

Curriculum Vitae

- **Barbara NELLI**

- Full Professor in Geometry, Department of Information Engineering, Computer Science and Mathematics, University of L' Aquila.
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LANGUAGES. Italian (native), English (fluent), French (fluent) , Portuguese (fluent), Spanish (basic).

EDUCATION

- PhD in Mathematics: 1995, University Paris VII and University of Pisa.
- Master's degree in Mathematics (4-year program): 1990, University of Pisa.

ACADEMIC APPOINTMENTS

- Current Position: since October 2017: Full Professor in Geometry, Department of Information Engineering, Computer Science and Mathematics, University of L' Aquila.
- March, 2005 - September 2017: Associate Professor in Geometry, Department of Information Engineering, Computer Science and Mathematics, University of L' Aquila.
- January 1999 – February 2000. Postdoctoral fellowship of the Humboldt Foundation at Technical University of Berlin.
- December, 1997- February, 2005. Researcher, Faculty of Mathematics Physics and Natural Sciences, University of L' Aquila.
- November, 1995 - February, 1997. ATER (Temporary Lecturer and Research Fellow), University Paris VII.

VISITING POSITIONS (SINCE 2010)

Since 2010, I have carried out around twenty short-term research visits (one to two weeks) in France (University of Tours and Paris Cité University- formerly Paris VII), Brazil (Federal University of Rio de Janeiro, IMPA), England (King's College London), Spain (University of Granada), Lebanon (Lebanese University, Beirut), USA (Princeton University).

I have held the following long-term visiting positions. University of Granada (February 2016, one month), Federal University of Rio de Janeiro (November 2015, one month), University of Tours (May 2015, one month - March-May 2011 three month), University of Paris VII (June 2010, one month).

RESEARCH INTEREST. Riemannian Geometry, Geometric Analysis, Minimal Surfaces, Non-linear PDEs, Sub-manifolds Theory.

PUBLICATIONS

Preprint

1. B. NELLI, C. PONTUALE: *Finite Index and Do Carmo's Question for Constant Mean Curvature Hypersurfaces*, arXiv:2601.11456v2 [math.DG].
2. A. DEL PRETE, J. M. MANZANO, B. NELLI: *The Jenkins-Serrin problem in 3-manifolds with a Killing vector field*, to be published in **American Mathematical Journal**.

Journal Articles

1. F. F. CRUZ, B. NELLI: *An extension of Liebmann's Theorem to hypersurfaces with boundary*, **Proceedings of the American Mathematical Society** 154, 3 (2026).
2. B. NELLI, G. PIPOLI, M. P. TASSI: *Special Weingarten surfaces with convex planar boundary*, **Communications in Contemporary Mathematics** vol. 27 (9) (2025).
3. R. F. DE LIMA, M.F. ELBERT, B. NELLI: *On Stability and Isoperimetry of constant mean curvature spheres in $\mathbb{H}^n \times \mathbb{R}$ and $\mathbb{S}^n \times \mathbb{R}$* , **Mathematische Zeitschrift** vol. 309, 2 (2025).
4. B. NELLI, J. ZHU: *Uniqueness of hypersurfaces of higher order mean curvature in hyperbolic space*, to be published in **Communications in Analysis and Geometry**, Vol. 32, 7 (2024).
5. M.F. ELBERT, B. NELLI: *On the stability of constant higher order mean curvature hypersurfaces in a Riemannian manifold*, **Mathematische Nachrichten** vol. 297, 11 (2024)
6. B. NELLI, G. PIPOLI, G. RUSSO: *On constant higher order mean curvature hypersurfaces in $\mathbb{H}^n \times \mathbb{R}$* , **Advanced Nonlinear Studies** (2024) vol. 24, 1 (2024)
7. B. NELLI: *A survey about a Do Carmo's question on complete stable constant mean curvature hypersurfaces*, **Mat. Contemp.** 57 (2023).
8. B. NELLI, G. PIPOLI: *Constant mean curvature hypersurfaces in $\mathbb{H}^n \times \mathbb{R}$ with small planar boundary*, published first on line in **Revista Matemática Iberoamericana**, 39, 4 (2023).
9. S. ILIAS, B. NELLI, M. SORET: *A Note on Constant Mean Curvature Foliations of Noncompact Riemannian Manifolds*, **International Journal of Mathematics and Mathematical Sciences** Volume 2022 (2022).
10. M.F. ELBERT, B. NELLI: *On the structure of hypersurfaces in $\mathbb{H}^n \times \mathbb{R}$ with finite strong total curvature*, **Bulletin of the London Mathematical Society** 51 (1) (2019).
11. J. M. MANZANO, B. NELLI: *Height and area estimates for constant mean curvature surfaces in $\mathbb{E}(\kappa, \tau)$ -spaces*, **Journal of Geometric Analysis**, 27, 4 (2017).
12. B. NELLI, R. SA EARP, E TOUBIANA: *Minimal graphs in Nil_3 : existence and non-existence results*, **Calc. Var. Partial Differential Equations** 56, 2 (2017).
13. J. A. GALVEZ, B. NELLI: *Entire solutions of the degenerate Monge-Ampère equation with a finite number of singularities*, **Journal of Differential Equations**, 216, 11, (2016).
14. M.F. ELBERT, B. NELLI, W. SANTOS: *Hypersurfaces with $H_{r+1} = 0$ in $\mathbb{H}^n \times \mathbb{R}$* , **Manuscripta Mathematica** 149 (2016).

