

CURRICULUM VITAE ET STUDIORUM OF UMBERTO GUARNOTTA



PERSONAL DATA

Place and date of birth: Catania, December 31, 1994.

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H-index (Scopus): 9.

CURRENT POSITION

01.10.2025- **Univ. Catania:** Research Associate (RTD-B - MATH-03/A).

ACADEMIC CAREER

01.07.2024-30.06.2025 **Univ. Politecnica delle Marche:** Research fellowship in Mathematical Analysis (MAT/05).

01.04.2023-19.02.2024 **Univ. Kore of Enna:** Research Associate (RTD-A - MAT/05).

14.02.2023-31.03.2023 **Univ. Catania:** Research fellowship in Mathematical Analysis (MAT/05).

24.11.2021-23.11.2022 **Univ. Palermo:** Research fellowship in Mathematical Analysis (MAT/05).

01.11.2018-31.10.2021 **Univ. Palermo:** PhD in Mathematics and Computational Sciences (with scholarship).

EDUCATION AND ACADEMIC TITLES

2024 **Habilitation for Associate Professor** (Mathematical Analysis, Probability, and Mathematical Statistics).

2021 **PhD in Mathematics and Computational Sciences**, Univ. Palermo, with honors (title of the thesis: *Existence results for singular convective elliptic problems*).

2018 **Master degree in Mathematics**, Univ. Catania, 110/110 with honors (title of the thesis: *Multiplicity results for nonlinear elliptic equations via Morse theory*).

2016 **Bachelor degree in Mathematics**, Univ. Catania, 110/110 with honors (title of the thesis: *Measure of non-compactness, Darbo's theorem and applications*, in Italian).

RESEARCH PROJECTS AND FUNDING

2025-2026 Participation to the **GNAMPA project** *Classification of solutions to evolutionary non-local equations* (CUP_E53C25002010001).

2024-2025 Participation to the **GNAMPA project** *Regularity and existence for anisotropic operators* (CUP_E5324001950001).

2023-2024 **Coordinator of the GNAMPA project** *Elliptic and parabolic problems with singular and convective reaction terms* (CUP_E53C22001930001).

2023-2024 Participation to the **project "RETURN"** (multi-Risk sciEnce for resilienT commUnities undeR a changiNg climate), theme "Natural, man-made and environmental risks" (CUP: J73C2200052000), European Union Next-GenerationEU (PNRR, Mission 4, Component 2, Investment 1.3 - D.D. 1243 2/8/2022, PE 0000005).

2022-2023 Participation to the **GNAMPA project** *Partial differential equation of elliptic or parabolic type with singular terms: existence, regularity, and multiplicity of solutions* (CUP_E55F22000270001).

2020-2022 Participation to **PRA 2020/2022 "PERITO"** - "PIACERI" Linea di intervento 3 (Univ. Catania).

2017-2022 Participation to the **PRIN project** (MIUR) *Nonlinear Differential Problems via Variational, Topological and Set-valued Methods* (Grant no. 2017AYM8XW).

ORGANIZATION OF INTERNATIONAL CONFERENCES AND WORKSHOPS

- Organizer of the special session *Variational and topological methods for local and nonlocal problems* for the 2nd Joint Meeting “Brazil-Italy in Mathematics”, September 7-11, 2026, Messina (Italy).
- Organizer of the special session *Elliptic PDEs: singularities, discontinuities, and nonlinear phenomena* for the 15th AIMS Conference (American Institute of Mathematical Sciences), July 6-10, 2026, Athens (Greece).
- Organizer of the workshop *New trends in regularity theory*, May 19, 2025, Ancona.
- Organizer of the international workshop *IX weekend on Variational Methods and Differential Equations*, December 13-14, 2024, Catania.
- Organizer of the international workshop *VIII weekend on Variational Methods and Differential Equations*, September 14-16, 2023, Catania.

