

FAUSTO FERRARI

1. CURRICULUM VITAE

Born in Reggio nell'Emilia (Italy) in 1963.

- Since 2016, January 11th, Professor of Mathematical Analysis, at the University of Bologna, Italy.
- From June 2021 to May 2024, Unione Matematica Italiana (UMI) treasurer.
- From July 2021 to February 2024, member of ASN, the national qualification committee 01/A3 *Analisi Matematica, Probabilità e Statistica Matematica*.
- Since December 30, 2013 he obtained the national scientific qualification as Professor (professore ordinario) for the sector A1/03: *Analisi Matematica, Probabilità e Statistica Matematica*.
- Since 2013, Faculty member of Bologna PhD School in Mathematics (Collegio dei docenti del Dottorato di Ricerca in Matematica) at the University of Bologna.
- From 2006 October 1st to 2016 January 10th, associate professor in Mathematics (Mathematical Analysis), at University of Bologna, Italy (with tenure).
- From 1994 July 16th to 2006 September 30th, assistant professor in Mathematics (Ricercatore confermato di Analisi Matematica) at the University of Bologna, Italy, (with tenure).
- In 1997, Dottore di ricerca in Matematica, (PhD in Mathematics), obtained at the University of Milan (Italy). Supervisor: Sandro Salsa
- From 1992 to 1996, Scuola di Dottorato di Ricerca, (PhD School in Mathematics) Milan University (Italy).
- From 1987 to 1994, Math Teacher at the high school (state schools). On the staff from 1991 September 1st 1994 July 15th 15/7/1994.
- From 1987 to 1988, Military service, (from 1987 April 1st to 1988 June 30th). On service as Lieutenant of the Italian Military Engineers Army from September 1st 1987 to June 30th 1988.
- 1986, Laurea in Mathematics obtained magna cum laude at University (Italy) of Bologna. Supervisor, Ermanno Lanconelli

2. PERSONAL INFORMATIONS

Married since 1994. I am father of a daughter.

3. SCIENTIFIC SUPERVISION OF STUDENTS

3.1. Master thesis obtaine under my supervision.

- Enrico Caneti, now eligible for the PhD School in Mathematics at the University of Bologna A.Y 2025/2026. He will defend his thesis on September 2025.
- Enrico Zani, now eligible for the PhD School in Mathematics at the University of Pavia A.Y 2025/2026.
- Davide Giovagnoli.
- Enzo Maria Merlino
- Nicolò Forcillo.
- Giacomo Sachs.

3.2. Current PhD students.

- Davide Giovagnoli, second year student at Dottorato di Ricerca in Matematica dell'Università di Bologna XXXIX cicle.

3.3. Former PhD students.

- Enzo Maria Merlino, Dottore di Ricerca in Matematica XXXVII ciclo, Università di Bologna. Now Post-Doc at the University of Bologna.
- Nicolò Forcillo, Dottore di Ricerca in Matematica XXXIV ciclo, Università di Bologna. Now PostDoc fellow at Michigan State University
- Aleksandr Dzhugan, Dottore di Ricerca in Matematica XXXIV ciclo, Università di Bologna. Now he is working in a company

3.4. PostDoc students.

- Dr David Jesus, July 1st 2023 to June 30th 2025 (now he is moving to KAUST in a PostDoc position)
- Dr Francesca Corni, September the first, 2022 to January 31st, 2025 (now math teaching in the Italian high school, tenured).
- Dr Elisa Affili, from April the first 2022 to August 31th, 2023 (now maitre de conference at the University of Rouen).
- Dr Nicolò Forcillo from November 1st 2021 to December 14th 2022 (now at the Michigan State University).
- Dr. Giorgio Tortone from May 2019 to February 2021 (now RTT at the University of Turin).
- Dr. Andrea Pinamonti from June 2015 to May 2016 (now associate professor at the University of Trento).

