

CURRICULUM VITAE - CLAUDIA BUCUR

CONTACT INFORMATION

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Birth date: 23 January 1982

CURRENT POSITION AND TITLE

1 February 2021 - presently: **Research Fellow (RTDa)**, 3 years position, University of Insubria - DISAT (Science and High Technology Department) and RISM (Riemann International School of Mathematics)

Italian **National Scientific Habilitation** to Associate Professor in Mathematical Analysis (Abilitazione Scientifica Nazionale Professore di II Fascia, SSD 01/A3)

PhD in Mathematics

Awarded by Department of Mathematics Federigo Enriques, University of Milano, Italy

Graduation date April 20, 2017

Thesis Some nonlocal operators and effects due to nonlocality

Supervisor Prof. Enrico Valdinoci (The University of Western Australia)

PREVIOUS POSITIONS

1 April 2020 - 31 January 2021: **Post-doctoral Researcher**, 2 years position, University of Milano-Bicocca, Advisors Prof. Veronica Felli, Prof. Simone Secchi

1 April 2019 - 31 March 2020: **Post-doctoral Researcher**, National Institute of High Mathematics Francesco Severi (INdAM) Italy, Advisor Prof. Serena Dipierro

1 October 2018 - 31 March 2019: **Post-doctoral researcher**, Department of Mathematics and Physics, Catholic University of the Sacred Heart, Italy, Advisor Prof. Marco Squassina

1 November 2017 - 30 September 2018: **Lecturer** Level A, School of Mathematics and Statistics, The University of Melbourne, Australia, Advisor Prof. Enrico Valdinoci

RESEARCH RELATED ACTIVITIES

Complete list of publications

Peer review journals

- (1) Claudia Bucur, Marco Squassina, *An asymptotic expansion for the fractional p -Laplacian and for gradient dependent nonlocal operators*, Communications in Contemporary Mathematics (online version), DOI 10.1142/S0219199721500218; (Available at <https://arxiv.org/pdf/2001.09892.pdf>)

- (2) Claudia Bucur, Serena Dipierro, Luca Lombardini, Enrico Valdinoci, *Minimisers of a fractional seminorm and nonlocal minimal surfaces*, Interfaces and Free Boundaries **22** (2020), pp. 465–505, DOI 10.4171/IFB/447; (Available at <https://arxiv.org/pdf/2002.06313.pdf>)
- (3) Claudia Bucur, Serena Dipierro, Enrico Valdinoci, *On the mean value property of fractional harmonic functions*, Nonlinear Analysis **201** (2020), pp. 112112 – 25 pages, DOI 10.1016/j.na.2020.112112; (Available at <https://arxiv.org/pdf/2002.09679.pdf>)
- (4) Claudia Bucur, *A symmetry result in \mathbb{R}^2 for global minimizers of a general type of nonlocal energy*, Calculus of Variations and PDE's **59**:2 (2020), Paper No. 52, 26 pages, DOI 10.1007/s00526-020-1698-6; (Available at <https://arxiv.org/pdf/1708.04924.pdf>)
- (5) Claudia Bucur and Marco Squassina, *Approximate convexity principle and applications to PDEs in convex domains*, Nonlinear Analysis **192** (2020), pp. 111661 - 21 pages, DOI 10.1016/j.na.2019.111661; (Available at <https://arxiv.org/pdf/1902.06419.pdf>)
- (6) Claudia Bucur, *The stickiness phenomena of nonlocal minimal surfaces: new results and a comparison with the classical case*, Bruno Pini Mathematical Analysis Seminar **10** (2019), pp. 42-82, DOI 10.6092/issn.2240-2829/10362; (Available at <https://mathematicalanalysis.unibo.it/article/view/10362>)
- (7) Claudia Bucur, Luca Lombardini and Enrico Valdinoci, *Complete stickiness of nonlocal minimal surfaces for small values of the fractional parameter*, Annales de l'Institut Henri Poincaré C, Analyse non linéaire **36**:3 (2019), pp. 655-703, DOI 10.1016/j.anihpc.2018.08.003; (Available at <https://arxiv.org/pdf/1612.08295.pdf>)
- (8) Claudia Bucur and Maria Medina, *A fractional elliptic problem in \mathbb{R}^n with critical growth and convex nonlinearities*, Manuscripta Mathematica **158**:3-4, (2019), pp 371-400, DOI 10.1007/s00229-018-1032-1; (Available at <https://arxiv.org/pdf/1609.01911.pdf>)
- (9) Claudia Bucur and Marco Squassina, *Asymptotic mean value properties for fractional anisotropic operators*, Journal of Mathematical Analysis and Applications **466**:1 (2018), pp. 107-126, DOI 10.1016/j.jmaa.2018.05.063; (Available at <https://arxiv.org/pdf/1801.00976.pdf>)
- (10) Claudia Bucur, *Local density of Caputo-stationary functions in the space of smooth functions*, ESAIM: Optimisation and Calculus of Variations (COCV) **23**:4 (2017), pp. 1361-1380, DOI 10.1051/cocv/2016056; (Available at <https://arxiv.org/pdf/1506.07004.pdf>)
- (11) Claudia Bucur and Aram L. Karakhanyan, *Potential theoretic approach to Schauder estimates for the Fractional Laplacian*, Proc. Amer. Math. Soc. **145**:2 (2017), pp. 637-651, DOI 10.1090/proc/13227; (Available at <https://arxiv.org/pdf/1602.05359.pdf>)
- (12) Claudia Bucur and Fausto Ferrari, *An extension problem for the fractional derivative defined by Marchaud*, Fractional Calculus and Applied Analysis (FCAA) **19**:4 (2016), pp. 867-887, DOI 10.1515/fca-2016-0047; (Available at <https://arxiv.org/pdf/1508.04156.pdf>)
- (13) Claudia Bucur, *Some observations on the Green function for the ball in the fractional Laplace framework*, Communications on Pure and Applied Analysis (CPAA) **15**:2 (2016), pp. 657-699, DOI 10.3934/cpaa.2016.15.657; (Available at <https://arxiv.org/pdf/1502.06468.pdf>)

