

# Francesco Solombrino

## Curriculum Vitae

### Personal data

Date of birth 16.12.1982  
Place of birth Lecce (Italy)  
Citizenship Italian  
Email francesco.solombrino@unina.it  
Homepage <https://www.docenti.unina.it/francesco.solombrino>

### Work experience

#### Current position

since 07.2023 **Full Professor**, *Dipartimento di Matematica e Applicazioni "R. Caccioppoli", Università Federico II, Napoli.*  
Research interests: Variational methods in continuum mechanics, limit analysis and optimal control of kynetic models of collective motion with stochastic terms.

#### Previous positions

- 01.12.2019-14.07.2023 **Associate Professor**, *Dipartimento di Matematica e Applicazioni "R. Caccioppoli", Università Federico II, Napoli.*  
Research interests: Relaxation- und Homogeneization problems in spaces of functions of bounded Deformation, limit analysis and optimal control of kynetic models of collective motion
- 02.2017-11.2019 **Ricercatore Universitario tdB (Assistant Professor with Tenure Track)**, *Dipartimento di Matematica e Applicazioni "R. Caccioppoli", Università Federico II, Napoli.*  
Research interests: Calculus of Variations with applications to Continuum mechanics, Relaxation- und Homogeneization problems
- 10.2012-02.2017 **Postdoctoral research fellow**, *Center of Mathematics-Chair of Analysis, Munich University of Technology, Garching (Germany).*  
Research interests focused on different topics of Applied Mathematics, such as discrete-to-continuum limits of lattice systems, or Optimal Control of kynetic models of collective motion.
- 11.2010-10.2012 **Postdoctoral research fellow**, *RICAM, Johann Radon Institut for Computational and Applied Mathematics, Linz (Austria).*  
Research interests focused on different topics of Applied Mathematics, such as evolution equations in Continuum Mechanics, or numerical methods for linearly constrained nonconvex and nonsmooth optimization problems.
- 2008-2010 **Teaching Assistant**, *Faculty of Mathematics, Physics and Natural Sciences, University of Trieste, Trieste (Italy).*  
Tutorials to undergraduate mathematics courses.

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## Education and Qualifications

- 2020 **National Habilitation as Full Professor (Professore Ordinario) in Analysis**, Italy.
- 2017 **National Habilitation as Professor (Professore Associato) in Analysis**, Italy.
- 2006–2010 **Ph.D. (Mathematics)**, *Scuola Internazionale Superiore di Studi Avanzati*, Trieste (Italy).  
Doctoral Thesis: *Rescaled viscosity solutions of a quasistatic evolution problem in non-associative plasticity*.  
Supervisor: Prof. G. Dal Maso.
- 2004–2006 **M.Sc.-Mathematics**, *Università del Salento*, Lecce (Italy), 'cum laude'.  
Master Thesis: *Formulazione debole per un problema variazionale del second'ordine e risultati di approssimazione (Weak formulation of a second-order variational problem and approximation results)*.  
Supervisor: Prof. M. Carriero.
- 2001–2004 **B.Sc.-Mathematics**, *Università del Salento*, Lecce (Italy), 'cum laude'.  
Bachelor Thesis: *L'equazione del calore e problemi connessi. (The Heat Equation and related problems)*.  
Supervisor: Prof. M. Carriero.
- 1996–2001 **High School Diploma**, *Liceo Classico Statale "G. Palmieri"*, Lecce (Italy).

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## Prizes and Awards

- 2011 **Award for the best SISSA PhD thesis**, *Research Area: Mathematics*.
- 2006–2010 **Doctoral scholarship**, *Scuola Internazionale Superiore di Studi Avanzati*, Trieste.
- 2004–2006 **INdAM scholarship** for Master Students in Mathematics.

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## Research Projects

- PRIN 2022* **Variational analysis of Complex systems in Materials Science, Physics and Biology**, (awarded from the Italian Ministry of Education and Research), principal investigator.
- Starplus 2020* **New challenges in the variational modeling of continuum mechanics**, (awarded from University of Naples "Federico II" and Compagnia di San Paolo), principal investigator.
- PRIN 2017* **Variational methods for stationary and evolution problems with singularities and interfaces**, (awarded from the Italian Ministry of Education and Research), local coordinator.

