CURRICULUM VITAE ET STUDIORUM
OF
RAFFAELLA SERVADEI

Personal Information

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Degree: in Mathematics on July 10, 1997 at the University of Perugia. Advisor: Professor Antonella Fiacca.

Ph.D.: in Mathematics on January 22, 2004 at the University of Rome 'Tor Vergata'. Advisor: Professor Michele Matzeu. Doctoral dissertation committee: Professor Marco Degiovanni, Professor Massimo Grossi, Professor Michele Matzeu. Referees: Professor Italo Capuzzo Dolcetta, Professor Andrzej Szulkin.

Current position: Professore di Prima Fascia (Full Professor) at the Dipartimento di Scienze Pure e Applicate (DiSPeA) of the Università degli Studi di Urbino Carlo Bo. Scientific area 01/MATH-03 - Mathematical Analysis, Probability and Statistics, sub-area: MATH-03/A - Mathematical Analysis.

Main research interests:
- critical point theory;
- variational methods;
- semilinear and quasilinear elliptic equations;
- nonlocal fractional Laplacian equations;
- nonlocal integrodifferential equations;
- nonlocal Kirchhoff-type equations;
- semilinear elliptic variational inequalities (subject of the Ph.D. Thesis);
- elliptic differential inclusions (subject of the Master Thesis) and equations;
- impulsive differential inclusions and equations.

EDUCATION, RESEARCH AND TEACHING ACTIVITIES

1992: graduated at the Scientific Liceo 'Giacomo Torelli' of Fano (Pesaro and Urbino, Italy).

November 1992 - July 1997:

- enroled at the University of Perugia on November 1992;
- from May 1997 to April 1998 scholarship for students by the National Research Council;
- degree cum laude in Mathematics on July 10, 1997 at the University of Perugia with a thesis entitled 'Inclusioni differenziali ellittiche con nonlinearità discontinue'. The advisor was Antonella Fiacca.

Academic Year 1997–1998:

- member of the national MURST Group *Analisi Reale* (national coordinator Professor Paolo De Lucia), local group of Perugia (local coordinator Professor Domenico Candeloro);
- research activity with Professor Antonella Fiacca at the Department of Mathematics of the University of Perugia.

Academic Year 1998–1999:

- taught *Applied Mathematics* for the Degree in Computer Science at the Faculty of Science of the University of Perugia;
- attended the Summer School of Mathematics organized by the Scuola Matematica Interuniversitaria at Perugia.

Academic Year 1999–2000:

- taught *Applied Mathematics* for the Degree in Computer Science at the Faculty of Science of the University of Perugia;
- passed the entrance examination to the Ph.D. in Mathematics at the Department of Mathematics of the University of Rome 'Tor Vergata'.

Academic Year 2000–2001:

- taught *Applied Mathematics* for the Degree in Computer Science at the Faculty of Science of the University of Perugia;
- member of the National Group for Mathematical Analysis, Probability and their Applications (GNAMPA);
- attended the Summer School of Mathematics on 'Calculus of variations' organized by the Scuola Matematica Interuniversitaria at Cortona (Arezzo, Italy);
- on September 24-28, 2001 attended the 'Fourth European conference on elliptic and parabolic problems' at Gaeta (Latina, Italy) and delivered the seminar 'Solutions of a class of semilinear elliptic variational inequalities via mountain pass type or linking type techniques';
- member of the national MIUR Group *Metodi Variazionali ed Equazioni Differenziali Nonlineari* (national coordinator Professor Antonio Ambrosetti), local group of Rome 'Tor Vergata' (local coordinator Professor Gabriella Tarantello).

Academic Year 2001–2002:

- member of the Unione Matematica Italiana (UMI);
- taught *Mathematical Analysis* for the Degree in Medical and Civil Engineering at the Faculty of Engineering of the University of Rome 'Tor Vergata';

- taught *Mathematical Analysis* for the Degree in Mathematics at the Faculty of Science of the University of Perugia;
- attended the school 'Nonlinear analysis and differential equations', organized by the National Institute of High Mathematics (INdAM) at the University of Milan 'Bicocca'. In particular attended the course 'Perturbations on critical point theory and applications' by Professor Antonio Ambrosetti and delivered the seminar 'A stability result for variational inequalities'.

Academic Year 2002–2003:

- taught *Mathematics* for the Degree in Biotechnology at the Faculty of Science of the University of Rome 'Tor Vergata';
- attended the school 'Recent trends in nonlinear variational problems', organized by the International Centre for Theoretical Physics in Trieste (Italy);
- on September 2-4, 2003 attended the workshop 'Nonlinear partial differential equations and connected geometrical problems' at Grado (Gorizia, Italy). In particular attended the courses 'Existence and non existence of periodic solutions of some nonlinear hyperbolic problems', by Professor Stanislav Pohozaev (Steklov Institute of Mathematics) and 'Mean curvature and isoperimetric problems', by Professors Paolo Caldiroli (University of Turin, Italy) and Andrea Malchiodi (SISSA);
- on September 8-13, 2003 delivered the seminar 'Risultati di stabilità per disequazioni variazionali semilineari ellittiche' at the XVII Congresso UMI, at the University of Milan 'Bicocca'.

Academic Year 2003–2004:

- from November 2003 to October 2004 scholarship at the Department of Mathematics of the University of Rome 'La Sapienza'. The research program was 'Nonlinear elliptic and parabolic differential equations'. The research director was Professor Filomena Pacella;
- Ph.D. in Mathematics on January 22, 2004 with a thesis entitled 'Mountain Pass and Linking methods for semilinear elliptic variational inequalities: existence, stability and multiplicity results'. The advisor was Professor Michele Matzeu;
- member of the local group of Rome 'La Sapienza' of the national MIUR Group *Metodi Variazionali ed Equazioni Differenziali Nonlineari* (local coordinator Professor Filomena Pacella).

Academic Year 2004–2005:

- taught *Mathematical Analysis* for the Degree in Engineering of Telecommunications at the Faculty of Engineering of the University of Rome 'Tor Vergata';
- from December 3, 2004 annual scholarship at the Department of Mathematics and Computer Science of the University of Perugia. The research program was 'Variational methods and nonlinear differential equations'. The research director was Professor Patrizia Pucci;
- attended the school 'Variational problems in nonlinear analysis' organized by SISSA at Trieste on April 26- May 13, 2005. In particular attended the courses 'Perturbation methods and applications' by Professor Antonio Ambrosetti (SISSA), 'Nonlinear oscillations in Hamiltonian PDEs' by Professor Massimiliano Berti (SISSA) and 'Geometric problems' by Professor Andrea Malchiodi (SISSA) and delivered the seminar 'Multiplicity of solutions for semilinear variational inequalities';
- from September 2005 a tree-months scholarship, funded by DAAD (Deutscher Akademischer Austauschdienst), at the Faculty of Mathematics of the University of Magdeburg. The research program is 'A biharmonic model problem with critical

growth - Topology versus geometry of the domain'. The research director is Professor Hans Christoph Grunau.

Academic Year 2005–2006:

- annual scholarship at the Department of Mathematics and Computer Science of the University of Perugia (renewal of the previous one);
- taught *Mathematical Analysis* for the Degree in Physics at the Faculty of Science of the University of Perugia.

Academic Year 2006–2007:

- since October 2, 2006 had an academic position as Ricercatore at the Faculty of Engineering of the University of Calabria in the scientific area MAT/05 - Mathematical Analysis;
- taught *Calcolo 1* (corso B) for Corso di Laurea in Ingegneria at the Faculty of Engineering of the University of Calabria;
- taught *Matematica di Base B* (corsi D and H) for Corso di Laurea in Ingegneria at the Faculty of Engineering of the University of Calabria;
- member of the Collegio dei Docenti of the Ph. D. on 'Mathematics and Computer Science' (since ciclo XXII) at the Department of Mathematics of the University of Calabria;
- taught *Calcolo 2* (corso B) for Corso di Laurea in Ingegneria at the Faculty of Engineering of the University of Calabria;
- taught *Equazioni alle Derivate Parziali* for Corso di Laurea Specialistica in Matematica at the Faculty of Science of the University of Calabria;
- taught *Calcolo 3* (corsi E, F and H) for Corso di Laurea in Ingegneria at the Faculty of Engineering of the University of Calabria.

Academic Year 2007–2008:

- taught *Matematica di Base B* (corso A) for Corso di Laurea in Ingegneria at the Faculty of Engineering of the University of Calabria;
- taught *Complementi di Analisi* (corso B) for Corso di Laurea Specialistica in Ingegneria Civile at the Faculty of Engineering of the University of Calabria;
- taught *Complementi di Analisi* for Corsi di Laurea Specialistica in Ingegneria Chimica e in Ingegneria per l'Ambiente e il Territorio at the Faculty of Engineering of the University of Calabria;
- member of the Collegio dei Docenti of the Scuola di Dottorato in 'Ingegneria dei Sistemi, Informatica, Matematica e Ricerca Operativa' at the University of Calabria;
- taught *Calcolo 2* (corso B) for Corso di Laurea in Ingegneria at the Faculty of Engineering of the University of Calabria;
- taught *Equazioni alle Derivate Parziali* for Corso di Laurea Specialistica in Matematica at the Faculty of Science of the University of Calabria;
- member of the national MIUR Group *Metodi Variazionali e Topologici nello Studio di Fenomeni Nonlineari* (national coordinator Professor Vieri Benci), local group of Brescia (local coordinator Professor Marco Degiovanni).

Academic Year 2008–2009:

- taught *Nozioni di Matematica* for Corso di Laurea in Scienze Politiche at the Faculty of Political Science of the University of Calabria;
- taught *Matematica e Logica* for Corso di Laurea in Ingegneria at the Faculty of Engineering of the University of Calabria;

- taught *Complementi di Analisi* (corso B) for Corso di Laurea Specialistica in Ingegneria Civile at the Faculty of Engineering of the University of Calabria;
- taught *Complementi di Analisi* for Corsi di Laurea Specialistica in Ingegneria Chimica e in Ingegneria per l'Ambiente e il Territorio at the Faculty of Engineering of the University of Calabria;
- taught *Analisi Matematica 1 - II modulo* for Corso di Laurea in Ingegneria at the Faculty of Engineering of the University of Calabria.

Academic Year 2009–2010:

- taught *Matematica e Logica* for Corso di Laurea in Filosofia e Storia at the Faculty of Arts of the University of Calabria;
- taught *Matematica e Logica* (corsi 1 e 2) for Corso di Laurea in Scienze dell'Educazione at the Faculty of Arts of the University of Calabria;
- taught *Matematica e Logica* for Corso di Laurea in Ingegneria at the Faculty of Engineering of the University of Calabria;
- taught *Analisi Matematica 2* for Corso di Laurea in Ingegneria Chimica at the Faculty of Engineering of the University of Calabria;
- taught *Complementi di Analisi* for Corsi di Laurea Specialistica in Ingegneria Chimica e in Ingegneria per l'Ambiente e il Territorio at the Faculty of Engineering of the University of Calabria;
- taught *Equazioni alle Derivate Parziali* for Corso di Laurea Specialistica in Matematica at the Faculty of Science of the University of Calabria;
- taught *Analisi Matematica 1 - II modulo* (corsi C e D) for Corso di Laurea in Ingegneria at the Faculty of Engineering of the University of Calabria.

Academic Year 2010–2011:

- taught *Analisi Matematica 1 - I modulo* (corso D) for Corso di Laurea in Ingegneria at the Faculty of Engineering of the University of Calabria;
- taught *Analisi Matematica 2* (corso B) for Corsi di Laurea in Ingegneria Chimica e in Ingegneria Civile at the Faculty of Engineering of the University of Calabria.

Academic Year 2011–2012:

- taught *Analisi Matematica 2* (corso B) for Corsi di Laurea in Ingegneria Chimica e in Ingegneria Civile at the Faculty of Engineering of the University of Calabria.

Academic Year 2012–2013:

- local coordinator, in collaboration with Dr. Alessandro Trombetta, for the organization of the CISIA Test for the admission to the Faculty of Engineering at the University of Calabria;
- collaborator of Consorzio Interuniversitario Sistemi Integrati per l'Accesso (CISIA) for preparing the Test CISIA 2013 for the admission to the Italian Faculties of Engineering;
- taught *Analisi Matematica 1 - I modulo* (corsi D e E) for Corso di Laurea in Ingegneria at the Faculty of Engineering of the University of Calabria;
- taught *Metodi variazionali per lo studio di equazioni semilineari ellittiche* for Corso di Dottorato di Ricerca in Matematica e Informatica at the Department of Mathematics and Computer Science of the University of Calabria.

Academic Year 2013–2014:

- taught *Analisi Matematica 1 - I modulo* (corsi A e B) for Corso di Laurea in Ingegneria Civile at the Dipartimento di Ingegneria Civile of the University of Calabria;
- taught *Analisi Matematica 2* for Corsi di Laurea in Ingegneria per l'Ambiente e il Territorio e in Ingegneria Chimica at the Dipartimento di Ingegneria per l'Ambiente e il Territorio e Ingegneria Chimica (DIATIC) of the University of Calabria;
- member of the committee for the evaluation of the Ph.D. Thesis 'Variational methods in the study of nonlinear elliptic problems' by Diana-Nicoleta Udrea (University of Craiova, Romania);
- on December 30, 2013 got the National Scientific Qualification for Professore di Seconda Fascia in the scientific area 01/A3 - Mathematical Analysis, Probability and Statistics;
- collaborator of Consorzio Interuniversitario Sistemi Integrati per l'Accesso (CISIA) for preparing the Test CISIA 2014 for the admission to the Italian Courses in Engineering.

Academic Year 2014–2015:

- taught *Analisi Matematica 1 - I modulo* (corso B) for Corso di Laurea in Ingegneria Civile at the Dipartimento di Ingegneria Civile of the University of Calabria;
- taught *Analisi Matematica 2* for Corsi di Laurea in Ingegneria per l'Ambiente e il Territorio e in Ingegneria Chimica at the Dipartimento di Ingegneria per l'Ambiente e il Territorio e Ingegneria Chimica (DIATIC) of the University of Calabria;
- on November 14, 2014 got the National Scientific Qualification for Professore di Prima Fascia in the scientific area 01/A3 - Mathematical Analysis, Probability and Statistics;
- collaborator of Consorzio Interuniversitario Sistemi Integrati per l'Accesso (CISIA) for preparing the Test CISIA 2015 for the admission to the Italian Courses in Engineering;
- since March 1, 2015 has an academic position as Professore di Seconda Fascia (Associate Professor) at the Dipartimento di Scienze di Base e Fondamenti (DiSBeF) of the Università degli Studi di Urbino Carlo Bo in the scientific area 01/A3 - Mathematical Analysis, Probability and Statistics, sub-area MAT/05 - Mathematical Analysis.

