.*)
in Mathematical Analysis
Università degli Studi della Campania *Luigi Vanvitelli*, Caserta, Italy
Mathematics and Physics Department.

October 2009 - December 2010: **post-doc** (*Wissenschaftlich Mitarbeit*)
Johann Wolfgang Goethe Universität, Frankfurt-am-Main, Germany.
Supervisor: Prof. Tobias Weth.

Education

October 2009 - **Ph.D. Degree in Mathematical Analysis**
SISSA - International School for Advanced Studies, Trieste, Italy.
Thesis: *Existence and stability of standing waves for the Schrödinger-Poisson-Slater system*.
Advisor: Prof. Antonio Ambrosetti.

October 2006 - gain admittance (and fellowship) to the Ph.D. program at *SISSA - International School for Advanced Studies*, Trieste, Italy.

September 2006 - **Master Degree in Mathematics** (*Laurea Specialistica in Matematica*)
Università *La Sapienza*, Roma, Italy (evaluation 110/110 summa cum laude).
Thesis: *Simmetria di soluzioni di equazioni ellittiche semilineari*.
Advisor: Prof. Filomena Pacella.

September 2004 - **Bachelor Degree in Mathematics** (*Laurea Triennale in Matematica*)
Università *La Sapienza*, Roma, Italy (evaluation 110/110 summa cum laude).
Thesis: *Il problema di Dirichlet per equazioni ellittiche lineari in* $\mathbb{R}^N$.
Advisor: Prof. Luigi Orsina.

Appointments

May 2019: national Italian **habilitation** to **Full Professor** in *Mathematical Analysis, Probability and Mathematical Statistics*

March 2017: national Italian **habilitation** to **Associate Professor** in *Mathematical Analysis, Probability and Mathematical Statistics*

Research Interests

nonlinear elliptic PDEs (Lane-Emden eqs, Schrödinger-Poisson eqs, singular Liouville eqs on a surface)
nonlinear evolution PDEs (parabolic eqs and Schrödinger type eqs)
existence and qualitative properties of solutions
semiclassical limit, concentration phenomena, asymptotic analysis
variational and topological methods in nonlinear analysis
perturbative methods in critical point theory

Bibliometric Data

total number of publications: **21** (Scopus)
total number of citations: **293** (Scopus)
total H-index: **8** (Scopus)
average number of citation per item: **13,95**

(year of first publication: 2008)

Top 5 impact publications

I. Ianni and G. Vaira, *On concentration of positive bound states for the Schrödinger-Poisson problem with potentials*, Adv. Nonlinear Studies 8 (2008) 573–595. (**90 citations**, Scopus)

I. Ianni, *Sign changing radial solutions for the Schrödinger-Poisson-Slater problem*, Topological Methods in Nonlinear Analysis 41 (2) (2013) 365–385. (**36 citations**, Scopus)

I. Ianni, *Solutions of the Schrödinger-Poisson problem concentrating on spheres, part II: existence*, M^3AS 19 (6) (2009) 877–910. (**35 citations**, Scopus)

I. Ianni and G. Vaira, *Solutions of the Schrödinger-Poisson problem concentrating on spheres, part I: necessary conditions*, M^3AS 19 (5) (2009) 707–720. (**34 citations**, Scopus)

I. Ianni and D. Ruiz, *Ground and bound states for a static Schrödinger-Poisson-Slater problem*, Communications in Contemporary Mathematics 14 (1) (2012). (**27 citations**, Scopus)

Complete list of Publications & Preprints

[24] I. Ianni and A. Saldaña, *Sharp asymptotic behavior of radial solutions of some planar semilinear elliptic problems*, preprint.

[23] F. Gladiali and I. Ianni, *Quasi-radial nodal solutions for the Lane-Emden problem in the ball*, preprint.

[22] F. De Marchis, M. Grossi, I. Ianni and F. Pacella, *Morse index and uniqueness of positive solutions of the Lane-Emden problem in planar domains*, Journal de Mathématiques Pures et Appliquées 128 (2019) 339–378.

[21] F. De Marchis, M. Grossi, I. Ianni and F. Pacella, *L^∞-norm and energy quantization for planar the Lane-Emden problem with large exponent*, Archiv der Mathematik 111 (4) (2018) 421–429.

[20] T. D'Aprile, F. De Marchis and I. Ianni, *Prescribed Gauss curvature problem on singular surfaces*, Calc. Var. PDE 57 (2018).

