

Personal information

Date of birth July 13, 1993.
Language Italian (native), English (fluent), German (basic).
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Research interests

Geometric Analysis, Geometric Measure Theory, Geometric and Functional inequalities.

Current position

Oct. 24 - **Tenure-Track Assistant Professor**, *University of Vienna*.

Previous positions

Jan. 23 - Sept. 24 **Hermann Weyl Instructor**, *FIM-ETH, Zürich*.
Supervisor Prof. Urs Lang.
Sept. 22 - Dec. 22 **Marsden Postdoctoral Fellow**, *Fields Institute, Toronto*.
Supervisors Prof. Vitali Kapovitch, Prof. Robert McCann.
Oct. 20 - Aug. 22 **Postdoctoral Research Fellow**, *University of Oxford*.
Supervisor Prof. Andrea Mondino.

Education

2024 **Italian Habilitation as Full Professor**, *for the period 2024-2035*.
2017-2020 **PhD in Mathematics**, *Scuola Normale Superiore*, cum laude.
Advisors: Prof. Luigi Ambrosio, Prof. Andrea Mondino.
2012–2017 **Student in Mathematics**, *Scuola Normale Superiore*, Pisa.
2015–2017 **Master degree in Mathematics**, *Università di Pisa*, 110/110 cum laude.
Advisor: Prof. Luigi Ambrosio.
2012–2015 **Bachelor degree in Mathematics**, *Università di Pisa*, 110/110 cum laude.
Advisor: Prof. Luigi Ambrosio.

Honors and Awards

2025 “Frontiers of Science Award” awarded by the International Congress of Basic Science for the paper “Fundamental groups and the Milnor Conjecture”.
2022 “Gioacchino Iapichino Prize” awarded by the Accademia Nazionale dei Lincei (Italy) to a mathematician under the age of 30, author of an original work in Mathematical Analysis.

2019 “Benedetto Sciarra Prize” for the best master thesis, awarded by the Scuola Normale Superiore.

Selected papers

- 1 G. Antonelli, M. Pozzetta, D. Semola, *Uniqueness on average of large isoperimetric sets in noncompact manifolds with nonnegative Ricci curvature*, (2024), *Comm. Pure Appl. Math.*, to appear.
- 2 E. Bruè, A. Pigati, D. Semola, *Topological regularity and stability of noncollapsed spaces with Ricci curvature bounded below*, (2024), preprint.
- 3 E. Bruè, A. Naber, D. Semola, *Fundamental Groups and the Milnor Conjecture*, *Ann. of Math. (2)* 201, (2025) no. 1, 225 - 289.
- 4 G. Antonelli, E. Pasqualetto, M. Pozzetta, D. Semola, *Sharp isoperimetric comparison on non-collapsed spaces with lower Ricci bounds*, (2022), *Ann. Sci. Éc. Norm. Supér.*, to appear.
- 5 E. Bruè, A. Mondino, D. Semola, *The metric measure boundary of spaces with Ricci curvature bounded below*, *Geom. Funct. Anal.* 33 (2023), no. 3, 593–636.
- 6 E. Bruè, A. Naber, D. Semola, *Boundary regularity and stability for spaces with Ricci bounded below*, *Invent. Math.*, 228 (2022), no. 2, 777–891.
- 7 E. Bruè, D. Semola, *Constancy of the Dimension for $RCD(K,N)$ Spaces via Regularity of Lagrangian Flows*, *Comm. Pure Appl. Math.* 73 (2020), no. 6, 1141–1204.
- 8 L. Ambrosio, E. Bruè, D. Semola, *Rigidity of the 1-Bakry-Émery inequality and sets of finite perimeter in RCD spaces*, *Geom. Funct. Anal.* 29 (2019), no. 4, 949–1001.

Books

- 1 L. Ambrosio, E. Bruè, D. Semola, *Lectures on Optimal Transport*, UNITEXT, Springer, Cham, ISSN 2038-5714. Pages IX, 250.

Invited Lectures and Courses (including forthcoming)

- February '26 3 hours mini-course during the school “Analysis, Geometry and Probability in Metric Measure Spaces”, Seasonal Institute MSJ, Fukuoka.
- January '25 4 hours mini-course during the Winter School “Analysis and Geometry on Groups and Spaces”, HIM Bonn.
- September '24 2 hours mini-series of lectures during the Workshop “Metric Measure Spaces, Ricci Curvature, and Optimal Transport”, Como.

Seminars (including forthcoming)

Colloquia

- 28/11/2024 Departmental Colloquium, University of Münster.
- 11/10/2023 Departmental Colloquium, University of Toronto.