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## Events (Organizer)

- September 2018 **Advanced School on Theories and Applications of Liquid Crystals**, Naples.
- January 2020 **Calculus of Variations and Applications (on the occasion of Gianni Dal Maso's birthday)**, Trieste.
- February 2023 **Variational models in Materials Science**, Naples.
- September 2023 **Variational models for material failure**, *FAU Erlangen-Nürnberg*, Erlangen (Germany), with M. Friedrich.
- January 2024 **Modeling, analysis, and control of multi-agent systems across scales**, *Centro De Giorgi*, Pisa (Italy), with G. Albi, S. Almi, N. Loy and M. Morandotti.
- February 2024 **Variational models in Materials Science- II**, Naples, with F. Dipasquale, N. Fusco and B. Stroffolini.

## Talks

### Conference presentations

16. July 2024 **Geometric rigidity for incompatible fields in the multi-well case and applications**, Minisymposium: *New trends in Calculus of Variations, European Congress of Mathematics*, Sevilla (Spain).
27. June 2024 **Non-local approaches to effective energies for materials' singularities**, Vito Volterra Meeting in *Calculus of Variations 2024*, Sapienza - University of Rome (Italy).
6. June 2024 **Geometric rigidity for incompatible fields in the multi-well case and applications**, *Calculus of Variations and Nonlinear Analysis in the Applied Sciences*, SBAI, Sapienza - University of Rome (Italy).
21. February 2023 **Integral representation and  $\Gamma$ -convergence for free-discontinuity problems with  $p(\cdot)$ -growth**, *Between Regularity and Defects: Variational and Geometrical Methods in Materials Science*, Vienna (Austria).
- May 2022 **Brittle membranes in finite elasticity**, *Beyond Elasticity: Advances and Research Challenges*, Luminy (France), (invited, represented by D. Reggiani).
23. June 2021 **A discrete finite-difference approximation of the Griffith functional**, *8th European Congress of Mathematics*, Portorož (Slovenia).
24. May 2021 **A discrete finite-difference approximation of the Griffith functional**, *SIAM Conference on Mathematical Aspects of Materials Science*, online conference.
29. October 2019 **A variational approach to the quasistatic limit of viscous dynamic evolutions in finite dimension**, *Calculus of Variations and Applications in Trani*, Trani (Italy).
17. September 2019 **Stable configurations of prestrained rods**, *DEA 2019 Conference "Dynamics, Equations and Applications"*, Kraków (Poland).
20. August 2018 **Multiscale analysis of singularly perturbed finite dimensional gradient flows: the minimizing movement approach**, *Workshop "New trends in the variational modeling of failure phenomena"*, Vienna (Austria).
4. July 2018 **On local and global minimizers of prestrained thin elastic rods**, *SIMAI Congress 2018*, Rom (Italy).
16. Februar 2018 **Analisi multiscala di movimenti minimizzanti per il limite singolare di flussi gradiente (Multiscale analysis of minimizing movements approximations for singular gradient flows)**, *XXVIII Convegno nazionale di calcolo delle variazioni*, Levico Terme (Italy).
14. September 2017 **Global and local minimizers in prestrained elastic bistrrips**, *Workshop "Calculus of Variations and Partial Differential Equations"*, Naples (Italy).
5. September 2017 **Quasistatic crack growth in 2d-linearised elasticity**, *XXIII AIMETA Conference (Italian Society for theoretical and applied Mechanics)*, Salerno (Italy).
12. February 2017 **Quasistatic crack growth in 2d-linearised elasticity**, *Miniworkshop in Dislocations, Plasticity and Fracture*, Trieste (Italy).
3. July 2016 **Discretization of Evolutions of Critical Points and Applications in Fracture Simulation**, *11th AIMS Conference on Dynamical Systems, Differential Equations and Applications*, Orlando (United States of America).
1. July 2015 **Chirality transitions in frustrated spin systems**, *Trends in Nonlinear Analysis*, Trieste (Italy).

