

# Nicola Soave

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## Academic Positions

- From 03/2023 Associate Professor, Department of Mathematics, Università di Torino.
- 12/2021-02/2023 Associate Professor, Department of Mathematics, Politecnico di Milano.
- 12/2018-12/2021 Assistant Professor (Ricercatore a tempo determinato “senior” (RTD b)), Department of Mathematics, Politecnico di Milano.
- 12/2016 - 12/2018 Assistant Professor (Ricercatore a tempo determinato “junior” (RTD a)), Department of Mathematics, Politecnico di Milano.
- 04/2014 - 11/2016 Wissenschaftliche Mitarbeiter (post-doc position), Mathematisches Institut, Justus-Liebig-Universität of Giessen (Germany). Supervisor: Prof. Thomas Bartsch.

## Education

- 01/2011-01/2014 Doctoral studies in Pure and Applied Mathematics, Università di Milano-Bicocca / Université de Picardie Jules Verne di Amiens (joint supervision).  
Diploma: PhD.  
Mentors: Prof. Alberto Farina, Prof. Susanna Terracini.  
Thesis defended on January 17, 2014.
- 10/2008 - 07/2010 Graduate studies in Mathematics, Università degli Studi di Torino.  
Diploma: Dottore Magistrale (Master degree) in Mathematics, 110/110 cum laude.
- 09/2005 - 10/2008 Degree in Mathematics, Università degli Studi di Torino.  
Diploma: Dottore (degree) in Mathematics, 110/110 cum laude.
- 09/2000 - 07/2005 High school, Liceo Scientifico “G. Arimondi”, Savigliano (CN), 100/100.

## Qualification

- 09/2019 - 09/2028 “Abilitazione scientifica nazionale (2018) - prima fascia, SC 01/A3, SSD MAT/05” (Italian qualification required to become Full Professor in Mathematical Analysis).
- 03/2017 - 03/2026 “Abilitazione scientifica nazionale (2016) - seconda fascia, SC 01/A3, SSD MAT/05” (Italian qualification required to become Associate Professor in Mathematical Analysis).

## Acknowledgments

2017 Supported by the Italian grant FFABR (*Fondo per il finanziamento di base delle attività di ricerca*) in the category "Researchers" in 2017.

2009 - 2010 The thesis *Aubry-Mather theory, and applications to ordinary differential equations* (Supervisor: Prof. Anna Capietto) has been awarded as best master degree thesis in mathematics of the Università degli Studi di Torino in the college year 2009/2010, and with the prize "Luciana Picco Botta".

## Scientific research activity

### Research interests, keywords

Nonlinear differential equations and systems: existence, multiplicity, qualitative properties and regularity of solutions.

- Variational methods; critical points theory; natural constraints; solitary waves for Schrödinger equations and systems; normalized solutions.
- Symmetry of solutions; 1-dimensional symmetry; radial symmetry; foliated Schwarz symmetry; moving planes method; polarization; rigidity of solutions; Liouville-type theorems.
- Nodal properties of solutions to elliptic equations; unique continuation principle; monotonicity formulae; regularity of the nodal set; sublinear and singular equations.
- Systems of elliptic equations with strong competition; uniform a priori bounds; pattern formation and regularity of interfaces; blow-up methods.
- Fractional Laplacian.

All my papers and preprints are available on [arXiv](#)

### Preprints

- [5] F. Esposito, B. Sciunzi and N. Soave. Notes on overdetermined singular problems. Preprint arXiv 2023. *Bulletin of the London Mathematical Society*, in press. Doi: 10.1112/blms.12996
- [4] S. Dipierro, N. Soave and E. Valdinoci. A fractional Hopf Lemma for sign-changing solutions. Preprint arXiv 2023. *Communications in Partial Differential Equations*, accepted.
- [3] M. Muratori and N. Soave. The Lane-Emden system on Cartan-Hadamard manifolds: asymptotics and rigidity of radial solutions. Preprint arXiv 2023.
- [2] J. Borthwick, X. Chang, L. Jeanjean and N. Soave. Bounded Palais-Smale sequences with Morse type information for some constrained functionals. Preprint arXiv 2022. *Transactions of the American Mathematical Society*, accepted.
- [1] N. Soave and G. Tortone. On the nodal set of solutions to some sublinear equations without homogeneity. Preprint arXiv 2022. *Archive for Rational Mechanics and Analysis*, in press. Doi: 10.1007/s00205-024-01970-4

