

## Personal information

<b>Date of birth</b>	25 <sup>th</sup> January 1991	<b>Languages</b>	Italian, English, French, German, Spanish
<b>Citizenship</b>	Italian		

## Research interests

Geometric Analysis, PDEs, Geometric Measure Theory, Calculus of Variations, Optimal Transport.

## Academic Position

- Currently**    **Assistant Professor (Tenure-track)**  
 Department of Decision Sciences, Bocconi University, Milano, Italy.  
 Department of Mathematics, University of Maryland, College Park, MD, USA (currently on leave).  
 Affiliate faculty of the AMSC program (UMD), and of BIDS (Bocconi).
- 2017-2020**    **Assistant Professor/Courant Instructor**  
 Courant Institute of Mathematical Sciences, New York University, New York, NY, USA.

## Education

- 2014-2017**    **Ph.D.** - University of Zurich. Advisors: *Prof. Camillo De Lellis and Prof. Guido De Philippis*.  
 Thesis: *Anisotropic energies in geometric measure theory*.  
 Awarded with *Distinction* and money prize (1.000 Chf): top 5% of the PhD candidates.
- 2013-2014**    **Master 2 of Research** : PDEs and Scientific Computing - University "Paris-Sud", Orsay.  
 Advisors: *Prof. Antonin Chambolle and Prof. Benoît Merlet*.  
 Thesis: *Continuous solutions for the divergence equation* - Grade : *Bien*.  
**Stage of Research** (1/3/2014-30/6/2014) - CMAP - "Ecole Polytechnique" - CNRS, France.
- 2012-2014**    **Master in Mathematics** - University of Naples "Federico II". Advisor: *Prof. Bianca Stroffolini*.  
 Thesis: *Continuous solutions for the divergence equation* - Grade : *110/110 cum laude*.
- 2009-2012**    **Bachelor in Mathematics** - University of Naples "Federico II". Advisor: *Prof. Massimiliano Berti*.  
 Thesis: *Conservation Laws and Transport Phenomena* - Grade : *110/110 cum laude*.

## Awards and Grants

- 2019-2022**    NSF DMS 1906451-2112311 Award (124.242 \$): *Anisotropic energy functionals in geometric analysis*.
- 2019**         Carlo Ciliberto Prize 2019 (1.500 €): for researchers in Mathematical Analysis.
- 2019-2021**    AMS Simons travel grant (4.000 \$).
- 2017**         Year Prize of the Science Faculty of the University of Zurich - *Distinction* (1.000 Chf).
- 2016**         Graduate Campus (GRC) Grant. University of Zurich (9.896 Chf).
- 2013**         Excellence Master Fellowship of the "Fondation mathématique Jacques Hadamard" (10.000 €).
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- 2020**         Abilitazione Scientifica Nazionale, Seconda Fascia, Settore Concorsuale 01/A3.
- 2019**         US Junior Oberwolfach Fellow.
- 2018**         US Junior Oberwolfach Fellow.
- 2018**         Presenter of the Hollis Cooley Memorial Prize at Prizes Ceremony of NYU.
- 2018**         Qualification as "Maître de conférences" in Sections 25-26.
- 2017**         Oberwolfach Leibniz Graduate Student (OWLG).
- 2009**         Prize of the Italian Ministry of Education for high school diploma grade cum laude.
- 2009**         Honourable mention at the XXV National Mathematical Olympiad.
- 2009**         Honourable mention at XVI "Certamen Ennianum".

