

# PIETRO MIRAGLIO

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## CURRICULUM VITAE

CMCC Foundation  
Regional Ocean Forecasting Systems  
Viale C. Berti Pichat 6/2, Bologna, Italy  
Post-Doc Researcher  
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### Personal data

- First name / Surname: Pietro Miraglio
- Nationality: Italian
- Date of birth: Mar 7<sup>th</sup>, 1992

### Professional experience

- Oct 2021 – ongoing. Post-Doc Researcher at CMCC Foundation, Regional Ocean Forecasting Systems division, Bologna (Italy). Main duties: data assimilation for the reanalysis of the Mediterranean Sea.
- Jul 2020 – Sep 2021. Post-Doc Researcher at EURAC Research, Institute for Renewable Energy, Bolzano (Italy). Main duties: data analysis and mathematical modelling in energy-related contexts; writing of project proposals in the Horizon Europe framework.
- Oct 2016 – Jan 2020 PhD student in Mathematical Sciences, Università degli Studi di Milano (Italy) and Universitat Politècnica de Catalunya (Barcelona, Spain). Thesis title: *Estimates and rigidity for stable solutions to some nonlinear elliptic problems*. Degree grade: *Excellent cum laude*. Supervisors: Prof. Enrico Valdinoci (UniMi) and Prof. Xavier Cabré (UPC).

### Education

- Oct 2014 - Jul 2016, Master's Degree in Mathematics, Università degli Studi di Torino. Degree grade: 110/110 *cum laude*. Supervisor: Prof. Paolo Caldirolì. Thesis title: *The fractional laplacian: an introduction and the study of a nonlocal problem*.
- Oct 2011 - Oct 2014, Bachelor's Degree in Mathematics, Università degli Studi di Torino. Degree grade: 110/110 *cum laude*. Supervisor: Prof. Paolo Caldirolì.
- Sep 2006 - Jul 2011, Scientific Diploma, Liceo "Arimondi", Savigliano, Italy. Final Mark: 100/100.

### Human languages

**Fluent:** Italian (mothertongue), English, Spanish.

## Computer languages

**Fluent:** Python, Julia, Bash, LaTeX, git.

**Limited:** MATLAB, FORTRAN, C++.

## Publications

1. S. Dipierro, P. Miraglio, L. Lombardini, E. Valdinoci - *The Phillip Island penguin parade (a mathematical treatment)*, The ANZIAM Journal, vol. 60, no. 1 (2018).  
<https://doi.org/10.21914/anziamj.v60i0.12472>
2. E. Cinti, P. Miraglio, E. Valdinoci - *One-dimensional symmetry for the solutions of a three-dimensional water wave problem*, J. Geom. Anal., vol. 30 (2020);  
<https://doi.org/10.1007/s12220-019-00279-z>
3. S. Dipierro, P. Miraglio, E. Valdinoci - *(Non)local  $\Gamma$ -convergence*, Bruno Pini Mathematical Analysis Seminar, vol. 11, no. 1 (2020);  
<https://doi.org/10.6092/issn.2240-2829/10580>
4. P. Miraglio - *Boundedness of stable solutions to nonlinear equations involving the  $p$ -Laplacian*, J. Math. Anal. Appl., vol. 489, no. 1 (2020);  
<https://doi.org/10.1016/j.jmaa.2020.124122>
5. Miraglio, P. - *Estimates and rigidity for stable solutions to some nonlinear elliptic problems*, Bull. Aus. Math. Soc., vol. 103, no. 2 (2020);  
<https://doi.org/10.1017/S0004972720000702>
6. P. Miraglio, E. Valdinoci - *Energy asymptotics of a Dirichlet to Neumann problem related to water waves*, Nonlinearity, vol. 33, no. 11 (2020);  
<https://doi.org/10.1088/1361-6544/ab9dcb>
7. X. Cabré, P. Miraglio, M. Sanchón - *Optimal regularity of stable solutions to nonlinear equations involving the  $p$ -Laplacian*, Adv. Calc. Var., vol. 15, no. 4 (2022);  
<https://doi.org/10.1515/acv-2020-0055>
8. X. Cabré, P. Miraglio - *Universal Hardy-Sobolev inequalities on hypersurfaces of Euclidean space*, Commun. Contemp. Math., 24 (2022);  
<https://doi.org/10.1142/S0219199721500632>
9. S. Dipierro, P. Miraglio, E. Valdinoci - *Symmetry results for the solutions of a partial differential equation arising in water waves*, 2018 MATRIX annals, MATRIX Book Series, Vol. 3 (2020), Springer;  
[https://doi.org/10.1007/978-3-030-38230-8\\_15](https://doi.org/10.1007/978-3-030-38230-8_15)
10. A. Aydogdu, P. Miraglio, R. Escudier, E. Clementi, S. Masina - *The dynamical role of upper layer salinity in the Mediterranean Sea*, in: 7th edition of the Copernicus Ocean State Report (OSR7), edited by: K. von Schuckmann, L. Moreira, P.-Y. Le Traon, M. Grégoire, M. Marcos, J. Staneva, P. Brasseur, G. Garric, P. Lionello, J. Karstensen, and G. Neukermans, Copernicus Publications, State Planet, 1-osr7, 6 (2023);  
<https://doi.org/10.5194/sp-1-osr7-6-2023>
11. K. Tzoumpas, A. Estrada, P. Miraglio, P. Zambelli - *A data filling methodology for time series based on CNN and (Bi)LSTM neural networks*, accepted for publication in IEEE Access, preprint available.  
<https://arxiv.org/abs/2204.09994>