Academic Year 2015–2016:

- taught *Precorso di Matematica* for Corso di Laurea in Informatica Applicata within the Scuola di Scienze e Tecnologie dell'Informazione of the Università degli Studi di Urbino Carlo Bo, 18 hours;
- taught *Analisi Matematica* for Corso di Laurea in Informatica Applicata within the Scuola di Scienze e Tecnologie dell'Informazione of the Università degli Studi di Urbino Carlo Bo, 12 CFU;
- taught *Calculus* for Corso di Laurea in Informatica Applicata (on-line course) within the Scuola di Scienze e Tecnologie dell'Informazione of the Università degli Studi di Urbino Carlo Bo, 12 CFU;
- taught *Matematica Discreta* for Corso di Laurea in Informatica Applicata within the Scuola di Scienze e Tecnologie dell'Informazione of the Università degli Studi di Urbino Carlo Bo, 6 CFU;
- taught *Discrete Structures and Linear Algebra* for Corso di Laurea in Informatica Applicata (on-line course) within the Scuola di Scienze e Tecnologie dell'Informazione of the Università degli Studi di Urbino Carlo Bo, 6 CFU;

- taught *Matematica* for Corso di Laurea in Scienze Biologiche within the Scuola di Scienze Biologiche of the Università degli Studi di Urbino Carlo Bo, 12 CFU;
- taught *Matematica* for Corso di Laurea in Scienze Geologiche within the Scuola di Scienze Geologiche e Ambientali of the Università degli Studi di Urbino Carlo Bo, 12 CFU, borrowed from *Matematica* for Corso di Laurea in Scienze Biologiche;
- from December 1, 2015 to December 4, 2023 is Head of the INdAM Research Unit at the Dipartimento di Scienze Pure e Applicate (DiSPeA) (formerly Dipartimento di Scienze di Base e Fondamenti (DiSBeF)) of the Università degli Studi di Urbino Carlo Bo;
- collaborator of Consorzio Interuniversitario Sistemi Integrati per l'Accesso (CISIA) for preparing the Test CISIA 2016 for the admission to the Italian Courses in Engineering;
- member of the Gruppo Assicurazione Qualità e Riesame of the Corso di Laurea in Informatica Applicata of the Università degli Studi di Urbino Carlo Bo;
- member of the Commissione Didattica of the Corso di Laurea in Informatica Applicata of the Università degli Studi di Urbino Carlo Bo;
- supervisor of the Test d'Ingresso for the Corso di Laurea in Informatica Applicata of the Università degli Studi di Urbino Carlo Bo;
- representative of the Dipartimento di Scienze Pure e Applicate (DiSPeA) of the Università degli Studi di Urbino Carlo Bo at the Conferenza Nazionale dei Presidenti e dei Direttori delle Strutture Universitarie di Scienze e Tecnologie (ConScienze);
- President of the Seconda Commissione giudicatrice per le classi di concorso A26-Matematica e A27-Matematica e Fisica del concorso per titoli ed esami per l'accesso ai ruoli del personale docente della scuola secondaria di primo e secondo grado per l'ambito disciplinare AD07, constituted by decree of the Direttore Generale of the Ufficio Scolastico Regionale per le Marche no.159 del 22 aprile 2016;
- member of the Commissione Supporto alla Ricerca (CoSRi), constituted by Decreto Rettorale no.279/2016, of the Università degli Studi di Urbino Carlo Bo for the triennium 2016-2018.

Academic Year 2016–2017:

- member of the Collegio dei Docenti of the Dottorato di Ricerca in 'Scienze di Base e Applicazioni' (ciclo XXXII) of the Università degli Studi di Urbino Carlo Bo;
- taught *Precorso di Matematica* for Corso di Laurea in Informatica Applicata within the Scuola di Scienze, Tecnologie e Filosofia dell'Informazione of the Università degli Studi di Urbino Carlo Bo, 28 hours;
- taught *Analisi Matematica* for Corso di Laurea in Informatica Applicata within the Scuola di Scienze, Tecnologie e Filosofia dell'Informazione of the Università degli Studi di Urbino Carlo Bo, 12 CFU;
- taught *Calculus* for Corso di Laurea in Informatica Applicata (on-line course) within the Scuola di Scienze, Tecnologie e Filosofia dell'Informazione of the Università degli Studi di Urbino Carlo Bo, 12 CFU;
- taught *Matematica* for Corso di Laurea in Scienze Biologiche within the Scuola di Scienze Biologiche e Biotecnologiche of the Università degli Studi di Urbino Carlo Bo, 12 CFU;
- taught *Matematica* for Corso di Laurea in Scienze Geologiche within the Scuola di Scienze Geologiche e Ambientali of the Università degli Studi di Urbino Carlo Bo, 12 CFU, borrowed from *Matematica* for Corso di Laurea in Scienze Biologiche;
- member of the Commissione Didattica of the Corso di Laurea in Informatica Applicata of the Università degli Studi di Urbino Carlo Bo;
- supervisor of the Test d'Ingresso for the Corso di Laurea in Informatica Applicata of the Università degli Studi di Urbino Carlo Bo;

- member of the committee of the competition for a position of ricercatore universitario a tempo determinato in the scientific area 01/A3 - Mathematical Analysis, Probability and Statistics, sub-area MAT/05 - Mathematical Analysis at the Dipartimento di Scienze Pure e Applicate (DiSPeA) of the Università degli Studi di Urbino Carlo Bo, constituted by Decreto Rettorale no.353/2016;
- member of the committee of the competition for a position of assegnista di ricerca in the scientific area 01/A3 - Mathematical Analysis, Probability and Statistics, sub-area MAT/05 - Mathematical Analysis at the Dipartimento di Scienze Pure e Applicate (DiSPeA) of the Università degli Studi di Urbino Carlo Bo, constituted by Decreto Rettorale no.513/2016;
- referee of the Ph.D. Thesis *Some nonlocal nonlinear problems in the stationary and evolutionary case* by Sara Saldi (Università degli Studi di Firenze);
- member of the Gruppo di Lavoro *Piano Lauree Scientifiche* at the Scuola di Scienze Biologiche e Biotecnologiche of the Università degli Studi di Urbino Carlo Bo;
- member of the committee of the competition for a scholarship in the scientific area 09/H1 - Sistemi di elaborazione delle informazioni, sub-area ING-INF/05 - Sistemi di elaborazione delle informazioni at the Dipartimento di Scienze Pure e Applicate (DiSPeA) of the Università degli Studi di Urbino Carlo Bo, constituted by Decreto Rettorale no.25/2017;
- member of the committee of the competition for two scholarships for research activity about *Sviluppo di strumenti e metodi di simulazione della dipendenza dei costi di produzione dalla distribuzione e dalla tipologia degli ordini* at the Dipartimento di Scienze Pure e Applicate (DiSPeA) of the Università degli Studi di Urbino Carlo Bo and the IMAB Group S.p.A., constituted by Decreto Rettorale no.27/2017;
- member of the committee of the competition for a scholarships for research activity about *Progettazione di algoritmi di indicizzazione, comparazione e selezione di immagini digitali*, within the cooperation with Photosì S.p.A., at the Dipartimento di Scienze Pure e Applicate (DiSPeA) of the Università degli Studi di Urbino Carlo Bo, constituted by Decreto Rettorale no.186/2017;
- collaborator of Consorzio Interuniversitario Sistemi Integrati per l'Accesso (CISIA) for preparing the Test CISIA 2017 for the admission to the Italian Courses in Engineering;
- member of the committee of the competition for a position of didactic manager for the Corso di Laurea in Informatica Applicata, at the Dipartimento di Scienze Pure e Applicate (DiSPeA) of the Università degli Studi di Urbino Carlo Bo, constituted by Disposizione of the Head of the Department no.82/2017;
- taught *Introduction to Partial Differential Equations* for the Summer Course - Perugia 2017, organized by Scuola Matematica Interuniversitaria (SMI) at the Università degli Studi di Perugia.

Academic Year 2017–2018:

- member of the Collegio dei Docenti of the Dottorato di Ricerca in 'Scienze di Base e Applicazioni' (ciclo XXXIII) of the Università degli Studi di Urbino Carlo Bo;
- supervisor at the Dipartimento di Scienze Pure e Applicate (DiSPeA) of the Università degli Studi di Urbino Carlo Bo for the organization of the Test Online Scienze (TOS) distributed by Consorzio Interuniversitario Sistemi Integrati per l'Accesso (CISIA);
- taught *Precorso di Matematica* for Corso di Laurea in Informatica Applicata within the Scuola di Scienze e Tecnologie dell'Informazione of the Università degli Studi di Urbino Carlo Bo, 30 hours;
- taught *Analisi Matematica* for Corso di Laurea in Informatica Applicata within the Scuola di Scienze, Tecnologie e Filosofia dell'Informazione of the Università degli

Studi di Urbino Carlo Bo, 12 CFU;
- taught *Analisi Matematica* (on-line supplementary course) for Corso di Laurea in Informatica Applicata within the Scuola di Scienze, Tecnologie e Filosofia dell'Informazione of the Università degli Studi di Urbino Carlo Bo, 24 hours;
- taught *Matematica Discreta* for Corso di Laurea in Informatica Applicata within the Scuola di Scienze, Tecnologie e Filosofia dell'Informazione of the Università degli Studi di Urbino Carlo Bo, 6 CFU;
- taught *Matematica Discreta* (on-line supplementary course) for Corso di Laurea in Informatica Applicata within the Scuola di Scienze, Tecnologie e Filosofia dell'Informazione of the Università degli Studi di Urbino Carlo Bo, 12 hours;
- collaborator of Consorzio Interuniversitario Sistemi Integrati per l'Accesso (CISIA) for preparing the Test CISIA 2018 for the admission to the Italian Courses in Engineering;
- member of the Commissione Didattica of the Corso di Laurea in Informatica Applicata of the Università degli Studi di Urbino Carlo Bo;
- supervisor of the Test d'Ingresso for the Corso di Laurea in Informatica Applicata of the Università degli Studi di Urbino Carlo Bo;
- member of the Commissione Orientamento of the Corso di Laurea in Informatica Applicata of the Università degli Studi di Urbino Carlo Bo;
- got the FFABR (Fondo per il Finanziamento delle Attività Base di Ricerca) 2017 - Professori Associati;
- supervisor at the Dipartimento di Scienze Pure e Applicate (DiSPeA) of the Università degli Studi di Urbino Carlo Bo for the Young Investigator Training Program 2017 by ACRI (Associazione di Fondazioni e Casse di Risparmio S.p.a.);
- organizer of a series of talks titled *Matematica e Realtà* at the Università degli Studi di Urbino Carlo Bo;
- member of the committee of the competition for a scholarship for young researchers in the field of Nonlinear Analysis and Calculus of Variations at the Dipartimento di Scienze Pure e Applicate (DiSPeA) of the Università degli Studi di Urbino Carlo Bo, constituted by Decreto Rettorale no.230/2018.

Academic Year 2018–2019:

- member of the Collegio dei Docenti of the Dottorato di Ricerca in 'Scienze di Base e Applicazioni' (ciclo XXXIV) of the Università degli Studi di Urbino Carlo Bo;
- supervisor at the Dipartimento di Scienze Pure e Applicate (DiSPeA) of the Università degli Studi di Urbino Carlo Bo for the organization of the Test OnLine CISIA (TOLC) distributed by Consorzio Interuniversitario Sistemi Integrati per l'Accesso (CISIA);
- supervisor of the Test d'Ingresso for the Corso di Laurea in Informatica Applicata of the Università degli Studi di Urbino Carlo Bo;
- head of the Commissione Orientamento of the Corso di Laurea in Informatica Applicata of the Università degli Studi di Urbino Carlo Bo;
- member of the Commissione Orientamento di Ateneo of the Università degli Studi di Urbino Carlo Bo as delegate of the Scuola di Scienze Tecnologie e Filosofia dell'Informazione;
- member of the Commissione Didattica of the Corso di Laurea in Informatica Applicata of the Università degli Studi di Urbino Carlo Bo;
- taught *Precorso di Matematica* for Corso di Laurea in Informatica Applicata within the Scuola di Scienze e Tecnologie dell'Informazione of the Università degli Studi di Urbino Carlo Bo, 28 hours;
- taught *Analisi Matematica 1* for Corso di Laurea in Informatica Applicata within the Scuola di Scienze, Tecnologie e Filosofia dell'Informazione of the Università degli

Studi di Urbino Carlo Bo, 9 CFU;
- taught *Analisi Matematica 1* (on-line supplementary course) for Corso di Laurea in Informatica Applicata within the Scuola di Scienze, Tecnologie e Filosofia dell'Informazione of the Università degli Studi di Urbino Carlo Bo, 18 hours;
- taught *Logica, Algebra e Geometria* for Corso di Laurea in Informatica Applicata within the Scuola di Scienze, Tecnologie e Filosofia dell'Informazione of the Università degli Studi di Urbino Carlo Bo, 6 CFU;
- taught *Logica, Algebra e Geometria* (on-line supplementary course) for Corso di Laurea in Informatica Applicata within the Scuola di Scienze, Tecnologie e Filosofia dell'Informazione of the Università degli Studi di Urbino Carlo Bo, 12 hours;
- organizer of a series of talks titled *Matematica e Realtà* at the Università degli Studi di Urbino Carlo Bo;
- member of the Gruppo Assicurazione Qualità della Ricerca Dipartimentale of the Dipartimento di Scienze Pure e Applicate (DiSPeA) of the Università degli Studi di Urbino Carlo Bo;
- supervisor at the Dipartimento di Scienze Pure e Applicate (DiSPeA) of the Università degli Studi di Urbino Carlo Bo for the Young Investigator Training Program 2018 by ACRI (Associazione di Fondazioni e Casse di Risparmio S.p.a.);
- taught *Matematica* in readiness for test di verifica della preparazione iniziale, organized for high-school students at the Università degli Studi di Urbino Carlo Bo;
- founding member of Digit SRL, spin-off of the Università degli Studi di Urbino Carlo Bo;
- member of the committee of the competition for a scholarship for young researchers in the field of Nonlinear Analysis, Calculus of Variations and Algebraic Geometry at the Dipartimento di Scienze Pure e Applicate (DiSPeA) of the Università degli Studi di Urbino Carlo Bo, constituted by Decreto Rettorale no.132/2019.

