Academic curriculum vitae

Name: Aldo Pratelli
Date and place of birth: Dec. 10, 1977, Pisa (Italy)

- (1994-1996) I participated to the Italian Mathematical Olympiad, winning the sixth place in 1995 and the third place in 1996. In those years I also parteciped to the International Mathematical Olympiad (IMO), winning a bronze medal in 1995 (Canada) and a silver medal in 1996 (India).

- (1996-2000) I won a place to make my undergraduate studies at the Scuola Normale Superiore in Pisa (Italy), where I graduated in 2000 with full grades and cum laude. My graduation thesis was about the mass transport problem, and the supervisor was prof. Ambrosio.

- (2000-2003) I won a Ph.D. Position at the Scuola Normale Superiore in Pisa, where I got my Ph.D. in 2003 with full grades and cum laude: the thesis was on "Existence of optimal transport maps and regularity of the transport density in mass transportation problems". My supervisor was prof. Ambrosio, while the referees of the thesis were prof. Buttazzo (Pisa), prof. Evans (Berkeley) and prof. Gangbo (Atlanta).

- (2002) I was visiting student at the University of Berkeley for a 2-months period to collaborate with prof. Evans.

- (2003-2004) I won a 2-year Post-doc position at the Scuola Normale Superiore in Pisa, to collaborate on "Problemi di trasporto ottimale e applicazioni" (Optimal transport problems and applications).

- (2004) I was visiting student at the University of Oxford (GB) for a 2-months period to collaborate with prof. Kirchheim.

- (2004) I won the 2004 medal "Le Scienze" (granted by the italian edition of "Scientific American") for Mathematics, and the 2004 Medal of the President of Italian Republic for young researchers.

- (2005-2010) I won a permanent position as Researcher at the University of Pavia (Italy), in the Department of Mathematics.

- (2005) I won the 2005 "Gioacchino Iapichino" prize for a paper in Mathematical Analysis, granted by the "Accademia Nazionale dei Lincei".

- (2006-2016) I was a member of the Italian commitee of the International Mathematical Olympiads.

- (2008) I have collaborated for 8 months with the University of Madrid (Universitad Autonoma, Spain) at the institute IMDEA, under the project "Ramon y Cajal" (granted by the Spanish Ministry of University).

- (2010-2015) I won an ERC Starting Grant of the European Research Council, for a 5-years research project.

- (2010-2012) I won a permanent position as Associate Professor at the University of Pavia in Mathematical Analysis.

- (2011) I won the 2011 "Premio Miranda" prize, granted by the "Accademia di Scienze Fisiche e Matematiche di Napoli".

- (2012) I was visiting professor at the University of Tolouse (France) for a 1-month period, to collaborate with prof. Puel and Bertrand.

- (2012-2018) I won a permanent position as Full Professor in Mathematics at the University of Erlangen (Germany).

- (2015) I won the 2015 "Premio De Giorgi" prize, granted by the "Unione Matematica Italiana".

- (2016) I won a DFG (Deutsche Forschung Gesellschaft) grant, for a 3-years research project.

- (2018-present) I won a permanent position as Full Professor in Mathematics at the University of Pisa (Italy).

List of publications

[**1**] L. De Pascale & A. Pratelli, Regularity properties for Monge transport density and for solutions of some shape optimization problem, Calc. Var., **14** (2002), 249–274.

[**2**] L. Ambrosio & A. Pratelli, Existence and stability results in the L^1 theory of optimal transportation, in "Optimal Transportation and Applications", Lecture Notes in Mathematics, LNM **1813**, Springer (2003), 123–160.

[**3**] A. Pratelli, Equivalence between some definitions for the optimal mass transport problem and for the transport density on manifolds, Ann. Mat. Pura Appl., **184** (2005), no. 2, 215–238.

[**4**] L. De Pascale, L.C. Evans & A. Pratelli, Integral Estimates for Transport Densities, Bull. London Math. Soc., **36** (2004), no. 3, 383–395.

[**5**] L. Ambrosio, B. Kirchheim & A. Pratelli, Existence of optimal transport maps for crystalline norms, Duke Math. J. **125** (2004), no. 2, 207–241.

[**6**] L. De Pascale & A. Pratelli, Sharp summability for Monge Transport density via interpolation, COCV, **10** (2004), no.4, 549–552.

[**7**] A. Pratelli, Existence of optimal transport maps and regularity of the transport density in mass transportation problems, Ph.D. Thesis (Scuola Normale Superiore, 2003).

[**8**] I. Fragalà, M.S. Gelli & A. Pratelli, Continuity of an optimal transport in Monge problem, J. Math. Pures Appl., **84** (2005), 1261–1294.

[**9**] G. Buttazzo, A. Pratelli & E. Stepanov, Optimal pricing policies for public transportation networks, SIAM J. Optim., **16** (3) (2006), 826–853.

[**10**] A. Pratelli, How to show that some rays are maximal transport rays in Monge problem, Rend. Sem. Mat. Univ. Padova, **113** (2005), 179–201.

