MERLO ANDREA

Universidad del Paí s Vasco
andrea.merlo@alumni.sns.it

Born in Valdobbiadene (TV, Italy), 01/08/1992.

EDUCATION AND POSITIONS

Marie Skłodowska-Curie postoctoral fellowship *2022-present*
Universidad País Vasco.
Supervisor: Mihalis Mougoglou.

Post-doc *2022-2022*
Université de Fribourg.
Supervisor: Enrico Le Donne.

Post-doc *2020-2022*
Université Paris-Saclay.
Supervisor: Guy David.

PhD in Mathematics *2016-2020*
Scuola Normale Superiore, cum Laude.
Dissertation: *"Geometry of* 1*-codimensional measures in Heisenberg groups"*
Supervisors: Giovanni Alberti, Roberto Monti.

Scuola Galileiana di Studi Superiori *2011-2017*
University of Padua, Italy. 100/100 cum Laude.
Dissertation: *"Geometry of uniform measures in the Heisenberg group"*
Supervisor: Roberto Monti.

MSc in Mathematics *2014-2016*
University of Padua, Italy. 110/110 cum Laude.
Dissertation: *"Non-differentiability sets of typical Lipschitz functions"*
Supervisors: Roberto Monti, David Preiss.

Erasmus Program, University of Warwick. *2015-2016*

BSc in Mathematics *2011-2014*
University of Padua, Italy. 110/110 cum Laude.
Dissertation: *"Struttura di insiemi di misura nulla"*
Supervisor: Roberto Monti.

PUBLISHED PAPERS

1. *Intrinsically Lipschitz functions with normal target in Carnot groups*, Published in Annales Fennici Mathematici, 46(1), 571–579, DOI: `https://doi.org/10.5186/aasfm.2021.4638` with G. Antonelli.
2. *Geometry of* 1*-codimensional measures in Heisenberg groups*, Published in Inventiones Mathematicae, DOI: `https://doi.org/10.1007/s00222-021-01063-z`.
3. On rectifiable measures in Carnot groups: representation, Published in Calculus of Variation and PDEs, DOI: `https://doi.org/10.1007/s00526-021-02112-4`, 2021 with G. Antonelli.

4. Endpoint Fourier restriction and unrectifiability, Published in the Proceedings of the AMS, DOI: https://doi.org/10.1090/proc/15857 with G. Del Nin..

5. On rectifiable measures in Carnot groups: existence of density, Published in the Journal of Geometric Analysis https://doi.org/10.1007/s12220-022-00971-7, 2022 with G. Antonelli.

6. On rectifiable measures in Carnot groups: Marstrand-Mattila rectifiability criterion, Published in the Journal of Functional Analysis https://doi.org/10.1016/j.jfa.2022.109495, 2022 with G. Antonelli.

ACCEPTED PAPERS

1. Marstrand-Mattila rectifiability criterion for -codimensional measures in Carnot Groups, Accepted for publication in Analysis and PDEs, https://arxiv.org/abs/2007.03236, 2020.

2. Unextendable intrinsic Lipschitz curves, Accepted for publication in Annali SNS, https://arxiv.org/abs/2105.13873, 2021 with G. Antonelli.

3. Characterization of rectifiability via Lusin type approximation, Accepted for publication in Analysis and PDEs, https://arxiv.org/abs/2112.15376, 2021, with A. Marchese.

SUBMITTED PAPERS

1. Full non-differentiability sets of typical Lipschitz functions, https://arxiv.org/abs/1906.08366, 2019.

2. On sets with unit Hausdorff density in homogeneous groups, https://arxiv.org/pdf/2203.16471.pdf, 2021 with A. Julia.

3. On the density problem in the parabolic space, https://arxiv.org/pdf/2211.04222.pdf, 2022 with M. Mourgoglou and C. Puliatti.

4. On the converse of Pansu's Theorem, https://arxiv.org/pdf/2211.06081.pdf, 2022 with G. De Philippis, A. Marchese, A. Pinamonti and F. Rindler.

5. Generic uniqueness for the Plateau problem, https://arxiv.org/abs/2302.01320, 2023 with G. Caldini, A. Marchese and S. Steinbrüchel.

6. Carnot rectifiability and Alberti representations, https://arxiv.org/pdf/2302.01376.pdf, 2023 with G. Antonelli and E. Le Donne.

TEACHING

1. Teaching assistant to the course Analysis 3 at the University of Pisa, Winter semester 2018-2019.

2. Tutor for the 107th orientation course of the Scuola Normale Superiore, held in Rome, July 8-13, 2019.

3. Tutor for the course of Analysis II at Université de Fribourg. Spring semester 2021-2022.

SELECTED TALKS

1. *Geometry of uniform measures in the Heisenberg group.* "XXVIII Convegno nazionale di calcolo delle variazioni", Levico Terme, February 12-16, 2018.

2. *Geometry of uniform measures in Heisenberg groups.* "A sub-Riemannian day in Padova", Padova, September 14, 2018.

3. *Geometry of* 1*-codimensional measures in Heisenberg groups.* Seminar at the Universidad Autónoma de Barcelona. Barcelona, February 25, 2019.

4. *Some extensions of the Frobenius Theorem, Part I.* "Some topics of Geometric Analysis and Geometric Measure Theory", Pisa, April 16-17, 2019.

5. *The Marstrand-Mattila rectifiability criterion in Carnot groups.* "Workshop on Geometric Measure Theory", Alba di Canazei, June 26-29, 2019.

6. *Preiss's rectifiability theorem in the first Heisenberg group.* Seminar at University of Warwick, online, March 4, 2021.

7. *Preiss's rectifiability theorem in the first Heisenberg group.* Jyväskylä Geometric Analysis Seminar, online, March 22, 2021.

8. *The Marstrand-Mattila rectifiability criterion in Carnot groups* Geometric Measure Theory and applications, Cortona, August 30-September 3, 2021.

9. *Endpoint Fourier restriction and unrectifiability.* Seminar in Bilbao Analysis and PDEs, online, October 14, 2021.

10. *The density problem in the parabolic space.* Interactions between Geometric measure theory, Singular integrals, and PDE, Bonn, 13-19 March 2022.

11. *On the density problem in Heisenberg groups.* First UMI meeting of Ph.D. students, Padova, 26-27 May 2022.

12. *On the converse of Pansu's Theorem.* Geometric measure theory and analysis on metric spaces, Warwick, 8-10 August 2022.

PRIZES AND AWARDS

1. **2022-2024, Grant.** Marie Skłodowska Curie Action, European Union's research and innovation programme Horizon 2022. Grant agreement number 101065346.

2. **2022, Prize.** Premio Guido Stampacchia relative to the theme "Calculus of Variations", of the "Accademia di Scienze Fisiche e Matematiche della Società Nazionale di Scienze, Lettere e Arti" in Naples.