Monographs

- (14) Claudia Bucur and Enrico Valdinoci, *Nonlocal diffusion and applications, Lecture Notes of the Unione Matematica Italiana* **20** (2016), Springer, Unione Matematica Italiana, Bologna, pp. xii+155, DOI 10.1007/978-3-319-28739-3; (Available at <https://arxiv.org/pdf/1504.08292.pdf>)

Contributed chapters

- (15) Claudia Bucur, Essentials on nonlocal operators. Chapter in: Kuusi, T., Palatucci, G. (eds.) *Recent Developments in the Nonlocal Theory*. De Gruyter Open (2017). Pages: 5–23, ISBN (Online): 9783110571561, DOI (Chapter) 10.1515/9783110571561-002, DOI (Book) 10.1515/9783110571561;
(Available at <https://www.degruyter.com/viewbooktoc/product/497180>)

Other papers

Submitted preprints

- (1) Claudia Bucur, Serena Dipierro, Luca Lombardini, José M. Mazón, Enrico Valdinoci (s, p) -harmonic approximation of functions of least $W^{s,1}$ -seminorm
(Available at <https://arxiv.org/pdf/2009.14659.pdf>)

PhD thesis

- (2) Claudia Bucur, Some nonlocal operators and effects due to nonlocality
(Available at <https://arxiv.org/pdf/1705.00953.pdf>)

Papers in preparation

- (3) Claudia Bucur and Luca Lombardini, *Asymptotics as $s \searrow 0$ of the nonlocal nonparametric Plateau problem with obstacle*
(4) Claudia Bucur, Daniele Cassani, Cristina Tarsi, *A note on a Schrödinger equation with exponential growth in \mathbb{R}^N*