[19] F. De Marchis, I. Ianni and F. Pacella, *Asymptotic analysis of the Lane-Emden problem in dimension two*, contribution in the volume *Partial Differential Equations arising from Physics and Geometry*, London Mathematical Society Lecture Note Series (No. 450, pp. 215–252), Cambridge University Press (2019).

[18] F. De Marchis, I. Ianni and F. Pacella, *A Morse index formula for radial solutions of Lane-Emden problems*, Advances in Mathematics, 322 (2017) 682–737.

[17] I. Ianni, S. Le Coz and J. Royer, *On the Cauchy problem and the black solitons of a singularly perturbed Gross-Pitaevskii equation*, SIAM Journal on Mathematical Analysis 49 (2) (2017) 1060–1099.

[16] F. De Marchis, I. Ianni and F. Pacella, *Asymptotic profile of positive solutions of Lane-Emden problems in dimension two*, Journal of Fixed Point Theory and Applications 19 (1) (2017) 889–916.

[15] F. De Marchis, I. Ianni and F. Pacella, *Exact Morse index computation for nodal radial solutions of Lane-Emden problems*, Mathematische Annalen 367 (1) (2017) 185–227.

[14] F. De Marchis, I. Ianni and F. Pacella, *Morse index and sign-changing bubble towers for Lane-Emden problems*, AMPA 195 (2) (2016) 357–369.

[13] I. Ianni, M. Musso and A. Pistoia, *Blow-up for sign-changing solutions of the critical heat equation in domains with a small hole*, Communications in Contemporary Mathematics 18 (1) (2016).

[12] I. Ianni and G. Vaira, *Non-radial sign-changing solution for the Schrödinger-Poisson problem in the semiclassical limit*, NoDEA 22 (4) (2015) 741–776.

[11] F. De Marchis, I. Ianni and F. Pacella, *Asymptotic analysis and sign changing bubble towers for Lane-Emden problems*, Journal of the European Mathematical Society 17 (8) (2015) 2037–2068.

[10] F. De Marchis and I. Ianni, *Blow up of solutions of semilinear heat equations in non-radially symmetric domains of* $\mathbb{R}^2$, Discrete and Continuous Dynamical System-A - 35 (3) (2015) 891–907.

[9] I. Ianni and S. Le Coz, *Multi-speeds solitary wave solutions for nonlinear Schrödinger systems*, J. London Math. Soc. 89 (2) (2014) 623–639.

[8] I. Ianni, *Sign changing radial solutions for the Schrödinger-Poisson-Slater problem*, Topological Methods in Nonlinear Analysis 41 (2) (2013) 365–385.

[7] F. De Marchis, I. Ianni and F. Pacella, *Sign changing solutions of Lane Emden problems with interior nodal line and semilinear heat equations*, Journal of Differential Equations 254 (2013) 3596–3614.

[6] I. Ianni, *Local and global solutions for some parabolic nonlocal problem*, Nonlinear Analysis 75 (2012) 4904–4913.

[5] I. Ianni and D. Ruiz, *Ground and bound states for a static Schrödinger-Poisson-Slater problem*, Communications in Contemporary Mathematics 14 (1) (2012).

[4] I. Ianni and S. Le Coz, *Orbital stability of standing waves of semiclassical nonlinear Schrödinger-Poisson equation*, Adv. in Differential Equations 14 (7-8) (2009) 717–748.

[3] I. Ianni, *Solutions of the Schrödinger-Poisson problem concentrating on spheres, part II: existence*, M^3AS 19 (6) (2009) 877–910.

[2] I. Ianni and G. Vaira, *Solutions of the Schrödinger-Poisson problem concentrating on spheres, part I: necessary conditions*, M^3AS 19 (5) (2009) 707–720.

[1] I. Ianni and G. Vaira, *On concentration of positive bound states for the Schrödinger-Poisson problem with potentials*, Adv. Nonlinear Studies 8 (2008) 573–595.

