

Curriculum Vitae: **Barbara NELLI**

- Full Name: Barbara Nelli
- Citizenship: Italian
- Position: Full Professor
- Institution: Università degli Studi dell' Aquila
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LANGUAGES. Italian (native), English, French and Portuguese (fluent), Spanish (basic).

ACADEMIC APPOINTMENTS

- Current Position: since October 2017: Professore Ordinario di geometria MAT/03, Dipartimento di Ingegneria e Scienze dell'Informazione e Matematica, Università dell' Aquila.
- March, 2005 - September 2017: Professore Associato MAT/03, Dipartimento di Matematica Pura e Applicata (dal 2012 denominato di Ingegneria e Scienze dell'Informazione e Matematica), Università dell' Aquila.
- December, 1997- February, 2005. Ricercatore, Facoltà di SMFN, Università dell'Aquila.
- November, 1995 - February, 1997. ATER (attaché temporaire d'enseignement et recherche) at Université Paris VII.

EDUCATION (HIGHER DEGREES)

- PhD in Mathematics: 1995, Université Paris VII and Università di Pisa.
- Laurea in Matematica: 1990, Università di Pisa.

SELECTED ACADEMIC SERVICES

UNIVERSITY OF L'AQUILA

- (Elected) President of the *Corso di Laurea in Matematica* (Bachelor's and Master degree in Mathematics) of the University of L'Aquila from October 2017 to October 2023.
- Member of the *Collegio dei Docenti* of the Ph.D program Matematica e Modelli (previously Matematica), University of L'Aquila (since 2006).

NATIONAL AND INTERNATIONAL

- Member of the promoting Board of the European School of Differential Geometry and member of the Scientific Committee of the first edition in 2024 in Granada: <http://imag.ugr.es/esdg/>.
- Member of the External Committee of Istituto de Matematica de Granada: <http://imag.ugr.es>.

- Member of the Commissione giudicatrice per l' abilitazione scientifica nazionale 2021, ASN 2021, per il settore concorsuale geometria e algebra (since 2021).
- Member of Publication and Electronic Dissemination Committee of the European Mathematical Society (since 2021).
- Expert participating in the evaluation of Spanish State Research Agency (Ramon y Cajal and Juan de la Cierva) 2021.
- (Elected) Vice President of the Unione Matematica Italiana (June 2018- May 2021).
- Delegate of the Unione Matematica Italiana at the EMS Council on-line, July 4, 2020, in Prague, June 23-24, 2018, in Berlin, July 16-17, 2016.
- Expert participating in the evaluation of HORIZON-MSCA-2020-ITN projects and HORIZON-MSCA-2022-DN projects.
- Delegate for Italy at the 18th General Assembly of IMU, Sao Paulo, Brasil, July 29-30, 2018.
- (Elected) member of the Commissione Scientifica of the Unione Matematica Italiana (June 2015-May 2018).
- Coordinator (joint with 3 persons) of the Editorial Board of the public awareness web site Maddmaths! Site supported by UMI, SIMAI, AILA and AIRO (since 2017)
<http://maddmaths.simai.eu>

VISITING POSITIONS (SINCE 2010)

I held short term visiting positions (one or two weeks) in France, Brasil, England, Spain and Lebanon, around 15 times, since 2010. A list of long term visiting position is:

- June, 2016. PUC Rio de Janeiro (invited professor at PUC, one month).
- February, 2016. Universidad Granada (invited professor at Departamento de Geometria y Topologia, one month).
- November, 2015. Universidade Federal do Rio de Janeiro (invited Professor, one month).
- May, 2015. Université Tours (invited professor, one month).
- March-May, 2011. Université Tours (invited professor by CNRS, three months).
- June, 2010. Université Paris VII (invited professor by CNRS, one month).

DISTINGUISHED FELLOWSHIPS

- Mai - July, 2004. Poste Rouge CNRS: position at Université Paris VII, Paris.
- January, 1999 - February, 2000. Post-doctorate fellowship of Humboldt foundation at Technische Universität Berlin.

MAIN FUNDING INFORMATION

- Local Coordinator at the University of L' Aquila of PRIN 2022: Real and Complex Manifolds: Geometry and Holomorphic Dynamics (PI: Filippo Bracci).

- Local Coordinator (replacing E. Musso) at the University of L' Aquila of PRIN 2007: Sotto-varietà, strutture speciali e geometria asintotica (PI: Simon Salamon).
- INdAM funds for organizing workshops, supporting visiting professor and for dissemination activities.
- Participation to many PRIN projects since 1998.

