

## Current position

Research fellow at Università Politecnica delle Marche. 01.01.23 - *present*. Scientific advisor: Prof. Francesca Gemma Alessio.

## Education

- Research fellow at Politecnico di Bari. 07.03.22 - 31.12.22 Scientific advisor: Prof. Pietro d'Avenia.
- Ph.D. in Mathematics (XXXIV cycle) at University of Milano-Bicocca, from November 2018 to January 2022. Dissertation given on May 23rd 2022. Dissertation title: *Different approaches in Critical Point Theory for entire Schrödinger equations and one for curl-curl problem*. Supervisor: Prof. Simone Secchi.
- Master degree in Mathematics, 26/04/2018, University of Perugia. Thesis: *On a logarithmic Hartree equation*. Supervisors: Prof. Dimitri Mugnai, Prof. Patrizia Pucci. Vote: 110/110 cum laude
- Bachelor degree in Mathematics, 27/11/2015, University of Perugia. Thesis (in italian): *Un problema ellittico nel semipiano (An elliptic problem in the half-plane)*. Supervisor: Prof. Roberta Filippucci. Vote: 97/110.

## Academic Activities

- Fellowship winner of the “PROM Programme - International scholarship exchange of PhD students and academics” for a visit at Nicolaus Copernicus University in Toruń from June 19th to July 16th, 2021.

## Internship/Visiting

- One-month internship at Nicolaus Copernicus University in Toruń under the supervision of Prof. Grzegorz Gabor. Collaboration with Dr. Bartosz Bieganowski on problems concerning Variational Methods and Maxwell's equations.

## Talks as invited speaker

- 1) 40 minutes talk at *Qualitative and quantitative aspects of nonlinear PDEs*, title “A GENERALIZED LINKING THEOREM FOR SIGN-CHANGING NONLINEARITIES”, Bari, September 9th 2022.
- 2) 40 minutes talk at *BiUrb Recent Advances in Variational Methods*, title “ON A LOGARITHMIC HARTREE EQUATION”, University of Urbino Carlo Bo, May 30th 2019.

## Other talks given

- 1) 50 minutes talk at *Topics in variational problems arising from models in physics*, title “GENERALIZED LINKING-TYPE THEOREM WITH APPLICATIONS TO STRONGLY INDEFINITE PROBLEMS WITH SIGN-CHANGING NONLINEARITIES”, Będlewo, July 28th 2022.
- 2) 45 minutes online talk, title “SEMIRELATIVISTIC CHOQUARD EQUATIONS WITH SINGULAR POTENTIAL AND GENERAL NONLINEARITIES ARISING FROM HARTREE-FOCK THEORY”, Institute of Mathematics Polish Academy of Sciences, March 21st 2022.

- 3) 50 minutes online talk in the cycle *Young Researchers Colloquium*, title “SEMIRELATIVISTIC CHOQUARD EQUATIONS WITH SINGULAR POTENTIAL AND GENERAL NONLINEARITIES ARISING FROM HARTREE-FOCK THEORY”, Institute of Mathematics Polish Academy of Sciences, May 28th 2021.
- 4) 30 minutes online talk at *Seminario Scientifico del CdS in Matematica*, title “UNA BREVE INTRODUZIONE ALLA TEORIA DEI PUNTI CRITICI”, University of Perugia, November 6th 2020.
- 5) 40 minutes talk in the cycle *Insalate di Matematica*, title “ONE VALLEY, TWO VILLAGES AND A CRITICAL POINT”, University of Milano–Bicocca, November 6th 2019.

## List of publications

4. BERNINI F., BIEGANOWSKI B., *Generalized linking-type theorem with applications to strongly indefinite problems with sign-changing nonlinearities*. Calc. Var. **61**, 182 (2022). <https://doi.org/10.1007/s00526-022-02297-2>
3. BERNINI F., BIEGANOWSKI B., SECCHI S., *Semirelativistic Choquard equations with singular potentials and general nonlinearities arising from Hartree-Fock theory*. Nonlinear Anal. **217** (2022). <https://doi.org/10.1016/j.na.2021.112738>
2. BERNINI F., SECCHI S., *Existence of solutions for a perturbed problem with logarithmic potential in  $\mathbb{R}^2$* , Mathematics in Engineering, 2020, **2(3)**: 438-458. <https://www.aimspress.com/article/doi/10.3934/mine.2020020>
1. BERNINI F., MUGNAI D., *On a logarithmic Hartree equation*, Adv. Nonlinear Anal. **9** (2020), 850–865. <https://doi.org/10.1515/anona-2020-0028>

## Schools attended

- RISM Course “The monotonicity trick and applications”, held by Prof. Michael Struwe, Varese, November 7–11 2022.
- Summer School in “Nonlinear Analysis with a special tribute to Patrizia Pucci on the occasion of her 70th birthday”, University of Tuscia, June 20–24 2022.
- RISM Course “Maximum Principle and Detours”, held by Prof. Italo Capuzzo Dolcetta, online November 16–20 2020.
- EMS Summer School “PDEs, from theory to applications”, University of Milan, July 01–05 2019.
- RISM Course “Generalized Solutions in Differential Equations: Theory and Applications”, held by Prof. Vieri Benci, Varese, February 11–15 2019.
- Scuola Matematica Interuniversitaria (SMI) at University of Perugia from July 23th to August 17th 2018. Attended courses: Functional Analysis, Complex Analysis.