Description of the research results

Lane-Emden equation (in [23,22,21,19,18,16,15,14,11,7]):

In a series of recent papers we have studied existence, qualitative properties and uniqueness results for the Lane-Emden equation in smooth bounded domains of $\mathbb{R}^N$ with Dirichlet boundary conditions. The Lane-Emden equation is an extremely simple looking semilinear elliptic equation with a power focusing nonlinearity, neverthless it has a very rich structure in terms of the dependence of the solutions on the exponent p of the power nonlinearity and on both the geometry and the topology of the domain. Many open problems are still unsolved and we have addressed some of them, focusing on the superlinear and subcritical case (i.e. when the exponent $p \in (1, p_S)$, where $p_S = +\infty$ in dimension 2, $p_S := \frac{N+2}{N-2}$ in dimension $N \geq 3$).

In [23] we have proved the uniqueness of the positive solution of the Lane-Emden problem in any convex planar domain, when p is sufficiently large. This is the first general answer to a longstanding open problem which goes back to the famous work [Gidas, Ni, Nirenberg, CMP 1979] (which contains the proof in the case when the domain is a ball) and it was conjectured to be true already in [Kawhol, Lect. Notes in Math. 1985] and [Dancer, JDE 1988]. Only partial results where know before: some considering specific domains (balls, perturbations of the ball, domains with some additional symmetry, etc) and other considering specific families of solutions (for instance least energy ones). Our proof is based on the study of the nondegeneracy of the solutions and ultimately on the computation of their Morse index for p large enough. This computation strongly relies on the characterization of the asymptotic behavior, as p goes to $+\infty$, of any family of positive solution.

While in dimension $N \geq 3$ the behavior of the solutions as $p \to p_S$ was known (see [Struwe, Math.Z. 1984], [Schoen, Lect. Notes 1988-1989], [Han, Ann. Inst. H. Poincare, 1991]), in dimension 2 this was still an open problem and only the specific case of families of least energy solutions had been previously described. In [16] (see also [19]) we have given a complete characterization of the asymptotic behavior of the positive solutions as p goes to $+\infty$ in any smooth bounded planar domain. In simple words we have proven concentration at a finite number of distinct points of the domain for any (bounded energy) solution, moreover differently than in the higher dimensional case the solution does not blow-up but remains bounded (i.e. the solution is a "k-peaks solution"). The concentration points may be located in term of a system which involves Green and Robin functions of $-\Delta$ in the domain. We have also described the pointwise behavior of the solutions out of the concentration set and identified a "limit profile" around each concentration point, which is simple. Moreover we have shown that the energy is quantized in the limit as p goes to $+\infty$. The exact value of the quantization constants as well as the one of the L^∞-norm has been then obtained in [21].
In [11] we have pushed the asymptotic analysis also to treat the case of sign-changing solutions (for which little is know also in higher dimension). In dimension $N = 2$ we have obtained some general partial result: again boundedness of the solution and concentration at a finite number of distinct points, but now the concentration points may be not simple as already shown in [Grossi, Grumiau, Pacella, J. Math. Pures Appl. 2014] for the radial case, hence a complete general characterization seems to be a very hard task to be carried out.
In [11] we have been able to characterize the asymptotic behavior as p goes to $+\infty$ of symmetric least energy sign-changing solutions in domains which are invariant by suitable finite group of rotations of the plane around the origin. We already had investigated some qualitative properties of these symmetric least energy solutions in [7] where in particular a uniform energy bound was obtained by exploiting the associated parabolic flow, with a suitable choice of the initial condition, combined with a topological argument based on the Krasnoselskii genus. From the energy estimate in [7] we were then able to deduce a first control on the number of nodal regions of the solution and also, using some geometrical arguments, on the shape of its nodal line. In [11] we have then focused on the study of the asymptotic behavior of these solutions, which turns out to be the same as for the radial solutions in the ball: the nodal line is a closed curve around the origin which shrinks to it, the origin is a non-simple concentration point, and asymptotically the solutions look as the superposition of different profiles (at different scales). In [14], again in a symmetric setting and for sign-changing solutions, we have then highlighted a connection between the existence of Morse index uniform a priori bounds for the solutions and this type of asymptotic behavior.

