

Nicolò De Ponti

Curriculum Vitae

✉ [nicolo.de Ponti\(at\)unimib.it](mailto:nicolo.de Ponti(at)unimib.it)
🌐 sites.google.com/view/nicolodeponti

Personal Information

name Nicolò
surname De Ponti
date and place of birth April, 24 1991 in Mariano Comense (Italy)
nationality Italian

Current position

March 2023-now **Post-doc**, *Università degli Studi di Milano-Bicocca*
Contacts:
○ e-mail: [nicolo.de Ponti\(at\)unimib.it](mailto:nicolo.de Ponti(at)unimib.it);
○ office 2098, Dipartimento di Matematica e Applicazioni, Via Roberto Cozzi, 55, 20126 Milano MI

Past positions

February 2020 - **Post-doc**, *Scuola Internazionale Superiore di Studi Avanzati*
January 2023
October 2019 - **Lecturer for Mathematical courses**, *University of Pavia*
September 2020

Education

December 2019 **Ph.D in Mathematics**, *University of Pavia (Italy)*
Thesis title: *Optimal transport: entropic regularizations, geometry and diffusion PDEs.*
Advisor: Prof. Giuseppe Savaré.
October 2016 **M.Sc. in Mathematics cum laude**, *Insubria University (Como, Italy)*
Thesis title: *Concentrazione della misura e applicazioni geometriche.*
Advisor: Prof. Emanuele Casini. Co-Advisor: Prof. Stefano Pigola.
December 2013 **Bc. in Mathematics cum laude**, *Insubria University (Como, Italy)*
Thesis title: *Congettura di Toeplitz e teorema di Vaughan.*
Advisor: Prof. Stefano Pigola.
July 2010 **Scientific high school diploma**, *Liceo Scientifico "Enrico Fermi", Cantù (Como, Italy)*

Languages

Italian mother tongue
English good

Invitations to conferences

February 14, 2024 XXXIII Convegno Nazionale di Calcolo delle Variazioni; Riccione.
September 14, 2023 MGT²: Milano-Grenoble-Torino Meeting in Geometry and Topology; Torino.
February 21, 2023 New Trends in Geometric & Variational PDEs; Trento.

October 25, 2022 Optimal Transportation and Applications; Pisa.
 December 03, 2021 Recent Advances in Analysis, PDEs and Applications; Politecnico Milano.
 February 05, 2019 XXIX Convegno Nazionale di Calcolo delle Variazioni; Levico Terme.

Invitations to Departments' seminars

April 29, 2022 Analysis Junior Seminars, SISSA.
 November 12, 2021 Analysis seminars, Coimbra.
 November 23, 2020 Optimal transport and mean field game seminar, UCLA-SC.
 October 09, 2020 Analysis Junior Seminars, SISSA.
 February 11, 2020 Analysis Seminars, Politecnico di Milano.
 May 28, 2019 Analysis Seminars, SISSA.
 February 21, 2019 Insalate di Matematica, University of Milano-Bicocca.
 October 11, 2018 Analysis Seminars, University of Warwick.

Research periods

March 01-07, 2020 **Oxford**, invited by Andrea Mondino.
 May 27-30, 2019 **SISSA**, invited by Fabio Cavalletti.
 October-December 2018 **Warwick Mathematics Institute**, research period abroad during my Ph.D studies under the supervision of Andrea Mondino.

Teaching activities

A. Y. 2023-2024 **University of Milano-Bicocca**, *Teaching assistant for the course "Matematica I"*, Faculty of Materials Science, (BcS 1st year).
 A. Y. 2022-2023 **SISSA**, *Lecturer for the course "Markov diffusion semigroups and functional inequalities"*, Mathematics, (30 hours PhD course).
 A. Y. 2019-2020 **University of Pavia**, *Lecturer for the course "Complements of Mathematical Analysis"*, Faculty of Engineering, (MSc 1st year).
 A. Y. 2019-2020 **University of Pavia**, *Teaching assistant for the course "Complements of Mathematical Analysis II"*, Faculty of Physics, (BcS 2nd year).
 A. Y. 2017-2018 **University of Pavia**, *Teaching assistant for the course "Mathematical methods for Engineering"*, Faculty of Engineering, (BcS 2nd year).
 A. Y. 2017-2018 **University of Pavia**, *Teaching assistant for the course "Mathematical Analysis 1"*, Faculty of Mathematics and Physics, (BcS 1st year).
 A. Y. 2016-2017 **University of Pavia**, *Teaching assistant for the course "Mathematical Analysis 2"*, Faculty of Engineering, (BcS 2nd year).
 A. Y. 2015-2016 **Insubria University**, *Teaching assistant for the course "Geometry 1"*, Faculty of Mathematics, (BcS 2nd year).

