

Pieralberto Sicbaldi's Curriculum Vitae

Institutional address:

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CAREERS

since 2021: **Profesor Titular de Universidad**, University of Granada (Spain).

2020-2021: **Profesor Contratado Doctor**, University of Granada (Spain).

2017-2020: **Researcher “Ramón y Cajal”**, University of Granada (Spain).

since 2010: **Maître de Conférences**, University of Aix-Marseille (France). Member of the **Institut de Mathématiques de Marseille**. On leave from March 2017 till February 2027 at the University of Granada.

2009-2010: **ATER (Research and Teaching Assistant)**, University Paris Est (France)

2006-2009: **Ph.D in Mathematics** (Fellowship of the « Ministère de l'Enseignement Supérieur et de la Recherche » - Graduate Teaching Assistant), University Paris Est.

STUDIES

- **Titulo Superior de Dirección de Orquesta (Graduate Diploma in Music Studies, Speciality: Conducting)**, Conservatorio Superior de Música de Málaga, 2020.
- **Doctorat en Mathématiques (Ph.D in Mathematics)**, University Paris Est, 2009.
- **Licenza del Collegio Superiore di Bologna (Superior Graduate School for interdisciplinary studies)**, Bologna (Italy), 2006.
- **Laurea Specialistica in Matematica (Master in Mathematics)**, University of Bologna, 2006.
- **Diploma di Pianoforte (Graduate and Master diploma in Music Studies, Speciality: Piano)**, Istituto Superiore di Studi Musicali of Lucca (Italy), 2006.
- **Master en Mathématiques fondamentales (Master in Fundamental Mathematics)**, University Paris 7 (France), 2006.
- **Compimento inferiore di Composizione** (1st cycle Diploma in Music Studies, Speciality : Composition), Conservatorio Statale di Musica of Alessandria (Italy), 2005.
- **Laurea in Matematica (Graduate in Mathematics)**, University of Bologna, 2004.

PRIZES, AWARDS AND HABILITATIONS

- **Borsista** of the **Istituto Nazionale di Alta Matematica** (National Institut of Higher Mathematics), Rome (Italy), 2001-2004, range 2.
- **Laureate** of the **Ph.D Prize** of the **Conséil Général du Val de Marne**, **First Prize** for the year **2009**.
- **French habilitation** for the position of **Maître de Conférences** in **Mathematics** and **Applied Mathematics**, CNU (France), 2010.

- **Prime d'Excellence Scientifique (Prime for Scientific Excellence)**, 2012 – 2016.
- **Délégations CNRS** for the academic years 2013/2014 and 2014/2015.
- **Spanish habilitation** for the position of *Profesor Titular de Universidad*, ANECA (Spain), 2014.

PH.D THESIS (written in French and English)

- P. Sicbaldi, **Domaines extrémaux pour la première valeur propre de l'opérateur de Laplace-Beltrami**, Ph.D of the University Paris Est, 2009.

