

DAVIDE GIOVAGNOLI

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WEBSITE/D.GIOVAGNOLI



PERSONAL INFORMATIONS

I was born 16 June 1999 in Fano, Italy.
Currently I am a PhD student in Mathematics in Bologna

EDUCATION

PhD in Mathematics

Bologna, Italy

Alma Mater Studiorum - Università di Bologna

Ongoing from Nov 2023

- Advisor: Prof. Fausto Ferrari
- Research interests: Regularity aspects in Elliptic/Parabolic PDEs, Free Boundary Problems, Analysis on Carnot groups, Nonlocal operators and Calculus of Variations

Master's Degree in Mathematics

Bologna, Italy

Alma Mater Studiorum - Università di Bologna

Oct 2021 - Sep 2023

- Thesis title: Alt-Caffarelli-Friedman monotonicity formulas,
Supervisor: Fausto Ferrari
- Vote: 110/110 cum laude
- Weighted grade average: 29.93/30

Bachelor's Degree in Mathematics

Bologna, Italy

Alma Mater Studiorum - Università di Bologna

Sep 2018 - Oct 2021

- Thesis title: The Fractional Laplacian defined through an analytical extension,
Supervisor: Fausto Ferrari
- Vote: 110/110 cum laude
- Weighted grade average: 29.07/30

PUBLICATIONS

1. D. Giovagnoli & D. Jesus & L. Silvestre $C^{1,\alpha}$ -regularity for fractional p -harmonic functions, preprint [ArXiv:2509.26565](https://arxiv.org/abs/2509.26565)
2. F. Ferrari & D. Giovagnoli & E. M. Merlino, On a fractional Alt-Caffarelli-Friedman-type monotonicity formula, submitted, [ArXiv:2509.25891](https://arxiv.org/abs/2509.25891)
3. F. Ferrari & D. Giovagnoli & D. Jesus, On the Geometry of Solutions of the Fully Nonlinear Inhomogeneous One-Phase Stefan Problem, preprint [ArXiv:2504.12912](https://arxiv.org/abs/2504.12912)
4. D. Giovagnoli & D. Jesus, A Fully Nonlinear Transmission problem degenerating on the interface, preprint [ArXiv:2410.16957](https://arxiv.org/abs/2410.16957)
5. F. Ferrari & N. Forcillò & D. Giovagnoli & D. Jesus, Free boundary regularity for the inhomogeneous one-phase Stefan problem, preprint [ArXiv:2404.07535](https://arxiv.org/abs/2404.07535)
6. F. Ferrari & D. Giovagnoli, Some counterexamples to Alt-Caffarelli-Friedman monotonicity formulas in Carnot groups, [Annali di Matematica Pura e Applicata](https://doi.org/10.1007/s00033-025-0204-4) 204, 427–445 (2025)
7. D. Giovagnoli & E. Salato, A gentle introduction to the Alt-Caffarelli-Friedman monotonicity formula, book, under revision, 2025
8. D. Giovagnoli & E. M. Merlino & D. Moreira A quantitative Hopf-Oleinik lemma for degenerate fully nonlinear operators and applications to free boundary problems, under revision 2025

TALKS	Free boundary regularity for the inhomogeneous Stefan Problem <i>Seminari d'Anàlisi de Barcelona, Universitat de Barcelona</i>	Barcelona, Spain July 10, 2025
	Free boundary regularity for the inhomogeneous Stefan Problem <i>PDE and Analysis seminar, University of Pittsburgh</i>	Pittsburgh, USA March 24, 2025
	Free boundary regularity for the inhomogeneous Stefan Problem <i>Talk in Free boundaries in action, in honor of Sandro Salsa</i>	Bologna, Italy March 11, 2025
	Free boundary regularity for the inhomogeneous Stefan Problem <i>PDE Geometric Analysis Seminar, University of Wisconsin-Madison</i>	Madison, USA March 10, 2025
	Free boundary regularity for the inhomogeneous Stefan Problem <i>Luis Silvestre's research group seminar, University of Chicago</i>	Chicago, USA February 25, 2025
	Regularity issues in Elliptic Transmission problems <i>Analysis seminar for ASK Seminar</i>	Bologna, Italy January 14, 2025
	Alt-Caffarelli-Friedman monotonicity formulas on Carnot groups <i>Short communication during Latinos on free boundaries in Bologna</i>	Bologna, Italy July 29, 2024
	Alt-Caffarelli-Friedman monotonicity formulas on Carnot groups <i>Contributed talk during SHaCAMiGa</i>	Bologna, Italy January 25, 2024
INTERNSHIPS	Universitat de Barcelona Barcelona, Spain Invited by Prof. G. Csato	July 2025 (2 weeks)
	Columbia University New York, USA Invited by Prof. D. De Silva and Prof. O. Savin	April 2025 (1 week)
	University of Pittsburgh Pittsburgh, USA Invited by Prof. J. Manfredi	March 2025 (1 week)
	University of Wisconsin Madison, USA Invited by Prof. M. Feldman	March 2025 (3 weeks)
	University of Chicago Chicago, USA Invited by Prof. L. Silvestre	February 2025 (2 weeks)
	Universitat de Barcelona Barcelona, Spain Invited by Prof. G. Csato	May - June 2024 (1 month)
	Universitat de Barcelona Barcelona, Spain Invited by Prof. X. Cabré and Prof. G. Csato	July 2023 (3 weeks)
PROJECTS AND FUNDS	I am involved in the following projects:	
	• Member of the PRIN 2022 Pattern formation in nonlinear phenomena from Nov 2023 PRIN 2022 7HX33Z - CUP J53D23003610006 Principal Investigator: Susanna Terracini. • Member of the INdAM - GNAMPA Project 2025, CUP E5324001950001: At the edge of Ellipticity. Principal Investigator: I. Birindelli. • INCENTIVI PER COLLABORAZIONI CON UNIVERSITÀ DEL NORD AMERICA 2024 MAT: Interplaying problems in analysis and geometry. Coordinated by F. Ferrari.	