- 15. May 2015 **Optimal control of mean field approximations of multiagent systems**, XIII Viennese Workshop on Optimal Control and Dynamic Games, Wien (Austria).
- 26. March 2015 **Numerical approximation of a quasistatic evolution problem in cohesive fracture**, LXXXVIII GAMM (German Society for Applied Mathematics and Mechanics) Annual Conference, Lecce (Italy).
- 3. February 2015 **Catene di spin frustrate: un approccio variazionale alle transizioni di chiralità (Frustrated spin chains: a variational approach to chirality transitions)**, XXV Convegno nazionale di calcolo delle variazioni ), Levico Terme (Italy).
- 8. July 2014 **Mean Field Optimal Control**, 10th AIMS Conference on Dynamical Systems, Differential Equations and Applications, Madrid (Spain).
- 21. September 2012 **Quasistatic evolution problems in perfect plasticity for generalized multiphase materials**, Evolution problems in damage, plasticity and fracture, Udine (Italy).
- 6. September 2012 **Quasistatic evolution problems in perfect plasticity for generalized multiphase materials**, Meeting on Applied Mathematics and Calculus of Variations, Rome (Italy).
- 23. August 2012 **Linearly constrained nonconvex and nonsmooth minimization**, 21st International Symposium on Mathematical Programming, Berlin (Germany).
- 24. February 2010 **Evoluzione quasistatica in plasticità alla Cam-Clay (Quasistatic Evolution of Cam-Clay model in Plasticity)**, XX Convegno nazionale di calcolo delle variazioni, Levico Terme (Italy).

#### Invited seminars

- 28. November 2024 **A fractional approach to strain-gradient plasticity: beyond core-radius of discrete dislocations**, Oberseminar zur Analysis der TU München und der Universität Augsburg, Munich (Germany).
- 29. May 2024 **Problemi variazionali nell'omogeneizzazione di dislocazioni semi-discrete**, Seminario di Analisi dell'Università degli Studi della Campania "Luigi Vanvitelli", Caserta (Italy).
- 6. May 2024 **Controllo ottimo mean-field di sistemi multipopolazione e condizioni di tipo Pontryagin**, Seminario di Analisi dell'Università di Padova, Padova (Italy).
- 15. April 2024 **Approssimazione non locale di problemi di discontinuità libera in elasticità lineare**, Seminario di Analisi dell'Università del Salento, Lecce (Italy).
- 14. June 2023 **Non-local approximation of free-discontinuity problems in linear elasticity**, Vienna PDE Afternoon, Vienna (Austria).
- 14. October 2022 **Mean field sparse optimal control of systems with additive white noise**, University of Pavia, Pavia (Italy).
- 11. May 2022 **Mean field sparse optimal control of systems with additive white noise**, Polytechnic University of Marche, Ancona (Italy).
- 15. May 2019 **A variational approach to the quasistatic limit of viscous dynamic evolutions in finite dimension**, Polytechnic University of Turin, (Italy).
- 25. October 2018 **On local and global minimizers of prestrained thin elastic rods**, Colloquium at the Institute for Analysis and Numerics of the Westfälischen Wilhelms-Universität, Münster (Germany).
- 8. February 2018 **Multiscale analysis of singularly perturbed finite dimensional gradient flows: the minimizing movement approach**, Università di Verona, (Italy).
- 23. January 2018 **Multiscale analysis of singularly perturbed finite dimensional gradient flows: the minimizing movement approach**, SISSA, Trieste (Italy).

- 17. October 2016 **Configurazioni stabili di strutture elastiche sottili sottoposte a pre-strain (Stable configurations of thin elastic structures under prestrain)**, Università di Trento (Italy).
- 6. April 2016 **Linearly constrained evolution of critical points**, University of Vienna (Austria).
- 6. February 2014 **Discrete-to-continuum limits for frustrated magnetic models**, Oberseminar zur Analysis der TU München und der Universität Augsburg, Munich (Germany).
- 18. July 2013 **Mean Field optimal control**, M15 Seminar on Applied and Computational Variational Calculus, Munich (Germany).
- 22. May 2013 **Quasistatic evolution problems in perfect plasticity for generalized multiphase materials**, OxPde Lunchtime Seminar, Oxford (UK).
- 26. May 2011 **Counterexamples and positive existence results in inverse free-discontinuity problems**, Oberseminar zur Analysis der TU München, Munich (Germany).
- 25. November 2010 **Rescaled viscosity solutions of a quasistatic evolution problem in non-associative plasticity**, Oberseminar zur Analysis der Universität Bonn, Bonn (Germany).
- 07. April 2009 **Problemi matematici in plasticità (Mathematical Problems in Plasticity)**, Seminario di Analisi dell'Università del Salento, Lecce (Italy).