### Publications

- [39] J. Borthwick, X. Chang, L. Jeanjean and N. Soave. Normalized solutions of  $L^2$ -supercritical NLS equations on noncompact metric graphs with localized nonlinearities. *Nonlinearity*, 36: 3776-3795, 2023. Doi: 10.1088/1361-6544/acda76

- [38] X. Chang, L. Jeanjean and N. Soave. Normalized solutions of  $L^2$ -supercritical NLS equations on compact metric graphs. Preprint arXiv 2022. Accepted for publication on *Annales de l'Institut Henri Poincaré (C) Analyse Non Linéaire*. Doi: 10.4171/AIHPC/88
- [37] N. Soave and S. Terracini. An anisotropic monotonicity formula, with applications to some segregation problems. *JEMS: Journal of the European Mathematical Society*, 25(9): 3727–3765, 2023. Doi: 10.4171/JEMS/1270
- [36] M. Muratori and N. Soave. Some rigidity results for Sobolev inequalities and related PDEs on Cartan-Hadamard manifolds. Preprint arXiv 2021. Accepted for publication on *Annali della Scuola Normale Superiore di Pisa. Classe di Scienze*. Doi: 10.2422/2036-2145.202105\_071
- [35] N. Soave, H. Tavares and A. Zilio. Free boundary problems with long-range interactions: uniform Lipschitz estimates in the radius. *Mathematische Annalen*, 386: 551–585, 2023. Doi: 10.1007/s00208-022-02406-8.
- [34] D. Pierotti and N. Soave. Ground states for the NLS equation with combined nonlinearities on non-compact metric graphs. *SIAM Journal of Mathematical Analysis*, 54(1): 768–790, 2022. Doi: 10.1137/20M1377837
- [33] E. Moreira Dos Santos, G. Nornberg, N. Soave. On unique continuation principles for some elliptic systems. *Annales de l'Institut Henri Poincaré (C) Analyse Non Linéaire*, 38(5): 1667–1680, 2021. Doi: 10.1016/j.anihpc.2020.12.001
- [32] D. Pierotti, N. Soave and G. Verzini. Local minimizers in absence of ground states for the critical NLS energy on metric graphs. *Proceedings of the Royal Society of Edinburgh Section A: Mathematics*, 151(2): 705–733, 2021. Doi: 10.1017/prm.2020.36
- [31] N. Soave. Saddle-shaped positive solutions for elliptic systems with bistable nonlinearity. *Mathematics in Engineering*, 2(3), 423–437, 2020. Doi: 10.3934/mine.2020019.
- [30] A. Farina, B. Sciunzi and N. Soave. Monotonicity and rigidity of solutions to some elliptic systems with uniform limits. *Communications in Contemporary Mathematics*, 22(5), 1950042, 2020. Doi: 10.1142/S0219199719500421.
- [29] N. Soave. Normalized ground states for the NLS equation with combined nonlinearities. *Journal of Differential Equations*. 269 (9), 6941–6986, 2020. Doi: 10.1016/j.jde.2020.05.016
- [28] N. Soave. Normalized ground states for the NLS equation with combined nonlinearities: the Sobolev critical case. *Journal of Functional Analysis*. 279 (6), 2020. Doi: 10.1016/j.jfa.2020.108610
- [27] A. Pistoia, N. Soave and H. Tavares. A fountain of positive Bubbles on a Coron's Problem for a Competitive Weakly Coupled Gradient System. *Journal de Mathématiques Pures et Appliquées*, 135: 159–198, 2020. Doi: 10.1016/j.matpur.2019.09.004.
- [26] N. Soave and S. Terracini. The nodal set of solutions to some elliptic problems: singular nonlinearities. *Journal de Mathématiques Pures et Appliquées*, 128 (2019), 264–296. Doi: 10.1016/j.matpur.2019.06.009.
- [25] N. Soave and E. Valdinoci, Overdetermined problems for the fractional Laplacian in exterior and annular sets. *Journal d'Analyse Mathématique*, 137 (2019), no. 1, 101–134. Doi: 10.1007/s11854-018-0067-2.
- [24] T. Bartsch and N. Soave, Multiple normalized solutions for a competing system of Schrödinger equations. *Calculus of Variations and Partial Differential Equations*, 58 (2019), no. 1, Art. 22, 24 pp. Doi: 10.1007/s00526-018-1476-x.
- [23] N. Soave and T. Weth, The unique continuation property of sublinear equations. *SIAM Journal of Mathematical Analysis*, 50 (2018), no. 4, 3919–3938. Doi: 10.1137/17M1144325.
- [22] N. Soave and S. Terracini, The nodal set of solutions to some elliptic problems: sublinear equations, and unstable two-phase membrane problem. *Advances in Mathematics*, 334 (2018): 243–299.

