

Federico Glaudo

Curriculum Vitae

Princeton, New Jersey, US

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Personal information

Birth Rome (Italy), April 29, 1994
Languages Italian (native), English (fluent)
Citizenship Italian

Academic positions

2024–2025 **Postdoctoral member**, *Institute for Advanced Study, Princeton*
2023–2024 **Postdoctoral Researcher**, *Princeton University, Princeton*
2022–2023 **Postdoctoral member**, *Institute for Advanced Study, Princeton*

Education

2018–2022 **Phd**, *ETH Zürich*
Advisor: Alessio Figalli
Doctoral thesis: *Quantitative Stability of Sobolev and Isoperimetric-type Inequalities*
2013–2018 Student of mathematics at *Scuola Normale Superiore di Pisa*.
2016–2018 **Master degree**, *Università di Pisa*, 110/110 cum laude
Advisor: Luigi Ambrosio
Degree thesis: *A New Approach to the Random Matching Problem*
2013–2016 **Bachelor degree**, *Università di Pisa*, 110/110 cum laude
Advisor: Roberto Frigerio
Degree thesis: *Quasi-isometrie di gruppi iperbolici indotte da omeomorfismi dei bordi*

Publications

- 15) Besicovitch's $1/2$ problem and linear programming (with C. De Lellis, A. Massaccesi, D. Vittone), *Preprint* (2024)
- 14) Non-degeneracy, stability and symmetry for the fractional Caffarelli-Kohn-Nirenberg inequality (with N. De Nitti, T. König), *Preprint* (2024)
- 13) Nonexistence of isoperimetric sets in spaces of positive curvature (with G. Antonelli), *Journal für die Reine und Angewandte Mathematik. [Crelle's Journal]* 812 (2024), 211–228
- 12) On the isoperimetric profile of the hypercube, *Mathematische Annalen* (Accepted) (2024)
- 11) An Invitation to Optimal Transport, Wasserstein Distances, and Gradient Flows — Second Edition (with A. Figalli), *EMS Textbooks in Mathematics* (2023), vi + 146
- 10) Reconstructing a set from its subset sums: 2-torsion-free groups (with N. Kravitz), *Discrete Analysis* (Accepted) (2024)

- 9) On the determination of sets by their subset sums (with A. Ciprietti), *Preprint* (2023)
- 8) Expansion of the fundamental solution of a second-order elliptic operator with analytic coefficients (with F. Franceschini), *Proceedings of the London Mathematical Society* 127 (2023), 1028–1056
- 7) Minkowski inequality for nearly spherical domains, *Advances in Mathematics* 408 (2022)
- 6) Sharp quantitative stability for isoperimetric inequalities with homogeneous weights (with E. Cinti, A. Pratelli, X. Ros-Oton, J. Serra), *Transactions of the American Mathematical Society* 375 (2022), 1509–1550
- 5) An Invitation to Optimal Transport, Wasserstein Distances, and Gradient Flows (with A. Figalli), *EMS Textbooks in Mathematics* (2021), vi + 136
- 4) On the sharp stability of critical points of the Sobolev inequality (with A. Figalli), *Archive for Rational Mechanics and Analysis* 237 (2020), 201–258
- 3) On the optimal map in the 2-dimensional random matching problem (with L. Ambrosio, D. Trevisan), *Discrete and Continuous Dynamical Systems. Series A* 39 (2019), 7291–7308.
- 2) Finer estimates on the 2-dimensional matching problem (with L. Ambrosio), *Journal de l'Ecole polytechnique – Mathématiques* 6 (2019), 737–765.
- 1) On the c-concavity with respect to the quadratic cost on a manifold, *Nonlinear Analysis* 178 (2019), 145–151.

Invited Speaker

- Dec 2024 “Geometry and Topology Seminar” of Caltech (Pasadena, California)
- Oct 2024 “Regularity of Nonlinear Equations and Free Boundary Problems (JMM session)” (Albany, New York)
- Sep 2024 “Short talks by Postdoctoral Members”, Institute for Advanced Study (Princeton, New Jersey)
- Mar 2024 “Analysis Seminar”, EPFL (Lausanne, Switzerland)
- Jan 2024 “Analysis Seminar” of Georgia Tech (Atlanta, Georgia)
- Jan 2024 “Advances in Analysis, PDE and Related Applications (JMM session)” (San Francisco, California)
- Oct 2023 “Workshop on Degenerate and Singular Diffusion”, ICMAT (Madrid, Spain)
- Oct 2023 “Asymptotic Geometric Analysis Seminar” (online)
- Sep 2023 “Geometric Analysis and Topology Seminar” of Courant Institute (New York)
- May 2023 “Analysis Seminar” of Princeton University (Princeton, New Jersey)
- Mar 2023 “New York Number Theory Seminar” at CUNY (New York)
- Mar 2023 “Analysis Seminar” of University of Texas at Austin (Austin, Texas)
- Oct 2022 “Analysis and Mathematical Physics seminar” of Institute for Advanced Study (Princeton, New Jersey)
- Sep 2022 “Short Talks by Postdoctoral Members” at Institute for Advanced Study (Princeton, New Jersey)

