

# MARIA GIOVANNA MORA

## EDUCATION

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**International School of Advanced Studies – SISSA**, Ph.D. in Mathematics (2001); thesis “*The calibration method for free-discontinuity problems on small domains*”, advisor Prof. Gianni Dal Maso

**Università di Parma**, Degree in Mathematics *summa cum laude* (1997)

## EMPLOYMENT AND OTHER PROFESSIONAL ROLES

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**Università di Pavia, Department of Mathematics** 2020 – present  
*Full Professor of Mathematical Analysis*

**Università di Pavia, Department of Mathematics** 2012 – 2019  
*Associate Professor of Mathematical Analysis*

**SISSA, Functional Analysis Sector** 2004 – 2011  
*Assistant Professor (with tenure) of Mathematical Analysis*

**Institute for Mathematics and its Applications, Minneapolis** Fall semester 2007  
*Visiting Professor in the framework of the Thematic Year on Mathematics of Molecular and Cellular Biology*

**Max-Planck Institute for Mathematics in the Sciences, Leipzig** 2001 – 2003  
*Post-doctoral fellow*

- Research interests: Calculus of variations, Free-discontinuity problems, Mathematical theory of elasticity, Plasticity, Quasistatic evolution problems, Dislocation theory, Nonlocal interaction problems
- Long-term invitations for scientific collaboration: Max-Planck Institute for Mathematics in the Sciences, Leipzig, Germany (2005, 2006, 2007); Carnegie Mellon University, Pittsburgh, USA (2008, 2010, 2012, 2016, 2017); Université de Paris Nord, France (2009); Courant Institute, New York University, USA (2009); Université de Paris 6, France (2011, 2018); Universidad Autonoma de Madrid, Spain (2012); SISSA, Trieste, Italy (2013, 2014, 2015, 2016); University of Bath, UK (2016, 2017, 2018); Universitat Autònoma de Barcelona, Spain (2018); Université Paris Saclay, France (2022); Hebrew University of Jerusalem, Israel (2023).
- Semi-plenary speaker (invited 40min talk) at the XXI Congresso dell’Unione Matematica Italiana, Pavia, 2–7 September 2019
- Plenary speaker at the Second Joint SIAM/CAIMS Annual Meeting – AN20, virtual conference originally scheduled in Toronto (Canada), 6–17 July 2020
- Plenary speaker at the SIAM Conference on Mathematical Aspects of Materials Science – MS20, virtual conference originally scheduled in Bilbao (Spain), 17–27 May 2021
- Lecturer at the Summer School on Analysis and Applied Mathematics, Münster (Germany), 12–16 September 2022
- Lecturer at the Hausdorff School “Analysis of PDEs: Variational and Geometric Perspectives”, Bonn (Germany), 10–14 July 2023
- Plenary speaker at the 94th GAMM Annual Meeting, Magdeburg (Germany), 18–22 March 2024
- More than 90 invited talks at conferences (plenary) and research institutes
- PI of the Blue Sky Research Project *Plasticity at different scales: micro to macro*, awarded by the Università di Pavia, 2017–2019 (60,000 Euro). This is an individual grant based on a peer-review evaluation and awarded to 5 scientists working at the Università di Pavia in the area of Science and Technology.

- Local unit coordinator of the PRIN 2017 Project *Variational methods for stationary and evolution problems with singularities and interfaces* awarded by the Italian Ministry of University and Research, 2019–2023
- Recipient of FFABR grant 2017. This is an individual grant awarded to the best 25% of Italian Associate Professors.
- Recipient, together with Cy Maor (Hebrew University), of the Vigevani Research Project Prize 2022, awarded by the Vigevani Foundation
- Local unit coordinator of the PRIN 2022 Project *Variational methods for stationary and evolution problems with singularities and interfaces*, awarded by the Italian Ministry of University and Research, 2023–2025
- Member of the Academic Board of the Ph.D. School in Mathematics of the Università di Pavia, 2013–present
- Member of the Academic Board of the Ph.D. School in Mathematics of SISSA, 2004–2011
- Mentor of 2 postdoc, advisor of 3 Ph.D. students and 11 Master students, co-advisor of 1 Ph.D. student and 1 Master student
- More than 20 years experience in teaching graduate courses on active research topics in the area of Calculus of Variations and Partial Differential Equations (Mathematical Theory of Elasticity, Gamma-convergence, Homogenization, Geometric Measure Theory and BV Functions, Mathematical Theory of Plasticity)

