

## PERSONAL INFORMATION

## Roberto Ognibene

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Gender Male | Date of birth 17 January 1992 | Nationality Italian

## JOB APPLIED FOR

Ricercatore a tempo determinato (tipo A)  
Università degli studi di Milano

## EDUCATION

2006–2011 **High School - Scientific Studies** (Maturità scientifica)

Liceo Classico-Scientifico "Ariosto-Spallanzani" - Reggio Emilia, Italy

**Evaluation:** 100/100

2011–2014 **Bachelor's Degree in Mathematics** (Laurea triennale)

Università degli studi di Modena e Reggio Emilia - Modena, Italy

**Evaluation:** 110/110 cum Laude

Thesis Title: "Complessità e Approssimazione"

Supervisor: prof. Mauro Leoncini.

2014–2017 **Master's Degree in Mathematics** (Laurea magistrale)

Università degli studi di Modena e Reggio Emilia - Modena, Italy

**Evaluation:** 110/110 cum Laude

Thesis Title: "Perturbation of the Green-Dirichlet Operator and Weyl's Law"

Supervisor: prof. Massimo Villarini.

2017–2021 **Ph.D. in Mathematics** (Dottorato di ricerca)

Università degli studi di Milano-Bicocca - Milano, Italy

Thesis title: "Monotonicity formulas and blow-up methods for the study of spectral stability and fractional obstacle problems"

Supervisor: prof.ssa Veronica Felli

Defence: 16 April 2021

Referees: A. Ferrero and E. Valdinoci.

## ACADEMIC POSITIONS

February 2021 – **Post-doc fellow** (Assegnista di Ricerca)

Università degli studi di Genova - Genova, Italy

Title of the project: "Equazioni alle derivate parziali e metodi variazionali applicati alla scienza dei materiali".

Supervisor: prof. Edoardo Mainini

## PUBLICATIONS

## Referred publications

1. Felli, V., Mukherjee, D., Ognibene, R., *On fractional multi-singular Schrödinger operators: Positivity and localization of binding*, (2020), J. Funct. Anal., 278 (4), DOI: 10.1016/j.jfa.2019.108389.
2. Felli, V., Ognibene, R., *Sharp convergence rate of eigenvalues in a domain with a shrinking tube*, (2020), J. Differential Equations, 269 (1), pp. 713-763, DOI: 10.1016/j.jde.2019.12.022.
3. Felli, V., Noris, B., Ognibene, R., *Eigenvalues of the Laplacian with moving mixed boundary conditions: the case of disappearing Dirichlet region*, (2020), Calc. Var. and Partial Differential Equations, 60 (1), art. no. 12, DOI: 10.1007/s00526-020-01878-3.
4. Cinti, E., Ognibene, R., Ruffini, B., *A quantitative stability inequality for fractional capacities*, (2021), to appear in Math. Eng.

## Preprints

1. Danielli, D., Ognibene, R., *On a weighted two-phase boundary obstacle problem*, (2021), Submitted, <https://arxiv.org/abs/2106.13492>
2. Felli, V., Noris, B., Ognibene, R., *Eigenvalues of the Laplacian with moving mixed boundary conditions: the case of disappearing Neumann region*, (2021), Submitted, <https://arxiv.org/abs/2107.03862>
3. Mainini, E., Ognibene, R., Percivale, D., *Asymptotic behavior of constrained local minimizers in finite elasticity*, (2021), Submitted, <https://arxiv.org/abs/2110.04333>.

## Other publications

1. Ognibene, R., *Monotonicity formulas and blow-up methods for the study of spectral stability and fractional obstacle problems*, (2021), Ph.D. Thesis, [Link](#).

## Articles in preparation

1. Mukherjee, D., Ognibene, R., *On fractional Schrödinger equations with multipolar Hardy-type potentials and critical nonlinearity*.