Doi: 10.1016/j.aim.2018.06.007

- [21] N. Soave, H. Tavares, S. Terracini and A. Zilio, Variational problems with long-range interaction. *Archive for Rational Mechanics and Analysis*. 228 (3): 743–772, 2018. Doi: 10.1007/s00205-017-1204-2
- [20] S. Dipierro, N. Soave and E. Valdinoci, On stable solutions of boundary reaction-diffusion equations and applications to nonlocal problems with Neumann data. *Indiana University Mathematical Journal*. 67 (1): 429–469, 2018. Doi: 10.1512/iumj.2018.67.6282
- [19] A. Pistoia and N. Soave, On Coron’s problem for weakly coupled elliptic systems. *Proc. London Math. Soc.*, 116 (1): 33–67, 2018. Doi: 10.1112/plms.12073
- [18] S. Dipierro, N. Soave and E. Valdinoci, On fractional elliptic equations in Lipschitz sets and epigraphs: regularity, monotonicity and rigidity results. *Mathematische Annalen*, 369: 1283–1326, 2017. Doi: 10.1007/s00208-016-1487-x
- [17] T. Bartsch and N. Soave, A natural constraint approach to normalized solutions of nonlinear Schrödinger equations and systems. *Journal of Functional Analysis*, 272 (12): 4998–5037, 2017. Doi: 10.1016/j.jfa.2017.01.025  
See also Correction to: “A natural constraint approach to normalized solutions of nonlinear Schrödinger equations and systems” [J. Funct. Anal. 272 (12) (2017) 4998–5037], *Journal of Functional Analysis*, 275 (2): 516–521, 2018.
- [16] N. Soave and A. Zilio, On phase separation in systems of coupled elliptic equations: asymptotic analysis and geometric aspects. *Annales de l’Institut Henri Poincaré (C) Analyse Non Linéaire*, 34 (3): 625–654, 2017. Doi: 10.1016/j.anihpc.2016.04.001
- [15] N. Soave and A. Zilio, Multidimensional entire solutions for an elliptic system modelling phase separation. *Analysis and Partial Differential Equations*, 9 (n. 5) (2016), 1019–1041. Doi: 10.2140/apde.2016.9.1019
- [14] T. Bartsch, L. Jeanjean and N. Soave, Normalized solutions for a system of coupled cubic Schrödinger equations on  $\mathbb{R}^3$ . *Journal de Mathématiques Pures et Appliquées*, 106 (2016), 583–614. Doi: 10.1016/j.matpur.2016.03.004
- [13] N. Soave and H. Tavares, New existence and symmetry results for least energy positive solutions of Schrödinger systems with mixed cooperation and competition terms. *Journal of Differential Equations*, 261 (2016), 505–537. Doi: 10.1016/j.jde.2016.03.015
- [12] N. Soave, H. Tavares, S. Terracini and A. Zilio, Hölder bounds and regularity of emerging free boundaries for strongly competing Schrödinger equations with nontrivial grouping. *Nonlinear Analysis: Theory, Methods & Applications*, 138 (2016), 388–427. Special Volume in honor of Juan Luis Vázquez for his 70th birthday. Doi: 10.1016/j.na.2015.10.023
- [11] N. Soave and A. Zilio, Uniform bounds for strongly competing systems: the optimal Lipschitz case. *Archive for Rational Mechanics and Analysis*, 218 (2015), 647–697. Doi: 10.1007/s00205-015-0867-9
- [10] N. Soave and S. Terracini, Liouville theorems and 1-dimensional symmetry for solutions of an elliptic system modelling phase-separation. *Advances in Mathematics*, 279 (2015), 29–66. Doi: 10.1016/j.aim.2015.03.015
- [9] N. Soave, On existence and phase separation of solitary waves for nonlinear Schrödinger systems modelling simultaneous cooperation and competition. *Calculus of Variations and Partial Differential Equations*, 53 (3–4) (2015), 689–718. Doi: 10.1007/s00526-014-0764-3
- [8] N. Soave, Symbolic dynamics: from for the  $N$ -centre to the  $(N + 1)$ -body problem, a preliminary study, *NoDEA Nonlinear Differential Equations and Applications* 21 (3) (2014), 371–413. Doi: 10.1007/s00030-013-0251-0
- [7] A. Farina and N. Soave, Monotonicity and 1-dimensional symmetry for solutions of an elliptic system arising in Bose-Einstein condensation, *Archive for Rational Mechanics and Analysis* 213 (1)