Conference talks

- 13/10/2025 Optimal transport and metric geometry across structures, EPFL, Lausanne.
- 15/07/2025 International Congress of Basic Science, Beijing.
- 31/04/2025 Geometry at infinity, MPI, Leipzig.
- 02/12/2024 Optimal Transport and Applications, Centro De Giorgi, Pisa.
- 18/11/2024 Curvature and Geometric Analysis in Rome, Sapienza Università di Roma.
- 21/08/2024 Metric Geometry and Geometric Measure Theory, Fribourg.
- 24/05/2024 Synthetic Curvature Bounds for Non-Smooth Spaces, ESI Vienna.
- 15/11/2023 Gromov's Not Only Scalar Curvature seminar, IHES (online).
- 09/11/2023 Riemannian Topology Meeting, Fribourg.
- 20/09/2023 Geometric Analysis Workshop, Centro De Giorgi, Pisa.
- 04/09/2023 Conference of the Italian Mathematical Union, sectional meeting, Pisa.
- 02/08/2023 Curvature and Global Shape, Münster.
- 25/07/2023 Taller de técnicas modernas de geometría, Oaxaca (online).
- 13/07/2023 Geometric Flows and applications, ICMS Edinburgh.
- 03/07/2023 Differential Geometry in the large, Oberwolfach.
- 29/06/2023 Sobolev inequalities in the Alps, Institut Fourier, Grenoble.
- 15/11/2022 Aspects of Ricci Curvature Bounds, Fields Institute, Toronto.
- 09/08/2022 Spaces with Symmetry and lower Ricci Curvature Bounds, BIRS (online).
- 22/06/2022 Isoperimetric Problems, University of Pisa.
- 27/05/2022 UMI PhD Conference, University of Padova.
- 10/11/2021 RCD spaces: Splitting theorems and applications, Oaxaca (online).
- 30/06/2021 Curvature Constraints and Spaces of Metrics, Institut Fourier, Grenoble.
- 01/04/2019 Optimal Transport and Geometric Analysis conference, Venezia.
- 24/03/2019 AMS meeting, University of Hawaii at Manoa, Honolulu.
- 07/02/2019 CDV conference, Levico Terme.
- 15/11/2018 Optimal Transport and Applications conference, Pisa.

Research seminars

- 19/03/2025 Geometry Lunch Seminar, Pennsylvania State University.
- 12/03/2025 Vienna Geometric Analysis Seminar, University of Vienna.
- 19/02/2025 Geometry Seminar, University of Copenhagen.
- 05/11/2024 Seminar on Analysis and Mathematical Physics, ISTA Vienna
- 22/10/2024 Geometry Seminar, LMU Munich.
- 02/07/2024 Geometry Seminar, KIT Karlsruhe.
- 07/12/2023 Analysis Seminar, SISSA, Trieste.
- 30/11/2023 Oberseminar Differentialgeometrie, MPIM Bonn.
- 16/11/2023 Geometry Seminar, Lehigh University (online).
- 13/11/2023 Geometry Seminar, University of Münster.
- 08/06/2023 Department Seminar, Università Bocconi, Milano.

- 19/05/2023 Differential Geometry Seminar, UC Santa Barbara (online).
- 10/05/2023 Geometry seminar, ETH Zürich.
- 07/02/2023 Séminaire d'analyse et géométrie, Sorbonne Université, Paris.
- 09/12/2022 Geometric Analysis and Topology seminar, Courant Institute, New York.
- 02/11/2022 Analysis & Mathematical Physics Seminar, IAS Princeton.
- 07/09/2022 Low Regularity Physics and Geometry Seminar, Fields Institute, Toronto.
- 16/03/2022 Geometry Seminar, University College London.
- 25/02/2022 Differential Geometry Seminar, UC Santa Barbara (online).
- 31/01/2022 Partial Differential Equations Seminar, University of Oxford.
- 28/01/2022 Geometric Analysis & Applications Seminar, Yale University (online).
- 11/11/2021 Analysis seminar, Mathematics Institute, University of Warwick, Coventry.
- 27/10/2021 Geometric Analysis seminar, UC San Diego (online).
- 01/06/2021 Analysis seminar, University of Trento (online).
- 21/10/2020 Analysis and/of PDEs seminar, University of Durham (online).
- 09/10/2020 Metric Measure Spaces and Convergence, (online).
- 30/06/2020 Forschungsseminar Variationsrechnung, Universität Hamburg (online).
- 16/12/2019 Séminaire de Géométrie, Institut de Mathématiques de Jussieu-Paris.
- 04/12/2019 Analysis seminar, University of Pisa.
- 24/10/2019 PDE CDT Lunchtime seminar, University of Oxford.
- 02/10/2019 Analysis seminar, University of Jyväskylä.
- 26/06/2019 Hausdorff Institute for Mathematics, Bonn.
- 28/02/2019 Analysis seminar, SISSA, Trieste.
- 14/02/2019 Analysis seminar, Mathematics Institute, University of Warwick, Coventry.
- 17/07/2018 SFB seminar, Bonn.
- 05/04/2018 Geometric Analysis seminar, SISSA, Trieste.

Outreach seminars

- 31/03/2023 Orientation meeting for high school students, Udine.
- 12/07/2020 Orientation Course for high school students, online.
- 05/09/2019 Orientation Course for high school students, Napoli.

Teaching (including forthcoming)

- Spring 2025 "Introduction to Geometric Measure Theory", University of Vienna.
- Spring 2024 "Introduction to Lie groups", ETH Zürich.
- Fall 2023 "Introduction to Optimal Transport", SISSA Trieste.
- Spring 2022 "Regularity theory of spaces with lower Ricci bounds", University of Oxford.
- 2018/2019 Tutorials in Calculus for students in Chemistry, Scuola Normale Superiore.
- 2017/2018 Tutorials in Calculus for students in Mathematics, Scuola Normale Superiore.

Mentoring

- Fall 2024 Jossi Schütt (ETH Zürich), semester paper. Co-supervised with Urs Lang.
- Summer 2021 Julian Gonzales (University of Oxford), undergraduate research project. Co-supervised with Andrea Mondino.
- Summer 2021 Mustafa Gunes (University of Oxford), undergraduate research project. Co-supervised with Andrea Mondino.

Service

- 2018 - Referee service for several journals, among the others: *American Journal of Mathematics*, *Annales Scientifiques de l'École Normale Supérieure*, *ARMA*, *CPAM*, *Duke Mathematical Journal*, *Geometric and Functional Analysis*, *Geometry and Topology*, *Inventiones mathematicae*, *Journal of Differential Geometry*.
- 2020-2024 Reviewer for *Mathematical Reviews*.
- 2021/2022 Organization of a series of online seminars about metric measure spaces with curvature bounds, in collaboration with Raquel Perales (UNAM, Oaxaca).