- A. Y. 2014-2015 **Insubria University**, *Teaching assistant for the course "Mathematical Analysis 1"*, Faculty of Mathematics, Physics and Chemistry, (BcS 1st year).
- A. Y. 2014-2015 **Insubria University**, *Teaching assistant for the course "Linear Algebra"*, Faculty of Mathematics and Physics, (BcS 1st year).
- A. Y. 2014-2015 **Insubria University**, *Teaching assistant for the course "Geometry 1"*, Faculty of Mathematics, (BcS 2nd year).

Grant and awards

- 2023-2024 **GNAMPA-INdAM**, *Member of the funded project "Mancanza di regolarità e spazi non lisci: studio di autofunzioni e autovalori" together with Paolo Cosentino, Marco Gallo (principal investigator) and Luca Tamanini.*
- 2019-2020 **GNAMPA-INdAM**, *Member of the funded project "Trasporto ottimo per dinamiche con interazione" together with Giulia Cavagnari, Stefano Lisini, Edoardo Mainini, Carlo Orrieri (principal investigator), Luca Scarpa, Bruno Volzone and Giovanni Alessandro Zanco.*
- 2017-2018 **GNAMPA-INdAM**, *Member of the funded project "Dinamiche di difetti su superfici curve" together with Fabio Cavalletti, Antonio Segatti and Marco Veneroni (principal investigator).*
- September 2016 **University of Pavia**, *Winner of the Ph.D. Fellowship "Alma Mater Ticinensis" at University of Pavia under the supervision of Giuseppe Savaré.*
- May 2010 **Olimpiadi della Matematica**, *Winner of the Silver Medal at Olimpiadi della Matematica.*

Services

Referee services for the following journals:

- *Journal of Functional Analysis*;
- *Potential Analysis*;
- *Transactions of the American Mathematical Society*;
- *Journal of Mathematical Analysis and Applications*;
- *SIAM Journal on Mathematical Analysis*;
- *Revista Matemática Iberoamericana*;
- *Symmetry, Integrability and Geometry: Methods and Applications*;
- *Bulletin of the London Mathematical Society*;
- *Calculus of Variations and Partial Differential Equations*;
- *Nonlinear Analysis*;
- *Proceedings of the Royal Society of Edinburgh Section A: Mathematics*.

I also act as a reviewer for zbMATH Open and Mathematical Reviews.

Research Interests

- Analysis and geometry of Riemannian manifolds and metric measure spaces.
- Optimal Transport.
- Distances between measures and metric measures spaces.
- Analysis of (linear and nonlinear) diffusion PDEs and connection with curvature properties.

Preprints

1. Nicolò De Ponti, Sara Farinelli, Ivan Yuri Violo, **“Pleijel nodal domain theorem in non-smooth setting”**; <https://arxiv.org/abs/2307.13983>

Publications

1. G. Bruno De Luca, Nicolò De Ponti, Andrea Mondino, Alessandro Tomasiello, **“Harmonic functions and gravity localization”**; *Journal of High Energy Physics*, 2023, 127 (2023).
2. G. Bruno De Luca, Nicolò De Ponti, Andrea Mondino, Alessandro Tomasiello, **“Gravity from thermodynamics: optimal transport and negative effective dimensions”**; *SciPost Physics*, 15, 039 (2023).
3. Nicolò De Ponti, Andrea Mondino, **“Entropy-Transport distances between unbalanced metric measure spaces”**; *Probability Theory and Related Fields*, 184, no. 1-2, (2022).
4. Nicolò De Ponti, Matteo Muratori, Carlo Orrieri, **“Wasserstein stability of porous medium-type equations on manifolds with Ricci curvature bounded below”**; *Journal of Functional Analysis*, Volume 283, Issue 9, (2022).
5. Nicolò De Ponti, Sara Farinelli, **“Indeterminacy estimates, eigenfunctions and lower bounds on Wasserstein distances”**; *Calculus of Variations and Partial Differential Equations*, 61, Article number: 131 (2022).
6. Nicolò De Ponti, **“Concentration on submanifolds of positively curved homogeneous spaces”**; *Differential Geometry and its Applications*, volume 80, (2022).
7. G. Bruno De Luca, Nicolò De Ponti, Andrea Mondino, Alessandro Tomasiello, **“Cheeger bounds on spin-two fields”**; *Journal of High Energy Physics*, volume 2021, Article number: 217 (2021).
8. Nicolò De Ponti, Andrea Mondino, Daniele Semola, **“The equality case in Cheeger’s and Buser’s inequalities on RCD spaces”**; *Journal of Functional Analysis*, 281, Issue 3, (2021).
9. Nicolò De Ponti, Andrea Mondino, **“Sharp Cheeger-Buser type inequalities in $\text{RCD}(K, \infty)$ spaces”**; *The Journal of Geometric Analysis*, 31, (2021), pp. 2416–2438.
10. Nicolò De Ponti, **“Metric properties of homogeneous and spatially inhomogeneous F -divergences”**; *IEEE Transactions on Information Theory*, 66, Issue 5, (2020), pp. 2872 - 2890.