Computing the Morse index of a solution or having at least an uniform bound of it is, in general, not an easy issue, we have addressed this topic in [23,18,15].
In [23], as already mentioned, we have considered the case of positive solutions in dimension 2 (actually for our purpose it was enough there to compute the Morse index only for families of 1-peak solutions, while the case of k-peaks solutions is still open).
[15,18] concern with the computation of the Morse index of sign-changing radial solutions. In [18] we have first obtained a lower bound for the Morse index of any radial solution either in a ball or in an annulus, for any dimension $N \geq 2$ and any exponent $p \in (1, p_S)$. The bound is given by the number $m + N(m-1)$, where m is the number of nodal regions of the solution and N is the dimension. In dimension $N \geq 3$ we have then shown that this lower bound is optimal, indeed we have proved that for p sufficiently close to p_S, the Morse index of the solution is exactly $m + N(m-1)$. This formula shows an unexpected phenomenon, since it says that the number of all the negative eigenvalues of the linearized operator, which is a Schrödinger type operator, grows linearly in m, which is also the number of the radial negative eigenvalues. We stress that we obtain the formula for p close to the critical exponent p_S, this is due to the proof which relies strongly, among other things, on the analysis of the asymptotic behavior of the radial solutions as p goes to p_S. Anyway the result is optimal since we can also prove that as p varies from 1 to p_S also the Morse index varies and in particular for p close to 1 it is indeed much higher. In dimension 2 the formula does not hold. Indeed in this case $p_S = +\infty$ and in [15] we have explicitly computed the Morse index for p large, showing that it is higher then the value given by the formula. This is due ultimately to the different asymptotic behavior of the solutions when the dimension is 2. We suspect that the lower bound obtained in [18] is then not optimal when the dimension is 2.

Finally in [22] we have exploited the information given by the Morse index computations done in [15] to prove the existence of at least 3 new (sign-changing, non radial) solutions in the planar ball. Each of these solutions bifurcates from the branch of the radial least energy sign-changing solutions at a certain value of the exponent p and it is invariant by a certain finite group of rotations around the origin. Moreover it has a "quasi-radial" shape, in the sense that it has exactly 2 nodal regions and its nodal line does not intersect the boundary of the ball. We conjecture that these nonradial bifurcating solutions actually coincide with the symmetric least energy sign-changing solutions (with the same symmetry). Indeed in [22] we have been able to prove that the symmetric least energy sign-changing solutions are radial for p close to 1 and nonradial for p sufficiently large. The proof exploits again the information given by the exact computation of the Morse index and relies on a spectral decomposition which allows to detect the symmetries of the eigenfunctions. We also need to perform a delicate blow-up analysis of the symmetric solutions.

Schrödinger-Poisson equation (in [1,2,3,4,5,8,12]):

The Schrödinger-Poisson equation is a semilinear equation in $\mathbb{R}^N$ with a focusing power nonlinearity and a defocusing Hartree nonlocal nonlinearity. It is derived after the reduction of a system having a nonlinear stationary Schrödinger equation coupled with a Poisson equation.
Non-existence results and existence of positive solutions where known in the literature, depending on the exponent p of the power nonlinearity, while there where no existence results concerning sign-changing solutions.
In [8] we have shown the existence of sign-changing solutions in dimension $N = 3$, for any $p \in [3, 5)$. More precisely we have proven the existence of a radially symmetric sign-changing solution with k zeros, for any $k \in \mathbb{N}$. Due to the presence of the nonlocal term one cannot simply apply the well known Nehari's method of gluing positive and negative solutions on alternating annulii, since the solution on each annulus would need global information. Hence we follow a different approach: we approximate the problem in the whole $\mathbb{R}^N$ with Dirichlet problems in balls, solve them by combining dynamical and topological arguments, then we show that we can pass to the limit keeping the number of zeros. In each ball the solution of the elliptic problem is found by looking for equilibria in the ω-limit set of trajectories of the associated parabolic problem. In order to get equilibria we take initial data on the boundary of the domain of attraction of zero, which is an asymptotically stable equilibrium and, in order to obtain

equilibria with a fixed number of zeros, we selected special initial data. The selection is possible due to a topological argument based on the use of the Krasnoselskii genus (the nonlinearities are odd) and to the zero number property for the parabolic flow.
In [12] we have proven the existence of infinitely many non-radial sign-changing solutions for the singularly perturbed Schrödinger-Poisson problem in $\mathbb{R}^N$, via a Lyapunov-Schmidt reduction method in a variational framework. These solutions look like superposition of signed "peaks", displaced in suitable symmetric configurations, which collapse at the same points in the semiclassical limit (cluster solutions).
In [5] we have considered a static version of the Schrödinger-Poisson problem, motivated by previous results in the literature, and proved existence of ground and bound states by using variational methods. [1,2,3] are concerned with the study of a singularly perturbed Schrödinger-Poisson problem in presence of exterior potentials, using a perturbative method in a variational framework. We prove existence of solutions concentrating at a point ([1]) and also existence of solutions concentrating at spheres ([3]). In [2] we deduce necessary conditions for concentration on spheres.