15. S. ILIAS, B. NELLI, M. SORET: *On the entropy of hypersurfaces with bounded curvature*, **Mathematische Annalen** 364 (2016).
16. L. HAUSWIRTH, B. NELLI, R. SA EARP, E TOUBIANA: *Minimal ends in $\mathbb{H}^2 \times \mathbb{R}$ with finite total curvature and a Schoen type theorem*, **Advances in Mathematics** 274 (2015).
17. B. NELLI, R. SA EARP, E TOUBIANA: *Maximum principle in a half-space for minimal hypersurfaces in $\mathbb{H}^n \times \mathbb{R}$* , **Annali della Scuola Normale Superiore di Pisa** 14, 2 (2015).
18. S. ILIAS, B. NELLI, M. SORET: *Caccioppoli's inequalities for cmc-hypersurfaces in Riemannian Manifolds*, **Ann. of Global Analysis and Geom.** 42, 4 (2012).
19. M.F. ELBERT, B. NELLI, R. SA EARP: *Vertical Ends of CMC surfaces in $\mathbb{H}^2 \times \mathbb{R}$* , **Trans. Amer. Math. Soc.** 364 (2012).
20. B. NELLI, R. SA EARP: *A halfspace theorem for mean curvature $H = \frac{1}{2}$ surfaces in $\mathbb{H}^2 \times \mathbb{R}$* , **J. of Math. Anal. and App.** 365 (2010).
21. B. NELLI: *A Survey on Alexandrov-Bernstein-Hopf Theorems* **Matematica Contemporanea** vol. 35 (2008).
22. B. NELLI, R. SA EARP, W. SANTOS, E. TOUBIANA: *Uniqueness of H -surfaces in $\mathbb{H}^2 \times \mathbb{R}$, $|H| \leq 1/2$, with boundary one or two parallel horizontal circles*, **Ann. of Global Anal. and Geom.** 33 (4) (2008).
23. B. NELLI, H. ROSENBERG: *Errata Minimal Surfaces in $\mathbb{H}^2 \times \mathbb{R}$* , [Bull. Braz. Math. Soc., New Series 33 (2002), 263-292] **Bull. Braz. Math. Soc.**, New Series 38 (4) (2007).
24. M.F. ELBERT, B. NELLI, H. ROSENBERG: *Stable Constant Mean Curvature Hypersurfaces*, **Proc. of the American Math. Soc.** 135, 10 (2007).
25. B. NELLI, M. SORET: *Stably Embedded Minimal Hypersurfaces*, **Math. Zeit.** 255 (2007)
26. B. NELLI, H. ROSENBERG: *Simply Connected Constant Mean Curvature Surfaces in $\mathbb{H}^2 \times \mathbb{R}$* , **Michigan Journal of Mathematics** 54, 3 (2006).
27. B. NELLI, H. ROSENBERG: *Global Properties of Constant Mean Curvature Surfaces in $\mathbb{H}^2 \times \mathbb{R}$* , **Pacific Journ. Math.** 226, N. 1 (2006).
28. B. NELLI, M. SORET: *The State of the Art of Bernstein's Problem*, **Matematica Contemporanea** vol. 29 (2005).
29. B. NELLI, H. ROSENBERG: *Minimal Surfaces in $\mathbb{H}^2 \times \mathbb{R}$* , **Bull. Bras. Math. Soc.** (33) 2, (2002) special issue for 50th of IMPA.
30. B. NELLI, B. SEMMLER: *On Hypersurfaces embedded in Euclidean Space with Positive Constant H_r Curvature*, **Indiana Univ. Math. Jour.** 50, (2), (2001).
31. B. NELLI: *On the structure of Scalar Curvature Type Graphs*, **It. Jour. of Pure and App. Math.** (2001)
32. B. NELLI, B. SEMMLER: *Some Remarks on H -Surfaces in a halfspace of $\mathbb{H}^n$* , **Jour. of Geom.** 64 (1999).
33. B. NELLI: *An Example of an Immersed Complete Genus One Minimal Surface in $\mathbb{R}^3$ with Two Convex Ends*, **Comm. Mat. Helv.** 73 (3), (1998).
34. M.E. GALVÃO, C. GÓES, B. NELLI: *A Weierstrass Type Representation for Surfaces in Hyperbolic Space with Mean Curvature One*, **An. Acad. Bra. Ci.** 70 (1), (1998).
35. NELLI, H. ROSENBERG: *Some Remarks on Positive Scalar and Gauss Kronecker Curvature Hypersurfaces of $\mathbb{R}^{n+1}$ and $\mathbb{H}^{n+1}$* , **Ann. de l'Inst. Fourier** (47) 4, 1997.