SCIENTIFIC PAPERS

1. F. Pacard and P. Sicbaldi, **Extremal domains for the first eigenvalue of the Laplace-Beltrami operator**, *Annales de l'Institut Fourier*, Vol. 59 n. 2 (2009), 515-542.
2. P. Sicbaldi, **New extremal domains for the first eigenvalue of the Laplacian in flat tori**, *Calculus of Variations and Partial Differential Equations*, Vol. 37 n. 3-4 (2010), 329-344.
3. F. Schlenk and P. Sicbaldi, **Bifurcating extremal domains for the first eigenvalue of the Laplacian**, *Advances in Mathematics*, Vol. 229 n. 1 (2012), 602-632.
4. A. Ros and P. Sicbaldi, **Geometry and topology of some overdetermined elliptic problems**, *Journal of Differential Equations*, Vol. 255 n. 5 (2013), 951-977.
5. P. Sicbaldi, **Extremal domains of big volume for the first eigenvalue of the Laplace-Beltrami operator in a compact manifold**, *Annales de l'Institut Henri Poincaré (C) Analyse non linéaire*, Vol. 31 n. 6 (2014), 1231-1265.
6. J. Lamboley and P. Sicbaldi, **New extremal domains for the first eigenvalue of the Laplace-Beltrami operator in a Riemannian manifold with boundary**, *International Mathematics Research Notices* 2015, n. 18, 8752-8798.
7. E. Delay and P. Sicbaldi, **Extremal domains for the first eigenvalue in a general Riemannian manifold**, *Discrete and Continuous Dynamical Systems, Series A*, Vol 35 n. 12 (2015), 5799-5825.
8. F. Morabito and P. Sicbaldi, **Delaunay type domains for an overdetermined elliptic problem in $S^n \times \mathbb{R}$ and $H^n \times \mathbb{R}$** , *ESAIM: Control, Optimisation and Calculus of Variations*, Vol 22 n. 1 (2016), 1-28.
9. A. Ros, D. Ruíz and P. Sicbaldi, **A rigidity result for overdetermined elliptic problems in the plane**, *Communications on Pure and Applied Mathematics*, Vol. 70 (2017), 1223-1252.
10. A. Ros, D. Ruíz and P. Sicbaldi, **Solutions to overdetermined elliptic problems in nontrivial exterior domains**, *Journal of the European Mathematical Society*, Vol. 22 n. 1 (2020), 253-281.
11. J. Lamboley and P. Sicbaldi, **Existence and regularity of Faber-Krahn minimizers in a Riemannian manifold**, *Journal de Mathématiques Pures et Appliquées*. Vol. 141 n. 1 (2020), 137 - 183.
12. F. Hamel, Y. Liu, P. Sicbaldi, K. Wang and J. Wei, **Half-space theorems for the Allen-Cahn equation and related problems**, *Journal für die Reine und Angewandte Mathematik*. Vol. 770 n. 1 (2021), 113 - 133.
13. P. Sicbaldi, **A short survey on overdetermined elliptic problems in unbounded domains**, *Proceedings of the 12th ISAAC Congress*, Aveiro, Portugal, 2019. Birkhauser 2022, 451-461.
14. D. Ruiz, P. Sicbaldi, J. Wu, **Overdetermined elliptic problem in onduloid-type domains with general nonlinearities**, *Journal of Functional Analysis*, Vol. 283 n. 12 (2022).

15. D. Ruiz, P. Sicbaldi, J. Wu, **Overdetermined elliptic problems in nontrivial contractible domains of the sphere**, *Journal de Mathématiques pures et appliquées*, Vol. 180 (2023), 151-187.
16. G. Dai, F. Morabito, P. Sicbaldi, **A smooth 1-parameter family of Delaunay-type domains for an overdetermined elliptic problem in $S^n \times \mathbb{R}$ and $H^n \times \mathbb{R}$** , *Potential Analysis*, Vol. 60 (2024), 1407-1420.
17. D. Ruiz, P. Sicbaldi, J. Wu, **Modica type estimates and curvature results for overdetermined elliptic problems**, *Communications in Contemporary Mathematics*, to appear.
18. A. Enciso, A. J. Fernández, D. Ruiz, P. Sicbaldi, **A Schiffer type problem in annuli and applications to Euler flows**, *Duke Mathematical Journal*, to appear.
19. G. Dai, F. Morabito, P. Sicbaldi, **Bifurcation domains for the Serrin's overdetermined problem in $S^n \times \mathbb{R}$ and $H^n \times \mathbb{R}$** , *preprint*.
20. G. Dai, P. Sicbaldi, Y. Zhang, **Overdetermined elliptic problems in exterior domains of the hyperbolic space**, *preprint*.
21. F. Pacella, D. Ruiz, P. Sicbaldi, **Nontrivial solutions to the relative overdetermined torsion problem in the cylinder**, *preprint*.