- (2014), 287–326. Doi: 10.1007/s00205-014-0724-2
- [6] N. Soave and G. Verzini, Bounded solutions for a forced bounded oscillator without friction, *Journal of Differential Equations* 256 (7) (2014), 2526–2558. Doi: 10.1016/j.jde.2014.01.015
- [5] N. Soave and A. Zilio, Entire solutions with exponential growth for an elliptic system modeling phase-separation, *Nonlinearity* 27 (2) (2014), 305–342. Doi: 10.1088/0951-7715/27/2/305
- [4] N. Soave and S. Terracini, Avoiding collisions under topological constraints in variational problems coming from celestial mechanics, *Journal of Fixed Point Theory and its Applications* 14 (2) (2013), 457–501. Special Volume *The Yvonne Choquet-Brubhat Festschrift*. Doi: 10.1007/s111784-014-0174-3
- [3] A. Farina and N. Soave, Symmetry and uniqueness of nonnegative solutions of some problems in the half-space, *Journal of Mathematical Analysis and Applications* 403 (1) (2013), 215–233. Doi: 10.1016/j.jmaa.2013.02.048
- [2] N. Soave and S. Terracini, Symbolic dynamics for the  $N$ -centre problem at negative energies *Discrete and Continuous Dynamical Systems - Series A* 32 (9) (2012), 3245–3301, Special Volume *Orlando Issue Contributed by the Plenary Speakers*. Doi: 10.3934/dcds.2012.32.3245  
See also Addendum to: symbolic dynamics for the  $N$ -centre problem at negative energies, 33 (8) (2013).
- [1] A. Capietto and N. Soave, Some remarks on Mather’s theorem and Aubry-Mather sets, *Communications in Applied Analysis*, 15 (2011), 283–298.

### Bibliometrics

Databases checked on February 15, 2023.

ISI-WoS 724 citations (654 without self citations), 369 citing articles, h-index 14.