## Publications

### Published or accepted

1. A. De Rosa, and L. Lussardi. On the anisotropic Kirchhoff-Plateau problem. **Math. Eng.** (2022), 4(2): 1-13.
2. M. Colombo, A. De Rosa, and A. Marchese. On the well-posedness of branched transportation. **Comm. Pure Appl. Math.** (2021), 74(4): 833-864.
3. A. De Rosa, and S. Giofrè. Absence of bubbling phenomena for non convex anisotropic nearly umbilical and quasi Einstein hypersurfaces. **J. Reine Angew. Math.** (2021), DOI: 10.1515/crelle-2021-0038.
4. A. De Rosa, and D. A. La Manna. A nonlocal approximation of the Gaussian perimeter: Gamma convergence and Isoperimetric properties. **Comm. Pure Appl. Anal.** (2021), 20(5): 2101-2116.
5. M. Colombo, A. De Rosa, A. Marchese, P. Pegon, and A. Prouff. Stability of optimal traffic plans in the irrigation problem. **Discrete Contin. Dyn. Syst.** (2021). *Arxiv:2003.11793*.
6. A. De Rosa, S. Kolasinski, and M. Santilli. Uniqueness of critical points of the anisotropic isoperimetric problem for finite perimeter sets. **Arch. Ration. Mech. Anal.** (2020), 238(3): 1157-1198.
7. A. De Rosa, and S. Kolasinski. Equivalence of the ellipticity conditions for geometric variational problems. **Comm. Pure Appl. Math.** (2020), 73(11): 2473-2515.
8. G. De Philippis, A. De Rosa, and F. Ghiraldin. Existence results for minimizers of parametric elliptic functionals. **J. Geom. Anal.** (2020), 30(2): 1450-1465.
9. M. Colombo, A. De Rosa, and A. Marchese. Stability for the mailing problem. **J. Math. Pures Appl.** (2019), 128: 152-182.
10. A. De Rosa, and S. Giofrè. Quantitative stability for anisotropic nearly umbilical hypersurfaces. **J. Geom. Anal.** (2019), 29(3): 2318-2346.
11. G. De Philippis, A. De Rosa, and J. Hirsch. The Area Blow Up set for bounded mean curvature submanifolds with respect to elliptic surface energy functionals. **Discrete Contin. Dyn. Syst. - A.** (2019), 39(12): 7031-7056.
12. C. De Lellis, A. De Rosa, and F. Ghiraldin. A direct approach to the anisotropic Plateau's problem. **Adv. Calc. Var.** (2019), 12(2): 211-223.
13. G. De Philippis, A. De Rosa, and F. Ghiraldin. Rectifiability of varifolds with locally bounded first variation with respect to anisotropic surface energies. **Comm. Pure Appl. Math.** (2018), 71(6): 1123-1148.
14. A. De Rosa. Minimization of anisotropic energies in classes of rectifiable varifolds. **SIAM Journal on Mathematical Analysis** (2018), 50(1): 162-181.
15. M. Colombo, A. De Rosa, and A. Marchese. Improved stability of optimal traffic paths. **Calc. Var. Partial Differential Equations** (2018), 57(28).
16. M. Colombo, A. De Rosa, A. Marchese, and S. Stuvard. On the lower semicontinuous envelope of functionals defined on polyhedral chains. **Nonlinear Analysis** (2017), 163C: 201-215.
17. G. De Philippis, A. De Rosa, and F. Ghiraldin. A direct approach to Plateau's problem in any codimension. **Adv. in Math.** (2016), 288: 59-80.

### Submitted

18. A. De Rosa, and A. Khajavirad. Efficient Joint Object Matching via Linear Programming. **Submitted** (2021). *Arxiv:2108.11911*.
19. A. De Rosa, and R. Tione. Regularity for graphs with bounded anisotropic mean curvature. **Submitted** (2020). *Arxiv:2011.09922*.
20. A. De Rosa, and A. Khajavirad. The ratio-cut polytope and K-means clustering. **Submitted** (2020). *Arxiv:2006.15225*.

### Reports and Proceedings

21. A. De Rosa. Anisotropic counterpart of Allard's rectifiability theorem and applications. **Oberwolfach Report**. No. 35/2018.

### Interdisciplinary papers

22. G. de Falco, M. Florent, A. De Rosa, T.J. Bandosz. Proposing an Unbiased Oxygen Reduction Reaction Onset Potential Determination by Using a Savitzky-Golay Differentiation Procedure. **J. Colloid Interface Sci** (2021), 586: 597-600.

## Teaching experiences

### Professor at University of Maryland:

Spring 2021: Partial Differential Equations

Fall 2020: Honors Calculus III

### Instructor at Courant Institute:

Spring 2020: Honors Analysis I

Fall 2019: Analysis

Spring 2019: Analysis

Fall 2018: Calculus 1

Spring 2018: Calculus 1

Fall 2017: Mathematics for Economics I

### Teaching assistant at the University of Zurich:

Spring 2017: Introduction to probability

Fall 2016: Analysis 1 for Mathematics

Spring 2016: Convex Optimization (graduate)

Fall 2015: Analysis for the Natural Sciences

Spring 2015: Convex Optimization (graduate)