Seminars and Schools

Invited speaker

- 13-20 September 2021 (Scheduled) Geometric PDEs @ Caserta, University of Campania Luigi Vanvitelli, **Caserta, Italy**
- 20-22 April 2020 (Canceled for Covid19 emergency) Nonlocal PDEs and applications, University of **Granada, Spain**
- 28-29 May 2020 (Canceled for Covid19 emergency) Bicocca-Urbino Days in Nonlinear Analysis, University of Milano-Bicocca, **Milano, Italy**
- September 2020 (Canceled for Covid19 emergency) Brescia-Trento Nonlinear day, Catholic University of the Sacred Heart, **Brescia, Italy**
- 13-15 January 2020 Winter school/workshop on reaction diffusion PDEs and optimization, Catholic University of the Sacred Heart, **Brescia, Italy**
- 3 June 2019 Workshop for young researchers in Mathematics, University of **Bucharest, Romania**
- 23 May 2019 Variational and PDE problems in Geometric Analysis, University of **Bologna, Italy**
- 17-20 September 2018 Advances in Nonlinear Elliptic and Parabolic PDEs (Joint meeting SIMAI, UMI and PTM 2018) at **Wroclaw, Poland**
- 15-17 March 2017 Topics in nonlinear analysis and applications, at Dipartimento di Matematica e Applicazioni dell'Università di Milano-Bicocca, **Milano, Italy**
- 6-11 November 2016 Stable Processes, organised by Banff International Research Station for Mathematical Innovation and Discovery (BIRS) and Casa Matematica **Oaxaca, Mexico**

Seminars

- 8 February 2021, RISM, **Varese, Italy**

- *25 January 2021*, University of Milano-Bicocca, **Milano, Italy**
- *1 October 2020 (Canceled for Covid19 emergency)*, Nonlinear differential problems at University La Sapienza, **Rome, Italy**
- *October 2019, August 2018*, The University of Western Australia, **Perth, Australia**
- *February 2019*, The University of **Bologna, Italy**, **Bruno Pini** Mathematical Analysis Seminar
- *July 2018*, AMSI Winter School on Curvature (Finalist Participant talk), The University of Queensland, **Brisbane, Australia**
- *November 2017*, Monash University, **Melbourne, Australia**
- *November 2016*, The University of Melbourne, **Melbourne, Australia**

Contributed talks

- *May 2017* International Conference on Elliptic and Parabolic Problems, **Gaeta, Italy**
- *September 2015* Workshop Variational inequalities, Nash equilibrium problems and applications, **Reggio Calabria, Italy**

Poster sessions

- *April 2019* Italian-Romanian Colloquium on Differential Equations and Applications, **Udine, Italy**

Organization of Scientific Events

- *1-21 November 2021 (Scheduled)* **Elliptic Partial Differential Equations, Geometry, and the Calculus of Variations**, University of Melbourne (Matrix Institute), Australia
- *1-5 July 2019* **Summer School on Pdes**, Dipartimento di Matematica Federigo Enriques, Università degli Studi di Milano, Italy
- *September 2017* **Pde Day in Unimelb**, The University of Melbourne, Australia

Grants

- **SMRI International Visit Program, (round August 2020)** Scholarship awarded by the Sydney Mathematical Research Institute, for a visit starting 1 October to 20 December 2021 at The University of Western Australia (collaboration with Enrico Valdinoci) and at The University of Sydney (collaboration with Dr. Daniel Hauer)
- **Summer school on Pdes, 2019** Grant awarded by the European Mathematical Society for the organization of the Summer School of 1-5 July 2019, with Prof. Serena Dipierro
- **HLF2018** travel grant for the participation to the Heidelberg Laureate Forum (Germany), September 2018
- **ChooseMath grant** travel grant for the participation to the Winter School on Curvature, The University of Queensland, Brisbane (Australia), July 2018
- **CIME grant** travel grant for the participation to the CIME School Geometric Measure Theory and Applications (September 2019) and the Summer School on Partial Differential Equations and Geometric Measure Theory (June 2014), in Cetraro (Italy)
- **MIUR scholarship** for the 3 years of PhD, University of Milan (Italy), from January 2014 to December 2017

Member of and Participation to Research Groups

- March 2019 - October 2020, INdAM project **PDEs, free boundaries, nonlocal equations and applications** with principal investigator Serena Dipierro

- 2014 - 2016 European Research fundings **ERC (Starting Grant)**, Project *Elliptic Pdes and Symmetry of Interfaces and Layers for Odd Nonlinearities*, Group Leader Enrico Valdinoci
- 2017 - 2018 **Australian Research Council** fundings (ARC), Discovery Project 2017 *NEW – Nonlocal equations at work*, Group Leader Enrico Valdinoci

Review activity

- Reviewer for **Grant Proposals** (*Opus, Preludium*), National Science Center, Poland
- Referee for the following **peer-review journals**: Journal de Mathématiques Pures et Appliquées, Calculus of Variations and Partial Differential Equations, SIAM Journal on Mathematical Analysis, Fractional Calculus and Applied Analysis, Nonlinear Analysis, Applied and Computational Harmonic Analysis, Mathematische Nachrichten, Topological Methods in Nonlinear Analysis, Electronic Journal of Differential Equations, Rivista di Matematica della Università di Parma, Communications in Mathematics
- Preliminary evaluation for Journal of the American Mathematical Society
- Reviewer for Mathematical Reviews (AMS)