COMMUNICATIONS IN INTERNATIONAL WORKSHOPS AND SEMINARS

24. Seminar at the University of Palermo, Italy (**invited speaker**).
23. Seminar at the University ‘Federico II’ of Naples, Italy (**invited speaker**).
22. International workshop *Young PDEs Meeting in Granada*, June 13, 2025, Granada (Spain) (**invited speaker**).
21. International workshop *Recent Advances in Nonlinear Differential Problems and Applications*, June 4-6, 2025, Perugia (**invited speaker**).
20. International workshop *Variational and geometrical methods in partial differential equations*, January 27-31, 2025, Warsaw (Poland) (**invited speaker**).
19. Seminar (FAAG: Functional Analysis and Applications Group) at the University of Aveiro, Portugal (**invited speaker**).
18. *2nd joint meeting AMS-UMI*, July 23-26, 2024, Palermo (**invited speaker**).
17. *IX European Congress of Mathematics*, July 15-19, 2024, Seville (Spain) (**invited speaker**).
16. *A school on regularity theory in the south of Italy*, July, 8-12, 2024, Rende (CS), Italy (**invited speaker**).
15. International workshop *Functional Analysis: Methods and Applications*, June 6-8, 2024, Amantea and Rende (CS), Italy.
14. Seminar (cycle ASK: Analysis Student Kernel) at the University of Bologna, Italy (**invited speaker**).
13. *21th International Conference of Numerical Analysis and Applied Mathematics*, September 11-17, 2023, Crete (Greece).
12. International workshop *Elliptic and parabolic PDEs and applications*, April 20-21, 2023, Rende (CS), Italy (**invited speaker**).
11. *IV Workshop on Trends in Nonlinear Analysis*, September 13-14, 2022, Cagliari, Italy (**invited speaker**).
10. International workshop *Nonlinear evolutionary equations and applications*, September 6-9, 2022, Chemnitz, Germany (**invited speaker**).
9. *First UMI meeting of PhD students*, May 26-27, 2022, Padova, Italy.
8. Workshop *Proprietà qualitative per soluzioni di equazioni ellittiche non-lineari*, April 27-28, 2022, Rende (CS), Italy (**invited speaker**).
7. *19th International Conference of Numerical Analysis and Applied Mathematics*, September 20-26, 2021, Rhodes, Greece.
6. *Two Days Workshop in Nonlinear Analysis 2021*, September 2-3, 2021, on-line (**invited speaker**).
5. International workshop *Variational Methods in Nonlinear Phenomena*, September 23-25, 2020, Naples, Italy.
4. *18th International Conference of Numerical Analysis and Applied Mathematics*, September 17-23, 2020, Rhodes, Greece.
3. *6th Weekend on Variational Methods and Differential Equations*, December 13-14, 2019, Catania, Italy.
2. International school *Lectures in Nonlinear Analysis and Differential Equations*, April 8-12, 2019, Rende (CS), Italy.
1. *5th Weekend on Variational Methods and Differential Equations*, December 14-15, 2018, Catania, Italy.

PARTICIPATION TO INTERNATIONAL CONFERENCES, WORKSHOPS, AND SCHOOLS

18. *III Workshop su Equazioni Differenziali e Applicazioni*, July 4-5, 2024, Roccalumera (ME).
17. International conference *Atlantic Conference in Nonlinear PDEs*, October 30 - November 3, 2023, Lisbon, Portugal.
16. International school *Geometric Analysis and PDEs*, July 3-7, 2023, Chęciny, Poland.
15. International workshop *Nonlinear Differential Problems*, September 19-22, 2022, Giardini Naxos (ME), Italy.