Fall 2014: ODEs and dynamical systems

## Invited talks

### Conference talks:

1. 29.07.2021, "Partial Differential Equations, Oberwolfach", July 25–31, 2021.
2. 17.06.2021, "The 13th AIMS Conference on Dynamical Systems, Differential Equations and Applications", Atlanta, June 17–21, 2021.
3. 11.06.2021, "Workshop on Minimal Surfaces and Related Topics", Tongji University, Shanghai, June 11–13, 2021.
4. 06.01.2021, "JMM 2021 Special Session 53A: PDEs in optimization, control, and games", Washington, DC, January 6–9, 2021.
5. 04.10.2020, "AMS Fall Eastern Sectional Meeting", Pennsylvania State University, October 3-4, 2020.
6. 19.09.2019, "Dynamics, Equations and Applications, (DEA 2019)", AGH, Kraków, September 16–20, 2019.
7. 22.10.2018, "Kinetic descriptions in theory and applications", University of Maryland, October 22–26, 2018.
8. 30.07.2018, "Calculus of Variations, Oberwolfach", July 29–August 04, 2018.
9. 16–20.07.2018, PCMI Summer Session (IAS): "Harmonic Analysis", July 1–21, Park City, Utah, 2018.
10. 18.07.2018, PCMI Summer Session (IAS): "Harmonic Analysis", July 1–21, Park City, Utah, 2018.
11. 12.07.2018, "2018 Seminar on Geometric Measure Theory, Varifolds, and Their Applications", Portland State University, Oregon, July 9–12, 2018.
12. 19.02.2018, "Kinetic models in biology and social sciences", Arizona State University, February 19–23, 2018.
13. 09.10.2017, "Current trends in kinetic theory", University of Maryland, October 9–13, 2017.
14. 08.02.2017, "XXVII Convegno nazionale di calcolo delle variazioni", Levico Terme, February 6–10 2017.
15. 27.05.2016, "New Trends in Calculus of Variations", Accademia Nazionale dei Lincei, Rome.

### Seminar talks:

16. 29.11.2021, Analysis and Applied Math seminar, University of Illinois at Chicago.
17. 18.11.2021, Analysis seminar, University of Trento.
18. 12.11.2021, Departmental Applied Math Colloquium, University of Maryland Baltimore County.
19. 04.11.2021, Geometry and Algebra Seminar, University of L'Aquila.
20. 07.09.2021, Online Seminar Geometric Analysis, Universities of Salzburg-Halle-Pittsburgh-Freiburg.
21. 13.04.2021, Mathematics Colloquium, City College of New York, New York.
22. 15.12.2020, Differential Equations in Warsaw, Warsaw.
23. 04.12.2020, EPFL, Lausanne.
24. 14.10.2020, CSCAMM Seminar, University of Maryland, College Park.
25. 06.10.2020, Geometric Analysis Seminar, Rutgers University, New Brunswick.
26. 29.05.2020, The London Geometry and Topology Seminar, Imperial College London.
27. 06.05.2020, Calculus of Variations Seminar, University of Pisa, Pisa.
28. 21.02.2020, Colloquium Talk, University of Puerto Rico.
29. 30.01.2020, Analysis Seminar, University Federico II of Naples, Naples.
30. 22.01.2020, EPFL, Lausanne.
31. 09.01.2020, Georgia Institute of Technology, Atlanta.
32. 26.11.2019, PDE-Applied Math Seminar, University of Maryland, College Park.
33. 15.11.2019, Analysis Special Lecture, University of Pennsylvania, Philadelphia.
34. 13.11.2019, Special Seminar, North Carolina State University, Raleigh.

35. 18.10.2019, Nonlinear PDEs Seminar, University of California Irvine, Irvine.
36. 17.10.2019, Analysis Seminar, University of California San Diego, San Diego.
37. 08.10.2019, Geometric Analysis Seminar, University of Chicago, Chicago.
38. 12.06.2019, Analysis Seminar, Tokyo Institute of Technology, Tokyo.
39. 11.06.2019, Analysis Seminar, The University of Tokyo, Tokyo.
40. 03.06.2019, Analysis Seminar, TU Delft.
41. 28.05.2019, Excellence Project Seminar DISMA, Politecnico di Torino.
42. 14.05.2019, Geometry/Topology Seminar, University of California, Davis.
43. 10.05.2019, UCSB Differential Geometry Seminar, University of California, Santa Barbara.
44. 25.04.2019, Analysis Seminar, University of Pennsylvania.
45. 18.04.2019, Analysis Seminar, Stony Brook University, New York.
46. 12.04.2019, Geometric Analysis Colloquium, Fields Institute, Toronto.
47. 07.02.2019, Analysis Seminar, Courant Institute of Mathematical Sciences, New York University.
48. 23.01.2019, Geometric function and mapping theory Seminar, IMPAN, Warsaw.
49. 04.12.2018, Rainwater Seminar, University of Washington, Seattle.
50. 28.09.2018, Geometry & Analysis Seminar, Columbia University, New York.
51. 25.09.2018, Geometric Analysis Seminar, CUNY, New York.
52. 18.06.2018, Analysis Seminar, University of Parma, Parma.
53. 08.06.2018, University of Konstanz, Konstanz.
54. 01.06.2018, Analysis Seminar, University Grenoble Alpes.
55. 31.05.2018, Applied Seminar, University Grenoble Alpes.
56. 28.05.2018, GdT Calcul des Variations, LJLL, University Paris Diderot.
57. 22.05.2018, Applied Mathematics Seminar, University of Pavia, Pavia.
58. 02.05.2018, Differential Geometry & Geometric Analysis Seminar, Princeton University.
59. 26.03.2018, Analysis and Partial Differential Equations Seminar, Johns Hopkins University, Baltimore.
60. 14.03.2018, Analysis Seminar, University Federico II of Naples, Naples.
61. 01.11.2017, Rutgers University, New Brunswick.
62. 20.10.2017, Courant Institute of Mathematical Sciences, NYU.
63. 28.09.2017, Geometric Analysis and Topology Seminar, Courant Institute of Mathematical Sciences, NYU.
64. 29.03.2017, Calculus of Variations Seminar, University of Pisa, Pisa.
65. 23.02.2017, University of Sussex, Brighton.
66. 22.02.2017, Geometry Seminar, King's College London and University College London, London.
67. 21.12.2016, Analysis Seminar, University Federico II of Naples, Naples.
68. 31.05.2016, Graduate Colloquium, Joint Math Seminar of ETH and UZH, Zurich.
69. 12.05.2016, 19.05.2016, Reading Seminar, ETH, Zurich.
70. 18.03.2016, Analysis Seminar, Max-Planck-Institut, Leipzig.