Prescribed Gauss curvature problems (in [20]):

In [20] we considered the problem of the existence of conformal metrics of prescribed Gaussian curvature on a closed surface Σ admitting conical singularities of orders α_i's at points p_i's. Most of the existing literature is about the case of positive prescribed Gaussian curvature and very few results were available for the sign-changing case. We mainly focused on the case when the prescribed Gaussian curvature is sign-changing and provided existence results when the quantity $\chi(\Sigma) + \sum_i \alpha_i$ approaches positive even integers, where $\chi(\Sigma)$ is the Euler characteristic of the surface Σ. This geometrical problem reduces to solve a singular Liouville equation on the surface Σ, our proof employs a min-max scheme jointly with a finite dimensional reduction method applied to this equation.

Nonlinear parabolic equations (in [6,7,8,10,13]):

As already mentioned, in [7,8] we used the parabolic flow mainly as a tool in order to deduce information on the qualitative properties for the solutions of the associated elliptic problem (stationary solutions). In [7], as a byproduct of our main results, we also get the existence of a global radial sign-changing solution for the parabolic Schrödinger-Poisson problem having k zeros at any time, for any $k \in \mathbb{N}$.

[10,13] are instead concerned with the study of the blow-up for a nonlinear parabolic Lane-Emden equation. More precisely in [10] we have considered the 2-dimensional case and give sufficient conditions for a family of sign-changing stationary solutions v under which the solution of the parabolic problem with initial value λv blows up in finite time if $|\lambda - 1| > 0$ is sufficiently small and p large (for a positive initial condition instead this is never the case). We have also shown that the symmetric solutions of the Lane-Emden problem studied in [7,11] satisfy these sufficient conditions when p is sufficiently large. Observe that since for $\lambda = 1$ the solution is global, this result implies that, the set of the initial conditions for which the solution is global is in general not star-shaped with respect to the origin.
In [13] we have proven a similar result for the critical parabolic Lane-Emden equation in smooth bounded domains of $\mathbb{R}^N$, $N \geq 3$ having a small hole. In this case the blow-up may be in finite or infinite time. We have then shown that the set of the initial conditions for which the solution is global and bounded is not star-shaped.

In [6] we have studied local and global existence of solutions for some semilinear parabolic initial boundary value problems with autonomous nonlinearities having a nonlocal "Newtonian" term. Some of the results obtained have been used in the proof of the existence results for the elliptic Schrödinger-Poisson problem obtained in [8].

Nonlinear Schrödinger type evolution equations (in [17,9,4]):

In [17] we have considered the one-dimensional Gross-Pitaevskii equation perturbed by a Dirac potential and with non-standard boundary conditions. Using a fine analysis of the properties of the linear propagator, we have studied the well-posedness of the Cauchy Problem for the nonlinear equation in an energy space of functions with modulus 1 at infinity. The main issues were the fact that the energy space is not a vector space and the loss of regularity of the solutions due to the Dirac perturbation. Then we have shown the persistence of the stationary black soliton of the unperturbed problem as a solution. We have also proven the existence of another branch of non-trivial stationary waves. Depending on the attractive or repulsive nature of the Dirac perturbation and of the type of stationary solutions, we have proven orbital stability via a variational approach, or linear instability via a bifurcation argument.

In [9] we have proven the existence of a new type of solutions to a nonlinear Schrödinger system. These solutions, which we have called multi-speeds solitary waves, behave at large time as a couple of scalar solitary waves traveling at different speeds. The proof relies on the construction of approximations of the multi-speeds solitary waves by solving the system backwards in time and using energy methods to obtain uniform estimates.

In [4] we have studied the orbital stability of the single-spike semiclassical standing waves of a nonhomogeneous -in-space nonlinear Schrödinger-Poisson equation, whose existence was proved in [1]. When the nonlinearity is subcritical or supercritical we have proven that the nonlocal Poisson-term does not influence the stability of standing waves, whereas in the critical case it may create instability if its value at the concentration point of the spike is too large. The proofs are based on the study of the spectral properties of a linearized operator and on the analysis of a slope condition. Our main tools were perturbation methods and asymptotic expansion formulas.