Academic Year 2019–2020:

- member of the Collegio dei Docenti of the Dottorato di Ricerca in 'Research Methods in Science and Technology' (ciclo XXXV) of the Università degli Studi di Urbino Carlo Bo;
- supervisor at the Dipartimento di Scienze Pure e Applicate (DiSPeA) of the Università degli Studi di Urbino Carlo Bo for the organization of the Test OnLine CISIA (TOLC) distributed by Consorzio Interuniversitario Sistemi Integrati per l'Accesso (CISIA);
- supervisor of the Verifica della Preparazione Iniziale for the Corso di Laurea in Informatica Applicata of the Università degli Studi di Urbino Carlo Bo;
- head of the Commissione Orientamento of the Corso di Laurea in Informatica Applicata of the Università degli Studi di Urbino Carlo Bo;
- member of the Commissione Orientamento di Ateneo of the Università degli Studi di Urbino Carlo Bo as delegate of the Scuola di Scienze Tecnologie e Filosofia dell'Informazione;
- member of the Commissione Didattica of the Corso di Laurea in Informatica Applicata of the Università degli Studi di Urbino Carlo Bo;
- organizer of a series of talks titled *Matematica e Realtà* at the Università degli Studi di Urbino Carlo Bo;
- member of the Gruppo Assicurazione Qualità della Ricerca Dipartimentale of the Dipartimento di Scienze Pure e Applicate (DiSPeA) of the Università degli Studi di Urbino Carlo Bo;
- taught *Precorso di Matematica* for Corso di Laurea in Informatica Applicata within the Scuola di Scienze e Tecnologie dell'Informazione of the Università degli Studi di

Urbino Carlo Bo, 8 hours;
- taught *Analisi Matematica 1* for Corso di Laurea in Informatica Applicata within the Scuola di Scienze, Tecnologie e Filosofia dell'Informazione of the Università degli Studi di Urbino Carlo Bo, 9 CFU;
- taught *Logica, Algebra e Geometria* for Corso di Laurea in Informatica Applicata within the Scuola di Scienze, Tecnologie e Filosofia dell'Informazione of the Università degli Studi di Urbino Carlo Bo, 6 CFU;
- member of the committee of the competition for the admission to the Dottorato di Ricerca in 'Research Methods in Science and Technology' (ciclo XXXV) at the Dipartimento di Scienze Pure e Applicate (DiSPeA) of the Università degli Studi di Urbino Carlo Bo, constituted by Decreto Rettorale no.392/2019;
- taught *Optimization methods* for Dottorato di Ricerca in Research Methods in Science and Technology of the Università degli Studi di Urbino Carlo Bo, 4 CFU;
- member of the committee of the competition for the admission to the Dottorato di Ricerca in 'Research Methods in Science and Technology' (ciclo XXXV) - Progetto Dottorato Innovativo a caratterizzazione industriale - at the Dipartimento di Scienze Pure e Applicate (DiSPeA) of the Università degli Studi di Urbino Carlo Bo, constituted by Decreto Rettorale no.520/2019;
- since December 19, 2019 has an academic position as Professore di Prima Fascia (Full Professor) at the Dipartimento di Scienze Pure e Applicate of the Università degli Studi di Urbino Carlo Bo in the scientific area 01/A3 - Mathematical Analysis, Probability and Statistics, sub-area MAT/05 - Mathematical Analysis;
- member of the committee of the competition for a position of ricercatore a tempo determinato in the scientific area 01/A3 - Mathematical Analysis, Probability and Statistics, sub-area MAT/05 - Mathematical Analysis at the Dipartimento di Matematica of the Alma Mater Studiorum - Università di Bologna, constituted by Disposizione Dirigenziale no.1757/2020.

Academic Year 2020–2021:

- member of the Collegio dei Docenti of the Dottorato di Ricerca in 'Research Methods in Science and Technology' (ciclo XXXVI) of the Università degli Studi di Urbino Carlo Bo;
- supervisor at the Dipartimento di Scienze Pure e Applicate (DiSPeA) of the Università degli Studi di Urbino Carlo Bo for the organization of the Test OnLine CISIA (TOLC) distributed by Consorzio Interuniversitario Sistemi Integrati per l'Accesso (CISIA);
- supervisor of the Verifica della Preparazione Iniziale for the Corso di Laurea in Informatica Applicata of the Università degli Studi di Urbino Carlo Bo;
- head of the Commissione Orientamento of the Corso di Laurea in Informatica Applicata of the Università degli Studi di Urbino Carlo Bo;
- member of the Commissione Orientamento di Ateneo of the Università degli Studi di Urbino Carlo Bo as delegate of the Scuola di Scienze Tecnologie e Filosofia dell'Informazione;
- head of the Commissione Didattica of the Corso di Laurea in Informatica Applicata of the Università degli Studi di Urbino Carlo Bo;
- member of the Gruppo Assicurazione Qualità della Ricerca Dipartimentale of the Dipartimento di Scienze Pure e Applicate (DiSPeA) of the Università degli Studi di Urbino Carlo Bo;
- taught *Precorso di Matematica* for Corso di Laurea in Informatica Applicata within the Scuola di Scienze e Tecnologie dell'Informazione of the Università degli Studi di Urbino Carlo Bo, 15 hours;
- referee of the Ph.D. Thesis *Dirichlet problems for several nonlocal operators via*

variational and topological methods by Silvia Frassu (Università degli Studi di Cagliari);
- taught *Optimization methods* for Dottorato di Ricerca in Research Methods in Science and Technology of the Università degli Studi di Urbino Carlo Bo, 4 CFU;
- taught *Analisi Matematica 1* for Corso di Laurea in Informatica Applicata within the Scuola di Scienze, Tecnologie e Filosofia dell'Informazione of the Università degli Studi di Urbino Carlo Bo, 9 CFU;
- taught *Matematica di base* for Corso di Laurea in Informatica Applicata within the Scuola di Scienze, Tecnologie e Filosofia dell'Informazione of the Università degli Studi di Urbino Carlo Bo, 4 hours;
- taught *Matematica per il TOLC* in readiness for test di verifica della preparazione iniziale, organized for high-school students by Corso di Laurea in Informatica Applicata of the Università degli Studi di Urbino Carlo Bo, 8 hours;
- member of the Commissione VQR of the Dipartimento di Scienze Pure e Applicate (DiSPeA) of the Università degli Studi di Urbino Carlo Bo, established with the task of supporting the Head of the Department in the activities concerning Valutazione della Qualità della Ricerca (VQR) 2015-2019, constituted by Decreto del Direttore no.39/2021;
- university referent for Area 01 - Scienze Matematiche e Informatiche - for Valutazione della Qualità della Ricerca (VQR) 2015-2019 at the Università degli Studi di Urbino Carlo Bo, constituted by Delibera del Senato Accademico no.16/2021;
- member of the committee of the competition for a position of ricercatore a tempo determinato in the scientific area 01/A3 - Mathematical Analysis, Probability and Statistics, sub-area MAT/05 - Mathematical Analysis at the Dipartimento di Scienze Matematiche, Fisiche e Informatiche of the Università degli Studi di Parma, constituted by Decreto Rettorale no.1189/2021;
- member of the committee of the competition for a scholarship for research activity about *Studio e sviluppo di applicazioni basate su IoT e registri distribuiti* at the Dipartimento di Scienze Pure e Applicate (DiSPeA) of the Università degli Studi di Urbino Carlo Bo, constituted by Decreto Rettorale no.387/2021;
- member of the committee of the competition for a scholarship in the scientific area 09/H1 - Sistemi di elaborazione delle informazioni, sub-area ING-INF/05 - Sistemi di elaborazione delle informazioni for research activity about *diAry: strumenti, incentivi ed applicazioni per accrescere la consapevolezza e la memoria dei propri spostamenti* at the Dipartimento di Scienze Pure e Applicate (DiSPeA) of the Università degli Studi di Urbino Carlo Bo, constituted by Decreto Rettorale no.388/2021.

Academic Year 2021–2022:

- member of the Collegio dei Docenti of the Dottorato di Ricerca in 'Research Methods in Science and Technology' (ciclo XXXVII) of the Università degli Studi di Urbino Carlo Bo;
- supervisor at the Dipartimento di Scienze Pure e Applicate (DiSPeA) of the Università degli Studi di Urbino Carlo Bo for the organization of the Test OnLine CISIA (TOLC) distributed by Consorzio Interuniversitario Sistemi Integrati per l'Accesso (CISIA);
- supervisor of the Verifica della Preparazione Iniziale for the Corso di Laurea in Informatica Applicata of the Università degli Studi di Urbino Carlo Bo;
- supervisor of the Orientamento of the Corso di Laurea in Informatica Applicata of the Università degli Studi di Urbino Carlo Bo;
- member of the Commissione Orientamento di Ateneo of the Università degli Studi di Urbino Carlo Bo as delegate of the Scuola di Scienze Tecnologie e Filosofia dell'Informazione;

- member of the Commissione Pratiche Studenti of the Corso di Laurea in Informatica Applicata of the Università degli Studi di Urbino Carlo Bo;
- member of the Gruppo Assicurazione Qualità della Ricerca Dipartimentale of the Dipartimento di Scienze Pure e Applicate (DiSPeA) of the Università degli Studi di Urbino Carlo Bo;
- organizer of a series of talks titled *Matematica e Realtà* at the Università degli Studi di Urbino Carlo Bo;
- member of the committee for the awarding of scholarships to students enrolled to the Corsi di Laurea in Informatica Applicata, in Scienze Geologiche e Pianificazione Territoriale and in Geologia Ambientale e Gestione del Territorio of the Università degli Studi di Urbino Carlo Bo, constituted by Decreto Rettorale no.36/2021;
- member of the committee of the competition for the admission to the Dottorato di Ricerca in 'Research Methods in Science and Technology' (ciclo XXXVII) at the Dipartimento di Scienze Pure e Applicate (DiSPeA) of the Università degli Studi di Urbino Carlo Bo, constituted by Decreto Rettorale no.394/2021;
- taught *Precorso di Matematica* for Corso di Laurea in Informatica Applicata within the Scuola di Scienze e Tecnologie dell'Informazione of the Università degli Studi di Urbino Carlo Bo, 15 hours;
- taught *Analisi Matematica 1* for Corso di Laurea in Informatica Applicata within the Scuola di Scienze, Tecnologie e Filosofia dell'Informazione of the Università degli Studi di Urbino Carlo Bo, 9 CFU;
- taught *Analisi Matematica 2* for Corso di Laurea in Informatica Applicata within the Scuola di Scienze, Tecnologie e Filosofia dell'Informazione of the Università degli Studi di Urbino Carlo Bo, 6 CFU;
- taught *Optimization methods* for Dottorato di Ricerca in Research Methods in Science and Technology of the Università degli Studi di Urbino Carlo Bo, 4 CFU;
- taught *Matematica di base* for Corso di Laurea in Informatica Applicata within the Scuola di Scienze, Tecnologie e Filosofia dell'Informazione of the Università degli Studi di Urbino Carlo Bo, 4 hours.

Academic Year 2022–2023:

- member of the Collegio dei Docenti of the Dottorato di Ricerca in 'Research Methods in Science and Technology' (ciclo XXXVIII) of the Università degli Studi di Urbino Carlo Bo;
- supervisor at the Dipartimento di Scienze Pure e Applicate (DiSPeA) of the Università degli Studi di Urbino Carlo Bo for the organization of the Test OnLine CISIA (TOLC) distributed by Consorzio Interuniversitario Sistemi Integrati per l'Accesso (CISIA);
- supervisor of the Verifica della Preparazione Iniziale for the Corso di Laurea in Informatica Applicata of the Università degli Studi di Urbino Carlo Bo;
- head of the Commissione Orientamento of the Corso di Laurea in Informatica Applicata of the Università degli Studi di Urbino Carlo Bo;
- member of the Commissione Orientamento di Ateneo of the Università degli Studi di Urbino Carlo Bo as delegate of the Scuola di Scienze Tecnologie e Filosofia dell'Informazione;
- member of the Commissione Pratiche Studenti of the Corso di Laurea in Informatica Applicata of the Università degli Studi di Urbino Carlo Bo;
- member of the Gruppo Assicurazione Qualità della Ricerca Dipartimentale of the Dipartimento di Scienze Pure e Applicate (DiSPeA) of the Università degli Studi di Urbino Carlo Bo;
- organizer of a series of talks titled *Matematica e Realtà* at the Università degli Studi di Urbino Carlo Bo;

- taught *Precorso di Matematica* for Corso di Laurea in Informatica Applicata within the Scuola di Scienze e Tecnologie dell'Informazione of the Università degli Studi di Urbino Carlo Bo, 15 hours;
- taught *Analisi Matematica 1* for Corso di Laurea in Informatica Applicata within the Scuola di Scienze, Tecnologie e Filosofia dell'Informazione of the Università degli Studi di Urbino Carlo Bo, 9 CFU;
- taught *Analisi Matematica 2* for Corso di Laurea in Informatica Applicata within the Scuola di Scienze, Tecnologie e Filosofia dell'Informazione of the Università degli Studi di Urbino Carlo Bo, 6 CFU;
- taught *Precorso di Matematica di base 2* for Corso di Laurea Magistrale in Filosofia dell'Informazione. Teoria e Gestione della Conoscenza of the Università degli Studi di Urbino Carlo Bo, 4 hours;
- taught *Optimization methods* for Dottorato di Ricerca in Research Methods in Science and Technology of the Università degli Studi di Urbino Carlo Bo, 4 CFU;
- taught *Matematica di base* for Corso di Laurea in Informatica Applicata within the Scuola di Scienze, Tecnologie e Filosofia dell'Informazione of the Università degli Studi di Urbino Carlo Bo, 4 hours;
- member of the committee of the competition for a position of didactic manager for Dottorato di Ricerca in Research Methods in Science and Technology of the Università degli Studi di Urbino Carlo Bo, at the Dipartimento di Scienze Pure e Applicate (DiSPeA) of the Università degli Studi di Urbino Carlo Bo, constituted by Decreto of the Head of the Department no.265/2022;
- member of the committee of the competition for a position of full professor in the scientific area 01/A3 - Mathematical Analysis, Probability and Statistics, sub-area MAT/05 - Mathematical Analysis at the Dipartimento di Scienza e Alta Tecnologia of the Università degli Studi dell'Insubria, constituted by Decreto Rettorale no.1216/2022;
- taught *Dalla scuola all'università: i test di verifica della preparazione iniziale come strumento di orientamento e autovalutazione*, in the framework of *Orientamento attivo nella transizione scuola-università* of the Piano Nazionale di Ripresa e Resilienza (PNRR), Missione 4 Istruzione e Ricerca, 45 hours.