Scopus 742 citations (674 without self citations), 383 citing articles, h-index 14.

MathSciNet 716 citations, 376 citing authors.

Publications 14, 17, 24, 28, 29 are ISI highly cited papers.

### Research projects - Principal Investigator

- 2023 Funded as Principal Investigator of the PRIN 2022 project  $NO^3$  - *Nodal Optimization, Nonlinear elliptic equations, Nonlocal geometric problems, with a focus on regularity*, cod. 2022R537CS (16 participants, € 187485).
- 2019 Principal Investigator for the project INDAM-GNAMPA *Esistenza e proprietà qualitative per soluzioni di EDP non lineari ellittiche e paraboliche*. € 3000.
- 2017 Principal Investigator for the project INDAM-GNAMPA *Aspetti non-locali in fenomeni di segregazione*. € 1200.

### Research projects - Participation

- 2023 Member of the project INDAM-GNAMPA *Regolarità e singolarità in problemi con frontiere libere*. Principal Investigator: Giorgio Tortone.
- 2020 Member of the project INDAM-GNAMPA *Proprietà qualitative per soluzioni di EDP non lineari ellittiche e paraboliche, locali e nonlocali*. Principal Investigator: Stefano Vita.
- 2016 - 2019 Member of the project PRIN 2015 *Variational Methods, with Applications to problems in Mathematical Physics and Geometry*. Principal Investigator: Andrea Malchiodi. Local coordinator: Gianmaria Verzini.
- 2013 - 2018 Member of the ERC Advanced Grant n. 339958 project *Complex Patterns for Strongly Interacting*

*Dynamical Systems - COMPAT*. Principal Investigator: Susanna Terracini.

2013 Member of the INDAM-GNAMPA project *Birth of pattern in systems with anomalous diffusion and strong competition*. Principal Investigator: Gianmaria Verzini.

2011 - 2012 Member of PRIN 2009 *Critical Point Theory and Perturbative Methods for Nonlinear Differential Equations*. Principal Investigator: Prof. Susanna Terracini.

### Research visits

03/2022 Università di Pisa - 4 days. Invited by Giorgio Tortone and Bozhidar Velichkov.

04/2019 KTH Royal Institut of Technology in Stockholm (Sweden) - 1 week. Invited by Henrik Shahgholian.

02/2019 Hausdorff Institut in Mathematics, Bonn (Germany), invited participant at the workshop "Geometric measure theory and free boundary problems" (1 week) - trimester program "Evolution of interfaces". Organizers: Prof. Emanuele Spadaro, László Székelyhidi Jr., Georg Weiss.

02/2018 University of Washington, Seattle (USA) - 1 week. Invited by Mariana Smit Vega Garcia.

10/2017 Università della Calabria, Rende (Italy) - 1 week. Invited by Bernardino Sciunzi.

11/2015 Università di Roma - La Sapienza, Rome (Italy) - 1 week. Invited by Angela Pistoia.

09/2015 Università degli Studi di Torino, Turin (Italy) - 2 weeks. Invited by Susanna Terracini.

07/2015 Weierstrass Institute for Applied Analysis and Stochastics, Berlin (Germany) - 2 weeks. Invited by Enrico Valdinoci.

03/2015 CAMGSD, Instituto Superior Técnico, Universidade de Lisboa (Portugal) - 1 week. Invited by Hugo Tavares.

02/2015 CAMS - EHESS, Paris (France) - 1 week. Invited by Alessandro Zilio.

10/2014 Weierstrass Institute for Applied Analysis and Stochastics, Berlino (Germany) - 1 week. Invited by Enrico Valdinoci.

02/2014 Pacific Institute of Mathematical Science, University of British Columbia, Vancouver (Canada) - 3 weeks. Invited by Juncheng Wei.

02/2013 Institute Camille Jordan, Université Lyon I, Lyon (France) - 1 month. Invited by Alberto Farina.