36. B. NELLI, J. SPRUCK: *On The Existence and Uniqueness of Constant Mean Curvature Hypersurfaces in Hyperbolic Space*, **Geometric analysis and the calculus of variations**, 253–266, Internat. Press, Cambridge (1996).
37. B. NELLI, H. ROSENBERG: *Some remarks on embedded hypersurfaces in hyperbolic space of constant mean curvature and spherical boundary*, **Ann. of Glob. Anal. and Geom.** (13) (1995)].
38. B. NELLI, R. SA EARP: *Some Properties of surfaces of prescribed mean curvature in $\mathbb{H}^{n+1}$* , **Bull. Soc. Math. de France** 6 (1996).
39. B. NELLI: *Polyhedral surfaces in $\mathbb{R}^3$ with minimality conditions*, **BUMI** (7) 9-B, (1995).

Other Publications

1. B. NELLI: *La curvatura di Gauss Positiva non ammette discontinuità isolate*, Vedere la matematica. . . alla maniera di Mimmo Luminati, Ed. ETS (2015).
2. B. NELLI: *On properties of constant mean curvature surfaces in $\mathbb{H}^2 \times \mathbb{R}$* , **Seminari di geometria 2005-2008, Bologna** (2009).
3. B. NELLI, M. SORET: *Stably Embedded Minimal Hypersurfaces*, **Trends in Mathematics**, Proceedings of Daewoo Workshops in Pure Mathematics, (5), 2, (2002).

INVITED TALKS (SINCE 2010)

Invited Seminar Talks at Academic Institutions

Since 2010, I have been invited to give more than 20 seminar talks at universities and research institutions worldwide, including in Italy, France, Spain, England, Greece, the USA, and Brazil.