## Teaching activity

### Università "Federico II"

2024 Winter Semester	<b>Instructor</b>	<i>Calculus of Variations for Mathematics (together with B. Stroffolini)</i>
2022-2023 Winter Semester	<b>Instructor</b>	<i>Mathematical Methods in Engineering for Mathematics (together with A. Barbagallo)</i>
2021-2022-2023-2024 Winter Semester	<b>Instructor</b>	<i>Analysis I for Mechanical and Aerospace Engineering</i>
January-February 2021	<b>Instructor</b>	<i>Phd Course: Variational methods in material mechanics: Landau-De Gennes and Griffith's functionals , Doctoral Degree in Mathematics (together with Bianca Stroffolini)</i>
2019-2020-2021-22-23-24 Summer Semester	<b>Instructor</b>	<i>Analysis II for Mechanical and Aerospace Engineering</i>
2017-18-19-20 Winter Semester	<b>Instructor</b>	<i>Basic Mathematics II for Optics and Optometry</i>
2017 and 2018 Summer Semester	<b>Instructor</b>	<i>Analysis II for Construction Engineering</i>

### TU Munich

2016, Winter Semester	<b>Exercises</b>	<i>Foundations of Mathematics (Munich School of Engineering), Lecturer: Prof. D.Matthes.</i>
2015 and 2016, Summer Semester	<b>Exercises</b>	<i>Differential und Integral Calculus (Munich School of Engineering), Lecturer: Prof. M. Cicalese.</i>

2014 and 2015, Winter Semester	<b>Exercises</b>	<i>Foundations of Mathematics (Munich School of Engineering), Lecturer: Prof. M. Cicalese.</i>
2015 Summer Semester	<b>Co-organiser of the Seminar</b>	<i>An introduction to evolutionary PDES and gradient flows</i>
2014 Summer Semester	<b>Exercises</b>	<i>Differential und Integral Calculus (Munich School of Engineering), Lecturer: Prof. M. Cicalese.</i>
2013 Winter Semester	<b>Co-organiser of the Seminar</b>	<i>Minimal Surfaces and Functions of Bounded Variation</i>
2013 Winter Semester	<b>Tutorials</b>	<i>Foundations of Mathematics (Munich School of Engineering), Lecturer: Prof. M. Cicalese.</i>
2013 Summer Semester	<b>Co-organiser of the Seminar</b>	<i>Homogeneization</i>
2013 Summer Semester	<b>Exercises</b>	<i>Gamma Convergence and Applications, Lecturer: Prof. M. Cicalese.</i>
2012 Winter Semester	<b>Exercises</b>	<i>Partial Differential Equations, Lecturer: Prof. M. Cicalese.</i>

## Mentoring and supervision of students

### Supervision of doctoral students

2021- October  
2024 Dr. Dario Reggiani , *Scuola Superiore Meridionale*, **Variational problems with non-standard growth**, (Thesis' defense January 22, 2025).

### Supervision of master thesis projects

July 2022 Claudio D'Eramo, *Polytechnic University of Turin*, **Mean-field limits for entropic multi-population dynamical systems**, (co-supervised with Prof. Marco Morandotti).

### Supervision of bachelor thesis projects

December 2024 Fabio Galloppi, *Università "Federico II", Naples*, **Teoria dei filtri e dei segnali e teorema del campionamento di Shannon-Nyquist.**

October 2024 Amalia del Bono, *Università "Federico II", Naples*, **Il teorema di Malgrange-Ehrenpreis.**

### Mentoring of undergraduate thesis projects

October 2013 Bachelor Thesis, Dominik Stöger, **Applications of topological methods to PDEs of variational type**, TU Munich, Examiner: Prof. M. Cicalese.

March 2015 Bachelor Thesis, Kilian Rückschloß, **Vector measures and Bochner integral**, TU Munich, Examiner: Prof. M. Cicalese.

### Mentoring of doctoral students

2013- 2015 Dr. Marco Artina , *International Research Training Group IGDK 1754 "Optimization and Numerical Analysis for Partial Differential Equations with Nonsmooth Structures"*, Thesis defended on 16.12.2015.

2013-2016 Dr. Mattia Bongini , *International Research Training Group IGDK 1754 "Optimization and Numerical Analysis for Partial Differential Equations with Nonsmooth Structures"*, Thesis defended on 25.07.2016.