[**11**] A. Pratelli, On the equality between Monge's infimum and Kantorovich's minimum in optimal mass transportation, Ann. Inst. H. Poincaré Probab. Statist. , **43** (1) (2007), 1–13.

[**12**] G. Buttazzo, A. Pratelli, S. Solimini & E. Stepanov, Optimal Urban Networks via Mass Transportation, Lecture Notes in Mathematics, LNM **1961**, Springer (2008).

[**13**] N. Fusco, F. Maggi & A. Pratelli, The Sharp Quantitative Isoperimetric Inequality, Annals of Mathematics **168**, (3) (2008), 941–980.

[**14**] A. Pratelli, On the sufficiency of $c-$cyclical monotonicity for optimality of transport plans, Mathematische Zeitschrift, **258** (3) (2008), 677–690.

[**15**] N. Fusco, F. Maggi & A. Pratelli, The sharp quantitative Sobolev inequality for functions of bounded variations, Journal of Functional Analysis, **244**, n. 1 (2007), 315–341.

[**16**] A. Cianchi, N. Fusco, F. Maggi & A. Pratelli, The sharp Sobolev inequality in quantitative form, J. Eur. Math. Soc., **11**, no. 5 (2009), 1105–1139.

[**17**] N. Fusco, F. Maggi & A. Pratelli, Stability estimates for certain Faber-Krahn, isocapacitary and Cheeger inequalities, Ann. Sc. Norm. Super. Pisa Cl. Sci. **8** (2009), no. 1, 51–71.

[**18**] A. Figalli, F. Maggi & A. Pratelli, A mass transportation approach to quantitative isoperimetric inequalities, Invent. Math. **182** (2010), no. 1, 167–211.

[19] A. Cianchi, N. Fusco, F. Maggi & A. Pratelli, On the Isoperimetric Deficit in the Gauss Space, Amer. J. Math. **133** (2011), no. 1, 131–186.

[20] G. Crippa, C. Jimenez & A. Pratelli, Optimum and equilibrium in a transport problem with queue penalization effect, Advances in Calculus of Variations **2**, no. 3 (2009), 207–246.

[21] A. Figalli, F. Maggi & A. Pratelli, A note on Cheeger sets, Proc. Amer. Math. Soc. **137**, no. 6 (2009), 2057–2062.

[22] G. Crippa, C. Jimenez & A. Pratelli, A transport problem with queue penalization effect, in "Singularities in nonlinear evolution phenomena and applications", Centro di Matematica "Ennio De Giorgi" (2008), Birkhäuser.

[23] A. Figalli, F. Maggi & A. Pratelli, A refined Brunn-Minkowski inequality for convex sets, Ann. Inst. H. Poincaré Anal. Non Linéaire **26** (2009), no. 6, 2511–2519.

[24] P. Antonietti & A. Pratelli, Finite Element Approximation of the Sobolev Constant, Numer. Math. **117** (2011), no. 1, 37–64.

[25] N. Fusco & A. Pratelli, On a conjecture by Auerbach, J. Eur. Math. Soc. **13** (2011), no. 6, 1633–1676.

[26] M. Beiglböck & A. Pratelli, Duality for rectified Cost Functions, Calc. Var. PDE **45** (2012), 27–41.

[27] L. Brasco & A. Pratelli, Sharp stability of some spectral inequalities, Geom. Funct. Anal. **22** (2012), 107–135.

[28] N. Fusco, F. Maggi & A. Pratelli, On the isoperimetric problem with respect to a mixed Euclidean-Gaussian density, J. Funct. Anal. **260** (2011), no. 12, 3678–3717.

[29] D. Krejcirik & A. Pratelli, The Cheeger constant of curved strips, Pacific J. Math. **254** (2011), 309–333.

[30] F. Maggi, M. Ponsiglione & A. Pratelli, Quantitative stability in the isodiametric inequality via the isoperimetric inequality, Trans. Amer. Math. Soc. **366** (2014) 1141–1160.

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[32] A Figalli, F. Maggi & A. Pratelli, A Geometric Approach to Correlation Inequalities in the Plane, Ann. Inst. H. Poincaré Probab. Statist. **50** (2014), no. 1, 1–14.

[33] S. Daneri & A. Pratelli, A planar bi-Lipschitz extension Theorem, Adv. Calc. Var. **8**, no. 3 (2014), 221–266.

[34] F. Morgan & A. Pratelli, Existence of isoperimetric regions in $\mathbb{R}^n$ with density, Ann. Global Anal. Geom. **43** n. 4 (2013), 331–365.

[35] A. Figalli, F. Maggi & A. Pratelli, Sharp stability theorems for the anisotropic Sobolev and log-Sobolev inequalities on functions of bounded variation, Adv. Math. **242** (2013), 80–101.

[36] D. Mazzoleni & A. Pratelli, Existence of minimizers for spectral problems, J. Math. Pures Appl. **100**, n. 3 (2013), 433–453.

[37] L. Brasco, C. Nitsch & A. Pratelli, On the boundary of the attainable set of the Dirichlet spectrum, Z. Angew. Math. Phys. **64** (2013), no. 3, 591–597.