Academic Year 2023–2024:

- member of the Collegio dei Docenti of the Dottorato di Ricerca in 'Research Methods in Science and Technology' (ciclo XXXIX) of the Università degli Studi di Urbino Carlo Bo;
- supervisor at the Dipartimento di Scienze Pure e Applicate (DiSPeA) of the Università degli Studi di Urbino Carlo Bo for the organization of the Test OnLine CISIA (TOLC) distributed by Consorzio Interuniversitario Sistemi Integrati per l'Accesso (CISIA);
- supervisor of the Verifica della Preparazione Iniziale for the Corso di Laurea in Informatica - Scienza e Tecnologia of the Università degli Studi di Urbino Carlo Bo;
- head of the Commissione Orientamento of the Corso di Laurea in Informatica - Scienza e Tecnologia of the Università degli Studi di Urbino Carlo Bo;
- member of the Commissione Orientamento di Ateneo of the Università degli Studi di Urbino Carlo Bo as delegate of the Scuola di Scienze Tecnologie e Filosofia dell'Informazione;
- member of the Commissione Pratiche Studentesche of the Corso di Laurea in Informatica - Scienza e Tecnologia of the Università degli Studi di Urbino Carlo Bo;
- member of the Gruppo Assicurazione Qualità della Ricerca Dipartimentale of the Dipartimento di Scienze Pure e Applicate (DiSPeA) of the Università degli Studi di

Urbino Carlo Bo;
- organizer of a series of talks titled *Matematica e Realtà* at the Università degli Studi di Urbino Carlo Bo;
- taught *Precorso di Matematica* for Corso di Laurea in Informatica - Scienza e Tecnologia within the Scuola di Scienze e Tecnologie dell'Informazione of the Università degli Studi di Urbino Carlo Bo, 20 hours;
- taught *Analisi Matematica 1* for Corso di Laurea in Informatica - Scienza e Tecnologia within the Scuola di Scienze, Tecnologie e Filosofia dell'Informazione of the Università degli Studi di Urbino Carlo Bo, 9 CFU;
- taught *Analisi Matematica 2* for Corso di Laurea in Informatica Applicata within the Scuola di Scienze, Tecnologie e Filosofia dell'Informazione of the Università degli Studi di Urbino Carlo Bo, 6 CFU;
- taught *Precorso I metodi della Matematica* for Corso di Laurea Magistrale in Filosofia dell'Informazione. Teoria e Gestione della Conoscenza of the Università degli Studi di Urbino Carlo Bo, 4 hours;
- taught *Optimization methods* for Dottorato di Ricerca in Research Methods in Science and Technology of the Università degli Studi di Urbino Carlo Bo, 4 CFU;
- taught *Matematica di base* for Corso di Laurea in Informatica - Scienza e Tecnologia within the Scuola di Scienze, Tecnologie e Filosofia dell'Informazione of the Università degli Studi di Urbino Carlo Bo, 10 hours;
- taught *Dalla scuola all'università: i test di verifica della preparazione iniziale come strumento di orientamento e autovalutazione*, in the framework of *Orientamento attivo nella transizione scuola-università* of the Piano Nazionale di Ripresa e Resilienza (PNRR), Missione 4 Istruzione e Ricerca, 30 hours;
- CRITERIUM platform evaluator for Dipartimento di Scienze Pure e Applicate (DiSPeA) of the Università degli Studi di Urbino Carlo Bo, constituted by Delibera del Consiglio DiSPeA no.233/2023;
- vice president of the Scuola di Scienze Tecnologie e Filosofia dell'Informazione of the Università degli Studi di Urbino Carlo Bo since January 15, 2024;
- member of the committee of the competition for a position of full professor in the scientific area 01/A3 - Mathematical Analysis, Probability and Statistics, sub-area MAT/05 - Mathematical Analysis at the Dipartimento di Scienze e Tecnologie of the Università degli Studi di Napoli Parthenope, constituted by Decreto Rettorale no.501/2024.

Academic Year 2024–2025:

- member of the Collegio dei Docenti of the Dottorato di Ricerca in 'Research Methods in Science and Technology' (ciclo XL) of the Università degli Studi di Urbino Carlo Bo;
- supervisor at the Dipartimento di Scienze Pure e Applicate (DiSPeA) of the Università degli Studi di Urbino Carlo Bo for the organization of the Test OnLine CISIA (TOLC) distributed by Consorzio Interuniversitario Sistemi Integrati per l'Accesso (CISIA);
- head of the Commissione Verifica della Preparazione Iniziale for the Corso di Laurea in Informatica - Scienza e Tecnologia of the Università degli Studi di Urbino Carlo Bo;
- head of the Commissione Orientamento of the Corso di Laurea in Informatica - Scienza e Tecnologia of the Università degli Studi di Urbino Carlo Bo;
- member of the Commissione Orientamento di Ateneo of the Università degli Studi di Urbino Carlo Bo as delegate of the Scuola di Scienze Tecnologie e Filosofia dell'Informazione;

- member of the Commissione Pratiche Studentesche of the Corso di Laurea in Informatica - Scienza e Tecnologia of the Università degli Studi di Urbino Carlo Bo;
- member of the Commissione Incarichi Didattici of the Corso di Laurea in Informatica - Scienza e Tecnologia and of the Corso di Laurea Magistrale in Informatica e Innovazione Digitale of the Università degli Studi di Urbino Carlo Bo;
- member of the Gruppo Assicurazione Qualità della Ricerca Dipartimentale of the Dipartimento di Scienze Pure e Applicate (DiSPeA) of the Università degli Studi di Urbino Carlo Bo;
- organizer of a series of talks titled *Matematica e Realtà* at the Università degli Studi di Urbino Carlo Bo;
- taught *Precorso di Matematica* for Corso di Laurea in Informatica - Scienza e Tecnologia within the Scuola di Scienze e Tecnologie dell'Informazione of the Università degli Studi di Urbino Carlo Bo, 20 hours;
- taught *Analisi Matematica 1* for Corso di Laurea in Informatica - Scienza e Tecnologia within the Scuola di Scienze, Tecnologie e Filosofia dell'Informazione of the Università degli Studi di Urbino Carlo Bo, 9 CFU;
- taught *Analisi Matematica 2* for Corso di Laurea in Informatica - Scienza e Tecnologia within the Scuola di Scienze, Tecnologie e Filosofia dell'Informazione of the Università degli Studi di Urbino Carlo Bo, 6 CFU;
- taught *Matematica di base* for Corso di Laurea in Informatica - Scienza e Tecnologia within the Scuola di Scienze, Tecnologie e Filosofia dell'Informazione of the Università degli Studi di Urbino Carlo Bo, 10 hours;
- taught *La matematica come strumento di formazione e di sviluppo*, in the framework of *Orientamento attivo nella transizione scuola-università* of the Piano Nazionale di Ripresa e Resilienza (PNRR), Missione 4 Istruzione e Ricerca, 15 hours;
- taught *Percorsi extracurricolari di tutoraggio per l'orientamento alle carriere professionali STEM: TOLC facoltà scientifiche*, in the framework of the project *Missione STEM e MULTILINGUISMO* of the Piano Nazionale di Ripresa e Resilienza (PNRR), Missione 4 Istruzione e Ricerca, Componente 1 - Potenziamento dell'offerta dei servizi di istruzione dagli asili nido alle università, Investimento 3.1 - Nuove competenze e nuovi linguaggi, founded by European Union - Next Generation EU, 30 hours;
- vice president of the Scuola di Scienze Tecnologie e Filosofia dell'Informazione of the Università degli Studi di Urbino Carlo Bo;
- member of the Commissione VQR of the Dipartimento di Scienze Pure e Applicate (DiSPeA) of the Università degli Studi di Urbino Carlo Bo, established with the task of supporting the Head of the Department in the activities concerning Valutazione della Qualità della Ricerca (VQR) 2020-2024;
- referee of the Ph.D. Thesis *Fractional calculus in variable exponent variational problems and epidemiological models* by Nezha Kamali (Sidi Mohamed Ben Abdellah University, Morocco);
- member of the committee for the evaluation of Dr. Alessandro Palmieri, researcher in the scientific area 01/MATH-03 - Mathematical Analysis, Probability and Statistics, sub-area MATH-03/A - Mathematical Analysis at the Dipartimento di Matematica of the Università degli Studi di Bari, constituted by Decreto Rettorale no.4316/2024;
- taught *Principi di Analisi Matematica* for Corso di Laurea in Filosofia dell'Informazione within the Scuola di Scienze, Tecnologie e Filosofia dell'Informazione of the Università degli Studi di Urbino Carlo Bo, 6 CFU.

RESEARCH PROJECTS

- National MURST Research Project *Analisi Reale* (1997-2000);
- National MIUR Research Project *Metodi Variazionali ed Equazioni Differenziali Nonlineari* (2000–2007);
- PRIN 2007 Research Project *Metodi Variazionali e Topologici nello Studio di Fenomeni Nonlineari*;
- PRIN 2009 Research Project *Metodi Variazionali e Topologici nello Studio di Fenomeni Nonlineari*;
- Project FP7-IDEAS-ERC Starting Grant 2011 ♯ 277749 EPSILON (*Elliptic Pde's and Symmetry of Interfaces and Layers for Odd Nonlinearities*), funded by the European Research Council (ERC), principal investigator: Enrico Valdinoci, grant period: January 1, 2012 - December 31, 2016;
- IndAM-GNAMPA Research Project 2012 *Metodi variazionali per lo studio di equazioni ellittiche non-locali con operatori di tipo Laplaciano frazionario*, principal investigator: Raffaella Servadei, homepage: `http://palatucci.altervista.org/GNAMPA2012/`;
- INdAM-GNAMPA Research Project 2013 *Problemi non-locali di tipo Laplaciano frazionario*, principal investigator: Raffaella Servadei, homepage: `https://www.mat.unical.it/∼servadei/ProgettoGNAMPA2013/home.htm`;
- INdAM-GNAMPA Research Project 2014 *Proprietà geometriche e analitiche per problemi non-locali*, principal investigator: Giovanni Molica Bisci, homepage: `https://www.mat.unical.it/∼servadei/ProgettoGNAMPA2014/`.
- Research Grant J1-5435-0101 *General topology and set-theoretic methods*, funded by the Slovenian Research Agency (SRA), grant period: August 1, 2013 - July 31, 2016;
- Research Grant P1-0292-0101 *Topology, geometry and nonlinear analysis*, funded by the Slovenian Research Agency (SRA), grant period: January 1, 2015 - December 31, 2020;
- Research Grant J1-6721-0101 *Limiting sets of iterative systems in dimensions 3 and 4*, funded by the Slovenian Research Agency (SRA), grant period: July 1, 2014 - June 30, 2017;
- INdAM-GNAMPA Research Project 2015 *Modelli ed equazioni non-locali di tipo frazionario*, principal investigator: Giovanni Molica Bisci, homepage: `http://www.sti.uniurb.it/servadei/ProgettoGNAMPA2015/`;
- Research Grant BI-US/15-16-029 *Application of topological methods in chaos theory and fractal geometry*, funded by the Slovenian Research Agency (SRA), principal investigator: Raffaella Servadei, grant period: March 1, 2015 - December 31, 2016;
- DiSBeF Research Project 2015 *Fenomeni non-locali: modelli e applicazioni*, principal investigator: Raffaella Servadei, grant period: September 1, 2015 - August 31, 2017;
- INdAM-GNAMPA Research Project 2016 *Problemi variazionali su varietà riemanniane e gruppi di Carnot*, principal investigator: Giovanni Molica Bisci, homepage: `http://www.sti.uniurb.it/servadei/ProgettoGNAMPA2016/`;
- DiSPeA Research Project 2016 *Implementazione e testing di modelli di fonti energetiche ambientali per reti di sensori senza fili autoalimentate*, principal investigator: Emanuele Lattanzi, grant period: May 15, 2016 - May 14, 2018;
- PRIN 2015 Research Project *Variational methods, with applications to problems in mathematical physics and geometry*;
- Research Grant J1-7025-0101 *Selected problems of nonlinear analysis*, funded by the Slovenian Research Agency (SRA), grant period: January 1, 2016 - December 31, 2018;
- INdAM-GNAMPA Research Project 2017 *Teoria e modelli non locali*, principal investigator: Luigi D'Onofrio, homepage: `http://www.sti.uniurb.it/servadei/ProgettoGNAMPA2017/`;

- Research Grant J1-8131-0101 *Continuous and discrete systems in nonlinear analysis*, funded by the Slovenian Research Agency (SRA), grant period: May 1, 2017 - April 30, 2020;
- DiSPeA Research Project 2017 *Sistemi non lineari: teoria e modelli*, principal investigator: Raffaella Servadei, grant period: July 6, 2017 - July 5, 2019;
- DiSPeA Development Project 2017 *Metodologie di analisi di modelli formali per la rappresentazione e verifica di sistemi complessi*, principal investigator: Alessandro Aldini, grant period: July 6, 2017 - October 31, 2020;
- DiSPeA Research Project 2018 *Esperimenti di Intelligenza Collettiva per l'analisi delle dinamiche di convergenza*, principal investigator: Lorenz Cuno Klopfenstein, grant period: May 30, 2018 - October 31, 2020;
- DiSPeA Research Project 2019 *Metodo degli elementi finiti applicato ai sistemi embedded*, principal investigator: Giovanni Molica Bisci, grant period: May 7, 2019 - October 31, 2021;
- INdAM-GNAMPA Research Project 2020 *Equazioni alle derivate parziali: problemi e modelli*, principal investigator: Patrizia Pucci;
- DiSPeA Research Project 2020 *Quantificazione dell'incertezza in sistemi hardware-software complessi*, principal investigator: Valerio Freschi, grant period: May 5, 2020 - October 31, 2022;
- DiSPeA Research Project 2021 *Equazioni alle derivate parziali non locali: teoria e modelli*, principal investigator: Alessia Kogoj, grant period: May 4, 2021 - October 31, 2023;
- DiSPeA Research Project 2022 *Pervasive digital twins for smart healthcare scenarios*, principal investigator: Sara Montagna, grant period: May 17, 2022 - October 31, 2024;
- INdAM-GNAMPA Research Project 2023 *Equazioni nonlineari e problemi di tipo Calabi-Bernstein*, principal investigator: Giovanni Molica Bisci;
- DiSPeA Research Project 2023 *Teoria e computazione per problemi non locali e inversi*, principal investigator: Giovanni Molica Bisci, grant period: May 9, 2023 - October 31, 2025;
- National Research Project PRIN 2022 *Advanced theoretical aspects in PDEs and their applications*, principal investigator: Giovanni Molica Bisci;
- INdAM-GNAMPA Research Project 2024 *Aspetti geometrici e analitici di alcuni problemi locali e non-locali in mancanza di compattezza*, principal investigator: Simone Secchi;
- DiSPeA Research Project 2024 *Problemi non-lineari: modelli, teoria e simulazioni numeriche*, principal investigator: Raffaella Servadei, grant period: April 4, 2024 - December 31, 2024;
- DiSPeA Research Project 2025 *Algoritmi adattativi a finestra variabile per il riconoscimento di attività umane in dispositivi a basso consumo energetico: teoria e applicazioni*, principal investigator: Valerio Freschi, grant period: January 1, 2025 - December 31, 2025.