COMMUNICATIONS IN  
CONFERENCES AND  
WORKSHOPS, SEMINARS

## Short Communications

- |                   |   |
|-------------------|---|
| 22 May 2018       | <i>Sharp convergence rate of eigenvalues in a domain with a shrinking tube</i><br>Summer School: Nonlocal interactions in Partial Differential Equations and Geometry - Stockholm, Sweden                         |
| 21 May 2019       | <i>Eigenvalues of the Laplacian with moving mixed boundary conditions: sharp asymptotics in terms of Sobolev capacity</i><br>International Conference on Elliptic and Parabolic Problems - Gaeta, Italy           |
| 9 September 2019  | <i>Eigenvalues of the Laplacian with moving mixed boundary conditions: sharp asymptotics in terms of Sobolev capacity</i><br>Workshop on Spectral Geometry and Analysis of Differential Operators - Padova, Italy |
| 22 June 2021      | <i>Sharp asymptotics of eigenvalues of the Laplacian in a domain with a shrinking tube</i><br>Online Mini-courses in Mathematical Analysis 2021 - Padova, Italy   |
| 24 September 2021 | <i>A quantitative fractional isocapacity inequality</i><br>XII Forum of Partial Differential Equations - Bedlewo, Poland  |

## Posters

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|-------------------|---|
| 11 September 2018 | <i>Sharp convergence rate of eigenvalues in a domain with a shrinking tube</i><br>Nonlinear Analysis and PDEs in Caserta - Caserta, Italy |
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## Research Seminars

- 26 November 2018 *Eigenvalues of the Laplacian and their dependence on the domain: regular and singular perturbations*  
Université de Picardie Jules Verne - Amiens, France
- 2 April 2019 *"Can one hear the shape of a drum?" and other related questions*  
Università degli studi di Milano-Bicocca - Milano, Italy
- 17 April 2019 *Eigenvalues of the Laplacian and their dependence on the domain: regular and singular perturbations*  
Università degli studi di Modena e Reggio Emilia - Modena, Italy
- 17 June 2019 *An introduction to capacity. Basic notions and applications to PDEs*  
Université de Picardie Jules Verne - Amiens, France
- 13 February 2020 *Eigenvalues of the Laplacian under perturbation of the boundary conditions: a capacitary approach*  
Purdue University - West Lafayette, IN, USA
- 14 May 2021 *Spectral stability of the Laplacian under perturbation of the boundary conditions*  
Young Researchers Colloquium - Mathematical Institute of the Polish Academy of Sciences - Warsaw, Poland
- 30 June 2021 *Spectral stability of the Laplacian under perturbation of the boundary conditions*  
DEG1 Webinars - Online seminar organized by DEG1 group

## ATTENDANCE TO SCHOOLS, WORKSHOPS AND CONFERENCES

- Young PDE's @ Roma, 19-22 February 2018, Rome, Italy.
- Summer School: Nonlocal interactions in Partial Differential Equations and Geometry, 21-25 May 2018, Stockholm, Sweden.
- Nonlinear Analysis and PDEs in Caserta, 10-14 September 2018, Caserta, Italy.
- RISM School: Generalized Solutions in Differential Equations: Theory and Applications, 11-15 February 2019, Varese, Italy.
- AIMS Spring School: Local and Nonlocal Elliptic and Geometric problems, 18-22 February 2019, Mbour, Senegal.
- International Conference on Elliptic and Parabolic Problems, 20-24 May 2019, Gaeta, Italy.
- Analytic and Geometric Aspects of PDEs, 27-30 May 2019, Milano, Italy.
- EMS Summer School: Partial differential equations from theory to applications, 1-5 July 2019, Milano, Italy.
- UMI Conference, 2-7 September 2019, Pavia, Italy.
- Workshop on Spectral Geometry and Analysis of Differential Operators, 9-11 September 2019, Padova, Italy.
- Focused Research Groups (FRG) New Challenges in Geometric Measure Theory, 24-27 August 2020, online lectures, organized by University of Washington, Princeton University, University of Texas at Austin.
- Online Mini-courses in Mathematical Analysis 2020, 14-17 September 2020, organized by Università degli Studi di Padova.
- Shape Optimization, Spectral Geometry and Calculus of Variations, 29 March-2 April 2021, virtual event, held by CIRM Marseille, France.
- Online Mini-courses in Mathematical Analysis 2021, 21-25 June 2021, organized by Università degli Studi di Padova.
- XXII Forum of Partial Differential Equations, 20-24 September 2021, Bedlewo, Poland.