[38] C. Mora Corral & A. Pratelli, Approximation of piecewise affine homeomorphisms by diffeomorphisms, J. Geom. Anal. **24** (2014), no. 3, 1398–1424.

[39] A. Pratelli & S. Puglisi, Elastic deformations on the plane and approximations, on "HCD-TE, Nonlinear Hyperbolic PDEs, Dispersive and Transport Equations", AIMS Book Series, Applied Mathematics, vol. 7 (2013), 51–130.

[40] E. Cinti & A. Pratelli, The $\varepsilon - \varepsilon^\beta$ property, the boundedness of isoperimetric sets in $\mathbb{R}^N$ with density, and some applications, J. Reine Angew. Math. (Crelle) **728** (2017), 65–103.

[41] I. Fonseca, A. Pratelli & B. Zwicknagl, Shapes of Epitaxially grown Quantum Dots, Arch. Ration. Mech. Anal. **214** (2014), no. 2, 359–401.

[42] G. Leugering & A. Pratelli (eds.), "New trends in Shape Optimization", Internat. Ser. Numer. Math. **166**, Birkhuser/Springer (2015).

[43] D. Bucur, D. Mazzoleni, A. Pratelli & B. Velichkov, Lipschitz regularity of the eigenfunctions on optimal domains, Arch. Ration. Mech. Anal. **216** (2015), no. 1, 117–151.

[44] G. De Philippis, G. Franzina & A. Pratelli, Existence of Isoperimetric sets with densities "converging from below" on $\mathbb{R}^N$, J. Geom. Anal. **27** (2017), no. 2, 1086–1105.

[45] G. Leonardi & A. Pratelli, On the Cheeger sets in strips and non-convex domains, Calc. Var. Partial Differential Equations **55** (2016), no. 1, Art. 15, 28 pp.

[46] A. Pratelli, A survey on the existence of isoperimetric sets in the space $\mathbb{R}^N$ with density, Atti Accad. Naz. Lincei Rend. Lincei Mat. Appl. **26** (2015), no. 1, 99–118.

[47] A. Pratelli & G. Saracco, On the generalized Cheeger problem and an application to 2d strips, Rev. Mat. Iberoam. **33** (2017), no. 1, 219–237.

[48] B. Acciaio & A. Pratelli, On the minimization of area among chord-convex sets, in "New trends in Shape Optimization", Internat. Ser. Numer. Math. **166** (2015), Birkhuser/Springer, 1–17.

[49] S. Hencl & A. Pratelli, Diffeomorphic Approximation of $W^{1,1}$ Planar Sobolev Homeomorphisms, J. Eur. Math. Soc., **20** (2018), no. 3, 597–656.

[50] J. Bertrand, A. Pratelli & M. Puel, Kantorovich potentials and continuity of total cost for relativistic cost functions, J. Math. Pures Appl. **110** (2018), 93–122.

[51] E. Cinti & A. Pratelli, Regularity of isoperimetric sets in $\mathbb{R}^2$ with density, Math. Ann. **368** (2017), no. 1-2, 419–432.

[52] A. Pratelli & E. Radici, On the piecewise approximation of bi-Lipschitz curves, Rend. Semin. Mat. Univ. Padova **138** (2017), 1–37.

[53] A. Pratelli, On the bi-Sobolev planar homeomorphisms and their approximation, Nonlinear Anal. **154** (2017), 258–268.

[54] J. Louet, A. Pratelli, F. Zeisler, On the continuity of the total cost in the mass transport problem with relativistic cost functions, preprint (2016).

[55] G. De Philippis, N. Fusco & A. Pratelli, On the approximation of SBV functions, Atti Accad. Naz. Lincei Rend. Lincei Mat. Appl. **28** (2017), no. 2, 369–413.

[56] A. Pratelli & E. Radici, Approximation of planar BV homeomorphisms by diffeomorphisms, Journal of Functional Analysis, **276** (2019), n. 3, 659–686.

[57] A. Pratelli & E. Radici, On the planar minimal BV extension problem, Rend. Lincei Mat. Appl. **29** (2018), 511–555.

[58] D. Mazzoleni & A. Pratelli, Some estimates for the higher eigenvalues of sets close to the ball, Journal of Spectral Theory **9** (2019), no. 4, 1385–1403.

[59] G. De Philippis & A. Pratelli, The closure of planar diffeomorphisms in Sobolev spaces, Ann. Inst. H. Poincaré Anal. Non Linéaire **37** (2020), no. 1, 181–224.

[60] A. Pratelli & G. Saracco, On the isoperimetric problem with double density, Nonlinear Analysis **177**, Part B (2018), 733–752.

[61] S. Giuffré, A. Pratelli & D. Puglisi, Radial solutions and free boundary of the elastic-plastic torsion problem, J. Convex Anal. **25** (2018), no. 2, 529–543.

[62] N. Fusco & A. Pratelli, Sharp stability for the Riesz potential, ESAIM Control Optim. Calc. Var. **26** (2020), paper no. 113, 24 pp.

[63] A. Pratelli & G. Saracco, The $\varepsilon - \varepsilon^{\beta}$ property in the isoperimetric problem with double density, and the regularity of isoperimetric sets, Advanced Nonlinear Studies **20** (2020), no. 3, 539–555.