## Language skills

Italian	Native speaker
German	Proficient
English	Fluent
French	Good

*Goethe Certificate C1*

## Computer skills

Good	$\LaTeX$
Basic	Matlab, C

## Other

Reviewer for

- Bulletin of the London Mathematical Society
- Annales de l'Institut Henri Poincaré (C) Non Linear Analysis
- Journal of Differential Equations
- SIAM Journal on Mathematical Analysis
- Archive for Rational Mechanics and Analysis
- ESAIM Control, Optimization and Calculus of Variations
- Mathematical Models and Methods in Applied Sciences
- Calculus of Variations and Partial Differential Equations
- Acta Applicandae Mathematicae
- Nonlinearity
- Journal of Nonlinear Science
- Nonlinear Differential Equations and Applications (NoDEA)
- Journal of the European Mathematical Society (JEMS)
- Open Geomechanics
- Rendiconti Lincei - Matematica e Applicazioni
- Journal of Mathematical Analysis and Applications
- Kinetic and Related models
- Journal of Convex Analysis

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## Publications

### Refereed journal papers

- [1] G. Di Fratta and F. Solombrino. Korn and Poincaré-Korn inequalities: A different perspective. *Proceedings of the American Mathematical Society*, 153(1):143–159, 2025.
- [2] F. Anceschi, G. Ascione, D. Castorina, and F. Solombrino. Well-posedness of kolmogorov-fokker-planck equations with unbounded drift. *Journal of Mathematical Analysis and Applications*, 543(2):Art. no. 128909, 2025.
- [3] S. Almi, M. Caponi, M. Friedrich, and F. Solombrino. Geometric rigidity on sobolev spaces with variable exponent and applications. *Nonlinear Differential Equations and Applications*, 2025. Online first. DOI: 10.1007/s00030-024-01016-4.
- [4] R. Marziani and F. Solombrino. Non-local approximation of free-discontinuity problems in linear elasticity and application to stochastic homogenisation. *Proceedings of the Royal Society of Edinburgh Section A: Mathematics*, 154(4):1060–1094, 2024.
- [5] S. Almi, D. Reggiani, and F. Solombrino. Lower semicontinuity and relaxation for free discontinuity functionals with non-standard growth. *Calculus of Variations and Partial Differential Equations*, 63(1):Art. no. 24, 2024.
- [6] S. Almi, M. Caponi, M. Friedrich, and F. Solombrino. A fractional approach to strain-gradient plasticity: beyond core-radius of discrete dislocations. *Mathematische Annalen*, 2024. Online first. DOI: 10.1007/s00208-024-03020-6.
- [7] G. Scilla, F. Solombrino, and B. Stroffolini. Integral representation and  $\Gamma$ -convergence for free-discontinuity problems with  $p(\cdot)$ -growth. *Calculus of Variations and Partial Differential Equations*, 62(8):Art. no. 213, 2023.
- [8] F. Riva, G. Scilla, and F. Solombrino. The notions of inertial balanced viscosity and inertial virtual viscosity solution for rate-independent systems. *Advances in Calculus of Variations*, 16(4):903–934, 2023.
- [9] C. Leone, G. Scilla, F. Solombrino, and A. Verde. Regularity of minimizers for free-discontinuity problems with  $p(\cdot)$ -growth. *ESAIM - Control, Optimisation and Calculus of Variations*, 29:Art. no. 78, 2023.
- [10] G. Lazzaroni, R. Molinarolo, F. Riva, and F. Solombrino. On the wave equation on moving domains: regularity, energy balance and application to dynamic debonding. *Interfaces and Free Boundaries*, 25(3):401–454, 2023.
- [11] M. Friedrich, M. Perugini, and F. Solombrino.  $\Gamma$ -convergence for free-discontinuity problems in linear elasticity: homogenization and relaxation. *Indiana Univ. Math. J.*, 72:1949–2023, 2023.
- [12] G. Ascione, D. Castorina, and F. Solombrino. Mean-field sparse optimal control of systems with additive white noise. *SIAM Journal on Mathematical Analysis*, 55(6):6965 – 6990, 2023.
- [13] S. Almi, D. Reggiani, and F. Solombrino. Brittle membranes in finite elasticity. *ZAMM - Journal of Applied Mathematics and Mechanics / Zeitschrift für Angewandte Mathematik und Mechanik*, 103(11):e202200525, 2023.