3.5. Few recent selected talks.

- SIIT-LSU Conference on Analysis and PDE 26 September 2024 in honor of Igor E. Verbitsky's Retirement, which will be held online via Zoom Fausto Ferrari: *Some Regularity Results in Two-Phase Free Boundary Conditions* (60') <https://sites.google.com/view/siit-lsu/>
- AMS-UMI meeting, Palermo, July 23-26, 2024: Special Session A16: Advances in Geometric Control Theory and Subelliptic PDEs. July 23-24, 2024 Fausto Ferrari: *Few counterexamples to ACF-Monotonicity formulas in Carnot groups* (45')
- 9-th ECM Siviglia, July 15th-19th, 2024 MS-65 - Towards the regularity theory, PDEs free boundaries and interfaces" July 18th, 2024, Fausto Ferrari: *Some regularity results about flat free boundaries for two-phase nonstandard growth problems with right hand side* (30') <https://www.ecm2024sevilla.com/>
- Mostly maximum principle, Cortona, 4th edition, Indam meeting, May 30-June 3, 2022 <https://www1.mat.uniroma1.it/ricerca/convegni/2022/mmp/>
Fausto Ferrari: Regularity results for a free boundary problem governed by a nonstandard growth operator
- *Nonlinear Elliptic and Parabolic Partial Differential Equations*, Levico terme, October 11-15, 2021, sito web del convegno: <https://neppde-levico21.fbk.eu/>
- 8ECM, Portoroz June 21-26, 2021, in the Mini-symposium *Modeling, approximation, and analysis of partial differential equations involving singular source terms*
Fausto Ferrari: Some remarks on a two phase problem in the Heisenberg group, June 22, 2021
- AMS Central Fall Virtual Sectional Meeting, September 12-13 2020, Special Session on Geometric Inequalities and Nonlinear Partial Differential Equations, I <https://math.confex.com/math/fall2020c/meetingapp.cgi/Program/1001>
Fausto Ferrari: *Few remarks about Alt-Caffarelli-Friedman monotonicity formula*
- *Nonlinear Averaging and PDEs*, Levico Terme, June 19-22, 2019
Fausto Ferrari: *Theorem on sums and Hölder continuity of the viscosity solutions*

4. RECENT GRANTS

- PRIN 2022, local P.I. in Bologna. National P.I. Susanna Terracini. Project 20227HX33Z. Budget in Bologna: 27500 Euros. <https://site.unibo.it/pattern-formation-in-nonlinear-phenomena/en>
- Member of the project BORDER Bologna-Rouen Diffusive Equations with nonlocal and Reaction terms.
- INC MOB NORDAMERICA FERRARI 2025 MAT. INCENTIVI PER COLLABORAZIONI CON UNIVERSITÀ DEL NORD AMERICA - BCSP UNIVERSITY OF CHICAGO; BCSP UNIVERSITY OF WISCONSIN - 2025 - MAT Project title: *Free Boundaries Problems: Analytical and Numerical Aspects*. Budget 9000 Euros, University of Bologna
- ISA VISITING 2025 - 5000 Euro, scientific and didactic collaboration with Diego Ribeiro Moreira, Universidade do Ceará, Brazil
- P.I. INDAM-GNAMPA 2024: *Free boundary problems in noncommutative structures and degenerate operators* (Euros 4000).
- INC MOB NORDAMERICA FERRARI 2024 MAT INCENTIVI PER COLLABORAZIONI CON UNIVERSITÀ DEL NORD AMERICA - 2024 MAT - project title: *Interplaying problems in analysis and geometry* Budget 9800 Euros, University of Bologna
- P.I. GNAMPA-INDAM contribution for the organization in Palermo, Italy, of a special session in the framework of AMS-UMI meeting July 23-26 2024. Budget 1400 Euros.
- "ICTP-INDAM Collaborative Grants and Research in Pairs" Program from October 2023 to April 2024
- P.I. INDAM-GNAMPA project 2019: *Proprietà di regolarità delle soluzioni viscosse con applicazioni a problemi di frontiera libera*.
- P.I. INDAM-GNAMPA project 2017: *Regolarità delle soluzioni viscosse per equazioni a derivate parziali non lineari degeneri*.