INVITED SCIENTIFIC ACTIVITIES

- on September 24-28, 2001 lecture *Solutions of a class of semilinear elliptic variational inequalities via mountain pass type or linking type techniques*, at the *Fourth European conference on elliptic and parabolic problems* at Gaeta, Italy;
- on October 10, 2002 lecture *A stability result for variational inequalities*, at the school on *Nonlinear analysis and differential equations* at the University of Milan 'Bicocca', Italy;

- on September 8-13, 2003 lecture *Risultati di stabilità per disequazioni variazionali semilineari ellittiche*, at the *XVII Congresso dell'Unione Matematica Italiana* at the University of Milan 'Bicocca', Italy;
- on December 11, 2004 lecture *Soluzioni multiple di disequazioni variazionali con termine superlineare*, at the *III Convegno Dipartimentale* at Perugia, Italy;
- on April 26 - May 13, 2005 lecture *Multiplicity of solutions for semilinear variational inequalities*, at the spring school on *Variational problems in nonlinear analysis* at SISSA, Trieste, Italy;
- on December 5, 2006 lecture *Teoria dei punti critici e disequazioni variazionali*, at the University 'Mediterranea' of Reggio Calabria, Italy;
- on September 24-29, 2007 lecture *Alcuni risultati di regolarità per equazioni quasilineari ellittiche*, at the *XVIII Congresso dell'Unione Matematica Italiana* in Bari, Italy;
- on June 4-7, 2008 lecture *Quasilinear elliptic equations with weights*, at the *Functional analysis: methods and applications (FAMA'08)* at Amantea, Italy;
- on June 18, 2008 lecture *Soluzioni deboli per equazioni quasilineari ellittiche con pesi*, at the University Politecnica delle Marche, Ancona, Italy;
- on July 2-9, 2008 lecture *p-Laplacian equations with singular weights: existence and regularity results*, at the *WCNA 2008, 5th World congress of nonlinear analysts* in Orlando, Florida, USA;
- on January 13, 2009 lecture *Equazioni di tipo p-laplaciano con pesi singolari*, at the University of Verona, Italy;
- on May 25-29, 2009 lecture *Elliptic equations with Hardy terms*, at the *6th European conference on elliptic and parabolic problems* in Gaeta, Italy;
- on April 14-16, 2010 lecture *Nonexistence for p–Laplace equations with singular terms*, at the *International workshop on variational, topological and set-valued methods for nonlinear differential problems* in Messina, Italy;
- on May 25-28, 2010 lecture *A variational approach to semilinear elliptic variational inequalities with dependence on the gradient* at *The 8th AIMS Conference on dynamical systems, differential equations and applications* in Dresden, Germany;
- on October 15, 2010 lecture *Disequazioni variazionali ellittiche con nonlinearità dipendente dal gradiente*, at the University of Perugia, Italy;
- on January 20-22, 2011 poster *Regularity and qualitative properties for quasilinear elliptic equations*, at the *Variational and perturbative methods for nonlinear differential equations* in Venice, Italy;
- on May 31, 2011 lecture *Esistenza, regolarità e proprietà delle soluzioni di problemi semilineari e quasilineari ellittici*, at the *Seminari di Analisi del Dipartimento di Matematica dell'Università della Calabria* at the University of Calabria, Italy;
- on July 5-8, 2011 lecture *Some results on quasilinear elliptic PDEs*, at the *International conference on nonlinear operators, differential equations and applications* in Cluj-Napoca, Romania;
- on April 18-21, 2012 lecture *Variational methods for equations driven by the fractional Laplacian*, at the *Variational and geometric methods in PDE's* in Ancona, Italy;
- on May 21-25, 2012 lecture *Fractional Laplacian equations with subcritical and critical growth*, at the *7th European conference on elliptic and parabolic problems* in Gaeta, Italy;
- on May 28 - June 1, 2012 lecture *A variational approach to fractional Laplace equations*, at the *Workshop on nonlinear partial differential equations on the occasion of the sixtieth birthday of Patrizia Pucci* in Perugia, Italy;
- on June 6-9, 2012 lecture *Nonlocal equations of elliptic type: a variational approach*, at the *Variational and topological methods: theory, applications, numerical simulations and open problems* in Flagstaff, Arizona, USA;

- on July 1-5, 2012 lecture *Mountain Pass and Linking solutions for fractional Laplacian equations*, at the *9th AIMS conference on dynamical systems, differential equations and applications* in Orlando, Florida, USA;
- on October 5-6, 2012 lecture *Elliptic problems driven by the fractional Laplacian*, at the *Two days on nonlocal operators and applications* in Parma, Italy;
- on November 22-23, 2012 lecture *On some non-local problems involving the fractional Laplace operator*, at the *Seminar days in Warsaw* at the University of Warsaw, Poland;
- on January 24, 2013 lecture *Nonlocal fractional Laplacian equations*, at the *Meeting on Mathematics* at the University 'Mediterranea' of Reggio Calabria, Italy;
- on April 27-29, 2013 lecture *Scienza e matematica: quali responsabilità?*, at the *Celebrazioni per il Cinquantenario del Liceo Scientifico di Pergola* at Pergola, Italy;
- on May 6, 2013 lecture *Problemi nonlocali di tipo Laplaciano frazionario*, at the University 'Mediterranea' of Reggio Calabria, Italy;
- on June 5, 2013 lecture *Operatori non-locali di tipo Laplaciano frazionario*, at the *Giornata UNICAL dell'Analisi Matematica* at the University of Calabria, Italy;
- on July 1-3, 2013 lecture *Elliptic nonlocal fractional equations*, at the Bogazici University in Istanbul, Turkey;
- on July 3-6, 2013 lecture *Nonlocal problems driven by the fractional Laplacian*, at the *Anatolian communications in nonlinear analysis* in Bolu, Turkey;
- on August 2, 2013 lecture *Some results on nonlocal fractional equations*, at the University of Perugia, Italy;
- on October 22, 2013 lecture *Elliptic problems involving the fractional Laplace operator*, at the *Seminars on nonlinear analysis* at the University 'Mediterranea' of Reggio Calabria, Italy;
- on October 24-26, 2013 lecture *Fractional nonlocal operators*, at the *4th International school on computational commutative algebra and algebraic geometry* at the University of Messina, Italy;
- on March 2-8, 2014 lecture *Equazioni ellittiche in ambito non-locale*, at the University of Perugia, Italy;
- on March 31 - April 4, 2014 lecture *On some equations in a non-local setting*, at the University of Cagliari, Italy;
- on May 26-30, 2014 lecture *On some nonlocal fractional equations*, at the *8th European conference on elliptic and parabolic problems* in Gaeta, Italy;
- on June 10-11, 2014 lecture *Some recent results for fractional Laplacian problems*, at the *International symposium on applied analysis* at the University of Zurich, Switzerland;
- on July 7-11, 2014 lecture *Nonlocal nonlinear problems*, at the *10th AIMS Conference on Dynamical Systems, Differential Equations and Applications*, Special Session *Variational methods for discrete and continuous boundary value problems (with applications)* in Madrid, Spain;
- on July 7-11, 2014 lecture *Variational analysis for fractional elliptic equations*, at the *10th AIMS Conference on Dynamical Systems, Differential Equations and Applications*, Special Session *Variational analysis and applications to equilibrium problems* in Madrid, Spain;
- on September 25, 2014 lecture *Critical equations involving fractional nonlocal operators*, at the *International Workshop on Nonlinear Analysis and Applications to Economics* at the University of Craiova, Romania;
- on February 6, 2015 lecture *Variational methods for nonlocal equations*, at the Università degli Studi di Palermo, Italy;
- on February 9, 2015 lecture *Fractional nonlinear problems*, at the Università degli Studi di Catania, Italy;
- on March 25-29, 2015 lecture *On some equations in a nonlocal fractional setting*,

at the *Conference on Partial Differential Equations* at the Technische Universität München, München, Germany;
- on November 3, 2015 lecture *Nonlinear problems involving the fractional Laplacian*, at the *Methods of Real Analysis and Partial Differential Equations* at the Accademia Pontaniana, Naples, Italy;
- on January 13, 2016 lecture *Critical fractional equations with concave-convex nonlinearities*, at the *Una giornata sulle equazioni ellittiche non lineari*, at the Università degli Studi di Perugia, Italy;
- on March 17, 2016 lecture *Nonlocal fractional problems via variational methods*, at the Alma Mater Studiorum - Università di Bologna, Italy;
- on January 27, 2017 lecture *Fractional Laplacian problems and related topics*, at the Workshop *Fractional calculus and its applications* at the Università Telematica Uninettuno, Roma, Italy;
- on February 23-24, 2017 lecture *Variational methods for nonlocal fractional problems*, at the *Two-day meeting on PDEs* at the Università degli Studi di Perugia;
- on May 22-26, 2017 lecture *Some recent results in nonlocal fractional problems*, at the *International conference on elliptic and parabolic problems* in Gaeta, Italy;
- on January 11-12, 2018 lecture *Topological methods for fractional critical equations*, at the *Two nonlinear days in Perugia* at the Università degli Studi di Perugia;
- on June 14, 2018 lecture *Matematica: mondo da scoprire o scoperta del mondo?*, at the *UniUrb Spritz* in Urbino, Italy;
- on December 12, 2018 lecture *Il segreto per essere primi*, at the *Matematica e Realtà* at the Università degli Studi di Urbino Carlo Bo;
- on February 11, 2019 lecture *Donne con i numeri*, at the *Le donne nella scienza: una risorsa preziosa per costruire nuovi ponti tra tecnologia e imprenditorialità*, at the Regione Marche, Ancona, Italy;
- on May 18, 2019 lecture *Equazioni differenziali e modelli matematici: come la Matematica vede il mondo*, at the *Freschi d'Accademia* at the Università degli Studi di Urbino Carlo Bo;
- on May 20-24, 2019 lecture *Multiplicity of solutions for fractional problems: the effect of the domain topology*, at the *International conference on elliptic and parabolic problems* in Gaeta, Italy;
- on July 18, 2019 lecture *On some nonlocal problems*, at the Politecnico di Bari, Italy;
- on October 14, 2019 lecture *Si può creare un codice inviolabile?*, at the *Matematica e Realtà* at the Università degli Studi di Urbino Carlo Bo;
- on February 3-5, 2020 lecture *Nonlocal problems with lack of compactness*, at the *Workshop on nonlinear PDEs and applications* at the Università degli Studi di Perugia;
- on May 13, 2021 lecture *L'ottimizzazione è solo matematica?*, at the course *Ottimizzazione per il design* of the Corso di Laurea in Design of the Università degli Studi 'Mediterranea' di Reggio Calabria, online;
- on May 18, 2021 lecture *A flower-shape geometry for the study of nonlinear problems*, at the *Function Spaces/Nonlinear Analysis and PDEs Online Seminars 2020-2021*, online;
- on September 2-3, 2021 lecture *Lack of compactness, symmetries and a flower-shape geometry*, at the *Nonlinear Elliptic PDEs in Ancona*, online;
- on October 8, 2021 lecture *L'arte dell'ottimizzare*, at the *Seminari scientifici del Corso di Studio in Matematica* of the Università degli Studi di Perugia, online;
- on November 17, 2021 lecture *L'enigma dei numeri primi*, as part of the seminars for students of the Corso di Laurea Magistrale in *Filosofia dell'Informazione. Teoria e Gestione della Conoscenza* of the Università degli Studi di Urbino Carlo Bo, online;
- on December 17, 2021 lecture *Differential equations and mathematical modeling*,

as part of the seminars for Ph.D. students of the Corso di Dottorato in *Research Methods in Science and Technology* of the Università degli Studi di Urbino Carlo Bo, online;

- on January 31 - February 2, 2022 lecture *Nonlinear problems: compactness and partial symmetries*, at the *ICMC Summer Meeting on Differential Equations - 2022 Chapter*, online;
- on March 20-26, 2022 lecture *Nonlinear problems with partially symmetric solutions*, at the *MFO-RIMS Tandem Workshop: Nonlocality in Analysis, Probability and Statistics*, online;
- on March 30, 2022 lecture *Matematica, epidemie e altri disastri*, at the *Matematica e Realtà* at the Università degli Studi di Urbino Carlo Bo;
- on May 11, 2022 lecture *Lo strano caso dei numeri primi*, at the *Matematica e Realtà* at the Università degli Studi di Urbino Carlo Bo;
- on June 9, 2022 lecture *The role of symmetry in the study of elliptic problems*, at the Shandong University of Science and Technology, Qingdao (Cina), online;
- on June 20-24, 2022 lecture *Nonlinear problems with lack of compactness*, at the *Summer School in Nonlinear Analysis*, at the Università della Tuscia, Viterbo, Italy;
- on October 12-15, 2022 lecture *Partial symmetry and compactness in variational problems*, at the *International Workshop on Nonlinear Analysis and its Applications (IWNAA 2022)*, at the Sakarya University of Applied Sciences and Sakarya University, Turkey;
- on October 28, 2022 lecture *Nonlinear problems with symmetries*, at the *A day on structures and geometrical analysis*, at the Università degli Studi di Perugia;
- on February 22-24, 2023 lecture *Nonlocal problems with critical nonlinearities*, at the *Journées d'Analyse Numérique et Optimisation (JANO'14)*, at the Rabat University, Morocco;
- on May 4, 2023 lecture *Nonlocal critical growth elliptic problems with jumping nonlinearities*, at the Ciclo di seminari *Problemi differenziali non lineari*, at La Sapienza Università di Roma;
- on May 22-24, 2023 lecture *Lack of compactness and partial symmetries*, at the *International Conference on Elliptic and Parabolic Problems*, at the Accademia Pontaniana, Napoli;
- on May 29 - June 1, 2023 lecture *On a flower-shape geometry*, at the *Algebraic and geometric methods of analysis (AGMA 2023)*, Ukraine, online;
- on July 11-14, 2023 lecture *On Yamabe-type nonlocal problems*, at the *14th International Conference on Fixed Point Theory and its Applications (ICFPTA 2023)*, in Brasov (Romania);
- on July 27-28, 2023 lecture *On fractional equations with critical growth*, at the *International Conference on Recent Advances in Partial Differential Equations and Applications*, in Casablanca (Morocco);
- on January 13-20, 2024 lecture *Nonlocal Brezis-Nirenberg type problems*, at the *Analysis Seminars*, at Fachbereich Mathematik - Universitat Salzburg, Salzburg (Austria);
- on March 13, 2024 lecture *La solitudine dei numeri primi*, at the *Matematica e Realtà* at the Università degli Studi di Urbino Carlo Bo;
- on May 17-18, 2024 lecture *Fractional problems with lack of compactness*, at the *Two Nonlinear Days at the anniversary of Patrizia Pucci's retirement*, at the Università degli Studi di Perugia;
- on May 20-24, 2024 lecture *Nonlocal Yamabe-type equations*, at the *International conference on elliptic and parabolic problems*, in Gaeta, Italy;
- on May 27-30, 2024 lecture *On some nonlocal critical equations*, at the *Algebraic and geometric methods of analysis (AGMA 2024)*, Ukraine, online;
- on June 7-13, 2024 lecture *Yamabe fractional problems*, at the *50th International*

Conference Applications of Mathematics in Engineering and Economics (AMEE), Special Workshop *Fractional Calculus, Special Functions and Applications*, in Sozopol, Bulgaria;

- on June 30 - July 3, 2024 lecture *Nonlocal critical growth elliptic problems with jumping nonlinearities*, at the *33rd European Conference on Operational Research (EURO 2024)*, in Copenhagen, Denmark;
- on July 23-26, 2024 lecture *Fractional Brezis-Nirenberg type equations*, at the *2nd International AMS-UMI Joint Meeting*, Special Session *PDEs Applications to Nonlinear Phenomena*, in Palermo, Italy;
- on September 15-20, 2024 lecture *Jumping nonlinearities and nonlocal fractional problems*, at the *Nonlocal Problems in Mathematical Physics, Analysis and Geometry*, in Hangzhou (China);
- on November 13-15, 2024 lecture *Fractional critical problems with jumping nonlinearities*, at the *Nonlinear and Geometric Analysis in Nancy*, at the Institut Élie Cartan de Lorraine (IECL), Nancy (France).