## Scholarships

- Oct 2016 – Sep 2019 PhD Scholarship at the *Doctoral Program in Mathematical Sciences*, Università degli Studi di Milano.
- Oct 2019 – Nov 2019 *Ferran Sunyer i Balaguer Scholarship* of the Insitut d'Estudis Catalans for visiting the University of Western Australia.
- Apr 2021 – Jun 2021 *Moxoff Academy Scholarship*, Moxoff, applied mathematics spin-off of the Polytechnic of Milan.

## Prizes

- 2021 Mahony-Neumann-Room Prize of the Australian Mathematical Society, awarded at the Annual Meeting of ANZIAM (2022) for authorship of the paper *The Phillip island penguin parade (a mathematical treatment)*, co-authored with S. Dipierro, L. Lombardini and E. Valdinoci, ANZIAM Journal vol. 60, no. 1 (2018).

## Thesis supervision

- Kostas Tzoumpas, *Reconstruction of multivariate time series in a smart city context using Deep Learning models*, for the Msc in Computer Science at the University of Bolzano (Italy), in collaboration with EURAC Research (2021).

## Teaching experiences

- Feb 2016 – Apr 2016 Tutorial Course of Mathematical Analysis II, Degree Course in Physics - Università degli Studi di Torino. Supervisor: Prof. Enrico Priola.
- Oct 2015 - Jan 2016 Tutorial Course of Mathematical Analysis II, Degree Course in Mathematics - Università degli Studi di Torino. Supervisor: Prof. Susanna Terracini.

## Visiting periods

- Oct, 29 – Nov, 19 2016 University of Melbourne (Australia) invited by Serena Dipierro and Enrico Valdinoci.
- Oct 2017 – July 2018 Universitat Politècnica de Catalunya, Barcelona (Spain) invited by Xavier Cabré in the Co-tutoring program between UniMi and UPC.
- Oct, 30 – Dec, 01 2018 University of Western Australia, Perth (Australia) invited by Serena Dipierro and Enrico Valdinoci.
- Jan 2019 – July 2019 Universitat Politècnica de Catalunya, Barcelona (Spain) invited by Xavier Cabré in the Co-tutoring program between UniMil and UPC.
- Oct, 25 – Nov, 29 2019 University of Western Australia, Perth (Australia) invited by Serena Dipierro and Enrico Valdinoci.

## Talks

- Dec, 18 2017 Mathematics PhD seminars - Università degli Studi di Torino.
- Nov, 29 2018 Mathematics and Statistics seminars - University of Western Australia, Perth.

- Nov, 18 2019 Mathematics and Statistics seminars - University of Western Australia, Perth.

## **Volunteering**

Mar 2020 – Jun 2020 Volunteer at Crowdfight Covid-19, an initiative from the scientific community to put all available resources at the service of the fight against COVID-19.

Bologna, Feb 7<sup>th</sup>, 2024