TEACHING	• Tutor for “Analisi Matematica 2”, Sep 2025 - Feb 2026 Analysis II for second year students in Matematica taught by F.Ferrari, University of Bologna • Tutor for “Analisi Matematica 2”, Sep 2025 - Feb 2026 Analysis II for second year students in Astronomy taught by M.C. Tesi, University of Bologna • Tutor for “Analisi Matematica T-B”, Feb - Sep 2025 Analysis II for first year students in Energy Engineering taught by F. Ferrari and E. Vecchi, University of Bologna • Tutor for “Analisi Matematica T-B”, Feb - Sep 2024 Analysis II for first year students in Energy Engineering taught by F. Ferrari, University of Bologna • Tutor for “Advanced Mathematical Analysis”, Oct 2023 - Feb 2024 Mathematics Master’s course taught by N. Arcozzi, University of Bologna • Tutor for the project “AlmaMathematica”, Feb 2022 - Oct 2023 Series of online seminars aimed at high school students for the TOLC exam (Test Online for the skills assesment) under supervision of G. Cupini, University of Bologna • Mathematics teacher for summer remedial courses June - July 2021 Review lessons and practice exercises for second, third, and fourth grades to recover school debt, Liceo Scientifico Malpighi Bologna
	Peer reviewer for: Proc. Amer. Math. Soc., Nonlinear Anal.
EDITORIAL SERVICE	
SKILLS	Languages: Italian (Native speaker), English (Advanced level), Spanish (Basic level).
	<i>English C1 level CLA Certificate</i> June 2025
	CLA Academics LEA Course C2 level English Course (50 hrs) Feb 2025 - June 2025
	CLA Academics LEA Course C1 level English Course (50 hrs) Oct 2024 - Jan 2025
	Programming: $\LaTeX$, MATLAB, Python.

CONFERENCES ATTENDED AND OTHER ACTIVITIES	Organizer of ASK Conference 2024 (Conference website)	
	Interaction between different areas of Mathematical Analysis and Probability, University of Bologna	December 18 - 20, 2024
	Organizer of ASK seminars (Seminar website)	
	A cycle of seminars and activities for young Analysis researchers in Bologna	
	Summer School JSID 2025 with poster presentation	
	21th School on Interactions between Dynamical Systems and Partial Differential Equations in Barcelona,	Barcelona, June 30 - July 4, 2025
	SIIT-LSU Conference on Analysis and PDE	Online, September 26, 2024
	AMS - UMI International Joint Meeting	Palermo, July 23 - 26, 2024
	First JHU - UNIBO Conference "Noncommutativity at the Interface of Topology, Geometry and Analysis"	Bologna, June 24 - 28, 2024
	Satellite ECM 2024 Conference "BAC24"	Barcelona, June 3 - 7, 2024
	Workshop "Highlights in Nonlinear PDEs"	Gaeta, April 8-11, 2024
	Workshop "CalVarFer"	Ferrara, March 6-7, 2024
	Workshop on "Regularity and geometric aspects of nonlinear PDEs"	Pisa, January 31 - February 2, 2024
	Summer School JSID 2023	
	19th School on Interactions between Dynamical Systems and Partial Differential Equations in Barcelona,	Barcelona, July 3 - 7, 2023
	Conference "NonPUB 2023 - Nonlocal and Nonlinear Partial Differential Equations"	Bologna, June 8-9 2023
PHD COURSES	"Fundamental Properties of Harmonic Functions" taught by D. Moreira (UFC),	Sep 2025
	"Qualitative properties of solutions of p-Laplace equations" taught by E. Vecchi (UNIBO), and S. Biagi (Polimi)	May 2025
	"Fully nonlinear elliptic equations" taught by D. Jesus (UNIBO),	Jan - Feb 2025
	"Introduction to the regularity up to the boundary for the Bernoulli type free boundary problems" taught by D. Moreira (UFC),	Sep - Oct 2024
	"An invitation to nonlinear Regularity Theory: the stationary and diffusive p-Laplacean" taught by S. Ciani (UNIBO),	June - July 2024
	"The Heat Equation: Dirichlet and Cauchy problems" taught by E. Lanconelli (UNIBO),	Apr - Sep 2024
	"First order nonlinear PDEs: from theory to approximation" taught by P. Albano (UNIBO) and S. Tozza (UNIBO),	May 2024
	"Large solutions for semilinear PDEs" taught by N. Abatangelo (UNIBO),	Mar - Apr 2024
	"Fine properties of functions of bounded variation and sets of finite perimeter" taught by G.E. Comi (UNIBO),	Mar - Apr 2024
	"Diffraction Theory and Complex Analysis in Several Variables" taught by V. Kunz (OSU),	Dec 2023 - Jan 2024
	"Viscosity solutions of second order elliptic equations and applications" taught by S. Salsa (Polimi) and F. Ferrari (UNIBO),	Feb - March 2023

I authorize the processing of personal data contained in my curriculum vitae.

Bologna, October 2, 2025

Davide Giovagnoli