09/2012 Institute Camille Jordan, Université Lyon I, Lyon (France) - 1 week. Invited by Alberto Farina.

03/2012 Université de Picardie Jules Verne, Amiens (France) - 8 weeks. Invited by Alberto Farina.

### Organization of scientific activities

01/2024 Conference *Regularity and geometric aspects of nonlinear PDEs*, Università di Pisa (with E. Cinti, A. Iacopetti, D. Mazzoleni, B. Noris and B. Velichkov).

03/2021 - 02/2023 Organizers of the Analysis Seminars at the Department of Mathematics of Politecnico di Milano (with M. Muratori).

2020 Conference *Nonlinear Meeting in Milan 2020*, Politecnico di Milano (with M. Garrione); January 30 - 31.

2019 Conference *Analytic and Geometric Aspects of PDEs*, Politecnico di Milano (with G. Catino, D. D. Monticelli, and G. Verzini); May 27 - 30.

### Minicourses at schools

02/2019 Minicourse at the *Spring School on Local and Nonlocal Elliptic and Geometric Problems*. School organized by AIMS Senegal and the Goethe-University of Frankfurt, and held at the African Institute for Mathematical Sciences (AIMS) in Mbour, Senegal.  
Title: On the nodal set of solutions to elliptic equations.

### Invited speaker at conferences

- 09/2023 XXII Congresso dell'Unione Matematica Italiana, Pisa (Italy).
- 06/2023 Highlights in Nonlinear Analysis, a workshop in honor of Susanna Terracini's birthday, Cetraro (Italy).
- 11/2022 Geometric Aspects of Nonlinear PDEs, Mittag-Leffler Institut, Stockholm (Sweden).
- 02/2022 PDEs in presence in Rome 2022, Roma (Italy).
- 09/2021 15th International Conference on Free Boundary Problems: Theory and Applications, Berlin (Germany) - online.
- 09/2021 Regularity Theory for Free Boundary and Geometric Variational Problems, Levico Terme (Italy).
- 06/2021 8th European Congress of Mathematics, Portoroz (Slovenia) - online.
- 09/2019 XXI congresso dell'Unione Matematica Italiana, Pavia (Italy).
- 06/2019 Intensive Week of PDEs at Cogne, Cogne (Italy).
- 05/2019 Brescia-Trento Nonlinear Days - Edition III, Università degli Studi di Trento (Italy).
- 09/2018 Workshop on Nonlinear Analysis and PDEs, Caserta (Italy).
- 07/2018 ICM 2018 Satellite conference on Nonlinear Partial Differential Equations, Fortaleza (Brazil).
- 07/2018 Workshop on Variational Problems arising from Physics and Geometry. Rauischholzhausen Castle, Marburg (Germany).
- 02/2018 Workshop on Variational Methods in Analysis, Geometry and Physics. Scuola Normale Superiore di Pisa (Italy).
- 01/2018 Workshop on Interaction models: Mean Field Games, pattern formation and related topics. Università di Padova (Italy).
- 11/2017 First Belgium-Chile-Italy conference in PDEs. Université Libre de Bruxelles (Belgium).
- 05/2017 International Conference on Elliptic and Parabolic Problems, Gaeta (Italy).
- 02/2017 Equazioni alle Derivate Parziali e Disuguaglianze Analitico-Geometriche Associate, Politecnico di Milano, Milan (Italy).
- 01/2017 Workshop Roma Caput PDE. Università di Roma - La Sapienza, Rome (Italy).
- 12/2016 Workshop Nonlinear Partial Differential Equations and Mathematical Physics, Tsinghua Sanya International Mathematics Forum (TSIMF), Sanya (China).
- 10/2016 Nonlinear PDE days, Frankfurt-Giessen-Karlsruhe-Köln. Justus-Liebig-Universität of Giessen (Germany).
- 07/2016 Summer School on Elliptic PDE's at Tenerife, Università de la Laguna, Tenerife (Spain).
- 06/2016 PDEs at the Grand Paradis, Cogne (Italy).
- 06/2016 Recent trends on elliptic nonlocal equations, Fields Institute in Toronto, Toronto (Canada).
- 05/2016 Bruxelles - Torino seminars in PDEs, Università degli Studi di Torino, Turin (Italy).
- 09/2015 Workshop on Nonlinear PDEs, Brussels (Belgium).
- 07/2015 Equadiff conference 2015, Lyon (France).
- 09/2014 Joint meeting of German and Polish Mathematical Societies, Poznań (Poland).
- 07/2014 10th AIMS international conference on dynamical systems, differential equations and applications, Madrid (Spain).
- 01/2013 BIRS workshop New perspectives on the  $N$ -body problem, Banff centre, Banff (Canada).
- 07/2012 9th AIMS international conference on dynamical systems, differential equations and applications, Orlando (Florida, USA).
- 06/2012 International workshop and advanced school on variational methods in  $N$ -body and vortex dynamics, Università del Salento, Lecce (Italy).