CONFERENCES ORGANIZED

- Minisymposium *Variational methods and nonlinear PDEs'* at the *7th European conference on elliptic and parabolic problems* in Gaeta, Italy, on May 21-25, 2012;
- *School on nonlinear elliptic problems* at the Dipartimento di Matematica e Applicazioni, Università di Milano 'Bicocca', on January 20-24, 2014, homepage: `https://www.mat.unical.it/~servadei/ProgettoGNAMPA2013/ScuolaMilano2013.htm`;
- Minisymposium *Recent trends in nonlinear analysis and its applications* at the *8th European conference on elliptic and parabolic problems* in Gaeta, Italy, on May 26-30, 2014;
- Special Session *Nonlocal fractional problems and related topics* at the *10th AIMS Conference on Dynamical Systems, Differential Equations and Applications* in Madrid, Spain, on July 7-11, 2014;
- Conference *Recent trends on nonlinear phenomena* at the Università 'Mediterranea' di Reggio Calabria, on November 5-7, 2014, homepage: `https://www.mat.unical.it/~servadei/ConferenceReggioCalabria/`;
- Meeting on *Mathematical Analysis, Modelling and Applications* at the Università 'Mediterranea' di Reggio Calabria, on June 5, 2015;
- Conference *Two nonlinear days in Urbino* at the Università degli Studi di Urbino Carlo Bo, on July 2-3, 2015, homepage: `http://www.sti.uniurb.it/servadei/TwoNonlinearDaysInUrbino/`;
- *2nd Conference on Recent Trends in Nonlinear Phenomena* at the Università degli Studi di Napoli 'Parthenope', on November 4-6, 2015, homepage: `http://www.sti.uniurb.it/servadei/ConferenceNapoli/`;
- Minisymposium *Nonlinear models and beyond* at the *9th European conference on elliptic and parabolic problems* in Gaeta, Italy, on May 23-27, 2016;
- Conference *Two nonlinear days in Urbino 2016* at the Università degli Studi di Urbino Carlo Bo, on July 7-8, 2016, homepage: `http://www.sti.uniurb.it/servadei/TwoNonlinearDaysInUrbino2016/`;
- *3rd Conference on Recent Trends in Nonlinear Phenomena* at the Università degli Studi di Perugia, on September 28-30, 2016, homepage: `http://www.sti.uniurb.it/servadei/ConferencePerugia2016/`;
- *Topics in nonlinear analysis and applications* at the Università degli Studi di Milano 'Bicocca', on March 15-16, 2017, homepage: `http://www.sti.uniurb.it/servadei/MeetingMilanoBicocca2017/`;
- Minisymposium *Nonlocal fractional problems and related topics* at the *International conference on elliptic and parabolic problems* in Gaeta, Italy, on May 22-26, 2017;

- Conference *Two nonlinear days in Urbino 2017* at the Università degli Studi di Urbino Carlo Bo, on July 6-7, 2017, homepage: `http://www.sti.uniurb.it/servadei/TwoNonlinearDaysInUrbino2017/`;
- *4th Conference on Recent Trends in Nonlinear Phenomena* at the Università degli Studi di Messina, on September 18-21, 2017, homepage: `http://www.sti.uniurb.it/servadei/ConferenceMessina2017/`;
- *Bicocca-Urbino Days in Nonlinear Analysis* at the Università degli Studi di Milano 'Bicocca', on May 24-25, 2018, homepage: `https://sites.google.com/campus.unimib.it/biurb/2018`;
- Conference *Two nonlinear days in Urbino 2018* at the Università degli Studi di Urbino Carlo Bo, on July 12-13, 2018, homepage: `http://www.sti.uniurb.it/servadei/TwoNonlinearDaysInUrbino2018/`;
- *Bicocca-Urbino Days in Nonlinear Analysis: recent advances in variational methods* at the Università degli Studi di Urbino Carlo Bo, on May 30-31, 2019, homepage: `https://sites.google.com/campus.unimib.it/biurb/2019`;
- Conference *Two nonlinear days in Urbino 2019* at the Università degli Studi di Urbino Carlo Bo, on July 11-12, 2019, homepage: `http://www.sti.uniurb.it/servadei/TwoNonlinearDaysInUrbino2019/`;
- *Workshop on PDEs and Applications*, online on June 18, 2021, homepage: `http://www.sti.uniurb.it/servadei/ConvegnoProgettoGNAMPA2020/`;
- Conference *Two nonlinear days in Urbino 2021*, online on July 1-2, 2021, homepage: `http://www.sti.uniurb.it/servadei/TwoNonlinearDaysInUrbino2021/`;
- Conference *Two nonlinear days in Urbino 2022* at the Università degli Studi di Urbino Carlo Bo, on July 14-15, 2022, homepage: `http://www.sti.uniurb.it/servadei/TwoNonlinearDaysInUrbino2022/`;
- Conference *Recent and New Perspectives in Nonlinear Analysis* at the Università degli Studi di Urbino Carlo Bo, on November 3-4, 2022, homepage: `http://www.sti.uniurb.it/servadei/NonlinearAnalysisUrbino2022/`;
- *14th International Conference on Fixed Point Theory and its Applications (ICFPTA 2023)* in Brasov (Romania), on July 11-14 2023, homepage: `https://icfpta2023.wordpress.com/`;
- Poster Session *Recent trends in nonlocal problems* at the *International conference on elliptic and parabolic problems* at the Accademia Pontaniana, Napoli, on May 22-24, 2023;
- Conference *Two nonlinear days in Urbino 2023* at the Università degli Studi di Urbino Carlo Bo, on July 6-7, 2023, homepage: `http://www.sti.uniurb.it/servadei/TwoNonlinearDaysInUrbino2023/`;
- Conference *Two nonlinear days in Urbino 2024* at the Università degli Studi di Urbino Carlo Bo, on July 4-5, 2024, homepage: `http://www.sti.uniurb.it/servadei/TwoNonlinearDaysInUrbino2024/`.

PUBLICATIONS

- Books

  1. G. Molica Bisci, V. Radulescu and R. Servadei, Variational methods for nonlocal fractional problems, *Encyclopedia of Mathematics and its Applications*, **162**, 2016, Cambridge University Press, ISBN 9781107111943.

- Papers

2. A. Fiacca, N. Matzakos, N. S. Papageorgiou and R. Servadei, Nonlinear elliptic differential equations with multivalued nonlinearities, *Proc. Indian Acad. Sci. Math. Sci.*, **111**, no. 4 (2001), 489-508.
3. A. Fiacca and R. Servadei, Extremal solutions for nonlinear Neumann problems, *Discuss. Math. Differ. Incl. Control Optim.*, **21**, no. 2 (2001), 191-206.
4. M. Matzeu and R. Servadei, A linking type method to solve a class of semilinear elliptic variational inequalities, *Adv. Nonlinear Stud.*, **2**, no. 1 (2002), 1-17.
5. P. Magrone and R. Servadei, A stability result for mountain pass type solutions of semilinear elliptic variational inequalities, *Nonlinear Stud.*, **9**, no. 4 (2002), 387-405.
6. T. Cardinali and R. Servadei, Existence theorems for periodic semilinear impulsive problems (viable and not viable cases), *Pure Math. Appl.*, **14**, no. 3 (2003), 161-171.
7. T. Cardinali, N. S. Papageorgiou and R. Servadei, The Neumann problem for quasilinear differential equations, *Arch. Math. (Brno)*, **40**, no. 4 (2004), 321-333.
8. T. Cardinali and R. Servadei, Periodic solutions of nonlinear impulsive differential inclusions with constraints, *Proc. Amer. Math. Soc.*, **132**, no. 8 (2004), 2339-2349.
9. T. Cardinali and R. Servadei, On the existence of solutions for nonlinear impulsive periodic viable problems, *Cent. Eur. J. Math.*, **2**, no. 4 (2004), 573-583.
10. R. Servadei and E. Valdinoci, A multiplicity result for a class of nonlinear variational inequalities, *Nonlinear Stud.*, **12**, no. 1 (2005), 37-48.
11. R. Servadei, Mountain Pass and Linking methods for semilinear elliptic variational inequalities: existence, stability and multiplicity results, *Tesi di Dottorato*, Roma 2004 (an abstract has appeared in *Boll. Unione Mat. Ital. Sez. A Mat. Soc. Cult. (8)*, Dic.2005/1).
12. R. Servadei, Existence results for semilinear elliptic variational inequalities with changing sign nonlinearities, *NoDEA Nonlinear Differential Equations Appl.*, **13**, no. 3 (2006), 311-335.
13. P. Magrone, D. Mugnai and R. Servadei, Multiplicity of solutions for semilinear variational inequalities via linking and ∇-theorems, *J. Differential Equations*, **228** (2006), 191-225.
14. M. Grossi and R. Servadei, Morse index for solutions of the nonlinear Schrödinger equation in a degenerate setting, *Ann. Mat. Pura Appl.*, **186**, no. 3 (2007), 433-453.
15. P. Pucci and R. Servadei, On weak solutions for p-Laplacian equations with weights, *Atti Accad. Naz. Lincei Cl. Sci. Fis. Mat. Natur. Rend. Lincei (9) Mat. Appl.*, **18** (2007), 257-267.
16. P. Pucci and R. Servadei, Existence, non-existence and regularity of radial ground states for p-Laplacian equations with singular weights, *Ann. Inst. H. Poincaré Anal. Non Linéaire*, **25**, no. 3 (2008), 505-537.
17. P. Pucci and R. Servadei, Regularity of weak solutions of homogeneous or inhomogeneous quasilinear elliptic equations, *Indiana Univ. Math. J.*, **57**, no. 7 (2008), 3329-3363.
18. M. Matzeu and R. Servadei, Semilinear elliptic variational inequalities with dependence on the gradient via Mountain Pass techniques, *Nonlinear Anal.*, **72** (2010), 4347-4359.
19. R. Servadei and M. Squassina, Soliton dynamics for a general class of Schrödinger equations, *J. Math. Anal. Appl.*, **365** (2010), 776-796.

20. P. Pucci and R. Servadei, Nonexistence for p-Laplace equations with singular weights, *Commun. Pure Appl. Anal.*, **9**, no. 5 (2010), 1421-1438.
21. M. Matzeu and R. Servadei, Stability for semilinear elliptic variational inequalities depending on the gradient, *Nonlinear Anal.*, **74** (2011), 5161-5170.
22. R. Servadei, A semilinear elliptic PDE not in divergence form via variational methods, *J. Math. Anal. Appl.*, **383** (2011), 190-199.
23. M. Matzeu and R. Servadei, A variational approach to a class of quasilinear elliptic equations not in divergence form, *Discrete Contin. Dyn. Syst. Ser. S*, **5**, no. 4 (2012), 819-830.
24. R. Servadei and E. Valdinoci, Mountain Pass solutions for non-local elliptic operators, *J. Math. Anal. Appl.*, **389** (2012), 887-898.
25. M. Matzeu and R. Servadei, On variational inequalities driven by elliptic operators not in divergence form, *Adv. Nonlinear Stud.*, **12** (2012), 597-619.
26. R. Servadei and E. Valdinoci, Variational methods for non-local operators of elliptic type, *Discrete Contin. Dyn. Syst.*, **33**, no. 5 (2013), 2105-2137.
27. R. Servadei and E. Valdinoci, Lewy-Stampacchia type estimates for variational inequalities driven by (non)local operators, *Rev. Mat. Iberoam.*, **29**, no. 3 (2013), 1091-1126.
28. R. Servadei, Infinitely many solutions for fractional Laplace equations with subcritical nonlinearity, *Contemp. Math.*, **595** (2013), 317-340.
29. R. Servadei and E. Valdinoci, A Brezis-Nirenberg result for non-local critical equations in low dimension, *Commun. Pure Appl. Anal.*, **12**, no. 6 (2013), 2445-2464.
30. R. Servadei, The Yamabe equation in a non-local setting, *Adv. Nonlinear Anal.*, **2** (2013), 235-270.
31. A. Fiscella, R. Servadei and E. Valdinoci, A resonance problem for non-local elliptic operators, *Z. Anal. Anwendungen*, **32** (2013), 411-431.
32. R. Servadei and E. Valdinoci, Weak and viscosity solutions of the fractional Laplace equation, *Publ. Mat.*, **58**, no. 1 (2014), 133-154.
33. G. Molica Bisci, V. Radulescu and R. Servadei, Low and high energy solutions of nonlinear elliptic oscillatory problems, *C. R. Acad. Sci. Paris Ser. I*, **352** (2014), 117-122.
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65. V. Bogelein, F. Duzaar, N. Liao, G. Molica Bisci and R. Servadei, Gradient regularity for (s, p)-harmonic functions, submitted for publication.

RESEARCH ACTIVITY

My research interests include:

- semilinear and quasilinear elliptic equations;
- nonlocal integrodifferential equations;
- semilinear elliptic variational inequalities (subject of the Ph.D. Thesis);
- elliptic differential inclusions (subject of the Master Thesis) and equations;
- impulsive differential inclusions and equations.