Visiting

- *3-31 October 2019* collaboration with Enrico Valdinoci, Serena Dipierro and Luca Lombardini at The University of Western Australia, Perth
- *14-20 May 2019* collaboration with Enrico Valdinoci and Serena Dipierro at Columbia University, New York
- *10-14 December 2018* collaboration with Hoai-Minh Nguyen at École Polytechnique Fédérale de Lausanne
- *27 October - 29 November 2016* collaboration with Enrico Valdinoci at the University of Melbourne
- *1- 23 October 2015* collaboration with Aram Karakhanyan at the University of Edinburgh
- *2 November - 12 December 2014* collaboration with Maria Medina at Universidad Autonoma de Madrid
- *9 September- 10 October 2014* collaboration with Enrico Valdinoci at Weierstrass Institute for Applied Analysis, Berlin

Supervising

- *2019* Co-supervisor for Michael Piantoni, Master Degree at Catholic University of the Sacred Heart, Brescia (Italy), Thesis *Convexity principles and applications to partial differential equations in convex domains*, Supervisor Prof. Marco Squassina

Distinctions

- SMRI International Visit program (round August 2020) to visit The University of Western Australia and the Mathematical Research Institute at The University of Sydney
- *September 2018* PostDoc participant at the Heidelberg Laureate Forum
- H-Index 5, with over 80 citations on 12 published articles, and over 185 citations on the published monograph (Scopus, WOS, MathSciNet).

TEACHING ACTIVITY

March 2021 - June 2021 (32 hours) Teaching Assistant for Analysis II, (Engineering), Prof. Daniele Cassani, University of Insubria

October 2020 - March 2021 (60 hours) Tutoring for Analysis I, Department of Mathematics and

Applications, University of Milano-Bicocca
December 2018 (4 hours) Tutoring for Functional Analysis, Prof. Marco Squassina, Department of Mathematics and Physics, The Catholic University of the Sacred Heart, Brescia, Italy
March 2017 - July 2017 (68 hours) Teaching assistant and tutoring for Analysis II (Engineering), Prof. Ettore Lanzarone, Polytechnic School, Milan, Italy
December 2016 - March 2017 (24 hours) Teaching assistant for Analysis I and Geometry (Engineering), Prof. Angela Iannelli, Polytechnic School, Milan, Italy
October 2015 - January 2016 (44 hours) Teaching assistant and tutoring for Analysis I (Engineering), Prof. Angela Iannelli, Polytechnic School, Milan, Italy

OTHER PROFESSIONAL EXPERIENCES

July 2006 - October 2012 SAS Institute S.r.l. as a Sales Support and Developer on SAS products

EDUCATION

January 2014 - April 2017 **PhD in Mathematics**, University of Milan
 Thesis: Some nonlocal operators and effects due to nonlocality
 Supervisor: Prof. Enrico Valdinoci
October 2013 **Master Degree in Mathematics**, vote 109/110, University of Milan
 Thesis: Representation formulas for solutions of fractional Laplacian equations
 Supervisor: Prof. Enrico Valdinoci
October 2006 **Bachelor Degree in Mathematics**, vote 100/110, University of Milan
 Thesis: Sobolev spaces. Existence of weak solutions of linear elliptic second order partial differential equations
 Supervisor: Prof. Kevin Ray Payne
2001 - 2004 **Student of Mathematics** at the University of Bucharest, vote 9.61/10.
 September 2003 - April 2004, **Erasmus scholarship**, as a student from the University of Bucharest to the University of Padova
2001 **High school Diploma**, 99/100
Acknowledgments
 1996 Third prize at the national stage of the Romanian Olympiad for Mathematics;
 1998, 2000 Third prize at the inter-regional competition of Mathematics, Romania;
 From 1996 to 2001 Participant in the national final stage at the Mathematics Olympiad;
 2001 Third prize at the national stage of the Romanian Olympiad for English.

SPOKEN LANGUAGES

Romanian - Native speaker
 Italian - Native speaker level
 English - Fluent

26/05/2021