- Jun 2022 Conference “Regularity for nonlinear diffusion equations. Green functions and functional inequalities” at Universidad Autónoma de Madrid - ICMAT (Madrid, Spain)
- May 2022 Workshop “Calculus of Variations and Functional Inequalities” at FAU Erlangen-Nürnberg (Erlangen, Germany)
- Mar 2022 Conference “Quantization, location, sampling and matching” at Lagrange Center (Paris, France)
- Mar 2022 “Competitive Programming Workshop” at ETH Zürich (Zürich, Switzerland)
- Dec 2021 “Geometry Seminar” of Stanford University (Stanford, California)
- Oct 2021 Conference “A Pisan workshop in Geometric Analysis” of Centro di Ricerca Matematica De Giorgi (Pisa, Italy)
- Jun 2021 “Analysis Seminar” of Universitat Autònoma de Barcelona and Universitat de Barcelona (Barcelona, Spain)
- Mar 2021 “Groupe de Travail modélisation stochastique del LPSM” of Univ. Paris Diderot and Sorbonne Université (Paris, France)
- Jun 2020 “Analysis and PDE Seminar” of the Instituto de Matemática Pura e Aplicada (Rio de Janeiro, Brazil)
- Feb 2020 “Stochastic analysis seminar” of the Imperial College (London, United Kingdom)
- Jun 2019 Conference “Optimal Transport in Analysis and Probability” (Vienna, Austria)
- Jun 2018 One-day meeting “Non-smooth Geometry and Optimal Transport” (Pisa, Italy)

Advising

- May–Jul 2024 Advisor of Brandon Cho for the Summer Undergraduate Research Program at Princeton University.
- Jun–Oct 2022 Advisor of A. Ciprietti (together with M. D’Adderio) for his bachelor thesis at Univesità di Pisa.
- Oct ’20–Feb ’21 Supervised A. Shrey for a Reading Course at ETH Zürich.
- Jan–Jun 2019 Co-supervised (with A. Figalli) L. Silini for an Semester Project at ETH Zürich (equivalent to a bachelor thesis).

Teaching

- Feb-May 2023 Analysis III (MAT 425), *Responsible for the course* (Teaching classes, preparing exercises, preparing and grading exams)
- Sep-Dec 2023 Calculus I (MAT 103), *Instructor* (Teaching classes)
- Sep-Dec 2021 Mathematics III - PDE, *Coordinator* (creating exercise sheets, coordinating exercise classes)
- Sep-Dec 2020 Analysis III - PDE, *Coordinator* (creating exercise sheets, coordinating exercise classes)
- Sep-Dec 2019 Optimal Transport, *Exercise class* (creating exercise sheets, solving them in class)
- Feb-May 2019 Measure theory, *Exercise class*
- Sep-Dec 2018 Introduction to Optimal Transport, *Students seminars*

Organization

- Sep '24-May '25 One of the organizers of the Analysis Seminar at IAS.
- Oct '23-Mar '24 Chief scientific organizer for the competitive programming contest EUC 2023/2024, in Prague.
- Sep '22-May '23 One of the organizers of the Analysis Seminar at IAS.
- Sep '22-Feb '23 Chief scientific organizer for the competitive programming contest SWERC 2022/23, in Milan.
- Dec '21-Apr '22 Chief scientific organizer for the competitive programming contest SWERC 2021/22, in Milan.
- Oct 2020 Minicourse for graduate students on *Young measures* taught by F. Franceschini (Zürich, Switzerland).
- Oct-Dec 2019 Graduate reading seminar on the *Inverse Mean Curvature Flow* following the work of Huisken–Ilmanen (Zürich, Switzerland).

Awards

- 2023 *ETH Silver Medal*, (2000 dollars) prize for Doctoral Thesis
- 2010-2013 *International Mathematical Olympiad*, one bronze and three silver medals
- 2012-2013 *International Olympiad in Informatics*, one bronze and one gold medal

Service

I have been referee (or offered a quick opinion) for: Duke Mathematical Journal, Communications in Pure and Applied Mathematics, Advances in Mathematics, Mathematische Annalen, Archive for Rational Mechanics and Analysis, Transactions of the AMS, Analysis & Partial Differential Equations, Journal de Mathématiques Pures et Appliquées, Annali SNS, Nonlinear Analysis, Archiv der Mathematik, Constructive Approximation.

Work experience

- Aug '16-Jan '17 Software Engineer Intern at Google (Zurich, Switzerland)

Programming skills

I am proficient in C++, python and \LaTeX .

I was one of the 25 finalists of the global programming competition *Google Codejam 2018* (in Toronto). I participated, with the the team of Scuola Normale Superiore, to the *ACM-ICPC 2018* world finals (in Beijing). I have organized many major programming competitions (*AtCoder Grand Contest 44*, *Codeforces Global Round 11*, *Codeforces Global Round 14*, *SWERC 2021/22*, *SWERC 2022/23*, *EUC 2023/24*).