- Member of "EPSILON"-team (Elliptic Pdes and Symmetry of Interfaces and Layers for Odd Nonlinearities, PE1), ERC starting grant 2011 P.I. E. Valdinoci.
- grant for collaborating with Mikko Parviainen dell'Università di Jyväskylä (Finlandia) U 2014/001430 18/12/2014 GNAMPA.
- grant for collaborating with Juan Manfredi dell'Università di Pittsburgh
- grant for collaborating with Irene Peral dell'Università Autonoma di Madrid, Madrid (Spagna)
- grant for collaborating with Igor Verbitsky dell'Università del Missouri, Columbia
- grant for collaborating with Cristian Gutierrez della Temple University di Filadelfia (USA)

5. VISITING

- **2002** Luis Caffarelli, Math Dept. of University of Texas in Austin (USA).
- **2002** Guozhen Lu, Math Dept. of Wayne State University di Detroit (USA).
- **2003** Luis Caffarelli, Math Dept. of University of Texas in Austin (USA).
- **2005** Mikhail Feldman, Math Dept. of Wisconsin in Madison (USA).
- **2006** Hervé Pajot, il Dipartimento di Matematica dell'Università di Grenoble (Francia).
- **2006** M. Feldman, il Math Dept. of University of Wisconsin in Madison (USA).
- **2010** I. Verbitsky, Math Dept. of, University of Missouri, Columbia (USA).
- **2010** M. Feldman, il Math Dept. of Wisconsin in Madison (USA).
- **2011** I. Peral, il Dipartimento di Matematica dell'Università Autonoma di Madrid, Madrid (Spagna).
- **2012** J. Manfredi, Math Dept. of University of Pittsburgh PA (USA).
- **2012** D. De Silva, Math Dept. of Columbia University di New York (USA).
- **Nel 2012** C. Gutierrez, Math Dept. of Temple University di Philadelphia PA (USA).
- **Nel 2013** D. De Silva, Math Dept. of Columbia University di New York (USA).
- **Nel 2013** J. Manfredi, Math Dept. of University di Pittsburgh, Pittsburgh PA (USA).
- **Nel 2013** Mittag-Leffler: program *Evolutionary problems* (<http://www.mittag-leffler.se/?q=1314f>).
- **Nel 2014** Henri Poincaré program *Geometry, Analysis and Dynamics on SubRiemannian Manifolds*.
- **Nel 2015** Mikko Parviainen l'University di Jyväskylä (Finlandia).
- **Nel 2017** BIRS di Banff in Canada dal 2 al 7 aprile <http://www.birs.ca/events/2017/5-day-workshops/17w5116/sched>

6. ORGANIZATIONS

- I am the coordinator of the organizing team of the EMS2028 in Bologna, Italy, (10th European Congress of Mathematics in 2028). <https://sites.google.com/view/bo-ecm2028/home>
- *Free boundaries in actions*, Bologna, March 10-11, 2025, Italy , <https://events.unibo.it/free-boundaries-in-action>
- *Latinos on free boundaries in Bologna*, held in Bologna, Italy July 29, 2024, <https://matematica.unibo.it/it/eventi/latinos-on-free-boundaries-in-bologna>
- Co-organizer with Daniela De Silva (Columbia University) Special Session in Palermo AMS-UMI meeting, July 23-26, 2024: *Free boundary problems: viscosity and variational approaches*.
- *Il Seminario di analisi Matematica a Bologna a quanta anni dalla nascita*, Bologna, 25 ottobre 2023., <https://www.dm.unibo.it/seminari/mat/seminars/2023/10/25/ermanno-lanconelli>
- *Testimonianze indirette su Renato Caccioppoli*, Bologna 9 giugno 2023, <https://www.dm.unibo.it/seminari/mat/seminari/foschini>
- *UMI C UNIBO*, Cento anni di UMI a Bologna, Bologna 31 marzo 2022: <https://eventi.unibo.it/centenario-umi-bologna>
- *One day in PDEs*, Milano 1st October 2021: <https://www.mate.polimi.it/odipde/>
- *Recent progress in Geometric Analysis and PDEs*, Bologna, September, 16-18, 2021: <https://events.unibo.it/geometric-analysis-and-pdes>
- *Something about nonlinear problems*, Bologna, June 13-14, 2019 <https://eventi.unibo.it/something-about-nonlinear-problems>
- *Viscosity and variational solutions of nonlinear PDEs*, Bologna, March 27, 2018 <https://events.unibo.it/viscosity-variational-solutions-nonlinear-pdes>
- *Sub-Riemannian Geometry Harmonic Analysis, PDE and Applications*, Bologna, January 24-27, 2018 <https://events.unibo.it/sub-riemannian-geometry-pde/>
- *Two nonlinear days in Urbino 2016*, July 7-8, 2016 <http://www.sti.uniurb.it/servadei/TwoNonlinearDaysInUrbino2016/>
- *Topics in Mathematics* per l'A.A. 15/16 (14 Ottobre 2015-31 Maggio 2016): http://www.dm.unibo.it/dottorato/topics_in_mathematics.15.16/