14. *Summer School in Nonlinear Analysis*, June 20-24, 2022, Viterbo, Italy.
13. International school *Classical and fractional partial differential equations under different perspectives*, January 27-30, 2020, Milan, Italy.
12. International workshop *Nonlinear PDEs and related topics*, January 9-10, 2020, Rende (CS), Italy.
11. International workshop *Nonlinear differential problems*, March 20, 2019, Palermo, Italy.
10. International workshop *Nonlinear Meeting in Turin 2019*, January 31 - February 1, 2019, Turin, Italy.
9. International school *Geometric Measure Theory in Verona*, June 11-15, 2018, Verona, Italy.
8. International conference *New trends in PDEs*, May 29-30, 2018, Catania, Italy.
7. School *Sulla classificazione delle soluzioni intere dell'equazione di Allen-Cahn*, March 6-16, 2018, Milan.
6. *4th Weekend on Variational Methods and Differential Equations*, September 22-23, 2017, Catania, Italy.
5. *4th Conference on Recent trends in Nonlinear Phenomena*, September 18-20, 2017, Messina, Italy.
4. *3th Weekend on Variational Methods and Differential Equations*, October 28-29, 2016, Catania, Italy.
3. *Gulbenkian International Summer School*, July 1-6, 2016, Lisbon, Portugal.
2. International conference *A day on PDEs*, June 14, 2016, Catania, Italy.
1. International school *Modeling Clinic for Industrial Mathematics*, February 14-27, 2016, Catania, Italy.

VISITING PERIODS AT INTERNATIONAL INSTITUTIONS

- 2025 Visiting (December 1-4) at the Department of Mathematics and Applications of the University 'Federico II' of Naples (Italy).
- 2025 **Visiting (June 7-16) at the Department of Mathematics of the University of Granada (Spain).**
- 2024 **Visiting (October 14-25) at the Department of Mathematics of the University of Aveiro (Portugal).**
- 2024 Visiting (May 27-31) at the Department of Mathematics of the University of Bologna (Italy).
- 2024 **Visiting (April 8-19) at the 'Institut für Mathematik' of the 'Technische Universität Berlin' (Germany).**

EDITORIAL ACTIVITIES FOR INTERNATIONAL JOURNALS

- 2023- **Member of the editorial board of the journal 'Demonstratio Mathematica'.**
- 2025- **Editor of the Special Issue "Nonlinear Differential Equations: New Perspectives and Techniques" for the journal 'Open Mathematics'.**
- 2023- **Member of the editorial board of the journal 'Open Mathematics'.**
- 2023-2025 **Editor of the Special Issue "Problems and Methods in Nonlinear Analysis" for the journal 'Mathematics'.**
- 2023- Reviewer of Mathematical Reviews for the American Mathematical Society.
- 2018- Referee for several international journals, amongst: Adv. Nonlinear Stud., AIMS Math., Appl. Anal., Bound. Value Probl., Discrete Contin. Dyn. Syst. Ser. S, J. Math. Anal. Appl., Electron. J. Qual. Theory Differ. Equ., Matematiche, Math. Nachr., Nonlinear Anal., Nonlinear Anal. Real World Appl., Open Math, Rend. Circ. Mat. Palermo.

DIDACTIC ACTIVITIES

- 2025-2026 Teacher assistant of the **Course of 'Complex Analysis and Integral Transforms' for the degree course in Mathematics**, Univ. of Catania (7 hrs).
- 2025-2026 Teacher of the **Course of 'Mathematical Analysis 1'** for the degree course in Computer Engineering, Univ. of Catania (79 hrs).
- 2024-2025 Lecture Assistant of the course 'Mathematical Analysis 2' for the degree courses in Biomedical Engineering, Civil and Environmental Engineering, Building Construction Engineering, Electronic Engineering, Computer Engineering, Mechanical Engineering of Polytechnic University of Marche (40 hrs).
- 2023-2024 Teacher of the **Course of 'Mathematical Analysis' - Module 1** for the degree course in Computer Engineering of Univ. Kore of Enna (40 hrs).
- 2023-2024 Teacher of the **Course of 'Mathematical Analysis' - Module 1** for the degree course in Aerospace Engineering of Univ. Kore of Enna (48 hrs).
- 2020-2021 Tutor of 'Mathematical Analysis 2', Univ. Catania, Department of Electrical, Electronic, and Computer Engineering (100 hrs).

THIRD-MISSION ACTIVITIES

- 2023 Component of the project "Orienta 2022-2026" in the National Recovery and Resilience Plan, Mission 4, Component 2, Investment 1.6, entitled "The role of mathematics in the education of engineers. Preparation to the math test for the courses in engineering".