Research Projects

- PRIN 2017 - *Qualitative and quantitative aspects of nonlinear PDEs*
local principal investigator for the research unit: Università degli Studi della Campania "Luigi Vanvitelli", Caserta (Italy)
(PI: Berardino Sciunzi)

- FFABR 2018 - Fondo per il Finanziamento delle Attività Base di Ricerca

- INDAM-GNAMPA Project 2017 - *Esistenza e proprietà qualitative di soluzioni per problemi ellittici nonlineari.*
principal investigator

- INDAM-GNAMPA Project 2014 - *Fenomeni di esplosione per problemi parabolici semilineari.*
participant (PI: Francesca De Marchis)

- Research Project of the University "Sapienza" of Rome 2012 - *Nonlinear differential problems: existence and qualitative properties of solutions*
participant (PI: Filomena Pacella)

- PRIN 2012 - *Aspetti variazionali e perturbativi nei problemi differenziali nonlineari*
participant in the research unit: Università "Sapienza", Roma (Italy)
(PI: Susanna Terracini/local PI: Filomena Pacella)

- PRIN 2009 - *Metodi variazionali e PDE non lineari*
participant in the research unit: Università "Sapienza", Roma (Italy)
(PI: Andrea Malchiodi/local PI: Filomena Pacella)

- PRIN 2006 - *Metodi Variazionali ed Equazioni Differenziali Nonlineari*
participant in the research unit: SISSA - International School for Advanced Studies, Trieste (Italy)
(PI/local PI: Antonio Ambrosetti)

VISITING	July 19 – 22 2017	Università di Sassari (Italy)
	March 15 – 17 2017	Università di Sassari (Italy)
	February 27 – March 2 2017	Universität Basel (Switzerland)
	May 30 – June 1 2016	Università di Sassari (Italy)
	April 7 – 30 2015	ETH Zürich (Switzerland)
	March 11 – 22 2014	Facultad de Matemáticas, Pontificia Universidad Católica de Chile (Chile)
	March 6 – 27 2013	Institut de Mathématiques de Toulouse - Université Paul Sabatier, Toulouse (France) - invited professor
	October 29 – November 1 2012	Dipartimento di Informatica, Università di Verona (Italy)
	September 02 – 10 2012	CMAF Centro de Matemática e Aplicações Fundamentais - Universidade de Lisboa (Portugal) - in the context of the ERASMUS mobilty project
	November 28 – December 04 2011	Institut de Mathématiques de Toulouse-Université Paul Sabatier, Toulouse (France)
	October 1 2009 – December 30 2010	Institut für Mathematik, "Johann Wolfgang Goethe" Universität, Frankfurt-am-Main (Germany) - Wissenschaftlich Mitarbeit (post-doc)
	November 16 – December 19 2008	Departamento de Análisis Matemático, Universidad de Granada (Spain)
	April 15 – 22 2008	Departamento de Análisis Matemático, Universidad de Granada (Spain)
	October 2006 – October 2009	SISSA, Trieste (Italy) - PhD program

INVITED TALKS	May 2020	BIRS-CMO workshop "Geometric and Analytical Aspects of Nonlinear Elliptic Equations and Related Evolution Problems", Casa Matematica Oaxaca (Mexico)
	January 2020	"Nonlinear Meeting in Milan 2020", Dpt. of Mathematics of Politecnico di Milano
	September 2019	"Nonlinear Days in Alghero", Alghero (Italy)
	May 2019	'International Conference on Elliptic and Parabolic Problems", Gaeta (Italy) Session: Variational Problems and Nonlinear PDEs & Session: Semilinear and Quasilinear PDEs
	February 2019	RISM workshop on "Advances and Challenges in Nonlinear Elliptic System", RISM Varese (Italy)
	November 2018	"Recent Trends on Nonlinear PDEs of Elliptic and Parabolic Type", MATRIX Center-Melbourne (Australia)
	November 2018	"MATRIX Satellite Conference", University of Sydney, Sydney (Australia)
	July 2018	"Variational Problems arising from Physics and Geometry", Rauischholzhausen Castle, Ebsdorfergrund (Germany)
	July 2018	"12th AIMS Conference on Dynamical Systems, Differential Equations and Applications", Taipei (Taiwan) Special Session 71: *Qualitative properties of solutions to local and nonlocal problems* & Special Session 80: *Modern topics in nonlinear PDEs and applications*
	February 2018	"Variational Methods in Analysis, Geometry and Physics", Scuola Normale Superiore, Pisa (Italy)
	June 2017	Workshop "Emerging issues in nonlinear elliptic equations: singularities, singular perturbations and non local problems", Bedlewo (Poland)
	May 2017	"International Conference on Elliptic and Parabolic Problems", Gaeta (Italy)
	March 2017	Research Seminar, Universität Basel (Switzerland)
	January 2017	Workshop "Roma Caput PDE", Rome (Italy)
	September 2016	BIRS-CMO Workshop "Asymptotic Patterns in Variational Problems: PDE and Geometric Aspects", Oaxaca (Mexico)