Conference and Workshop Presentations

1. (Forthcoming) July 2026. Differential Geometry 2026: A Tribute to Francesco Mercuri, University of Cagliari: *Insights into the Stability of Constant Mean Curvature Hypersurfaces*.
2. March 2026. Workshop on Differential Geometry, Universidade Federal de Alagoas, Maceió: *On the Do Carmo Problem for Constant Mean Curvature Hypersurfaces*.
3. September 2025. Perspective in Geometric Analysis, Polytechnic University of Milan: *Special Weingarten surfaces with convex boundary*.
4. June 2025. INdAM workshop - Old and new trends in Mathematical collaboration between Brazil and Italy: *Special Weingarten surfaces with convex boundary*.
5. June 2025. Differential Geometry, Analysis and Epistemology in Milan - a conference in honor of Marco Rigoli's 70th birthday, University of Milan: *Special Weingarten surfaces with convex boundary*.
6. December 2024. Workshop to Celebrate 55 years of SBM, University of Campinas: *Special Weingarten surfaces with convex boundary*.
7. September 2024. Geometria in Bicocca 2024, University of Milano Bicocca: *Minimal surfaces with infinite boundary values in three-manifolds*.
8. August 2024. Bridging Borders International Geometric Analysis in São Paulo, São Paulo State University: *Minimal surfaces with infinite boundary values in three-manifolds*.

9. April 2024. València Geometrica, University of Valencia: *Minimal surfaces with infinite boundary values in three-manifolds*.
10. March 2024. Differential Geometry and Geometric Analysis, Federal University of Fortaleza: *The Jenkins-Serrin theorem in three-manifolds*.
11. February 2024. A Conference on classical differential geometry and integrable systems, Polytechnic University of Turin: *The Jenkins-Serrin theorem in three-manifolds*.
12. November 2023. Differential Geometry at Polytechnic University of Turin: *The Jenkins-Serrin theorem reloaded*.
13. August 2023. Three days between Analysis and Geometry in Trento, University of Trento: *The Jenkins-Serrin theorem reloaded*.
14. February 2023. *H*-workshop in Granada, University of Granada: *Hypersurfaces with constant higher order mean curvature*.
15. September 2022. Geometric Analysis at Granada, University of Granada: *The Topology of constant mean curvature surfaces with convex boundary*.
16. June 2022. A geometric analysis meeting at UniTo, University of Turin: *About a De Carmo's question on complete stable constant mean curvature hypersurfaces*.
17. August 2021. XXXIII Colóquio Brasileiro de Matemática **on-line**: *The topology of constant mean curvature surfaces with convex boundary*.
18. July 2021. Real and complex manifolds: the mathematical heritage of Edoardo Vesentini **on-line**, Scuola Normale Superiore Pisa: *The topology of constant mean curvature surfaces with convex boundary*.
19. June 2021. A Conference Mapping the Network of Lebanese Mathematics **on line**, Beirut American University: *The shape of soap films and bubbles*.
20. May 2021. Geometric Analysis in the Large **on line**, University of Sevilla: *Hypersurfaces with constant higher order mean curvature*.
21. February 2021: Workshop in Differential Geometry **on line**, Fluminense Federal University: *Hypersurfaces with constant higher order mean curvature*.
22. January 2020: Milano - Torino Geometry and Analysis seminar I, University of Milan: *Hypersurfaces with constant higher order mean curvature function*.
23. November 2019: Recent trends in Geometric analysis and applications, Scuola Normale Superiore, Pisa: *Hypersurfaces with constant higher order mean curvature function*.
24. September 2019. The Second joint IMU-INdAM Conference in Analysis, University of Naples: *The topology of constant mean curvature surfaces with convex boundary*.
25. September 2019. Geometric analysis, submanifolds, and geometry of PDE's, Polytechnic University of Turin: *The topology of constant mean curvature surfaces with convex boundary*.
26. September 2019. UMI Congress 2019, Pavia (Session on Topology and Differential Geometry): *Hypersurfaces with constant higher mean curvature*.
27. April 2019. LICMA 2019, University of Lebanon: *Hypersurfaces with constant higher mean curvature*.
28. October 2018. Géométrie Riemannienne et fonctions généralisées, University of Paris 7: *Hypersurfaces with constant higher mean curvature*.