- 2023 Component of the project PCTO (Path for Transversal Skills and Orientation) for the Scientific high school “Farinato” of Enna, entitled “The role of mathematics in the education of engineers”.
- 2023 Participation to the Open Day of University Kore of Enna.
- 2017-2018 Tutor, Scientific high school “Leonardo” of Giarre (CT), Italy, POF project *Potenziamento di matematica per le prime classi*.

OTHER DIDACTIC ACTIVITIES

- 2025-2026 Co-tutor of the bachelor thesis of the student Francesco M. De Martino (Bachelor degree in Mathematics, Univ. Catania).
- 2025-2026 Co-tutor of the bachelor thesis of the student Francesco Puglisi (Bachelor degree in Mathematics, Univ. Catania).
- 2021-2022 Co-tutor of the scientific activity of the student Giuseppe Failla (Master degree in Mathematics, Univ. Palermo).
- 2020-2021 Co-tutor of the scientific activity of the student Laura Gambera (Master degree in Mathematics, Univ. Catania).

SCIENTIFIC PUBLICATIONS

Scientific articles divided in: **23** published (or accepted for publication) articles, **2** preprints (submitted for publication), and **3** proceedings. International collaborations with: **L. Baldelli (Universidad de Granada, Spain)**, **N. Biswas (Indian Institute of Science Education and Research Pune, India)**, **D. Motreanu (Univ. Perpignan, France)**, **A. Moussaoui (Univ. Bejaia, Algeria)**, **N.S. Papageorgiou (National Technical University of Athens, Greece)**, **K. Perera (Florida Institute of Technology, USA)**, **P. Winkert (Technische Universität Berlin, Germany)**.

23. U. Guarnotta, C. Marcelli, *Traveling waves for highly degenerate and singular reaction-diffusion-advection equations with discontinuous coefficients*, J. Differential Equations **460** (2026), Paper no. 114075.
22. U. Guarnotta, P. Winkert, *Degenerate singular Kirchhoff problems in Musielak-Orlicz spaces*, Nonlinear Anal. **264** (2026), Paper no. 113986.
21. U. Guarnotta, S.A. Marano, *Strong solutions to singular discontinuous p -Laplacian problems*, Commun. Contemp. Math. (2025), <https://doi.org/10.1142/S0219199725500671>.
20. N. Biswas, L. Gambera, U. Guarnotta, *On the linear independence condition for the Bobkov-Tanaka first eigenvalue of the double-phase operator*, Appl. Math. Lett. **166** (2025), Paper no. 109549.
19. L. Gambera, U. Guarnotta, *On Bobkov-Tanaka type spectrum for the double-phase operator*, Adv. Nonlinear Stud. **25** (2025), 719-739.
18. L. Baldelli, U. Guarnotta, *Existence and regularity for a p -Laplacian problem in \mathbb{R}^N with singular, convective, critical reaction*, Adv. Nonlinear Anal. **13** (2024), Paper no. 20240033.
17. L. Gambera, U. Guarnotta, *Existence, uniqueness, and decay results for singular Φ -Laplacian systems in \mathbb{R}^N* , NoDEA Nonlinear Differential Equations Appl. **31** (2024), Paper no. 111.
16. L. Gambera, U. Guarnotta, N.S. Papageorgiou, *Continuous spectrum for a double-phase unbalanced growth eigenvalue problem*, Mediterr. J. Math. **21** (2024), Paper no. 124.
15. U. Guarnotta, R. Livrea, P. Winkert, *The sub-supersolution method for variable exponent double phase systems with nonlinear boundary conditions*, Atti Accad. Naz. Lincei Rend. Lincei Mat. Appl. **34** (2023), 617–639.
14. U. Guarnotta, S. Mosconi, *A general notion of uniform ellipticity and the regularity of the stress field for elliptic equations in divergence form*, Anal. PDE **16** (2023), 1955–1988.
13. U. Guarnotta, S.A. Marano, *A note on gradient estimates for p -Laplacian equations*, Boll. Unione Mat. Ital. **17** (2023), 391-399.
12. S. Ciani, U. Guarnotta, *Liouville rigidity and time-extrinsic Harnack estimates for an anisotropic slow diffusion*, Proc. Amer. Math. Soc. **151** (2023), 4371–4388.
11. S. Ciani, U. Guarnotta, V. Vespi, *On a particular scaling for the prototype anisotropic p -Laplacian*, Special Volume “Recent Advances in Mathematical Analysis” (2023), Springer Series “Trends in Mathematics”, 289–308.
10. U. Guarnotta, R. Livrea, S.A. Marano, *Some recent results on singular p -Laplacian systems*, Discrete Contin. Dyn. Syst. Ser. S **16** (2023), 1435–1451.
9. U. Guarnotta, S.A. Marano, A. Moussaoui, *Multiple solutions to quasi-linear elliptic Robin systems*, Nonlinear Anal. Real World Appl. **71** (2023), Paper no. 103818.
8. P. Candito, U. Guarnotta, R. Livrea, *Existence of two solutions for singular Φ -Laplacian problems*, Adv. Nonlinear Stud. **22** (2022), 659–683.