In particular I study nonlinear elliptic equations by means of critical point theory and variational methods.

Nonlinear elliptic equations. In [14], we studied the Morse index of the single-peaked solutions of the nonlinear elliptic equation involving in the study of the standing wave solutions of the nonlinear Schrödinger equation. In particular, we proved that the Morse index of such solutions is related to the study of a matrix depending on the second derivative of the potential. We considered both non-degenerate potentials and degenerate ones (in particular we studied a potential which has a flat region of maxima).

In [15] and [16] by using the Mountain Pass Theorem and the constrained minimization method we proved existence of positive or compactly supported radial ground states, i.e. non–trivial non–negative weak solutions which tend to zero at infinity, for quasilinear singular elliptic equations with weights. We also established a Pohozaev type identity from which we deduced some non–existence results.

In [17] we discussed the regularity of the solutions of quasilinear elliptic equations essentially by means of the Moser iteration scheme and the translation method due to Nirenberg. We also gave some qualitative properties for the solutions of these equations. The results given in this paper allowed us to prove some regularity properties for radial ground states of the p–Laplacian elliptic equation studied in [15] and [16].

In [19] the soliton dynamics for a general class of nonlinear focusing Schrödinger problems in presence of non-constant external (local and nonlocal) potentials was considered. This class of problems includes various physically meaningful particular cases, such as Schrödinger equation with a spatial potential, Schrödinger equation with a time-independent external magnetic field, Hartree or Newton-Schrödinger type equation, weakly coupled Schrödinger system and so on. In particular in [19] we studied a system of Schrödinger equations in presence of nonlocal term by taking as initial datum the ground state solution of an associated autonomous elliptic equation. In the main theorem of the paper we showed that the solution of this system is close to this ground state, in a suitable sense. This result was proved using the conservation's laws of the masses and of the energy associated to the system and thanks to some estimates on the energy.

In [20] we gave some nonexistence theorems of nontrivial weak solutions for p-Laplacian equations with singular weights. The main tool for deriving this kind of results is a Pohozaev–type identity. We first showed that such identity holds true for weak solutions, sufficiently regular, of the problem. Then, under a suitable growth condition on the nonlinear term, we proved that every weak solution has the required regularity, so that the Pohozaev–type identity can be applied. From this identity we derived some nonexistence results, improving several theorems already appeared in the literature. In particular, we discussed the case when the nonlinearity and the weights are pure powers.

In [23] we considered a quasilinear elliptic equation not in divergence form with gradient-dependent nonlinear term. The nature of this problem is non-variational. Nevertheless, in order to get the existence of a non-trivial weak solution, we used a variational approach. Associating a suitable problem, variational in nature, with the equation, and performing an iterative technique, in the paper we proved the existence of a non-trivial weak solution and, moreover, a regularity result for such a solution, which is differentiable with its gradient α–Hőlder continuous for some $\alpha \in (0, 1)$.

In [22] we considered the elliptic equation studied in [23] when the nonlinear term does not depend on Du. In this framework we extended the results obtained in [23] in dimension $N = 3$ to the general case $N \geq 3$.

In [33] and in [50] we studied an elliptic problem involving a general operator in divergence form of p-Laplacian type when the nonlinearity is a power function perturbed by the presence of a term oscillating near the origin or at infinity. Through variational and topological methods we showed that the number of solutions of the problem is influenced by the competition between the power and the oscillatory term. We also gave some estimates for the Sobolev norm of the solutions. The results given in the paper extend some recent contributions, obtained for equations driven by the Laplace operator, to the case of the p-Laplacian and of operators more general than this one.

In [51] we considered an elliptic equation on fractal domains depending on a real parameter. Our approach was based on variational methods. More precisely, the existence of at least two non-trivial weak (strong) solutions for the treated problem was obtained exploiting a local minimum theorem for differentiable functionals defined on reflexive Banach spaces. A special case of the main result improved a classical application of the Mountain Pass Theorem in the fractal setting, given by Falconer and Hu.

In [57] we showed how to define suitable subgroups of the orthogonal group related the unbounded part of a strip-like domain $\omega \times \mathbb{R}^{d-m}$ with $d \geq m + 2$, in order to get "mutually disjoint" nontrivial subspaces of partially symmetric functions of $H_0^1(\omega \times \mathbb{R}^{d-m})$ which are compactly embedded in the associated Lebesgue spaces. As an application of the introduced geometrical structure we proved existence and multiplicity results for semilinear elliptic problems set in a strip-like domain, in presence of a nonlinearity which either satisfies the classical Ambrosetti-Rabinowitz condition or has a sublinear growth at infinity. The main theorems got along this paper may be seen as an extension of existence and multiplicity results, already appeared in the literature, for nonlinear problems set in the entire space, as for instance, the ones obtained in some celebrated papers due to Bartsch and Willem. The techniques used seems to be new.

In [63] we studied the existence of nontrivial weak solutions for a suitable class of critical systems driven by the p-Laplacian operator under homogenous Dirichlet boundary conditions, using a new Linking theorem and variational methods. This result extends well-known theorems for critical p-Laplacian equations to systems.

Nonlocal integrodifferential equations. In [24] we studied the existence of solutions for equations driven by a nonlocal integrodifferential operator with homogeneous Dirichlet boundary conditions. These equations have a variational structure and we found a non-trivial solution for them using the Mountain Pass Theorem. We proved this result for a general integrodifferential operator of fractional type and, as a particular case, we derived an existence theorem for the fractional Laplacian.

In [26] we studied the existence of non-trivial solutions for equations driven by a general nonlocal integrodifferential operator with a nonlinear term satisfying superlinear and subcritical growth conditions at zero and at infinity. This equation has a variational nature, and so its solutions can be found as critical points of the energy functional associated to the problem. In the paper we got such critical points using both the Mountain Pass Theorem and the Linking Theorem. As a particular case, we derived an existence theorem for an equation driven by the fractional Laplacian. The results presented in this paper may be

seen as the extension of some classical nonlinear analysis theorems to the case of fractional operators.

After [24] and [26], where a nonlocal integrodifferential problem with subcritical growth was considered, in [29, 30, 34, 36, 43] we studied some nonlocal fractional equations involving critical nonlinearities. In this framework we proved some existence results through variational techniques. As a concrete example, we derived some Brezis-Nirenberg type results in any space dimension, both for our model equation, that is for a critical equation driven by the fractional Laplacian, and also for critical problems with a lower order perturbation. In this sense these papers may be seen as the extension of the classical Brezis-Nirenberg results to a nonlocal setting.

In [28] we carried on the research started in [24] and [26], about nonlocal integrodifferential problems with subcritical growth nonlinearity. In [28] we discussed the existence of infinitely many solutions for a nonlocal, nonlinear equation with homogeneous Dirichlet boundary data. Adapting the classical variational techniques used in order to study the standard Laplace equation with subcritical growth nonlinearities to the nonlocal framework, along this paper we proved that our problem admits infinitely many weak solutions. These results may be seen as the extension of some classical nonlinear analysis theorems to the case of fractional operators.

In [31] we studied a nonlocal integrodifferential equation in the resonant case. In this setting we proved the existence of weak solutions using the Saddle Point Theorem. This result extends some theorems, known for the classical Laplace operator, to the nonlocal framework.

The paper [32] is devoted to the study of the regularity of the solutions of nonlocal integrodifferential equations of fractional Laplacian type. In particular, for this problem both the notion of weak and viscosity solution were considered. Along the paper we proved that every weak solution of this problem is continuous and bounded in the whole space. Moreover, in the main result of the paper, we showed that every weak solution is a viscosity one, provided the data are sufficiently smooth. As a consequence of this, in the nonlocal fractional framework the regularity theory for viscosity solutions, recently developed by Caffarelli and Silvestre, can be applied also to weak solutions.

In [35] we studied two nonlocal operators, that are both well known and widely studied in the literature in connection with elliptic problems of fractional type. Precisely, we considered the fractional Laplacian $(-\Delta)^s$ and another fractional operator, denoted by A_s, which is defined as the power of the Laplace operator and it is obtained by using the spectral decomposition of the Laplacian. Aim of the paper was to compare these two operators, with particular reference to their spectrum, in order to emphasize their differences. In the paper, by using the classical regularity theory for the eigenfunctions of the Laplace operator and some recent regularity results for the fractional Laplace equation, we showed that the eigenfunctions of these two operators are different. While, with respect to the eigenvalues of A_s and $(-\Delta)^s$, we proved that the first eigenvalue of $(-\Delta)^s$ is strictly less than the first one of A_s. To this purpose we used some extension results for both these fractional operators.

In [39] we studied a nonlocal fractional equation depending on two real parameters and with right-hand side with either sublinear or superlinear growth. A critical point result for differentiable functionals is exploited, in order to prove that the problem admits at least one non-trivial and non-negative (non-positive) solution, provided the parameters lie in a suitable range. The existence result obtained in the paper may be seen as a bifurcation theorem, which extends some results, well known in the classical Laplace setting, to the nonlocal fractional framework.

In [42] we considered a critical problem driven by the fractional Laplace operator, depending on a real parameter and with concave-convex power nonlinearities. The main results of the paper, obtained via variational methods, show the existence and multiplicity of solutions of the problem for different values of the parameter. The dependency on this parameter changes according to whether the concave power case or the convex power case occurs. This

result extends to the nonlocal fractional framework some theorems well know in the classical elliptic setting.

In [38] we gave the details of the proof of some density properties of smooth and compactly supported functions in the fractional Sobolev spaces and suitable modifications of them, which have found application in variational problems. The arguments are rather technical, but, roughly speaking, they rely on a basic technique of convolution (which makes functions C^∞), joined with a cut-off (which makes their support compact), with some care needed in order not to exceed the original support.

In [37] we studied a nonlocal equation of fractional Laplacian type. Under different types of conditions on the nonlinearity, by using a famous critical point theorem in the presence of splitting established by Brezis and Nirenberg, we obtained the existence of at least two nontrivial weak solutions for the problem. In this way, we extended a multiplicity result already known for classical elliptic equations, to the case of nonlocal fractional operators.

In [45] we considered a nonlocal fractional Laplace equation, depending on a parameter, with asymptotically linear right-hand side. The main result of this paper concerns the existence of weak solutions for this equation and it was obtained using variational and topological methods, namely as an application of the Saddle Point Theorem. It extends some results, well known for the Laplace operator, to the nonlocal fractional setting.

In [40] we studied the weak lower semicontinuity of a functional of fractional type. As a consequence of this regularity result, we proved the existence of a nontrivial weak solution for two different nonlocal critical equations driven by the fractional Laplace operator. These two existence results were obtained using, respectively, the direct method in the calculus of variations and critical points theory.

In [47] we proved Hopf's boundary point lemma for the fractional Laplacian. With respect to the classical formulation, in the nonlocal framework the normal derivative of the involved function u at $z \in \partial\Omega$ is replaced with the limit of the ratio $u(x)/(\delta_R(x))^s$ as $B_R \ni x \to z$, where $\delta_R(x) = \mathrm{dist}(x, \partial B_R)$ and $B_R \subset \Omega$ is a ball such that $z \in \partial B_R$. Along the paper we considered also an overdetermined problem, driven by the fractional Laplacian, in a bounded open set, containing the origin and satisfying the interior ball condition. We showed that, under suitable growth condition on the boundary data, the problem admits a solution only in a suitable ball centered at the origin: this explains the meaning of constrained symmetry. The proof of this result is based on a comparison principle, which has been proved along the paper, and on the Hopf's boundary point lemma.

In [46] we considered a critical nonlocal equation and we proved a multiplicity and bifurcation result for this problem, using a classical theorem in critical points theory. Precisely, we showed that in a suitable left neighborhood of any eigenvalue of the fractional Laplacian (or its generalization) the number of nontrivial solutions for the problem under consideration is at least twice the multiplicity of the eigenvalue. Hence, we extended a result already known for classical elliptic equations, to the case of nonlocal fractional operators.

In [41] and in [49] we proved the existence of infinitely many weak solutions for equations driven by nonlocal integrodifferential operators with homogeneous Dirichlet boundary conditions whose model is given by the fractional Laplacian. We considered different superlinear growth assumptions on the nonlinearity, starting from the well-known Ambrosetti–Rabinowitz condition. In this framework we obtained three different results about the existence of infinitely many weak solutions for the problem under consideration, by using the Fountain Theorem. All these theorems extend some classical results for semilinear Laplacian equations to the nonlocal fractional setting.

In [44] we studied a highly nonlocal problem involving a fractional operator combined with a Kirchhoff-type coefficient. The latter is allowed to vanish at the origin (degenerate case). By working in suitable fractional Sobolev spaces, which encode Dirichlet homogeneous boundary conditions, and exploiting the genus theory introduced by Krasnoselskii, we derived the existence of infinitely many weak solutions for the problem under consideration.

In [52] we proved the existence of at least three non-trivial solutions for a nonlocal

fractional equation in a suitable left neighborhood of any eigenvalue of $(-\Delta)^s$. At this purpose we employ a variational theorem of mixed type (one of the so-called ∇-theorems).

The book [1] provides researchers and graduate students with a thorough introduction to the variational analysis of nonlinear problems described by nonlocal operators. Part I begins the book with some basics facts about fractional Sobolev spaces. Part II is dedicated to the analysis of fractional elliptic problems involving subcritical nonlinearities, via classical variational methods and other novel approaches. Finally, Part III contains a selection of recent results on critical fractional equations. A careful balance is struck between rigorous mathematics and physical applications, allowing readers to see how these diverse topics relate to other important areas, including topology, functional analysis, mathematical physics, and potential theory.

In [48] we studied an eigenvalue problem for the fractional Laplacian and, in this setting, we gave a necessary and sufficient condition for the existence of a weak solution. With respect to the classical elliptic case, the proof of this result presents additional difficulties due to the nonlocal character of the operator involved in the problem.

The paper [53] deals with multiplicity and bifurcation results for nonlinear problems driven by the fractional Laplace operator and involving a critical Sobolev term. The main tools used in order to prove the main results of the paper are variational and topological methods and a suitable decomposition of the functional space where we look for solutions of the problem, through the eigenvalues of the fractional Laplace operator.

In [54] we studied the multiplicity of solutions for a critical fractional Laplace problem. Using the Lusternik-Schnirelman theory, we related the number of nontrivial solutions of the problem under consideration with the topology of the domain, extending the validity of well-known results for the classical Laplace equation to the fractional nonlocal setting.

In [55] we considered a fractional Kirchhoff problem in a bounded set, in presence of critical or supercritical nonlinearities. By combining variational techniques and a truncation argument, we proved two existence results for this equation.