- School/Workshop March 9-11 2015, Bologna
Phase transition problems and nonlinear PDEs,
School/Workshop. Ulteriori dettagli e il programma dell'evento sono reperibili al seguente indirizzo web:
<http://phasetransition.dm.unibo.it/index>
- Organizzatore della giornata di lavoro dedicata alla memoria di Bruno Pini, Bologna Novembre, 25, 2011.
Seminari di Analisi Matematica, giornata di lavoro in ricordo di Bruno Pini, Bologna 25/11/2011,
Dipartimento di Matematica di Bologna.
Ulteriori dettagli e il programma dell'evento sono reperibili al seguente indirizzo web:
<http://www.dm.unibo.it/%7Eferrari/pini2011/pini.html>
- "Topics in Mathematics" per il Corso di Dottorato in Matematica dell'Università di Bologna per l'A.A. 2010/2011: Alcune idee forti in Matematica 15 Aprile 2011, 24 Giugno 2011.
[http://www.dm.unibo.it/dottorato/topics in mathematics/](http://www.dm.unibo.it/dottorato/topics%20in%20mathematics/)
- *Mathematics and Applications*,
Milan, 2010, January 11 (Politecnico di Milano), Cagliari, 2010, June, 3-5 (Università di Cagliari);
<http://www.mate.polimi.it/mathapp/>
- Organizzatore della giornata di lavoro dedicata alla memoria di Bruno Pini tenutasi a Bologna il Novembre, 26, 2010.
Seminari di Analisi Matematica, giornata di lavoro in ricordo di Bruno Pini, Bologna 26/11/2010,
Dipartimento di Matematica di Bologna. <http://www.dm.unibo.it/%7Eferrari/pini10/pini.html>
- Organizzatore della giornata di lavoro dedicata alla memoria di Bruno Pini tenutasi a Bologna il 27 Novembre 2009. *Seminari di Analisi Matematica*, giornata di lavoro in ricordo di Bruno Pini, Bologna 27/11/2009, Accademia delle Scienze e Dipartimento di Matematica di Bologna.
<http://www.dm.unibo.it/%7Eferrari/pini/pini.html>

PUBLICATIONS

REFERENCES

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- [2] F. CORNI, F. FERRARI, *The fractional powers of the sub-Laplacian in Carnot groups through an analytic continuation*. J. Geom. Anal. 35 (2025), no. 4, Paper No. 106, 95 pp
- [3] S. DIPIERRO, F. FERRARI, N. FORCILLO, E. VALDINOCI, *Lipschitz regularity of almost minimizers in one-phase problems driven by the p -Laplace operator*, Indiana University Mathematics Journal, 73, issue 3, 2024, 813–854. <https://doi.org/10.48550/arXiv.2206.03238>
- [4] F. FERRARI, D. GIOVAGNOLI, *Some counterexamples to Alt-Caffarelli-Friedman monotonicity formulas in Carnot groups*, Annali di Matematica Pura ed Applicata, 2024, First on line, pp. 1 - 19 Ann. Mat. Pura Appl. (4) 204 (2025), no. 2, 427–445.
- [5] F. FERRARI, C. LEDERMAN, *Regularity of flat free boundaries for two-phase $p(x)$ -Laplacian problems with right hand side*, Calc. Var. Partial Differential Equations 63 (2024), no. 5, Paper No. 132, 43 pp.
- [6] F. FERRARI, N. FORCILLO, *Alt-Caffarelli-Friedman monotonicity formula and mean value properties in Carnot groups with applications*, Boll Unione Mat Ital Boll. Unione Mat. Ital. 17 (2024), no. 2, 333–348. . <https://doi.org/10.1007/s40574-023-00393-5>, arXiv:2310.13264
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- [8] F. FERRARI, C. LEDERMAN, *Regularity of Lipschitz free boundaries for a $p(x)$ -Laplacian problem with right hand side*, Journal des Mathématiques Pures et Appliquées, 2023, 171, pp. 26–74
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- [11] F. FERRARI, G. GALISE, *A regularity result for a class of non-uniformly elliptic operators*, Arch. Math. (2022). <https://doi.org/10.1007/s00013-022-01715-3>, arXiv:2103.04641.
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