	September 2016	Workshop "Donne e ricerca in Matematica: il contributo della SISSA", SISSA Trieste (Italy)
	June 2016	Workshop "Pde's at the Grand Paradis. International conference on Variational Methods and Nonlinear PDE's. On the occasion of Filomena Pacella's 60th birthday", Cogne (Italy)
	May 2016	"9th European Conference on Elliptic and Parabolic Problems", Gaeta (Italy) Special Session: *Some aspects of nonlinear elliptic equations* & Special Session: *Variational models and transportation problems*
	November 2015	"2nd Conference on Recent Trends in Nonlinear Phenomena", Napoli (Italy)
	September 2015	"Workshop in Nonlinear PDEs", Brussels (Belgium)
	June 2015	Workshop "Espalia. Three days in PDEs and calculus of variations between Italy and Spain", Rome (Italy)
	April 2015	Research Seminar, ETH Zürich (Switzerland)
	March 2015	International conference on "Nonlinear elliptic PDEs at the End of the World", Punta Arenas (Chile)
	December 2014	"Workshop in honor of Antonio Ambrosetti on the occasion of his 70th birthday", Venezia (Italy)
	July 2014	"The 10th AIMS Conference on Dynamical Systems, Differential Equations and Applications, Madrid (Spain) Special Session: Recent trends in nonlinear Schrodinger systems"
	September 2013	"International Workshop on Variational Problems and PDE's", Sao Paulo (Brazil)
	May 2013	Research Seminar, Dipartimento di Matematica, Università di Parma (Italy)
	April 2013	Research Seminar, Dipartimento di Matematica, Università di Tor Vergata, Roma (Italy)
	November 2012	Workshop "Singular limit problems in nonlinear PDEs", CIRM Luminy (France)
	September 2012	Research Seminar, CMAF - Universidade de Lisboa (Portugal)
	November 2011	Research Seminar, Institut de Mathématiques de Toulouse - Université Paul Sabatier, Toulouse (France)
	October 2011	Research Seminar, Dipartimento di Matematica, Università La Sapienza, Roma (Italy)
	January 2011	Joint meeting of the research projects "Variational and perturbative methods for nonlinear differential equations", Venezia (Italy)
	March 2010	Research Seminar, Dipartimento di Matematica, Università di Tor Vergata, Roma (Italy)
	May 2009	Research Seminar, Institut für Mathematik, Johann Wolfgang Goethe-Universität, Frankfurt-am-Main (Germany)
	December 2008	Research Seminar, Departamento de Análisis Matemático, Universidad de Granada (Spain)
	April 2008	Research Seminar, Departamento de Análisis Matemático, Universidad de Granada (Spain)
Other Talks	September 2015	XX Congresso UMI, Siena (Italy) Session: "Analisi nonlineare e sistemi hamiltoniani"
	January 2014	Workshop "Variational Methods in Elliptic Equations and Systems, dedicated to the memory of Miguel Ramos", CMAF - Universidade de Lisboa, Lisbon (Portugal)
	May 2012	"Workshop on Nonlinear Partial Differential Equations on the occasion of the sixtieth birthday of Patrizia Pucci", Perugia (Italy)
	January 2012	"School and Workshop on Cocompact Imbeddings, Profile Decompositions and their Applications to PDE", TATA Institute-TIFR Centre for Applicable Mathematics, Bangalore (India)
	May 2008	Research Seminar, SISSA, Trieste (Italy)

Poster Sessions

June 2016	"EWM-EMS Summer School on *Geometric and Physical aspects of Trudinger-Moser type inequalities*", Institut Mittag-Leffler, Djursholm (Sweden)

Events (as Organizer)