### **Speaker at conferences**

- 01/ 2014 School on nonlinear elliptic problems, Università di Milano - Bicocca, Milano, Italy.  
01/ 2014 Workshop on Variational methods in elliptic equations and systems, Lisbon (Portugal).

### **Invited talks in Analysis seminars**

- 03/2023 Università di Roma La Sapienza, Rome (Italy).  
03/2022 Università di Pisa, Pisa (Italy).  
01/ 2020 Università di Milano-Bicocca, PDEs sessions in Bicocca: free boundary problems. Milan (Italy).  
11/ 2018 Università degli Studi Roma Tre, Rome (Italy).  
02/ 2018 University of Washington, Seattle (USA).  
10/ 2017 Scuola Normale Superiore di Pisa (Italy).  
10/2017 Università della Calabria, Rende (Italy).  
12/ 2016 Politecnico di Milano (Italy).  
04/ 2016 Philipps-Universität Marburg (Germany).  
11/ 2015 Università di Roma – La Sapienza (Italy).  
09/ 2015 Università degli Studi di Torino (Italy).  
07/ 2015 Justus-Liebig-Universität Giessen (Germany).  
04/ 2015 Università degli Studi di Torino (Italy).  
03/ 2015 Università di Pisa (Italy).  
03/ 2015 Universidade de Lisboa (Portugal).  
03/ 2015 Università di Roma Tor Vergata (Italy).  
02/ 2015 CAMS-EHESS Paris (France).  
01/ 2015 Goethe-Universität Frankfurt (Germany).  
06/ 2014 Justus-Liebig-Universität Giessen (Germany).  
11/ 2013 Università degli Studi di Milano-Bicocca (Italy).  
10/ 2013 Justus-Liebig-Universität Giessen (Germany).  
04/ 2013 Università Statale di Milano (Italy).  
03/ 2013 Università degli Studi di Torino (Italy).  
02/ 2012 Università degli Studi di Milano-Bicocca (Italy).  
01/ 2012 Politecnico di Milano (Italy).  
12/ 2011 Università degli Studi di Torino (Italy).

### **Reviewer Activity for Scientific Journals**

Reviewer for *MathReviews*.

Referee for many scientific journal, among which:

*J. European Math. Soc.*; *Advances in Math.*;  
*J. de Math. Pures et Appl.*; *Mathematisches Annalen*;  
*J. Functional Analysis*; *Comm. in Partial Differential Equations*;  
*Transactions AMS*; *Proc. London Math. Soc.*; *J. London Math. Soc.*;  
*Comm. in Mathematical Physics*; *SIAM J. of Mathematical Analysis*; *Calc. Var. and PDEs*;  
*J. Differential Equations*; *Nonlinearity*;  
*Nonlinear Analysis TMA*; *Proc. of the Royal Society of Edinburgh - Section A*;  
*Revista Matemática Iberoamericana*; *Annali della Scuola Normale Superiore di Pisa, classe di Scienze*.