- [14] S. Almi, M. Morandotti, and F. Solombrino. Optimal control problems in transport dynamics with additive noise. *Journal of Differential Equations*, 373:1–47, 2023.
- [15] S. Almi, C. D’Eramo, M. Morandotti, and F. Solombrino. Mean-field limits for entropic multi-population dynamical systems. *Milan Journal of Mathematics*, 91(1):175–212, 2023.
- [16] G. Lazzaroni, R. Molinarolo, and F. Solombrino. Radial solutions for a dynamic debonding model in dimension two. *Nonlinear Analysis, Theory, Methods and Applications*, 219(2):112822, 2022.
- [17] F. Farroni, G. Scilla, and Solombrino F. On some non-local approximation of nonisotropic Griffith-type functionals. *Mathematics In Engineering*, 4(4):1–22, 2022.
- [18] V. Crismale, M. Friedrich, and F. Solombrino. Integral representation for energies in linear elasticity with surface discontinuities. *Advances in Calculus of Variations*, 15(4):705–733, 2022.
- [19] G. Albi, S. Almi, M. Morandotti, and Solombrino F. Mean-field selective optimal control via transient leadership. *Applied Mathematics and Optimization*, 85(2), 2022. Art. no. 9.
- [20] G. Scilla and F. Solombrino. Non-local approximation of the Griffith functional. *Nonlinear Differential Equations and Applications*, 28(2), 2021. Art. no. 17.
- [21] M. Friedrich, M. Perugini, and F. Solombrino. Lower semicontinuity for functionals defined on piecewise rigid functions and on GSBD. *Journal of Functional Analysis*, 280(7):108929, 2021.
- [22] S. Almi, M. Morandotti, and F. Solombrino. A multi-step lagrangian scheme for spatially inhomogeneous evolutionary games. *Journal of Evolution Equations*, 21(2):2691–2733, 2021.
- [23] M. Morandotti and F. Solombrino. Mean-field analysis of multipopulation dynamics with label switching. *SIAM Journal on Mathematical Analysis*, 52(2):1427–1462, 2020.
- [24] M. Friedrich and F. Solombrino. Functionals defined on piecewise rigid functions: Integral representation and  $\Gamma$ -convergence. *Archive for Rational Mechanics and Analysis*, 236(3):1325–1387, 2020.
- [25] V. Crismale, G. Scilla, and F. Solombrino. A derivation of Griffith functionals from discrete finite-difference models. *Calculus of Variations and Partial Differential Equations*, 59(6), 2020.
- [26] G. Scilla and F. Solombrino. A variational approach to the quasistatic limit of viscous dynamic evolutions in finite dimension. *Journal of Differential Equations*, 267(11):6216–6264, 2019.
- [27] G. Albi, M. Bongini, F. Rossi, and F. Solombrino. Leader formation with mean-field birth and death models. *Mathematical Models and Methods in Applied Sciences*, 29(4):633–679, 2019.
- [28] G. Scilla and F. Solombrino. Multiscale analysis of singularly perturbed finite dimensional gradient flows: The minimizing movement approach. *Nonlinearity*, 31(11):5036–5074, 2018.