[64] G. Buttazzo, A. Pratelli & M. Van den Berg, On relations between principal eigenvalue and torsional rigidity, to appear on Comm. Contemp. Math. (2020).

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[66] E. Cinti, F. Glaudo, A. Pratelli, J. Serra & X. Ros-Oton, Sharp quantitative stability for isoperimtric inequalities with homogeneous weights, to appear on Trans. Amer. Math. Soc. (2021).

[67] S. Di Marino, N. Gigli & A. Pratelli, Global Lipschitz extension preserving local constants, Atti Accad. Naz. Lincei Rend. Lincei Mat. Appl. **31** (2020), no. 4, 757–765.

[68] M. Novaga & A. Pratelli, Minimisers of a general Riesz-type problem, Nonlinear Anal. **209** (2021), Paper No. 112346, 27 pp.

[69] D. Carazzato, N. Fusco & A. Pratelli, Minimality of balls in the small volume regime for a general Gamow type functional, preprint (2020).

[70] G. Buttazzo & A. Pratelli, An application of the continuous Steiner symmetrization to Blaschke-Santalò diagrams, preprint (2020).

[71] V. Franceschi, A. Pratelli & G. Stefani, On the Steiner property for planar minimizing clusters. The isotropic case, preprint (2021).

[72] V. Franceschi, A. Pratelli & G. Stefani, On the Steiner property for planar minimizing clusters. The anisotropic case, preprint (2021).

List of public lectures

I give here the complete lists of my visits to other universities, of my talks at workshops or international conferences and of the workshops that I have organized.

Visits to other universities

1. Prof. L.C. Evans at Berkeley University (California, US), as Visiting Scholar, between April-June 2002 (during that visit, I gave there a talk).

2. Prof. B. Kirchheim at Oxford University (GB) between May 4–7, 2003 (during that visit, I gave there a talk).

3. Prof. S. Solimini at Bari University (Italy) between January 19–31, 2004 (during that visit, I gave there a talk).

4. Prof. B. Kirchheim at Oxford University (GB) between May–June 2004 (during that visit, I gave there two classes).

5. Prof. S. Müller and prof. S. Conti at the "Max Planck Institute for Mathematics in the Sciences" in Leipzig (Germany) in September 2004.

6. Prof. N. Fusco at Naples University (Italy) between March 29–April 1, 2005 (after this first visit, I have been at Naples University several other times, giving a number of talks and teaching a Ph.D. class in 2006).

7. Prof. S. Conti at Duisburg University (Germany) between June 19–24, 2005 (during that visit, I gave there a talk).

8. Prof. G. Buttazzo at Pisa University (Italy) between November 23–25, 2005 (during that visit, I gave there a talk).

9. Prof. S. Bianchini at the Sissa (Trieste, Italy) between May 15–18, 2006 (during that visit, I gave there a talk).

10. Prof. P. Marcellini at Florence University (Italy) on December 14, 2007 (during that visit, I gave there a talk).

11. Prof. I. Fonseca and prof. G. Leoni at the "Center for Nonlinear Analysis" of the Carnegie Mellon University at Pittsburgh (PA, USA) between March 8–17, 2008.

12. Prof. E. Zuazua at the research center IMDEA Matématicas in Madrid (Spain) between June 12–15, 2008.

13. Dr. G. Crippa at Parma University (Italy) between August 31–September 3, 2008.

14. Prof. J. Arrieta at the Universidad Complutense of Madrid (Spain) on November 20, 2008 (during that visit, I gave there a talk).

15. Prof. E. Zuazua at the research center IKERBASQUE in Bilbao (Spain) between December 3–6, 2008 (during that visit, I gave there a talk).

16. Prof. D. Krejcirik at the Department of Theoretical Physics of the Nuclear Physics Institute in Rez (Prague, Czech Republic), between June 14–20, 2009 (during that visit, I gave there two talks).

17. Prof. W. Schachermayer at Wien University (Austria) between November 2–6, 2009 (during that visit, I gave there a talk).

18. Prof. C. Mora-Corral at the research center IKERBASQUE in Bilbao (Spain) between November 30–December 6, 2009.

19. Prof. L. De Pascale at Pisa University (Italy) on December 16, 2009 (during that visit, I gave there a talk).

20. Prof. W. Schachermayer and dr. M. Beiglboeck at Wien University (Austria) between September 23–26, 2010 (during that visit, I gave there a talk).

21. Prof. E. Carlen and Prof. M. Lewicka at the Rutgers University (NJ, USA) between October 19–24, 2010 (during that visit, I gave there a talk).

22. Prof. R. McCann at the Fields Institute in Toronto (Canada) between October 24– November 7, 2010.

23. Prof. I. Fonseca at the Carnegie Mellon University in Pittsburgh (PA, USA) between November 7–21, 2010 (during that visit, I gave there a talk).

24. Prof. A. Garrone at the University "La Sapienza" in Roma (Italy) between January 17–18, 2011 (during that visit, I gave there a talk).

