# CURRICULUM VITAE SEBASTIANO NICOLUSSI GOLO

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# Education

Doctor of Philosophy in Mathematics: 25 October 2017 Double degree based on a cotutelle agreement: University of Jyväskylä, Finland Advisor: Enrico Le Donne University of Trento, Italy Advisor: Francesco Serra Cassano Thesis: Topics in the geometry of non-Riemannian Lie groups Grade: Pass with distinction

Master degree in mathematics: March 2012 Università degli Studi di Trento, Italia Supervisor: Francesco Serra Cassano Thesis: The tangent space in subRiemannian geometry Grade: 110/110 cum laude

Bachelor degree in mathematics: July 2009 Università degli Studi di Trento, Italia Thesis: Symplectic geometry Supervisor: Roberto Pignatelli Grade: 108/110

## Employments and Fellowships

Senior Researcher (Oberassistent) at the University of Fribourg March 2025 – Present

Senior Researcher (Senior Forscher) at the University of Fribourg May 2024 – February 2025

A pause of one year for religious research September 2023 – April 2024

Postdoctoral Researcher (Tutkijatohtori) at the University of Jyväskylä September 2022 – August 2023 Mentor: Enrico Le Donne

Postdoctoral Researcher (Tutkijatohtori) at the University of Jyväskylä October 2020 – August 2022 Mentor: Katrin Fässler

Postdoctoral Researcher at the University of Padova December 2018 – June 2020 Mentor: Davide Vittone Postdoctoral Researcher at the University of Birmingham December 2017 – November 2018 Mentor: Alessio Martini

Visiting Student at the University of Granada November 2017 Mentor: Manuel Ritoré

Postgraduate Student within the project Marie Curie ITN MAnET January 2015 – October 2017

Postgraduate Student at the University of Jyväskylä, Finland October 2012 – December 2014

Erasmus at Eberhard Karls Universität Tübingen, Deutschland September 2007 – July 2008

Kitchen Hand at Restaurant "Rifugio Agostini" July 2004 – August 2004

## GRANTS AND AWARDS

Seal of Excellence from Marie Skłodowska-Curie actions:

The project proposal 101025614, *MICA: Minimal Submanifolds in Carnot Groups*, Submitted under the Horizon 2020 Marie Skłodowska-Curie actions call H2020-MSCA-IF-2020 of 9 September 2020 by Sebastiano Nicolussi Golo and Jyvaskylan Yliopisto was scored as a high-quality project proposal in a highly competitive evaluation process, with a total score of 92.20%. This proposal is recommended for funding by other sources, since Horizon 2020 resources available for this specific Call were already allocated following a competitive ranking.

Seal of Excellence from Marie Skłodowska-Curie actions:

The project proposal 888619, *MICA: Minimal Submanifolds in Carnot Groups*, Submitted under the Horizon 2020 Marie Skłodowska-Curie actions call H2020-MSCA-IF-2019 of 11 September 2019 by Sebastiano Nicolussi Golo and Universidad de Granada was scored as a high-quality project proposal in a highly competitive evaluation process, with a total score of 87.40%. This proposal is recommended for funding by other sources, since Horizon 2020 resources available for this specific Call were already allocated following a competitive ranking.

INdAM–GNAMPA Project 2019 "Rectifiability in Carnot Groups" (as Principal Investigator) March 2019 – February 2020

#### Publications

- F. Bigolin and S. Nicolussi Golo. A historical account on characterizations of C<sup>1</sup>-manifolds in Euclidean spaces by tangent cones. J. Math. Anal. Appl., 412(1):63-76, 2014.
- [2] E. Le Donne, S. Nicolussi Golo, and A. Sambusetti. Asymptotic behavior of the Riemannian Heisenberg group and its horoboundary. Ann. Mat. Pura Appl. (4), 196(4):1251–1272, 2017.
- [3] S. Nicolussi Golo. Topics in the geometry of non-Riemannian Lie groups. PhD thesis, *Report*, Department of Mathematics and Statistics, University of Jyväskylä, 163 (2017).
- [4] E. Le Donne and S. Nicolussi Golo. Regularity properties of spheres in homogeneous groups. Trans. Amer. Math. Soc., 370(3):2057–2084, 2018.