September 10 – 14 2018	workshop *Nonlinear Analysis and PDEs* , Caserta (Italy)
July 5 – 9 2018	"12th AIMS Conference on Dynamical Systems, Differential Equations and Applications". Session: SS93 "Recent trends in nonlinear PDEs", Taipei (Taiwan)
September 19 – 21 2016	workshop *Geometric properties of solutions to elliptic and parabolic problems*,, Cagliari (Italy)
February 2 – 6 2015	*Congreso de la RSME. Session: "Nonlinear Analysis and Elliptic PDEs"*, Granada (Spain)

Referee Activity

Archiv der Mathematik, Annali di Matematica Pura ed Applicata, Bulletin of the London Math. Society, Calc. Var. PDE, Communications in Contemporary Mathematics, Discrete and Continuous Dynamical Systems, ESAIM: Control, Optimisation and Calculus of Variations, Journal of Dynamics and Differential Equations, Journal of Differential Equations, Journal of Mathematical Analysis and Applications, Journal of Mathematical Physics, Mathematische Zeitschrift, Mediterranean Journal of Mathematics, Nonlinear Analysis, Nonlinear Analysis Series B: Real World Applications, Taiwanese Journal of Mathematics, Zeitschrift fuer Angewandte Mathematik und Physik.

Teaching

2018/2019	*Analisi Matematica 3* (68h, Matematica) *Equazioni differenziali (with G. Vaira)* (32h, Matematica) *Matematica (with G. di Blasio)* (16h, Scienze Ambientali)
2017/2018	*Analisi Matematica 3* (68h, Matematica) *Analisi Matematica* (24h, Scienze e Tecniche dell'Edilizia)
2016/2017	*Analisi Matematica 3* (68h, Matematica)
2015/2016	*Analisi Matematica 3* (68h, Matematica) *Istituzioni di Matematiche* (40h, Farmacia)
2014/2015	*Analisi Matematica 2 (with A. Ferone)* (72h, Matematica & Fisica)
2013/2014	*Analisi Matematica 3* (64h, Matematica)
2012/2013	*Analisi Matematica 3* (64h, Matematica) *Introduction to the Schrödinger-Maxwell problem*, minicourse, CMAF-University of Lisbon (Portugal)
2011/2012	*Matematica 2* (Scienze Ambientali)
2010/2011	Teaching assistant for *Analisi Matematica I* (Matematica) Teaching assistant for *Differential Equations*, Goethe-Universität, Frankfurt-am-Main (Germany)
2009/2010	Teaching assistant for *Theorie kritischer Punkte für Variationsprobleme*, Goethe-Universität, Frankfurt-am-Main (Germany)
April 2009	*Differential equations (MTH-DE)* (with S. Zagatti and S. Le Coz), Post-graduate Diploma Course in Mathematics, ICTP, Trieste (Italy)
October 2007	Teaching assistant for *Ordinary Differential Equations*, Post-graduate Course, ICTP, Trieste (Italy)

Students

Elena De Angelis (Bachelor in Math, 2015; Master in Math. 2019)
Rosa Cerullo (Bachelor in Math, 2015; Master in Math. 2019)
Francesco Calcagno (Bachelor in Math, 2019)
Roberta Martino (Bachelor in Math, 2018)
Domenico Turino (Bachelor in Math, 2018)
Antonella Letizia (Bachelor in Math, 2017)
Francesco Pagliuca (Bachelor in Math, 2017)
Giuseppina Tessitore (Bachelor in Math, 2016)

Academic duties

- Since 2018 member of the **Academic Board for the PhD program** in *Matematica, Fisica e Applicazioni per l'Ingegneria* at the Università degli Studi della Campania *Luigi Vanvitelli*

- Since 2016 member of the **ERASMUS Committee** of the Mathematics and Physics Department of the Università degli Studi della Campania *Luigi Vanvitelli*.

- Since 2013 member of the **Research Committee** of the Mathematics and Physics Department at the Università degli Studi della Campania *Luigi Vanvitelli*.

Fellowships

- LLP/ERASMUS professors **mobility fellowship** 2011/2012,
Seconda Università degli Studi di Napoli.

- **Best student fellowship** of the Mathematics Department,
Università *Sapienza* di Roma in the academic years 2002-2003, 2003-2004 and 2004-2005.

- **PHD fellowship** at *SISSA - International School for Advanced Studies*,
Trieste, Italy from 2006 to 2009.