25. Dr. D. Vittone at the University of Padova (Italy) between May 19–20, 2011 (during that visit, I gave there a talk).

26. Dr. G. Leonardi at the University of Modena (Italy) between September 19–21, 2011 (during that visit, I gave there a talk).

27. Prof. F. Duzaar at the University of Erlangen (Germany), January 19th, 2012 (during that visit, I gave there a talk).

28. Dr. J. Bertrand and M. Puel at the University of Toulouse (France), January–February 2012 (during that visit, I gave there a talk).

29. Prof. Cicalese and Friesecke at the TUM of Munich (Germany), January 10, 2013 (during that visit, I gave there a talk).

30. Prof. L. Boccardo and G. Tarantello at the University of Roma "La Sapienza" and at the University of Roma "Tor Vergata", March 4–6, 2013 (during that visit, I gave there two talks).

31. Prof. Hencl and Krejcirik at the University of Prague and at the Doppler Institute in Prague (Czech Republik), March 18–22, 2013 (during that visit, I gave there two talks).

32. Prof. Bourni at the University of Berlin, April 25th, 2013 (during that visit, I gave there a talk).

33. Prof. Maugeri at the University of Catania (Italy), February–March 2014 (during that visit, I gave a Ph.D. course).

34. Prof. Kawohl at the University of Köln, April 25th, 2014 (during that visit, I gave there a talk).

35. Prof. T. Rajala at the University of Jyväskylä (Finland), May 13–17, 2014 (during that visit, I gave there a talk).

36. Prof. B. Acciaio at the London School of Economics of London (GB), November 10–12, 2014 (during that visit, I gave there a talk).

37. Prof. B. Dacorogna at the EPFL of Lausanne (Switzerland), January 8–10, 2015 (during that visit, I gave there a talk).

38. Prof. D. Pallara at the University of Lecce (Italy), March 4–6, 2015 (during that visit, I gave there a talk).

39. Prof. M. Westdickenberg at Aachen (Germany), May 4–5, 2015 (during that visit, I gave there a talk).

40. Prof. G. Dolzmann at Regensburg (Germany), January 28–29, 2016 (during that visit, I gave there a talk).

41. Prof. L. Beck at Augsburg (Germany), January 19–20, 2017 (during that visit, I gave there a talk).

42. Prof. B. Dacorogna at the EPFL of Lausanne (Switzerland), May 3–5, 2017 (during that visit, I gave there a talk).

43. Prof. L. Boccardo at the University of Roma "La Sapienza", May 15–16, 2017 (during that visit, I gave there a talk).

44. Prof. P. Marcati at the GSSI in L'Aquila (Italy), May 17–18, 2017 (during that visit, I gave there a talk).

45. Prof. R. Frank at the LMU University in Munich, June 28, 2017 (during that visit, I gave there a talk).

46. Prof. S. Hencl at the University of Prague (Czech Republik), March 26–29, 2018 (during that visit, I gave there a talk).

47. Prof. Yogeshwaran at the University of Bangalore (India), April 22, 2021 (online seminar).

48. Prof. P. Dondl at the University of Freiburg (Germany), May 11, 2021 (online seminar).

Workshops or conferences where I gave talks

1. Workshop "Mass Transportation Problems, Shape optimization and Weak Geometrical Structures" at the Scuola Normale Superiore in Pisa (Italy), October 26–28, 2000.

2. Workshop "Giornate di lavoro sul Calcolo delle Variazioni" in Levico Terme (Trento, Italy), March 25–29, 2001.

3. Workshop "Giornate di lavoro sul Calcolo delle Variazioni" in Levico Terme (Trento, Italy), February 18–22, 2002.

4. Workshop "Giornate di lavoro sul Calcolo delle Variazioni" in Levico Terme (Trento, Italy), February 16–21, 2003.

5. Workshop "Optimal Transport Theory and Applications" at the Scuola Normale Superiore in Pisa (Italy), October 9–12, 2003.

6. Workshop "Giornate di lavoro sul Calcolo delle Variazioni" in Levico Terme (Trento, Italy), February 1–6, 2004.

7. Workshop "Calculus of Variations" in Oberwolfach (Germany), June 13–19, 2004.

8. Workshop "Quarta Giornata di Studio Università di Pavia – Politecnico di Milano: equazioni differenziali e calcolo delle variazioni" at the Politecnico di Milano (Italy) on March 9, 2005.

9. Workshop "Optimal Transportation, Transport Equations and Hydrodynamics" at Edinburgh (GB), July 11–15, 2005.

10. Workshop "Giornate di lavoro sul Calcolo delle Variazioni" at Levico Terme (Trento, Italy), February 5–10, 2006.

11. Workshop "Optimal transport and geometric PDE's" at Nizza (France), June 15–18, 2006.

12. Workshop "Calculus of Variations" at Oberwolfach (Germany), July 9–15, 2006.

13. "Summer School on Calculus of Variations and Applications" at Ponta Delgada (Portugal), September 4–9, 2006.

14. Workshop "Optimal transport: theory and applications" at the Centro De Giorgi (Pisa, Italy), November 14–18, 2006.

15. Workshop "Optimal Transportation, and Applications to Geophysics and Geometry" at Ediburgh University (GB), July 16–20, 2007.