- [5] S. Golo. Some remarks on contact variations in the first Heisenberg group. Ann. Acad. Sci. Fenn. Math., 43(1):311–335, 2018.
- [6] S. Golo and S. Rigot. The Besicovitch covering property in the Heisenberg group revisited. J. Geom. Anal., 29(4):3345–3383, 2019.
- [7] S. Nicolussi and F.Serra Cassano. The Bernstein problem for Lipschitz intrinsic graphs in the Heisenberg group. *Calc. Var. Partial Differential Equations*, 58(4):Art. 141, 28, 2019.
- [8] E. Le Donne and S. Nicolussi Golo. Metric Lie groups admitting dilations. Ark. Mat., 59(1) (2021).
- [9] S. Nicolussi Golo and M. Ritoré. Area-minimizing cones in the Heisenberg group H. Ann. Fenn. Math., 46(2):945–956, 2021.
- [10] N. Fisher and S. Nicolussi Golo. Sub-Finsler horofunction boundaries of the Heisenberg group. Anal. Geom. Metr. Spaces, 9(1):19–52, 2021.
- [11] A. Julia and S. Nicolussi Golo. Intrinsic rectifiability via flat cones in the Heisenberg group. Ann. Sc. Norm. Super. Pisa Cl. Sci., Vol. XXIII, Issue 2 (2022).
- [12] A. Julia, S. Nicolussi Golo, and D. Vittone. Nowhere differentiable intrinsic Lipschitz graphs. Bull. Lond. Math. Soc., 53(6) (2021).
- [13] A. Martini, D. Müller, and S. Nicolussi Golo. Spectral multipliers and wave equation for sub-Laplacians: lower bounds of Euclidean type. J. Eur. Math. Soc. (JEMS) (2021).
- [14] A. Julia, S. Nicolussi Golo, and D. Vittone. Area of intrinsic graphs and coarea formula in Carnot groups. *Math. Z.* 301, 1369–1406 (2022).
- [15] E. Le Donne, V. Kivioja, and S. Nicolussi Golo. Metric equivalences of Heintze groups and applications to classifications in low dimension. *Illinois J. Math.* 66 (1) 91 - 121, April 2022.
- [16] A. Julia, S. Nicolussi Golo, and D. Vittone. Lipschitz functions on submanifolds in Heisenberg groups. *International Mathematics Research Notices*, Volume 2023, Issue 9, May 2023, Pages 7399–7422.
- [17] G. Antonelli, E. Le Donne, and S. Nicolussi Golo. Lipschitz Carnot-Carathéodory structures and their limits. J. Dyn. Control. Syst. 29, 805–854 (2023).
- [18] S. Eriksson-Bique, C. Gartland, E. Le Donne, L. Naples, and S. Nicolussi Golo. Nilpotent groups and biLipschitz embeddings into L1. International Mathematics Research Notices, Volume 2023, Issue 12, June 2023, Pages 10759–10797.
- [19] S. Nicolussi Golo, and B. Warhurst. Jet spaces over Carnot groups. Rev. Mat. Iberoam. 39 (2023), no. 6, pp. 2289–2330.
- [20] L. Ambrosio, S. Nicolussi Golo, and F. Serra Cassano. Optimal C<sup>∞</sup>approximation of functions with exponentially or sub-exponentially integrable derivative. *Calc. Var. Partial Differ. Equ.* 62 21 (2023).
- [21] L. Ambrosio, S. Nicolussi Golo, and F. Serra Cassano. Classical flows of vector fields with exponential or sub-exponential summability. J. Differ. Equations 372 458-504 (2023).
- [22] A. Ottazzi, and S. Nicolussi Golo. Left-invariant distributions diffeomorphic to flat distributions. *Geom. Dedicata* 218, 56 (2024).
- [23] S. Nicolussi Golo and Y. Zhang. Curvature Exponent and Geodesic Dimension on Sard-regular Carnot groups. Anal. and Geom. in Metr. Spaces, vol. 12, no. 1, pp. 20240004 (2024).
- [24] M. G. Cowling, V. Kivioja, E. Le Donne, S. Nicolussi Golo, and A. Ottazzi. From homogeneous metric spaces to Lie groups. C. R. Math. Acad. Sci. Paris 362 (2024), 943–1014.