## LIST OF PUBLICATIONS 2018–2023

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1. G.A. Francfort, M.G. Mora: Quasistatic evolution in non-associative plasticity revisited. *Calc. Var. Partial Differential Equations* **57** (2018), art. 11.
2. J.-F. Babadjian, M.G. Mora: Stress regularity in quasi-static perfect plasticity with a pressure dependent yield criterion. *J. Differential Equations* **264** (2018), 5109–5151.
3. G.B. Maggiani, M.G. Mora: Quasistatic evolution of perfectly plastic shallow shells: a rigorous variational derivation. *Ann. Mat. Pura Appl.* **197** (2018), 775–815.
4. M.G. Mora, L. Rondi, L. Scardia: The equilibrium measure for a nonlocal dislocation energy. *Comm. Pure Appl. Math.* **72** (2019), 136–158.
5. I. Fonseca, G. Leoni, M.G. Mora: A second order minimality condition for a free-boundary problem. *Ann. Sc. Norm. Super. Pisa Cl. Sci.* **19** (2019), 1303–1358.
6. J.A. Carrillo, J. Mateu, M.G. Mora, L. Rondi, L. Scardia, J. Verdera: The ellipse law: Kirchhoff meets dislocations. *Commun. Math. Phys.* **373** (2020), 507–524.
7. J. Mateu, M.G. Mora, L. Rondi, L. Scardia, J. Verdera: A maximum-principle approach to the minimisation of a nonlocal dislocation energy. *Mathematics in Engineering* **2** (2020), 253–263.
8. J.A. Carrillo, J. Mateu, M.G. Mora, L. Rondi, L. Scardia, J. Verdera: The equilibrium measure for an anisotropic nonlocal energy. *Calc. Var. Partial Differential Equations* **60**, 10 (2021).
9. J. Mateu, M.G. Mora, L. Rondi, L. Scardia, J. Verdera: Explicit minimisers of some nonlocal anisotropic energies: a short proof. *Izv. Math.* **85** (2021), 468–482.
10. C. Maor, M.G. Mora: Reference configurations versus optimal rotations: a derivation of linear elasticity from finite elasticity for all traction forces. *J. Nonlinear Sci.* **31**, 62 (2021).
11. M.G. Mora, A. Scaglioni: Equilibrium measure for a nonlocal dislocation energy with physical confinement. *Adv. Calc. Var.* **15** (2022), 929–938.
12. L. Freddi, P. Hornung, M.G. Mora, R. Paroni: Stability of boundary conditions for the Sadowsky functional. *J. Nonlinear Sci.* **32**, 72 (2022).

13. M.G. Mora, F. Riva: Pressure live loads and the variational derivation of linear elasticity. *Proc. Roy. Soc. Edinburgh Sect. A.* **153** (2023), 1929–1964.
14. J. Mateu, M.G. Mora, L. Rondi, L. Scardia, J. Verdera: Energy minimisers of perturbed dislocation energies. *Nonlinear Analysis* **231**, 113014 (2023).
15. J. Mateu, M.G. Mora, L. Rondi, L. Scardia, J. Verdera: Stability of ellipsoids as the energy minimisers of perturbed Coulomb energies. *SIAM J. Math. Anal.* **55** (2023), 3650–3676.
16. J. Mateu, M.G. Mora, L. Rondi, L. Scardia, J. Verdera: Explicit minimisers for anisotropic Coulomb energies in 3D. *Adv. Math.* **434**, 109333 (2023).

Pavia, 4 June 2024

Prof. Maria Giovanna Mora  
Department of Mathematics, Università di Pavia  
mariagiovanna.mora@unipv.it