16. Workshop "Partial differential equations, optimal design and numerics" at Benasque (Spain), between August 26–September 7, 2007 (during this workshop, in addition to my talk, I organized an open session with title "Optimal Transportation").

17. Workshop "Giornate di lavoro sul Calcolo delle Variazioni" at Levico Terme (Trento, Italy), February 10–15, 2008.

18. "Workshop on New Trends in Calculus of Variations and Mass Transport" at the Carnegie Mellon University in Pittsburgh (PA, USA), March 13–15, 2008.

19. INdAM intensive period on "Geometric properties of nonlinear local and nonlocal problems", Milano–Pavia, May–June 2009.

20. Workshop "MTM2008-03541" at Bilbao (Spain), June 30–July 1, 2009.

21. Workshop "Optimization, Transport and Equilibrium in Economics" at Paris (France), July 6–8, 2009.

22. Workshop "Partial differential equations, optimal design and numerics" at Benasque (Spain), August 26–September 4, 2009 (during this workshop, in addition to my talk, I organized an open session with title "Geometric inequalities and PDEs").

23. Workshop "Recent Advances in Optimal Transportation and Applications" at Nizza (France), October 28–30, 2009.

24. Workshop "Giornate di lavoro sul Calcolo delle Variazioni" at Levico Terme (Trento, Italy), February 21–26, 2010.

25. "INdAM Workshop on vector-valued mappings and systems of PDE's", at the Roma University "La Sapienza" (Italy), May 17–21, 2010.

26. Workshop "MTM2008-03541" at Bilbao (Spain), June 30–July 1, 2010.

27. Summer School "Frontiers of Mathematics and Applications" at Santander (Spain), August 9–13, 2010.

28. "ERC Workshop on Optimal Transportation and Applications" at the Centro De Giorgi of the Scuola Normale Superiore in Pisa (Italy), October 12–16, 2010.

29. "Partial Differential Equations and Geometric Analysis" at the Fields Institute of Toronto (Canada), October 25–29, 2010.

30. "Giornate di lavoro sul Calcolo delle Variazioni" at Levico Terme (Trento, Italy), February 6–9, 2011.

31. "Third South West Regional PDE Winter School" at Bristol (UK), February 10–11, 2011 (plenary conference).

32. Fifth International Workshop on "Convex Geometry–Analytic Aspects" in Cortona (Italy), June 12–18, 2011.

33. Intensive Trimester at Sissa on "Nonlinear Hyperbolic PDEs, Dispersive and Transport Equations: Analysis and Control", Sissa (Trieste, Italy), May 16–July 22, 2011 (I gave a six-hours course in the week of June 20–24, 2011).

34. Workshop "Partial differential equations, optimal design and numerics" at Benasque (Spain), August 28–September 4, 2011 (during this workshop, in addition to my talk, I organized an open session with title "Geometric Inequalities").

35. "5th International Conference on Stochastic Analysis and its Applications" at Bonn (Germany), September 5–9, 2011.

36. Workshop "Geometry meets Transport" at Nizza (France), September 27–30, 2011.

37. "Rencontres d'Analyse" in Lyon (France), January 12–13, 2012 (I gave one of the two four-hours courses).

38. Workshop "Isoperimetric problems, space-filling, and soap bubble geometry" at Edinburgh (GB), March 19–23, 2012.

39. Workshop "Variational Analysis and Application" at Erice (Italy), May 14–22, 2012.

40. Workshop "Shape optimization problems and spectral theory" at Luminy (France), May 28–June 2, 2012.

41. Workshop "Geometric Aspects of Spectral Theory" in Oberwolfach (Germany), July 1–7, 2012.

42. Workshop "Calculus of Variations" in Oberwolfach (Germany), July 22–28, 2012.

43. "Trilateral Meeting on PDE and Related Topics" in Wollongong (Australia), December 3–7, 2012.

44. Workshop on "Geometric Measure Theory and Optimal Transport" at ICTP in Trieste (Italy), July 29–August 2, 2013.

45. Workshop "Qualitative and Geometric aspects of elliptic PDEs" at Barcelona, September 2–6, 2013.

46. Workshop "New Trends in Calculus of Variations and Partial Differential Equations" at the Accademia Pontaniana in Naples (Italy), November 21–23, 2013.

47. Workshop "New Trends in Nonlinear PDE's" at the Accademia dei Lincei in Roma, November 26, 2013.

48. "42nd Winter School in Abstract Analysis", Svratka (Czech Republic), January 11–18, 2014 (I gave a four-hours course).

49. "BFZ Seminar in Analysis – Basel, Fribourg, Zurich", Basel, April 11th, 2014.

50. "INdAM Day 2014" at the Sissa (Trieste, Italy), June 11th 2014 (I gave one of the four plenary conferences).

51. "ERC Workshop on Existence and Regularity for Nonlinear Systems of Partial Differential Equations", Scuola Normale Superiore (Pisa, Italy), June 30–July 4, 2014.