## Academic service

### Mentoring:

- 2021** Advisor of the *PostDoc Giulia Bevilacqua* at University of Maryland.
- 2021** Advisor for the REU of the *undergraduate Nicholas Baranello* at University of Maryland.
- 2016-2019** Co-mentor of the *PhD student Stefano Gioffré* at University of Zurich (main advisor C. De Lellis).
- 2017-2018** Advisor of the *undergraduate student Dominic Louis Wynter* at Courant Institute, NYU.  
Awarded the *Hollis Cooley Memorial Prize* for his thesis.  
(Currently PhD student at University of Cambridge, UK).
- 2017-2018** Advisor of the *undergraduate student Jeffrey Kober* at Courant Institute, NYU.
- 2016-2017** Co-mentor of the *master student Simone Steinbrüchel* at University of Zurich (main advisor C. De Lellis).

### Committee member:

1. May 7th, 2021, University of Maryland, USA. *Committee member for the PhD Preliminary Oral Exam of Lucas Christopher Bouck.*
2. January 6th, 2020, Paris-Sud University, France. *Jury member for the PhD defense of Camille Labourie.*
3. 2020-2021, University of Maryland, USA. *Member of the Policy Committee*
4. 2020-2021, University of Maryland, USA. *Member of the PhD Admission Committee.*

**Conference organizer:**

1. June, 2022, Rome, Italy. 13th AIMS Conference on Dynamical Systems, Differential Equations and Applications. *Special session on elliptic PDEs and geometric variational problems*. Co-organized with H. Yu.
2. March 22nd - March 24th, 2019, University of Hawaii Manoa, USA. *New Trends in Geometric Measure Theory*. Co-organized with L. Spolaor.
3. April 24th - April 26th, 2017, University of Zurich, Switzerland. *Transport problems in Zurich*. Co-organized with M. Colombo, A. Marchese and A. Massaccesi.

**Seminar organizer:**

- 2020-2021** *PDE-Applied Math Seminar*. University of Maryland, USA.  
**2020-2021** *Informal Geometric Analysis Seminar*. University of Maryland, USA.  
**2020-2021** *RIT on Applied PDE*. University of Maryland, USA.  
**2018-2020** *Geometry and geometric analysis working group*. Courant Institute, NYU, USA.

**Research affiliation:**

- Full Member of Sigma Xi: The Scientific Research Honor Society.

**Referee for the journals:**

Comm. Pure App. Math., JEMS, Duke Math. J., ARMA, Ann. Sci. de l'Ecole Norm. Superieure, J. Funct. Anal., Adv. Math., Calc. Var. Partial Differential Equations, Quart. Appl. Math., Anal. PDE, AMS-PCMI lecture notes, Discrete Contin. Dyn. Syst., Pure Appl. Anal., ESAIM: COCV, Ann. Mat. Pur. Appl., J. Geom. Anal., Adv. Calc. Var, Netw. Heterog. Media, J Differ Equ.

**Languages**

Italian (Mother tongue) - English (fluent) - French (intermediate) - German (intermediate) - Spanish (basic)

**Computer skills**

**Programming Languages** Fortran, Matlab, Python, R