## Meetings

- *Qualitative and quantitative aspects of nonlinear PDEs*, Bari, September 05–09 2022.
- *Topics in variational problems arising from models in physics*, Bedlewo, July 24–29 2022.
- *XII Forum of Partial Differential Equations*, Bedlewo, September 18–25 2021.
- *Workshop on PDEs and Applications*, University of Perugia, online, June 18th 2021.

- *Workshop on Nonlinear PDEs and Applications on the occasion of the retirement of Professor Maria Cesarina Salvatori*, University of Perugia, February 3–5 2020.
- *PDE's sessions in Bicocca: free boundary problems*, University of Milano–Bicocca, January 20th 2020.
- *Variational methods, with applications to problems in mathematical physics and geometry*, Venezia, from November 30th to December 1st 2019.
- *Lezione Leonardesche*, Milano, October 29th 2019.
- *PDE's sessions in Bicocca: eigenvalue problems and shape optimization*, University of Milano–Bicocca, October 28th 2019.
- *Two nonlinear days in Urbino 2019*, University of Urbino Carlo Bo July 11–12 2019.
- *BiUrb Recent Advances in Variational Methods*, University of Urbino Carlo Bo, May 30–31 2019.
- *Analytic and Geometric Aspects of PDEs*, Politecnico of Milan, May 27–30 2019.
- *An Afternoon in Nonlinear Differential Equations*, Politecnico of Milan, February 18th 2019.
- *Advances and Challenges in Nonlinear Elliptic Systems*, RISM (Varese), February 7–8 2019.
- *Nonlinear Meeting in Turin 2019*, University of Turin, from January 31th to February 1st 2019.
- *A two-days PDE event*, University of Milan, January 7–8 2019.
- *Two-day meeting on PDEs*, University of Perugia, February 23–24 2017.
- *James SERRIN: from His legacy to the new frontiers*, Perugia, from January 30th to February 4th 2017.

## Conferences organizer

Organizer of the Ph.D. seminars “*Insalate di Matematica*” at University of Milano–Bicocca, 2019–2021.

## Teaching activities

- Academic Year 2021/2022:
  - Teaching activity (front exercises) of *Matematica Generale I*, Degree in *Economia e Amministrazione delle Imprese*, University of Milano–Bicocca, 12 hours.
  - Teaching activity (front exercises) of *Matematica Generale I*, Degree in *Economia e Commercio*, University of Milano–Bicocca, 12 hours.
- Academic Year 2020/2021
  - Tutoring activity of *Matematica Generale I*, Degree in *Economia e Amministrazione delle Imprese*, University of Milano–Bicocca, 28 hours.
  - Teaching activity (front exercises) of *Matematica Generale I*, Degree in *Economia e Amministrazione delle Imprese*, University of Milano–Bicocca, 12 hours.
- Academic Year 2019/2020
  - Tutoring activity of *Matematica Generale I*, Degree in *Economia e Amministrazione delle Imprese*, University of Milano–Bicocca, 28 hours.

- Teaching activity (front exercises) of *Matematica Generale I*, Degree in *Economia e Amministrazione delle Imprese*, University of Milano–Bicocca, 12 hours.
- Academic Year 2017/2018
  - Temporary substitute teacher for the teaching of Mathematics and Physics, competition class A027, at *State High School "Vittoria Colonna"* from May to June.
  - Appointed "Cultore della Materia" SSD MAT/05 by the Degree Council of the Department of Computer Science and Electronic Engineering of the University of Perugia on 30 May 2018.
  - Tutoring activity of *Mathematical Analysis II* at the *Department of Computer Science and Electronic Engineering* of the University of Perugia from February to August 2018.
- Academic Year 2016/2017
  - Internship at *Istituto Tecnico Tecnologico "Leonardo da Vinci"* in Viterbo, March-May 2017: classroom co-presence, lectures, homework corrections, exercises.

## Other activities

- Reviewer for zbMATH, since September 2022.
- Referee activity for the following journals: *Electronic Journal of Qualitative Theory of Differential Equations*, *Journal of Inequalities and Applications*, *Complex Variables and Elliptic Equations*, *Journal of Function Spaces*, *Topological Methods in Nonlinear Analysis*.