52. Workshop "Optimal Transport in the Applied Sciences" at the RICAM (Linz, Austria), December 4–8, 2014.

53. "Giornate di lavoro sul Calcolo delle Variazioni" at Levico Terme (Trento, Italy), February 1–6, 2015.

54. Workshop "ESPALIA 2015" at the University La Sapienza at Rome (Italy), June 17–19, 2015.

55. "XX Congresso UMI" at Siena (Italy), September 7–11, 2015.

56. "Workshop Analysis" in Lyon (France), October 26–30, 2015.

57. "PDE 2015 – Theory and applications of partial differential equations" at the WIAS of Berlin (Germany), November 30–December 4, 2015.

58. "Trilateral meeting on Partial Differential Equations and Related Topics" at Parma (Italy), December 13–18, 2015.

59. "9th European Conference on Elliptic and Parabolic Problems" at Gaeta (Italy), May 23–27, 2016.

60. "New Trends in Calculus of Variations" at the Accademia dei Lincei (Roma, Italy), May 27–28, 2016.

61. "Hausdorff Kolloquium 2016" at the Hausdorff Center (Bonn, Germany), June 15, 2016.

62. "CMC conference on Analysis, Geometry, and Optimal Transport" at Seoul (Korea), June 20–24, 2016.

63. "Geometric and Analytic Inequalities" at the BIRS Center (Banff, Canada), July 10–15, 2016.

64. Workshop "Geometric Measure Theory, Shape Optimisation and Free Boundaries", Sissa (Trieste), October 25–28, 2016.

65. Workshop "Applications of Optimal Transportation in the Natural Sciences", Oberwolfach (Germany), January 29–February 4, 2017.

66. Meeting "PDEs and Nonlinear Elasticity" in Naples, May 16–17, 2017.

67. Workshop "Elliptic partial differential equations of second order: Celebrating 40 years of Gilbarg and Trudingers book" in Melbourne (Australia), October 23–27, 2017.

68. "Giornate di lavoro sul Calcolo delle Variazioni" at Levico Terme (Trento, Italy), February 12–16, 2018.

69. "Seminar on Differential Geometry and Analysis" in Magdeburg (Germany), April 26, 2018.

70. Workshop "Eigenvalues and Inequalities" at the Mittag-Leffler Institut, Stockholm (Sweden), May 14–18, 2018.

71. Workshop "Meeting in Applied Mathematics and Calculus of Variations" at the University La Sapienza in Roma (Italy), September 3–6, 2018.

72. Workshop "MAR: Metric Analysis and Regularity" in Catania (Italy), September 24–28, 2018.

73. Workshop "Analysis, Control and Inverse Problems for PDEs" in Napoli (Italy), November 26–30, 2018.

74. Workshop "Alessio Figalli, Fields medallist 2018" in Pisa (Italy), January 14–17, 2019.

75. Workshop "'Variational problems, PDEs and applications' in Pisa (Italy), January 17–19, 2019.

76. "7th Trilateral Meeting" at the NCKU University, Tainan (Taiwan), January 23–28, 2019.

77. COPDESC-Workshop "Calculus of Variation and Nonlinear Partial Differential Equations" at the Regensburg University (Germany), March 25–28, 2019.

78. Indam Intensive Period on "Shape optimization, control and inverse problems for PDEs" in Napoli (Italy), May 8–10, 2019.

79. Spring School in Analysis 2019 in Paseky (Czech Republic), May 27–31, 2019 (I gave one of the three 6-hour courses).

80. Conference "FSDONA2019" in Turku (Finland), June 12–15, 2019.

81. Workshop "Partial Differential Equations" in Oberwolfach (Germany), July 21–26, 2019.

82. Workshop "Swedish Summer PDEs" at the KTH (Stockholm, Sweden), August 26–28.

83. Workshop "Shape Optimization and Isoperimetric and Functional Inequalities" in Levico (Italy), September 23–27, 2019.

84. Workshop "Modeling of Crystalline Interfaces and Thin Film Structures" at the ESI (Vienna, Austria), November 11–15, 2019.

85. Workshop "Calculus of Variations and Free Boundary Problems III" in Napoli (Italy), November 21–22, 2019.

86. "Giornate di lavoro sul Calcolo delle Variazioni" at Levico Terme (Trento, Italy), February 2–7, 2020.

87. "GeoCa2020-Integral" at Horní Lysečiny (Czech Republic), December 2–6, 2020.

88. Workshop "Variational methods and applications", at the Centro De Giorgi (Pisa), September 6–10, 2021.

Workshops that I have organized

1. First Winter School at IMDEA on PDE's and Inequalities, Madrid (Spain), January 25–30, 2009.

2. ERC-Summer School on "Calculus of Variations, Continuum Mechanics and Geometric Inequalities", Ischia (Italy), June 5–10, 2011.

3. Bimester at the Centro De Giorgi (Pisa, Italy) on "Geometric and Analytic Techniques in Calculus of Variations and Partial Differential Equations", June–July 2012.

4. ERC Workshop on "New Trends in Shape Optimization" at the University of Erlangen (Germany), September 23–27, 2013.

5. ERC Research Period on "Calculus of Variations and Analysis in Metric Spaces" at the Scuola Normale Superiore (Pisa, Italy), June 9-July 12, 2014.