CONGRESS (ORGANIZATION, LAST 15 YEARS)

- Scientific Committee of the European School of Differential Geometry 2024 in Granada: <http://imag.ugr.es/esdg/>.
- Scientific and Organizing Committee of the Congress: Differential Geometry in L' Aquila (September 20th-22nd 2023)
- Organization (joint with Bruno Martelli, University of Pisa) of the special session Geometria a Topologia of the XXII Congresso dell' Unione Matematica Italiana, University of Pisa (September 4th-8th 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).
- Member of the Scientific Committee of the Congress: Geometry in Castro (June 1st-5th 2020 **postponed to May 30th-June 4th 2021, finally held on June 2022**).
- Organizer (joint with Maria Lucia Fania) of the workshop: A day to remember Aldo Biancofiore (September 8th, 2017).
- Organization (joint with Maria Fernanda Elbert, UFRJ) of the special session Geometric Analysis in First Joint Meeting Brazil - Italy in Mathematics (IMPA, August 29th - September 2nd, 2016).
- Organization (joint with Adriana Garroni and Gianluca Vinti) of the Colloqui Scientifici e Assemblea dell'UMI (May, 20th, 2016 and May, 19th, 2017).
- Member of the organizing committee of NTDG 2014 (Villasimius, September 18th-20th, 2014)
- Organization (joint with Magdalena Rodriguez, Universidad Granada) of the special session Geometric Analysis in the First Joint International Meeting RSME-SCM-SEMA-SIMAI-UMI (Bilbao, June 30th - July 4th, 2014)
- Member of the scientific and organizing committee of NTDG 2011 (L'Aquila, September 7th-9th, 2011):
- Member of the scientific and organizing committee of RAGTS 2008 (Roma, May 28th-30th, 2008):

DOCTORAL AND POST-DOCTORAL TRAINING

Since 2017, I have been the supervisor of 4 two-years ASSEGNISTI DI RICERCA (postdoctoral position) at University of L'Aquila. Post-doc: Marcos Paulo Tassi, Giovanni Russo, Vlad Moraru, Giuseppe Pipoli.

I am currently the supervisor (joint with J. Manzano) of a PhD student at the University of L'Aquila: Andrea Del Prete (defense expected in March 2024).

I have been referee and/or member of the Thesis Commission of around 15 PhD Thesis in Italy, Spain, France, England and Brasil.

INVITED TALKS (SINCE 2010)

I have been invited to give talks at several Universities in Italy, France, Spain, England and Brasil (around 20 talks since 2010). Moreover I was invited to give a talk to the following conferences:

1. March 2024. Differential Geometry and Geometric Analysis, Fortaleza, Brasil: TBA.
2. February 2024. A Conference on classical differential geometry and integrable systems, Polito: TBA.
3. November 2023. Differential Geometry at Polito: The Jenkins-Serrin theorem reloaded.
4. August 2023. Three days between Analysis and Geometry in Trento: The Jenkins-Serrin theorem reloaded.
5. February 2023. H -workshop in Granada: Hypersurfaces with constant higher order mean curvature.
6. September 2022. Geometric Analysis at Granada: The Topology of constant mean curvature surfaces with convex boundary.
7. June 2022. A geometric analysis meeting at UniTo: About a Do Carmo's question on complete stable constant mean curvature hypersurfaces.
8. August 2021. XXXIII Coloquio Brasileiro de Matematica **on-line**: The topology of constant mean curvature surfaces with convex boundary.
9. July 2021. SNS Pisa: Real and complex manifolds: the mathematical heritage of Edoardo Vesentini **on-line**: The topology of constant mean curvature surfaces with convex boundary.
10. June 2021. Beirut American University: A Conference Mapping the Network of Lebanese Mathematics **on line**: The shape of soap films and bubbles.
11. May 2021. University of Sevilla: Geometric Analysis in the Large **on line**: Hypersurfaces with constant higher order mean curvature.
12. February 2021: Universidade Federal Fluminense (Niteroi): Workshop in Differential Geometry **on line**: Hypersurfaces with constant higher order mean curvature.
13. January 2020: Milano - Torino Geometry and Analysis seminar I, University of Milan: Hypersurfaces with constant higher order mean curvature function.
14. November 2019: Recent trends in Geometric analysis and applications, SNS, Pisa: Hypersurfaces with constant higher order mean curvature function.