29. February 2018. Humboldt Kolleg: at the confluence of analysis, geometry and modern mathematical physics, University of Lebanon: *The Shape of Soap films and Bubbles*.
30. February 2018. Workshop on Real and Complex Varieties: Geometry, Topology, and Harmonic Analysis, SNS, Pisa: *Minimal Surfaces in Heisenberg Space*.
31. April 2017. School of Mathematical Sciences, Queen Mary University of London. Geometric Analysis Day: *Minimal Surfaces in Heisenberg space*.
32. March 2017. Minimal Surface Integrable Systems and visualization: Spring 2017 workshop, University of Cork. *Minimal Surfaces in Heisenberg space*.
33. February 2017. France–Italy Meeting on Geometric Analysis, Ennio de Giorgi Research Center: *Non compact constant mean curvature surfaces*.
34. September 2016. Workshop on Riemannian and Complex Geometry, University of Parma: *Old and New Results on Constant Mean Curvature Surfaces*.
35. February 2016. Workshop on complex geometry and Hamiltonian actions, University of Parma: *Minimal surfaces in the Heisenberg space*.
36. December 2015. End of Year London Geometry Conference, King's College, London: *Minimal surfaces in Heisenberg Space*.
37. September, 2015. UMI Congress 2015, Siena (Session on Topology and Differential Geometry): *Superfici Minime nelle varietà omogenee di dimensione tre*.
38. August, 2014. 18th School of Differential Geometry, University of Brasília: *Minimal graphs in Heisenberg space*.
39. February, 2013. Workshop on Real and Complex Varieties: Geometry, Topology, and Harmonic Analysis, SNS, Pisa: *Superfici di curvatura media costante*.
40. July, 2012. International School in Differential Geometry - Universidad de Manaus: *Minimal Surfaces with two ends in $\mathbb{H}^2 \times \mathbb{R}$* .

TEACHING EXPERIENCE

Standard Academic Coursework

I started teaching in 1992 at the University of Pisa, conducting exercises for Geometry for Physics. Then, as an ATER at the University of Paris VII, I taught *travaux dirigés* for first-year Scientific DEUG (1995) and Mathematics for second-year Economic DEUG (1996). Since 1997, I have carried out almost all my teaching activities at the University of L'Aquila, mainly teaching mathematics students (both bachelor's and master's), with a particular focus on geometry. I have also taught students in Biology, Chemistry, and Physics. Moreover, I gave courses of Analysis II to Engineering students at Roma Tor Vergata (2002, 2003, 2009) and courses of Linear Algebra to Engineering students at Roma Sapienza (2008, 2009, 2011).

Invited Post-Graduate and PhD Teaching

1. February 2026. *The maximum Principle in riemannian manifolds*, PhD mini-course (5 hours) at the University of L'Aquila.
2. August 2025. *Geometry and Analysis of Minimal Surfaces* at International Centre of Theoretical Science (Bangalore, India). Mini-course (3 hours): Maximum Principle for Elliptic PDE and Geometric Applications.

3. April 2025. International Mathematics Master at the National Higher School of Mathematics, Algeria: *Geometry* (20 hours in a course of 60 hours)
<https://internationalmathematicsmaster.org/organizations-countries/algeria/>
4. July–August 2021 (online), International Mathematical School of the University of Perugia. Summer Course (24 hours + 12 hours of exercises): *Differential Geometry*.
5. July–August 2020 (online), International Mathematical School of the University of Perugia. Summer Course (24 hours + 12 hours of exercises): *Differential Geometry*.
6. January 2020. University of Lebanon, Beirut. Master course (15 hours): *Riemannian Geometry*.
7. January 2019. University of Lebanon, Beirut. Master course (15 hours): *Analytical methods applied to geometry*.
8. June 2016. PUC Rio de Janeiro. PhD Course (3 lectures): *Constant Mean curvature Hypersurfaces in $\mathbb{H}^n \times \mathbb{R}$* .

MENTORING EXPERIENCE

I have extensively served as an advisor for numerous Bachelor's and Master's theses, actively guiding students through their academic development and the successful completion of their degrees.

Since 2017, I have supervised four postdoctoral researchers at the University of L'Aquila: Marcos Paulo Tassi, Giovanni Russo, Vlad Moraru, and Giuseppe Pipoli.

I have supervised (co-supervisor J. Manzano) a PhD student at the University of L'Aquila: Andrea Del Prete (defended March 4, 2024).

Currently, I am supervising Claudia Pontuale and Angelo Benedetti, PhD students in Mathematics and Models at the University of L'Aquila (XV cycle, 2024–2027).