CONFERENCES, WORKSHOPS AND SEMINARS

Invited speaker at the following Conferences/Workshops/Schools

- “Mostly maximum principle”, Rio de Janeiro (Brasil), June 2024.
- “The 4th International Conference on Surfaces, Analysis, and Numerics in Differential Geometry”, Takamatsu (Japan), February 2024.
- “Recent trends in nonlinear and geometric analysis”, New York (United States), April 2023.
- “Qualitative and quantitative aspects of nonlinear PDEs”, Bari (Italy), September 2022.
- “Geometric Analysis”, Cagliari (Italy), June 2022.
- “Mostly maximum principle”, Cortona (Italy), May 2022.
- V Congreso de Jovenes Investigadores de la RSME, January 2020.
- International Congress on Geometric Analysis at UCA, October 2019.
- “12th International ISAAC Congress”, Aveiro (Portugal), July 2019.
- “1st Joint Meeting Brazil-France in Mathematics”, Rio de Janeiro (Brazil), July 2019.
- “IX Workshop on Differential Geometry”, Maceió (Brazil), March 2019.
- “Variational approach to PDEs”, Roma (Italy), March 2019.
- “Nonlinear analysis and PDEs”, Caserta (Italy), September 2018.
- “2nd Italian-Chilean Workshop in PDE's”, Roma (Italy), January 2018.
- “Emerging issues in nonlinear elliptic equations: singularities, singular perturbations and non local problems”, Bedlewo (Poland), June 2017
- “James Serrin: from his legacy to the new frontiers”, Perugia (Italy), January 2017.
- “Geometric aspect on capillary problems and related topics”, Granada (Spain), December 2015.
- “Mostly maximum principle”, Agropoli (Italy), September 2015.
- “Minimal surfaces, overdetermined problems and geometric analysis”, Santiago del Chile, (Chile), April 2015. Invited to give a mini-course.
- “Geometric Analysis”, Nice (France), June 2014.

- “I International congress of educational sciences and development”, Santander (Spain), October 2013.
- “Taller de jóvenes investigadores de la REAG”, Granada (Spain), October 2013.
- “Congreso de jóvenes investigadores” de la Real Sociedad Matemática Española, Sevilla (Spain), September 2013.
- “Geometric analysis seminar”, Valencia (Spain), September 2013.
- “Geometric analysis”, Marseille (France), September 2012.
- “Geometric analysis”, Domaine de Seillac (France), September 2012.
- “Shape optimization and spectral theory”, Marseille (France), May 2012.
- “Geometric analysis of optimal shapes”, Rennes (France), March 2012.
- “Singular reaction-diffusion equations”, Louvain-la-neuve (Belgium), June 2011.
- “Surface theory”, Sevilla (Spain), April 2011.
- “Algebraic, geometric and analytic aspects of surface theory”, Búzios (Brazil), April 2010.
- “Differential geometry”, Nancy (France), January 2010.

Invited seminars in the following Mathematics Research Centers:

- University of Roma Sapienza (United Kingdom),
- University of Waewick (United Kingdom),
- University of Bologna (Italy),
- University of Hannover (Germany),
- King's College of London (United Kingdom),
- University of Aix-Marseille (France)
- University of Picardie (France),
- University of Nice (France),
- University of Grenoble (France),
- University of Nantes (France),
- University of Neuchâtel (Switzerland),
- University of Granada (Spain),
- University of Paris 6 and 7 (France)
- University of Rome “Tor Vergata” (Italy),
- University of Freiburg (Germany),
- University of Tours (France).

RESEARCH PROJECTS

- Member of the National Research Project “**Phénomènes de concentration en analyse géométrique**”, ANR-08-BLAN-0335, 2009-2012, *Agence Nationale de la Recherche, Projet Blanc* (France). IP: Frank Pacard.
- Principal investigator of the Research Project “**Applied Analysis**”, 2011-2016, *CNRS, Fédération de recherche des Unités de Mathématiques de Marseille* (France).
- Member of the **International Scientific Coordination Network of Geometric Analysis** (France-Spain), 2011-2015, *CNRS, Groupement de Recherche Européen*. IP: Pascal Romon.
- Member of the Research Project “**Surfaces**” (France-Brazil), ANR-11-IS01-0002, 2012-2015, *Agence Nationale de la Recherche, Projets blanc international* (France-Brazil). IP: Laurent Hauswirth.
- Member of the Research Project “**Análisis geométrico**” MTM2014-52368-P, 2015-2018, *Ministerio de Economía y Competitividad, Proyectos Plan Nacional* (Spain). IP: Joaquín Pérez Muñoz.