15. September 2019. The Second joint IMU-INdAM Conference in Analysis, Napoli: The topology of constant mean curvature surfaces with convex boundary.
16. September 2019. Geometric analysis, submanifolds, and geometry of PDE's, Politecnico di Torino: The topology of constant mean curvature surfaces with convex boundary.
17. September 2019. Congresso UMI 2019, Pavia (sessione topologia e geometria differenziale): Hypersurfaces with constant higher mean curvature.
18. April 2019. LICMA 2019, Université Libanaise: Hypersurfaces with constant higher mean curvature.
19. October 2018. Géométrie Riemannienne et fonctions généralisées, Université Paris Diderot (Paris 7): Hypersurfaces with constant higher mean curvature.
20. February 2018. Humboldt Kolleg: at the confluence of analysis, geometry and modern mathematical physics: The Shape of Soap films and Bubbles.
21. February 2018. Workshop su varietà reali e complesse: geometria, topologia e analisi armonica, SNS, Pisa: Minimal Surfaces in Heisenberg space.
22. April 2017. School of Mathematical Sciences, Queen Mary University of London. Geometric Analysis Day: Minimal Surfaces in Heisenberg space.
23. March 2017. University of Cork. Minimal Surface Integrable Systems and visualization: Spring 2017 workshop: Minimal Surfaces in Heisenberg space.
24. February 2017. Centro di Ricerca Ennio de Giorgi, France-Italy meeting in Geometric Analysis: Non compact constant mean curvature surfaces.
25. September 2016. Università di Parma: Workshop on Riemannian and Complex Geometry: Old and New Results on Constant Mean Curvature Surfaces.
26. February 2016. Workshop on complex geometry and Hamiltonian actions, Università di Parma: Minimal surfaces in the Heisenberg space.
27. December 2015. End of Year London Geometry Conference, King's College, London: Minimal surfaces in Heisenberg Space.
28. September, 2015. Congresso UMI 2015 (geometry session): Superfici Minime nelle varietà omogenee di dimensione tre.
29. August, 2014. XVIII escola de geometria diferencial, Brasilia: Minimal graphs in Heisenberg space.
30. February, 2013. Workshop su varietà reali e complesse: geometria, topologia e analisi armonica, SNS, Pisa: Superfici di curvatura media costante.
31. July, 2012. International School in Differential Geometry - Universidad de Manaus: Minimal Surfaces with two ends in $\mathbb{H}^2 \times \mathbb{R}$.
32. December, 2011. Universidad Granada: Jornada de Geometria: Minimal Surfaces with two ends in $\mathbb{H}^2 \times \mathbb{R}$.

MASTER AND PHD COURSES AT ITALIAN AND FOREIGN INSTITUTIONS

1. July-August 2021 (on-line). Scuola Matematica Universitaria, Perugia. Summer Course (24 hours +12 exercises): Differential geometry.
2. July-August 2020 (on-line). Scuola Matematica Universitaria, Perugia. Summer Course (24 hours +12 exercises): Differential geometry.
3. January 2020. Université Libanaise, Beirut. Master course (15 hours): Riemannian Geometry.
4. January 2019. Université Libanaise, Beirut. Master course (15 hours): Analytical methods applied to geometry.
5. June 2016. PUC Rio de Janeiro. PhD Course (3 lectures): Constant Mean curvature Hypersurfaces in $\mathbb{H}^n \times \mathbb{R}$.

PAPERS TO BE PUBLISHED

1. B. NELLI, G. PIPOLI, G. RUSSO: *On constant higher order mean curvature hypersurfaces in $\mathbb{H}^n \times \mathbb{R}$* , arXiv:2304.00349 [math.DG] (2023) **accepted** for publication in **Advanced Nonlinear Studies**.
2. B. NELLI, J. ZHU: *Uniqueness of hypersurfaces of higher order mean curvature in hyperbolic space*, arXiv:2008.11018 [math.DG] (2020), **accepted** for publication in **Communications in Analysis and Geometry**.

PUBLISHED PAPERS

1. 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 Matematica Iberoamericana**, 39, 4 (2023).
2. S. ILIAS, B. NELLI, M. SORET: *A Note on Constant Mean Curvature Foliations of Non-compact Riemannian Manifolds*, **International Journal of Mathematics and Mathematical Sciences** Volume 2022 (2022).
3. 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).
4. 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).
5. 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).
6. 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).
7. M.F. ELBERT, B. NELLI, W. SANTOS: *Hypersurfaces with $H_{\tau+1} = 0$ in $\mathbb{H}^n \times \mathbb{R}$* , **Manuscripta Mathematica** 149 (2016).
8. S. ILIAS, B. NELLI, M. SORET: *On the entropy of hypersurfaces with bounded curvature*, **Mathematische Annalen** 364 (2016).
9. 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).