In [58] we studied an equation driven by a nonlocal integrodifferential operator in presence of an asymmetric nonlinear term. Among the main results of the paper we proved the existence of at least a weak solution for this problem, under suitable assumptions on the asymptotic behavior of the nonlinearity at infinity. Moreover, we got the uniqueness of this solution, under additional requirements on the nonlinear term. We also gave a non-existence result for the problem under consideration. All these results were obtained using variational techniques and a monotonicity property of the eigenvalues of the nonlocal operator involved in the problem with respect to suitable weights, that we proved along the paper. This monotonicity property is of independent interest and represents the nonlocal counterpart of a famous result got by de Figueiredo and Gossez in the setting of uniformly elliptic operators.

In [59] we considered a parametric elliptic problem governed by the spectral Neumann fractional Laplacian on a bounded domain, with a general nonlinearity. This problem is related to the existence of steady states for Keller-Segel systems in which the diffusion of the chemical is nonlocal. By variational arguments we proved the existence of a weak solution as local minimum of the corresponding energy functional and we derived some qualitative properties of this solution. Finally, we proved a regularity result for weak solutions of the problem under consideration, which is of independent interest.

In the paper [60] we considered a nonlocal critical growth elliptic problem driven by the fractional Laplacian in presence of jumping nonlinearities. In the main results of the work we proved the existence of a nontrivial solution for the problem under consideration, using variational and topological methods. These existence results can be seen as the nonlocal counterpart of the ones known in the context of the Laplacian equations. In the nonlocal framework the arguments used in the classical setting have to be refined. Indeed the presence of the fractional Laplacian operator gives rise to some additional difficulties, that we are able to overcome proving new regularity results for weak solutions of nonlocal problems,

which are of independent interest.

In [61, 64, 65] we got various regularity results concerning higher Sobolev and Hölder regularity for weak solutions of the fractional p-Laplace equation of order $s \in (0,1)$, using precise local estimates proved in the paper itself.

In [62] we studied the existence of nonnegative solutions for a one parameter sublinear elliptic boundary-value problem driven by the fractional Laplacian operator. The existence of a weak solution, for any parameter beyond the first resonance, has been proved by using a slight variation of the classical Mountain Pass result due to Ambrosetti and Rabinowitz.

Semilinear elliptic variational inequalities. In [4, 5] we studied semilinear elliptic variational inequalities when the nonlinearity verifies suitable superlinear and subcritical growth conditions at zero and at infinity. In this framework we obtained existence, stability and multiplicity results by means of a penalization method and some classical variational theorems (the Mountain Pass Theorem and the Linking Theorem).

In [10] we studied a class of nonlinear variational inequalities which is larger than the one considered in [4]: the existence of solutions is obtained by means of the so called 'direct method'. This result, combined with the one given in [4], yields a multiplicity result for the problem considered in [4].

In [11] all these existence, stability and multiplicity results were extended to some variational inequalities involving a uniformly elliptic operator more general than the Laplacian. Moreover, some results were improved.

In [12] we obtained the existence of nontrivial solutions for a semilinear elliptic variational inequalities in the case of changing sign nonlinearities: as in the framework of semilinear elliptic equations we considered nonlinearities of the form $p(x)f(u)$, where p is a changing sign function and f satisfies superlinear and subcritical growth conditions.

In [13] we proved the existence of three solutions for a semilinear elliptic variational inequality. In order to get this goal we used a critical point theory for non-smooth functionals introduced by Degiovanni and Marzocchi. In [13], we got some abstract theorems which guarantee, under suitable geometrical and compactness conditions, the existence of 'critical' points (in the sense of Degiovanni and Marzocchi) for non regular functionals. By applying these results to suitable functionals we were able to prove the multiplicity theorem mentioned above.

In [18] we considered a semilinear variational inequality with gradient-dependent nonlinear term. Obviously the nature of this problem is non-variational. Nevertheless we studied that problem associating a suitable semilinear variational inequality, variational in nature, with it, and performing an iterative technique already used in order to treat semilinear elliptic equations when there is a gradient dependence on the nonlinearity. We proved the existence of a non-trivial non-negative weak solution u for the problem using essentially variational methods, a penalization technique and an iterative scheme. Via Lewy-Stampacchia estimates and regularity theory for elliptic equations we also showed that u is differentiable and its gradient is α–Hőlder continuous for $\alpha \in (0,1)$.

In [21] we proved a result about the continuous dependence on the data for the weak solutions of semilinear elliptic variational inequalities with nonlinear term depending on the gradient of the solution, found with the technique used in [18].

In [25] the approach used in [18] was adapted in order to get an existence and regularity result for a semilinear variational inequality driven by an operator not in divergence form. Also in this case the problem has not a variational structure but, despite that, the solutions of the problem were obtained as critical points of a functional suitably associated with the variational inequality.

The purpose of [27] was to derive some Lewy-Stampacchia estimates in some cases of interest, such as the ones driven by nonlocal operators. Since we performed an abstract approach to the problem, this provided, as a byproduct, Lewy-Stampacchia estimates in more classical cases as well. In particular, we had recovered the known estimates for the

standard Laplacian, the p-Laplacian, and the Laplacian in the Heisenberg group. In the nonlocal framework we proved a Lewy-Stampacchia estimate for a general integrodifferential operator and, as a particular case, for the fractional Laplacian. Both the abstract framework and the results in the nonlocal setting seem to be new in the literature.

In [56] we considered a nonlocal fractional variational inequality, driven by the fractional Laplacian. Using an iterative technique and a penalization method, we got the existence of a nontrivial nonnegative solution for this problem, performing the Mountain Pass Theorem. This result can be seen as the extension of [18], where a variational inequalities driven by the Laplace operator was studied, to the local fractional setting.

Elliptic differential inclusions and equations. In my master thesis and in some other works (see [2, 3, 7]) I studied elliptic differential inclusions and equations by using the method of sub-solutions and super-solutions.
Nonlinear elliptic equations under Dirichlet or Neumann homogenous conditions were been studied when the nonlinearity is a Carathèodory function verifying suitable growth conditions (see [3, 7]) or when the nonlinear part is a monotone or non-monotone multifunction (see [2]). In case of Carathèodory nonlinearities or monotone multifunctions we prove the existence of solutions by means of the method of sub-solutions and super-solutions combined with penalization and truncation techniques. When the nonlinear part is a non-monotone multifunction the differential inclusion gives rise to a hemivariational inequality which we studied by using the critical point theory for locally Lipschitz functional introduced by Chang. In this contest we also obtained some multiplicity results (see [2]).

Impulsive differential inclusions and equations. The impulsive differential equations represent a natural mathematical model to describe many physical and biological phenomena characterized by immediate changes at some time instants which can be fixed at the beginning of the process. The possibility of wide practical applications of impulsive differential equations explains the still growing interest of many authors in the investigation of these equations. In the recent past, the attention has been given to impulsive differential inclusions and interesting results concerning the existence of periodic solutions for first order impulsive differential inclusions have appeared.

In [6] we studied the existence of periodic solutions for an impulsive problem involving a semilinear differential equation with semi-continuity multifunctions. We have considered both the viable case and the not viable one, obtaining results which improve theorems already known in literature.

In [8] we obtained the existence of periodic solutions for a viable impulsive differential inclusion by using a result due to Hristova–Bainov about the existence of a periodic solution for impulsive differential equations together with an approximation argument. In the framework of viable problems other results were obtained in [9].

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  - *Dynamics of Continuous, Discrete and Impulsive Systems*;

- *Discrete and Continuous Dynamical Systems*;
- *Discrete and Continuous Dynamical Systems - Series B*;
- *Electronic Journal of Differential Equations*;
- *Fractional Calculus and Applied Analysis*;
- *International Journal of Mathematics and Mathematical Sciences*;
- *Israel Journal of Mathematics*;
- *Journal of Analysis*;
- *Journal of Differential Equations*;
- *Journal of Mathematical Analysis and Applications*;
- *Journal of Mathematical Physics*;
- *Journal of Pseudo-Differential Operators and Applications*;
- *Mathematical Communications*;
- *Mathematical Methods in the Applied Sciences*;
- *Mathematische Nachrichten*;
- *Mediterranean Journal of Mathematics*;
- *Methods of Functional Analysis and Topology*;
- *Nonlinearity*;
- *Nonlinear Analysis Series A - Theory Methods and Applications*;
- *Nonlinear Analysis Series B - Real World Applications*;
- *Nonlinear Analysis: Modelling and Control*;
- *Nonlinear Differential Equations and Applications (NoDEA)*;
- *Proceedings of the Edinburgh Mathematical Society*;
- *Proceedings Mathematical Sciences*;
- *Revista Matematica Iberoamericana*;
- *Transactions of the American Mathematical Society*;

- referee for the following series:

  - *Progress in Nonlinear Differential Equations and Their Applications* (Birkhauser series);

- since 2007 reviewer for *Mathematical Reviews*;

- since 2013 reviewer for *Zentralblatt Math.*

AWARDS AND RECOGNITIONS

- *Top Cited Article 2007 - 2011* awarded to Patrizia Pucci and Raffaella Servadei for the paper entitled *Existence, non-existence and regularity of radial ground states for p-Laplacian equations with singular weights* published in *Ann. Inst. H. Poincaré Anal. Non Linéaire*, **25**, no. 3 (2008), 505-537;
- *Highly Cited Researchers 2017* from Clarivate Analytics, homepage: `https://clarivate.com/hcr/2017-researchers-list/`;
- *Highly Cited Researchers 2018* from Clarivate Analytics, homepage: `https://hcr.clarivate.com/`;
- Award *Freschi d'Accademia*, from the Associazione culturale per le Marche *Le Cento Città* on May 18, 2019, as an excellence of the Università degli Studi di Urbino Carlo Bo in the scientific area, homepage: `http://new.lecentocitta.it/freschi-daccademia-urbino-18-maggio-palazzo-passionei/`;
- *James S.W. Wong JMAA Prize 2018* awarded from Editorial Board of Journal of Mathematical Analysis and Applications to Raffaella Servadei and Enrico Valdinoci for the paper *Mountain Pass solutions for non-local elliptic operators* published in *J. Math. Anal. Appl.*, **389** (2012), 887-898, homepage: `https://www.journals.else`

vier.com/journal-of-mathematical-analysis-and-applications/ news/winners-of-2018-jmaa-wong-prize-announced;
- *Highly Cited Researchers 2019* from Web of Science Group, homepage: https://recognition.webofsciencegroup.com/awards/highly-cited/2019/;
- *Highly Cited Researchers 2020* from Clarivate - Web of Science Group, homepage: https://recognition.webofsciencegroup.com/awards/highly-cited/2020/;
- *Highly Cited Researchers 2021* from Clarivate Analytics, homepage: https://recognition.webofscience.com/awards/highly-cited/2021/;
- *Highly Cited Researchers 2022* from Clarivate Analytics, homepage: https://recognition.webofscience.com/awards/highly-cited/2022/.

MASTER THESES

- advisor, in collaboration with Professor Annamaria Canino, of the Tesi di Laurea Specialistica in Matematica *Modelli matematici per lo studio dei tumori* (student: Maria Elena Albanese, A.Y. 2007–2008);
- advisor of the Tesi di Laurea Magistrale in Matematica *Problemi non-locali di tipo Laplaciano frazionario* (student: Chiara Zucco, A.Y. 2014–2015);
- advisor, in collaboration with Professor Giovanni Molica Bisci, of the Tesi di Laurea Triennale in Informatica Applicata *Principi di teoria quantistica della computazione* (student: Antonio Cardellini, A.Y. 2021–2022);
- advisor, in collaboration with Professor Giovanni Molica Bisci, of the Tesi di Laurea Triennale in Informatica Applicata *Correttezza e completezza del sistema hilbertiano nella logica proposizionale* (student: Kevin Attarantato, A.Y. 2021–2022);
- advisor, in collaboration with Professor Giovanni Molica Bisci, of the Tesi di Laurea Triennale in Informatica Applicata *Linguaggi e interpretazione nella logica del primo ordine* (student: Giorgia Roselli, A.Y. 2021–2022);
- advisor, in collaboration with Professor Giovanni Molica Bisci, of the Tesi di Laurea Triennale in Informatica Applicata *Un algoritmo di parsing nella logica predicativa* (student: Marzio Della Bosca, A.Y. 2022–2023).

Ph.D. THESES

- advisor, in collaboration with Professor Enrico Valdinoci, of the Ph.D. Thesis in Mathematics *Variational problems involving non-local elliptic operators* by Alessio Fiscella (Università di Milano), A.Y. 2013–2014;
- advisor, in collaboration with Professors Giovanni Molica Bisci and Luciano Stefanini, of the Ph.D. Thesis in Research Methods in Science and Technology *Recent and new perspectives in interval analysis* by Benedetta Amicizia (Università degli Studi di Urbino Carlo Bo), A.Y. 2021–2022.

POST-DOC POSITIONS AND FELLOWSHIPS

- advisor of Vincenzo Ambrosio, assegnista di ricerca within the research program *Problemi non-locali di tipo Laplaciano frazionario* at the Dipartimento di Scienze Pure e Applicate (DiSPeA) of the Università degli Studi di Urbino Carlo Bo from January 16, 2017 to January 15, 2018;
- advisor of Alessio Fiscella (Universidade Estadual de Campinas, Brazil), research fellow within the Young Investigator Training Program 2017 funded by ACRI (Associazione di Fondazioni e Casse di Risparmio S.p.a.), title of the research *Fractional Kirchhoff type problems*, at the Dipartimento di Scienze Pure e Applicate (DiSPeA)

of the Università degli Studi di Urbino Carlo Bo from June 28, 2018 to August 3, 2018;

- advisor of Marcos Tadeu de Oliveira Pimenta (Universidade Estadual Paulista (UNESP), Brazil), research fellow within the Young Investigator Training Program 2017 funded by ACRI (Associazione di Fondazioni e Casse di Risparmio S.p.a.), title of the research *Nonlocal fractional problems with discontinuous nonlinearities*, at the Dipartimento di Scienze Pure e Applicate (DiSPeA) of the Università degli Studi di Urbino Carlo Bo from October 1, 2018 to October 31, 2018;
- advisor, in collaboration with Professor Giovanni Molica Bisci, of Ameni Hamemi and Mohamed Louchaich (High School of Sciences and Technology, Tunisia), during their research visit at the Dipartimento di Scienze Pure e Applicate (DiSPeA) of the Università degli Studi di Urbino Carlo Bo from February 28, 2022 to March 30, 2022;
- advisor of Danilo Gregorin Afonso, assegnista di ricerca within the research program *Problemi sovradeterminati coinvolgenti operatori locali e non-locali di tipo Laplaciano frazionario* at the Dipartimento di Scienze Pure e Applicate (DiSPeA) of the Università degli Studi di Urbino Carlo Bo from November 2, 2024 to April 30, 2025.