## Academic services

### Mentoring

- 2024-today Scientific supervisor of a post-doc position held by Luigi Pollastro, University of Turin.
- 2021-22 Advisor of the Master Thesis of Francesco de Pas (now PhD student at University of Western Australia, Perth), Master Degree in Math. Engineering, Politecnico di Milano.

### Participation in evaluation committees

- 2023 At Università degli Studi di Torino, for the selection of postdoc positions in Nonlinear Analysis and PDEs.
- 2019-22 At Politecnico di Milano, for the selection of the following positions: Teaching Assistants (T.A.) for Mathematical Analysis courses.

### Reviewer Activity

- 2023 Reviewer for the Master Thesis of Davide Piccinini, Università degli Studi di Torino.
- 2022 Reviewer for the Master Thesis of Manuel Dias, Instituto Superior Técnico, Lisbon.
- 2022 Reviewer for the PhD Thesis of Alessandra De Luca, Università di Milano-Bicocca.

## Teaching activity

### Books

- 2021 M. Muratori, F. Punzo, N. Soave. *Esercizi svolti di analisi reale e funzionale*. Editrice Esculapio.

### PhD courses

- 2023-24 Geometric aspect of PDEs II, with Alessandro Iacopetti and Susanna Terracini, PhD program in Mathematics, Università degli Studi di Torino (Italy).
- 2023-24 Geometric aspect of PDEs, with Alessandro Iacopetti and Susanna Terracini, PhD program in Mathematics, Università degli Studi di Torino (Italy).
- 2021-22 Reaction-Diffusion Equations, with Gianmaria Verzini, PhD course in Mathematical Models and Methods in Engineering, Politecnico di Milano (Italy).
- 2019-20, 17-18 Semilinear Elliptic Equations, with Gianmaria Verzini, PhD course in Mathematical Models and Methods in Engineering, Politecnico di Milano (Italy).

### Holder of regular courses

- 2023-24 Variational Methods, Master Degree in Mathematics, Università degli Studi di Torino (Italy).
- 2023-24 Mathematical Analysis, Degree in Informatics, Università degli Studi di Torino (Italy).
- 2023-24 Mathematics for Economics II, Degree in Economics, Università degli Studi di Torino (Italy).
- 2022-23, 23-24 Calculus 1B, Degree in Mathematics, Università degli Studi di Torino (Italy).
- 2022-23 Real and Functional Analysis, Master Degree in Mathematical Engineering, Politecnico di Milano (Italy).
- From 2019-20 to 22-23 Calculus 1, Degree in Control Engineering, Computer Eng., Telecommunications Eng., Electric Eng., Electronic Eng., Politecnico di Milano (Italy).
- 2020-21, 21-22 Calculus and Geometry 1, Degree in Aerospace Engineering, Energy Eng., Mechanical Eng., Politecnico di Milano (Italy).
- From 2016-17 to 2018-19 Calculus 2, Degree in Civil Engineering, Politecnico di Milano (Italy).

## **Assistant**

- 2018-19 Real and Functional Analysis, Master Degree in Mathematical Engineering, Politecnico di Milano (Italy).
- 2016-17, 2015-16 Calculus I, Degree in Physics, Justus-Liebig-Universität of Giessen (Germany).
- 2014-15 Calculus 3 and Calculus 4, Degree in Mathematics, Justus-Liebig-Universität Giessen (Germany).
- 2013-14 Partial Differential Equations, Degree in Mathematics, Justus-Liebig-Universität Giessen (Germany).
- 2013-14 Calculus 2, Degree in Mathematics, Università degli Studi di Milano-Bicocca (Italy).
- 2011-12 Maths I, Degree in Science and Technology for the Environment, Università degli Studi di Milano-Bicocca (Italy).

## Language skills

Mother tongue: Italian.

Other languages: English (advanced), German (intermediate), French (elementary).