10. 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).
11. S. ILIAS, B. NELLI, M. SORET: *Caccioppoli's inequalities for cmc-hypersurfaces in Riemannian Manifolds*, **Ann. of Global Analysis and Geom.** 42, 4 (2012).
12. 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).
13. 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).
14. B. NELLI: *On properties of constant mean curvature surfaces in $\mathbb{H}^2 \times \mathbb{R}$* , **Seminari di geometria 2005-2008, Bologna** (2009).
15. B. NELLI: *A Survey on Alexandrov-Bernstein-Hopf Theorems* **Matematica Contemporanea** vol. 35 (2008).
16. 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).
17. 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).
18. M.F. ELBERT, B. NELLI, H. ROSENBERG: *Stable Constant Mean Curvature Hypercurves*, **Proc. of the American Math. Soc.** 135, 10 (2007).
19. B. NELLI, M. SORET: *Stably Embedded Minimal Hypersurfaces*, **Math. Zeit.** 255 (2007)
20. B. NELLI, H. ROSENBERG: *Simply Connected Constant Mean Curvature Surfaces in $\mathbb{H}^2 \times \mathbb{R}$* , **Michigan Journal of Mathematics** 54, 3 (2006).
21. 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).
22. B. NELLI, M. SORET: *The State of the Art of Bernstein's Problem*, **Matematica Contemporanea** vol. 29 (2005).
23. 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.
24. B. NELLI, M. SORET: *Stably Embedded Minimal Hypersurfaces*, **Trends in Mathematics**, Proceedings of Daewoo Workshops in Pure Mathematics, (5), 2, (2002).
25. B. NELLI, B. SEMMLER: *On Hypersurfaces embedded in Euclidean Space with Positive Constant H_r Curvature*, **Indiana Univ. Math. Jour.** 50, (2), (2001).
26. B. NELLI: *On the structure of Scalar Curvature Type Graphs*, **It. Jour. of Pure and App. Math.** (2001)
27. B. NELLI, B. SEMMLER: *Some Remarks on H -Surfaces in a halfspace of \mathbb{H}^n* , **Jour. of Geom.** 64 (1999).
28. 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).

29. 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).
30. 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.
31. 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).
32. 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)].
33. 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).
34. 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).

TEACHING EXPERIENCE

Over the years I have been the advisor of many Bachelor's and Master's theses.

I started teaching in 1992 at the University of Pisa doing exercises for Geometria for Physics. Then, as ATER in Paris VII, I taught *travaux dirigés* for Scientific DEUG first year (1995). Mathématiques for Economic DEUG second year (1996). Since 1997 I did almost all my teaching activities at the University of L'Aquila, teaching mainly to students of Mathematics (both bachelor and master), not only, but especially geometry. I also taught to students in Biology, Chemistry and Phisycs. Moreover, I gave three courses of Analisi 2 to students in Engineering in Roma Tor Vergata (2002, 2003, 2009) and three courses of Linear algebra to students in Engineering in Roma Sapienza (2008, 2009, 2011).

OUTREACH ACTIVITIES AND TALKS

- Organizer of the event May12 UMI from 2020 to 2023.
- Organizer of the event May12 at the University of L'Aquila: UMI-UNIVAQ Lo sguardo di Mirzakhani (May, 9th, 2022).
- Organizer of the **on-line** event May12 at the University of L'Aquila: Indovina chi viene stasera? in honour to Maryam Mirzakhani – stop-over in L'Aquila (June 3, 2021).
- Speaker at Beirut American University: A Conference Mapping the Network of Lebanese Mathematics **on line**. *Women in mathematics* (June 2021).
- Organizer of the **on-line** event May12: UMI, festa delle donne matematiche 2021 (May 21st, 2021)
- Participant to the round table *Encuentro de Mujeres Matematicas*, Universidad de Pamplona (Colombia) **on line** (May 2021).

- Organizer of the **on-line** event: Workshop on green Open Access, transformative agreements and planS (July 14th, 2020)
- Organizer of the **on-line** event May12 at the University of L'Aquila: Journey of Women in Mathematics, in honour to Maryam Mirzakhani – stop-over in L'Aquila (May 12th, 2020).
- Organizer of the **on-line** event May12: UMI, festa delle donne matematiche 2020 (May 27th, 2020).
- Speaker at Università Politecnica delle Marche **on-line**. *Le dimensioni della disuguaglianza di genere nelle STEM* (May 2020).
- Speaker at Università di Camerino: Donne per la matematica. *Uno sguardo oltre la superficie*. (May 2019).
- Organizer of the event May12 at the University of L'Aquila: Journeys of Women in Mathematics (May 9th, 2019).