- [25] M. Di Marco, A. Julia, S. Nicolussi Golo, and D. Vittone. Submanifolds with boundary and Stokes' Theorem in Heisenberg groups. *Trans. Amer. Math. Soc.*, Published electronically.
- [26\*] C. Y. Guo, S. Nicolussi Golo, M. Williams, and Y. Xuan Quasiregular mappings between subRiemannian manifolds. arXiv e-prints.
- [27<sup>\*</sup>] S. Nicolussi Golo and B. Warhurst. Moduli of Sub-Laplacians on the second Heisenberg group. *arXiv e-prints*.
- [28\*] A. Kijowski, S. Nicolussi Golo, and B. Warhurst. Equivalence of sub-Laplacian on Polarized groups. arXiv e-prints.
- [29\*] E. Le Donne, L. Nalon, S. Nicolussi Golo, and S. Y. Ryoo. Asymptotics of Riemannian Lie groups with nilpotency step 2. arXiv e-prints.

#### Research stays

- Visiting Student at "Laboratoire J.A. Dieudonné", Nice, France (November–December 2016)
- Visiting Graduate Student at the Department of Mathematics of Tufts University, Medford, USA (January–February 2017)
- Visiting Graduate Student at the Simons Semester "Symmetry and Geometric Structures", Warsaw, Poland (August–October 2017)
- Junior Leader of the Simons Semester at IMPAN in Warsaw (September–October 2019)
- Theoretical Sciences Visiting Program (TSVP) visitor to OIST, Okinawa Institute of Science and Technology, in Japan (August-October 2022)

#### ACTIVITIES

- Teaching assistant ("Geometry of surfaces in 3D space"): University of Jyväskylä, Finland (Fall 2012)
- Organizer of the "Kindergarten Seminar" for doctoral students at the University of Jyväskylä, Finland (Spring 2014)
- Organizer of the seminar for doctoral students at Institute Henri Poincaré, Paris (October 2014)
- Co-organizer of the conference "Subriemannian Geometry and Beyond", Jyväskylä, Finland (February 2018)
- Co-organizer of the conference "Harmonic Analysis and PDE Day", Birmingham, UK (September 2018)
- Organizer of seminars "GeA (Geometria e Analisi)" at the Department of Mathematics, University of Padova (Fall 2019)
- Teaching assistant ("Analysis 1"): University of Padova, Faculty of Engineering (Fall 2019)
- Co-organizer of the workshop "Geometric Measure Theory in Padova", Padova, Italy (January 2020)
- Representative of postdocs in the department council of the Department of Mathematics at the University of Padova (January–June 2020)
- Master thesis supervisor; University of Jyväskylä (2021–2022)
- Teacher of the course "Riemannian Geometry"; University of Jyväskylä, (2021– 2022)
- Teacher of the Mini-course "BV functions in Carnot groups"; OIST, Japan (August 2022)
- Co-organizer in the conference "Sub-Riemannian Geometry and Beyond, III", Pisa (June 2023)
- Teacher of the course "Thematical Seminar"; University of Fribourg, Switzerland (Fall 2024)
- Teacher of the course "Introduction to PDE"; University of Fribourg, Switzerland (Spring 2025)
- Co-organizer in the conference "Sub-Riemannian Geometry and Beyond, IV", Schwarzsee, Switzerland (June 2025)

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