

## Curriculum vitae of F.Montefalcone

### Personals

- Name and Surname: Francescopaolo Montefalcone
- Born in Pescara (Italy) on October 21, 1975
- Italian Citizen. Married. Two children.
- Languages: Italian, French and English
- E-mails: montefal@math.unipd.it & francescopaolo.montefalcone@unipd.it

### Education

- November 2000. Laurea in Mathematics summa cum laude, University of Bologna. Title of the thesis: “*Approssimazione di insiemi di Caccioppoli rispetto ad una famiglia di campi vettoriali*”. Advisor: Prof. B. Franchi.
- April 2004. PhD in mathematics, University of Bologna. Title of the PhD thesis : “*Some Remarks in Differential and Integral Geometry of Carnot Groups*”. Advisor: Prof. Bruno Franchi.

### Career

- February 2004–February 2009. Postdoc at the University of Bologna, under the direction of Prof. B. Franchi.
- March 2009–August 2009. Winner of a grant from at the University of Trento. Research theme: “*Superfici minime in gruppi omogenei*”. Project responsible, Prof. Raul Serapioni.
- November 2010. Winner of a competition for a permanent position as Assistant Professor in Mathematical Analysis (SSD MAT/05) at the University of Padova.
- December 2010–February 2011. Winner of a 3 years grant from CIRM (Fondazione Bruno Kessler) at Povo (Tn).  
Title of the project: “*Questioni concernenti la regolarità dei minimi dell’H-perimetro in Gruppi di Carnot*”.
- March 2011-Present. Assistant Professor (“Ricercatore Universitario a tempo indeterminato”) at the Departement of Mathematics “Tullio Levi-Civita” of the University of Padova (confirmed in 2014).

### Scientific Interests

- Analysis and Geometric Measure Theory in Carnot Groups
- Analysis on Metric Measure Spaces
- Subriemannian Geometry and CC-geodesics
- Minimal and Constant Mean Curvature hypersurfaces in both sub-Riemannian and Riemannian Geometry

### Teaching activities

- From 2001 until 2010 I served as assistant and tutor in many courses of mathematical analysis (such as *Analisi Matematica I and II*) mainly in the faculty of Engineering of the Universities of Bologna, Forlì, Cesena and Padova.
- From 2011 until 2024, at the University of Padova, I have been working as a teacher (or main teacher) of the courses “*Analisi Matematica*” (Computer Sciences), “*Metodi Matematici*” (Mathematics) and “*Analisi 2*” (Phisic). In the same period, I have collaborated in many courses of mathematical analysis at the faculties of Engineering, Phisic, and Statistics. Since september 2023 I teach “*Fondamenti di Analisi Matematica 2*” at the faculty of Engineering.

### Didactic materials

- *Analisi Matematica*, Lecture notes (305 pp.), available on Moodle.
- *Note del corso: “Metodi Matematici”*, Lecture notes (245 pp.) available on Moodle.
- *Note del corso: “Fondamenti di Analisi Matematica 2”*, Lecture notes (253 pp.) available on Moodle.

### Scientific Publications

1. F. Montefalcone, *Sets of finite perimeter associated with vector fields and polyhedral approximation*, *Rend. Mat. Acc. Lincei*, s. 9, v. 14 (2003) 4, pp. 279 - 295 *Calcolo delle variazioni*.
2. ———, *Some relations among volume, intrinsic perimeter and one-dimensional restrictions of BV functions in Carnot groups*, *Ann. Sc. Norm. Sup. Pisa Cl. Sci. (5)* 4 (2005), no. 1, 79–128.

3. ———, *Some Remarks in Differential and Integral Geometry of Carnot Groups*, Tesi di Dottorato, Università degli Studi di Bologna (2004).
4. ———, *Alcune osservazioni sulla Geometria Differenziale ed Integrale dei Gruppi di Carnot*, Fascicolo Tesi di Dottorato, UMI (2005).
5. ———, *Hypersurfaces and variational formulas in sub-Riemannian Carnot groups*, JMPA, 87 (2007) 453-494.
6. A. Baldi & F. Montefalcone *A note on the extension of BV functions in metric measure spaces*, Journal of Mathematical Analysis and Applications 340 (2008) 197-208.
7. ———, *An integral formula on the Heisenberg group*, Annali di Matematica Pura ed Applicata (August 2012), (21 pag.) Springer- Verlag.
8. ———, *Geometric inequalities in Carnot groups*, PJM (Pacific Journal of Mathematics) MSP Vol. 263 (2013), No. 1, 171 – 206.
9. ———, *Stable H-Minimal Hypersurfaces*, Journal of Geometric Analysis (September 2013), (50 pag.) Springer US.
10. ———, *Convex hull property and enclosure theorems for H-minimal hypersurfaces in Carnot groups*, Analysis and Geometry in Metric Spaces, vol. 4, pp. 216-235, 2016.
11. N. Arcozzi, F. Ferrari and F. Montefalcone, *Regularity of the distance function to smooth hypersurfaces in some two-step Carnot groups*, Annales Academiae Scientiarum Fennicae. Mathematica, vol. 42, pp. 339-356, 2017.
12. B. Franchi, F. Montefalcone and E. Serra, *Gaffney-Friedrichs inequality for the Rumin's complex on Heisenberg groups*, Revista Matematica Iberoamericana, vol. 35, pp. 643-692, 2019.
13. V. Franceschi, F. Montefalcone and R. Monti, *Constant mean curvature spheres in  $H^1$* , Analysis and Geometry in Metric Spaces, vol. 7, pp. 109-129, 2019.
14. A. Baldi & F. Montefalcone, *The distributional divergence of horizontal vector fields vanishing at infinity on Carnot groups*, Le Matematiche, vol. 78 (1), (2023) doi: 10.4418/2023.78.1.9.

15. ———, *A density result on a BV-type space on Carnot groups– Un risultato di densità in uno spazio di tipo BV in gruppi di Carnot*, in Bruno Pini Mathematical Analysis Seminar vol. 14 (2), (2023) doi: 10.6092/issn.2240-2829/18848.

**Other informations**

- Referee for international journals such as Calculus of Variations and PDEs, Mathematische Annalen, Advanced Nonlinear Studies, Journal of Mathematical Analysis and Applications,
- Reviewer of MathScinet (American Mathematical Society).

Bologna, 9 June 2025

*Francescopaolo Montefalcone*