- Principal investigator of the Research Project “**Overdetermined elliptic problems**”, RYC-2015-18730, 2017-2021, *Ministerio de Economía y Competitividad, Ayudas Ramón y Cajal* (Spain).
- Member of the **Institute of Mathematics of Granada IE-Math-GR**, since 2017.
- Member of the Research Project “**Análisis geométrico**” MTM2017-89677-P, 2018-2020, *Ministerio de Economía y Competitividad, Proyectos Plan Nacional* (Spain), IPs: Joaquín Pérez Muñoz and Antonio Alarcón López
- Member of the Research Project “**Problemas variacionales y EDPs elípticas en geometría**” A-FQM-139-UGR18, 2020-2022, *Junta de Andalucía, Proyectos Feder* (Spain). IPs: José Antonio Gálvez and Magdalena Rodríguez.
- Member of the Research Project “**Superficies e análisis geométrico**” P18-FR-4049, 2020-2022, *Junta de Andalucía, Proyectos de Excelencia* (Spain). IPs: Antonio Ros and Joaquín Pérez.
- Member of the Research Project “**Análisis geométrico**” PID2020-117868GB-I00, 2021-2024, *Ministerio de Economía y Competitividad, Proyectos Plan Nacional* (Spain), IPs: Joaquín Pérez Muñoz and Antonio Alarcón López.
- Member of the “**Maria de Maeztu**” Excellence Unit **IMAG (Granada)**, reference CEX2020-001105-M, 2022-2025, *Ministerio de Ciencias e Innovación* (Spain), Scientific Director: Joaquín Pérez Muñoz.
- Member of the Research Project “**Análisis geométrico**” PID2023-150727NB-I00, 2024-2028, *Ministerio de Economía y Competitividad, Proyectos Plan Nacional* (Spain), IPs: Joaquín Pérez Muñoz and Antonio Alarcón López.

PhD SUPERVISIONS

- 2019 – 2023: PhD Advisor of Jing Wu, University of Granada. Title of the thesis: Overdetermined elliptic problems: bifurcation of solutions and Modica type estimates. Codirection with D. Ruiz (University of Granada).
- 2023 – present: PhD of Lianlian Yuan. University of Granada. Title of the thesis: Overdetermined elliptic problems.

RESEARCH STAYS

- University of Neuchâtel (Switzerland) April and June 2010.
- University of Granada (Spain), January 2013 – June 2013 (Stay in collaboration with the European Research Group of Geometric Analysis).
- University of Granada, January 2014 to June 2014 (Délégation CNRS).
- University of Granada, September 2014 to December 2014 (Délégation CNRS).
- University of Cagliari, Visiting Professor, June 2022.

TEACHING

A total of about **2400 Hours** of teaching from 2006 to 2023 in the Universities París-Est, Aix-Marseille and Granada. **Complete lectures of:**

- **Linear Algebra** (for the Bachelor's degrees in Mathematics, Physics, Computer Science and Engineering)
- **Discrete Mathematics** (Graph Theory, Number Theory and Cryptography, for the Bachelor's degrees in Mathematics and Computer Science)
- **Mathematical Analysis** (for all the levels of the Bachelor's degrees in Mathematics, Physics, Computer Science and Engineering)
- **Topology** (for the Bachelor's degree in Mathematics)

- **Mathematical tools** (for the first year of the Bachelor's degrees in Biology, Natural Sciences and Optics)
- **Partial Differential Equations** (for the Master in Engineering)
- **Non-linear Analysis and Partial Differential Equations** (for the Master in Mathematics)

SPOKEN LANGUAGES

- **Italian** (native)
- **French** (fluent)
- **English** (fluent)
- **Spanish** (fluent)