I have served as referee and/or member of the thesis commission for around 15 PhD theses in Italy, Spain, France, UK, India, Brazil.

SELECTED PROFESSIONAL SERVICE

International and National Service

- Member of the scientific board of the INdAM National Group for Geometric and Algebraic Structures, since September 2025.
- Co-founder (2022) of the European School of Differential Geometry, Vice-Chair of the Scientific Board since 2024 and main organizer of the upcoming edition at the University of L'Aquila (2026)
- Member of the External Committee of Institute of Mathematics of the University of Granada (IEMath-GR): <http://imag.ugr.es>.
- Member of the Evaluation Committee for the National Scientific Qualification (ASN) 2021, for the field of Algebra and Geometry (2021–2023).
- Member of Publication and Electronic Dissemination Committee of the European Mathematical Society (since 2021) and of the Women in Mathematics Committee of the European Mathematical Society (since 2025).
- (Elected) Vice President of the Italian Mathematical Union (June 2018– May 2021).

- Expert reviewer for the European Commission (HORIZON-MSCA-2020-ITN and HORIZON-MSCA-2022-DN projects) and various national European research agencies.

Institutional Service - University of L'Aquila

- Deputy Rector of the University of L' Aquila from October 2024 to September 2025.
- (Elected) President of the Bachelor's and Master degree in Mathematics of the University of L' Aquila from October 2017 to October 2023.

Conference and School Organization - last 15 years

- Organizing Committee of the European School of Differential Geometry 2026 in L' Aquila:
- Scientific Committee of the European School of Differential Geometry 2024 in Granada:
- Scientific and Organizing Committee of the Congress: Differential Geometry in L' Aquila (September 20th-22nd 2023)
- Organization of the special session "Geometry and Topology" at the XXII Congress of the Italian Mathematical Union, University of Pisa (September 4–8, 2023).
- Scientific Committee of the INdAM Workshop *Recent advances in the theory of submanifolds*, (Roma, September 4th-8th 2023)
- Chair of the Scientific Committee of the First UMI meeting for PhD students (Padova May 26th-27th, 2022).
- Scientific Committee of the Congress: Geometry in Castro (May 30th - June 3rd 2022).
- Organization of the workshop: A day to remember Aldo Biancofiore (L' Aquila, September 8th, 2017).
- Organization of the special session Geometric Analysis in First Joint Meeting Brazil - Italy in Mathematics (IMPA, August 29th - September 2nd, 2016).
- Organization of the Scientific Colloquia and Assembly of the Italian Mathematical Union (May 20, 2016, and May 19, 2017).
- Organizing Committee of NTDG 2014 (Villasimius, September 18th-20th, 2014)
- Organization of the special session Geometric Analysis in the First Joint International Meeting RSME-SCM-SEMA-SIMAI-UMI (Bilbao, June 30th - July 4th, 2014)
- Scientific and Organizing Committee of NTDG 2011 (L' Aquila, September 7th-9th, 2011):
- Scientific and Organizing Committee of RAGTS 2008 (Roma, May 28th-30th, 2008):

OUTREACH ACTIVITIES

- Coordinator (joint with 4 persons) of the Editorial Board of the public awareness web site Maddmaths! Site supported by UMI, SIMAI, AILA and AIRO (since 2017 to 2024)
<http://maddmaths.simai.eu>
- Coordinator of "May12" (Women in Mathematics) Initiatives: Organizer of the international May12 celebrating events from 2019 to 2024, encompassing both the local editions co-organized by the University of L' Aquila and GSSI, and the national events promoted by the Italian Mathematical Union (UMI) between 2020 and 2024. Details and event records can be found at the official international portal:
<https://may12.womeninmaths.org>.

- Organizer of the **on-line** event: Workshop on green Open Access, transformative agreements and planS (July 14th, 2020).
- Outreach and Diversity Talks: Invited speaker and panelist at several national and international events focused on gender equality in STEM and women in mathematics (2019–2021). These include talks and round tables at the American University of Beirut (Lebanon), the University of Pamplona (Colombia), the Polytechnic University of Marche, and the University of Camerino.