6. Workshop on "Shape optimization and spectral geometry" at the ICMS Institute in Edinburgh (GB), June 29–July 3, 2015.

7. Workshop "Lecce conference in the calculus of variations and partial differential equations" in Lecce (Italy), October 4–7, 2016.

8. Workshop "Shape Optimization and Isoperimetric and Functional Inequalities" in Luminy (Marseille, France), November 21–25, 2016.

List of projects supported by third-party funds

I have participated, either as Participant or as Principal Investigator (coordinator), in the following projects.

- "Calcolo delle Variazioni" (Italian Ministry of University); years 2001–2002;
  Principal Investigator Gianni Dal Maso;
  total amount 454.480 euros.

- "Calcolo delle Variazioni" (Italian Ministry of University); years 2003–2004;
  Principal Investigator Luigi Ambrosio;
  total amount 430.000 euros.

- "Calcolo delle Variazioni" (Italian Ministry of University); years 2005–2006;
  Principal Investigator Luigi Ambrosio;
  total amount 398.570 euros.

- "Geometric-functional inequalities in sharp and quantitative form" (InDAM, Italian National Institute for High Mathematics); year 2007;
  Principal Investigator Francesco Maggi;
  total amount 3.000 euros.

- "Metodi variazionali nella teoria del trasporto ottimo di massa e nella teoria geometrica della misura" (Italian Ministry of University); years 2007–2008;
  Principal Investigator Luigi Ambrosio;
  total amount 148.500 euros.

- "Geometric-functional inequalities in sharp and quantitative form" (InDAM, Italian National Institute for High Mathematics); year 2008;
  Principal Investigator Aldo Pratelli;
  total amount 4.000 euros.

- "Analytic Techniques for Geometric and Functional Inequalities" (ERC Advanced Grants 2008, European Community); years 2009–2012;
  Principal Investigator Nicola Fusco;
  total amount 600.000 euros.

- "Project MTM2008-03541" (Spanish Ministry of University); years 2009–2011;
  Principal Investigator Enrique Zuazua;
  I don't know the total amount.

- "Calcolo delle Variazioni" (Italian Ministry of University); years 2010-2011;
  Principal Investigator Luigi Ambrosio;
  I don't know the total amount.

- "Analysis of optimal sets and optimal constants: old questions and new results" (ERC Starting Grants 2010, European Community); years 2010–2015;
  Principal Investigator Aldo Pratelli;
  total amount 540.000 euros.

- "Approximation Problems for Sobolev Homeomorphisms" (DFG Grant, Deutsche Forschung Gesellschaft); years 2016–2019;
  Principal Investigator Aldo Pratelli;
  total amount 266.900 euros.

- "Nuovi sviluppi per minimi dell'energia in problemi di ottimizzazione di forma" (PRA Grant, University of Pisa); years 2020–2022;
  Principal Investigator Aldo Pratelli;
  total amount 42.278 euros.

Teaching Statement

I have been teaching continuously since 2002. More precisely, I gave some exercise classes at the Universities of Pisa (Italy) and Pavia (Italy), a high number of courses at the universities of Pavia (Italy), Erlangen (Germany) and Pisa (Italy), and three Ph.D. classes at the Universities of Naples (Italy), Pavia (Italy), Catania (Italy). My classes where basically about all the different aspects of Mathematical Analysis, ranging from the basic courses for the first year students to the most advanced courses.

List of supervised Ph.D. theses

- Sara Daneri (2008–2011), SISSA of Trieste (Italy) –I was coadvisor for this thesis together with Stefano Bianchini.

- Dario Mazzoleni (2011–2014), University of Pavia (Italy) and Erlangen (Germany).

- Florian Zeisler (2013–2016), University of Erlangen.

- Emanuela Radici (2013–2016), University of Erlangen.

- Vincenzo Scattaglia (2018–2021), University of Pisa (Italy).

- Davide Carazzato (2020–2023), University of Pisa (Italy).

List of postdocs under my supervision

- Sara Daneri (2011) at the University of Pavia (Italy).

- Eleonora Cinti (2012) at the University of Pavia and Erlangen (Germany).

- Giovanni Franzina (2013–2014) at the University of Erlangen.

- Diana Barseghyan (2013–2014) at the University of Erlangen.

- Felix Jachan (2014–2015) at the University of Erlangen.

- Jean Louet (2014–2015) at the University of Erlangen.

- Giorgio Saracco (2017–2018) at the University of Erlangen.

- Daniel Campbell (2017–2018) at the University of Erlangen.

Referee Activity

- I am refereeing since 2003 a very high number of papers for most of the leading journals in Mathematics.

- I have been in the panel to evaluate the research projects in Mathematics to be funded by the National Agency of a European country in 2011 (for young researchers).

- I have been in the panel to evaluate the research projects in Mathematics to be funded by the National Agency of a European country in 2014 (for both young and senior researchers).

- I have been in the extended panel to evaluate the research projects in Mathematics to be funded by the National Agency of a European country in 2016 (for senior researchers).

- I have evaluated several Research Projects to be funded by different agencies of European countries.