7. U. Guarnotta, R. Livrea, S.A. Marano, *Some recent results on singular p -Laplacian equations*, *Demonstr. Math.* **55** (2022), 416–428.
6. L. Gambera, U. Guarnotta, *Strongly singular convective elliptic equations in \mathbb{R}^N driven by a non-homogeneous operator*, *Commun. Pure Appl. Anal.* **21** (2022), 3031–3054.
5. U. Guarnotta, S.A. Marano, A. Moussaoui, *Singular quasilinear convective elliptic systems in \mathbb{R}^N* , *Adv. Nonlinear Anal.* **11** (2022), 741–756.
4. U. Guarnotta, S.A. Marano, *Infinitely many solutions to singular convective Neumann systems with arbitrarily growing reactions*, *J. Differential Equations* **271** (2021), 849–863; corrigendum: *Corrigendum to “Infinitely many solutions to singular convective Neumann systems with arbitrarily growing reactions” [J. Differ. Equ. 271 (2021) 849–863]*, *J. Differential Equations* **274** (2021), 1209–1213.
3. U. Guarnotta, S.A. Marano, D. Motreanu, *On a singular Robin problem with convection terms*, *Adv. Nonlinear Stud.* **20** (2020), 895–909.
2. P. Candito, U. Guarnotta, K. Perera, *Two solutions for a parametric singular p -Laplacian problem*, *J. Nonlinear Var. Anal.* **4** (2020), 455–468.
1. U. Guarnotta, S.A. Marano, N.S. Papageorgiou, *Multiple nodal solutions to a Robin problem with sign-changing potential and locally defined reaction*, *Atti Accad. Naz. Lincei Rend. Lincei Mat. Appl.* **30** (2019), 269–294.

PREPRINTS

2. U. Guarnotta, S.A. Marano, *On singular p -Laplacian problems with discontinuous convection terms*, preprint ([arXiv:2603.13811](https://arxiv.org/abs/2603.13811)).
1. L. Baldelli, U. Guarnotta, *Decay estimates for solutions to non-autonomous critical p -Laplace problems*, preprint ([arXiv:2502.19819](https://arxiv.org/abs/2502.19819)).

CONFERENCE PROCEEDINGS

3. U. Guarnotta, *Singular Φ -Laplacian systems in \mathbb{R}^N* , *AIP Conference Proceedings* **3315** (2025), Paper no. 370001.
2. U. Guarnotta, *Existence of entire solutions for singular quasilinear convective elliptic systems*, *AIP Conference Proceedings* **2849** (2023), Paper no. 340006.
1. U. Guarnotta, *Singular quasilinear elliptic problems with convection terms*, *AIP Conference Proceedings* **2425** (2022), Paper no. 210002.

April 1st, 2026

Umberto Guarnotta