## AWARDS & SCHOLARSHIPS

- 2014 Awarded by *Università degli studi di Modena e Reggio Emilia* for my Bachelor's Degree (520 EUR).

- 2017 Scholarship for the Ph.D. course (3 years), funded by *Università degli studi di Milano-Bicocca*.
- 2021 Post-doc fellowship (1 year), funded by *Università degli studi di Genova*.

## PARTECIPATION IN RESEARCH PROJECTS

- 2018 Project: *Formula di monotonia e applicazioni: problemi frazionari e stabilità spettrale rispetto a perturbazioni del dominio*, Institution: INdAM-GNAMPA, Principal investigator: Alberto Ferrero.
- 2019 Project: *Valeurs propres d'un opérateur Aharonov-Bohm avec pôle variable*, Institution: PICS, Principal investigator: Benedetta Noris.

## RESEARCH VISITS

- 18/11/2018 – 18/12/2018 Institution: Université de Picardie Jules Verne, Amiens, France.
- 7/06/2019 – 23/06/2019 Institution: Université de Picardie Jules Verne, Amiens, France.
- 14/11/2019 – 12/12/2019 Institution: Université de Picardie Jules Verne, Amiens, France.
- 2/02/2020 – 4/03/2020 Institution: Purdue University, West Lafayette, IN, USA.

## TEACHING ACTIVITIES

- 2015/2016 Teaching assistant for the course *Analisi Matematica 1*, Undergraduate studies in Computer Science, Università degli studi di Modena e Reggio Emilia.
- 2016/2017 Teaching assistant for the course *Analisi Matematica 1*, Undergraduate studies in Computer Science, Università degli studi di Modena e Reggio Emilia.
- 2016/2017 Course *Analisi Matematica 1*, Fondazione Collegio San Carlo, Modena.
- 2017/2018 Teaching assistant for the course *Matematica 2*, Undergraduate studies in Material Science, Università degli studi di Milano-Bicocca.
- 2018/2019 Teaching assistant for the course *Matematica 2*, Undergraduate studies in Material Science, Università degli studi di Milano-Bicocca.
- 2019/2020 Teaching assistant for the course *Matematica 2*, Undergraduate studies in Material Science, Università degli studi di Milano-Bicocca.
- 2020/2021 Remedial course (*precorso*) in Mathematics for science students, Università degli studi di Milano-Bicocca.
- 2021/2022 Remedial course (*precorso*) in Mathematics for architecture students, Università degli studi di Genova.

## REFeree ACTIVITIES

I serve as a referee for the journals *Mathematica Bohemica*, *Mathematics in Engineering*. Since 2020 I am a reviewer for *Mathematical Reviews*.

## ORGANIZATION OF SEMINARS, CONFERENCES, WORKSHOPS

- 2018–2020 I participated to the organization of the series of seminars *Insalate di Matematica* (based at Università degli studi di Milano-Bicocca), which are held by and addressed to PhD students or young researchers.
- 2019/2020 Member of the organizing committee of the series of thematic mini-workshops *PDEs Sessions in Bicocca*. We held 2 events (the last one was cancelled due to Covid-19), see <https://sites.google.com/view/pdessionsinbicocca/home>

## MEMBERSHIPS

- 2019–present Member of UMI (Italian Mathematical Union).
- 2018–present Member of GNAMPA (INdAM group).

## OTHER

- 2016/2017 Tutor at Fondazione Collegio San Carlo (Modena, Italy) for approximately 1 year.

## LANGUAGES

Italian    Mother tongue

English    Fluent