- [29] G. Scilla and F. Solombrino. Delayed loss of stability in singularly perturbed finite-dimensional gradient flows. *Asymptotic Analysis*, 110(1-2):1–19, 2018.
- [30] M. Friedrich and F. Solombrino. Quasistatic crack growth in 2d-linearized elasticity. *Annales de l'Institut Henri Poincaré (C) Non Linear Analysis*, 35(1):28–64, 2018.
- [31] M. Cicalese, M. Ruf, and F. Solombrino. On global and local minimizers of prestrained thin elastic rods. *Calculus of Variations and Partial Differential Equations*, 56(4), 2017.
- [32] M. Cicalese, M. Ruf, and F. Solombrino. Hemihelical local minimizers in prestrained elastic bistrrips. *Zeitschrift für angewandte Mathematik und Physik ZAMP*, 68(6):122, 2017.
- [33] M. Bongini, M. Fornasier, F. Rossi, and F. Solombrino. Mean-field Pontryagin maximum principle. *Journal of Optimization Theory and Applications*, 175(1), 2017.
- [34] M. Artina, F. Cagnetti, M. Fornasier, and F. Solombrino. Linearly constrained evolutions of critical points and an application to cohesive fractures. *Mathematical Models and Methods in Applied Sciences*, 27(02):231–290, 2017.
- [35] Marco Cicalese, Matthias Ruf, and F. Solombrino. Chirality transitions in frustrated  $S^2$ -valued spin systems. *Math. Models Methods Appl. Sci.*, 26(8):1481–1529, 2016.
- [36] F. Solombrino. A priori time regularity estimates and a simplified proof of existence in perfect plasticity. *Mathematische Nachrichten*, 288(14–15):1786–1800, 2015.
- [37] M. Cicalese and F. Solombrino. Frustrated ferromagnetic spin chains: a variational approach to chirality transitions. *J. Nonlinear. Sci.*, 25(2):291–313, 2015.
- [38] A. Braides, M. Cicalese, and F. Solombrino. Q-tensor continuum energies as limits of head-to-tail-symmetric spin systems. *SIAM J. Math. Anal.*, 47(4):2832–2867, 2015.
- [39] F. Solombrino. Quasistatic evolution in perfect plasticity for general heterogeneous materials. *Archive for Rational Mechanics and Analysis*, 212(1):283–330, 2014.
- [40] M. Fornasier and F. Solombrino. Mean-field optimal control. *ESAIM: COCV*, 20(4):1123–1152, 2014.
- [41] M. Fornasier, R. March, and F. Solombrino. Existence of minimizers for the Mumford-Shah functional with singular operators and unbounded data. *Annali di Matematica Pura ed Applicata*, 192(3):361–391, 2013.
- [42] M. Artina, M. Fornasier, and F. Solombrino. Linearly constrained nonsmooth and nonconvex minimization. *SIAM Journal on Optimization*, 23(3):1904–1937, 2013.
- [43] G. Dal Maso, A. Desimone, and F. Solombrino. Quasistatic evolution for Cam-Clay plasticity: properties of the viscosity solution. *Calc. Var. Partial Differential Equations*, 44(3–4):495–541, 2012.
- [44] G. Dal Maso, A. Desimone, and F. Solombrino. Quasistatic evolution for Cam-Clay plasticity: a weak formulation via viscoplastic regularization and time rescaling. *Calc. Var. Partial Differential Equations*, 40(1–2):125–181, 2011.
- [45] F. Solombrino. Quasistatic evolution for plasticity with softening: the spatially homogeneous case. *Discrete Contin. Dyn. Syst.*, 27(3):1189–1217, 2010.

- [46] G. Dal Maso and F. Solombrino. Quasistatic evolution for Cam-Clay plasticity: the spatially homogeneous case. *Netw. Heterog. Media*, 5(1):97–132, 2010.
- [47] F. Solombrino. Quasistatic evolution problems for nonhomogeneous elastic plastic materials. *J. Convex Anal.*, 16(1):89–119, 2009.

[Submitted papers](#)

- [1] F. ANCESCHI, G. ASCIONE, D. CASTORINA AND F. SOLOMBRINO, *Optimal control problems driven by nonlinear degenerate Fokker-Planck equations*, arXiv preprint arXiv:2410.24000.
- [2] C. LEONE, G. SCILLA, F. SOLOMBRINO AND A. VERDE, *Strong existence for free-discontinuity problems with non-standard growth*, arXiv preprint arXiv:2405.06625.
- [3] S. ALMI, R. DURASTANTI AND F. SOLOMBRINO, *A Pontryagin Maximum Principle for agent-based models with convex state space*, arXiv preprint arXiv:2402.13680.
- [4] S. ALMI, D. REGGIANI AND F. SOLOMBRINO, *Geometric rigidity for incompatible fields in the multi-well case and an application to strain-gradient plasticity*, arXiv preprint arXiv:2311.00438.
- [5] F. RIVA, G. SCILLA, AND F. SOLOMBRINO, *Inertial Balanced Viscosity (IBV) solutions to infinite-dimensional rate-independent systems*, arXiv preprint arXiv:2306.12248.

Dichiaro sotto la mia responsabilità che tale curriculum e tutto quanto in esso dichiarato corrisponde a verità ai sensi degli artt. 46 e 47 del D.P.R. 28 dicembre 2000, n. 445  
November 30, 2024