

LUIGI VERGORI

Personal Details:

Age 35, Italian.

Address:

School of Mathematics, Statistics and Applied Mathematics,
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Research Topics

Stability of harmonic maps;
Linear and nonlinear stability in implicit theories of fluid dynamics;
Piezo-viscous fluids;
Mechanics of nematic shells;
Nonlinear elasticity.

Education

2005-08: PhD in Mathematics, Università del Salento, Lecce, Italy.
Thesis: *Linear and Nonlinear Stability in non-standard Theories of Fluid Dynamics*;
Advisor: Professor Giuseppe Saccomandi.

1996-2003: BSc & MSc in Mathematics, Università degli Studi di Lecce, Italy
(awarded cum laude).

Teaching and Research Experience

March 2012–to date: Marie Curie Fellow of the Istituto Nazionale di Alta Matematica (INdAM) based at National University of Ireland Galway.

Project title: ‘Anastomosis: Biomechanics, Modelling, Instabilities’.

Teaching Assistant for the course ‘Nonlinear Elasticity’, NUIGalway.

November 2008–October 2011: Postdoctoral Fellow, Department of Mathematics, Università del Salento, Lecce, Italy.

September 2008–March 2011: Adjunct Professor of Rational Mechanics, Department of Industrial Engineering, Università del Salento, Lecce, Italy.

Fundings

2012-14: INdAM outgoing fellowship in mathematics and its applications for experienced researchers cofunded by Marie Curie Actions (FP7 People Work Programme).

2010-11: Postdoctoral Fellowship competitive funding, Università del Salento, Lecce, Italy.

2008-11: Adjunct Professorship competitive funding, Università del Salento, Lecce, Italy.

2008-10: Postdoctoral Fellowship competitive funding, Università del Salento, Lecce, Italy.

2005-08: PhD competitive funding, Università del Salento, Lecce, Italy.

Publications, 18 published, 1 under review, 5 in preparation

1. G. NAPOLI, L. VERGORI: *Curvature-induced ordering in cylindrical nematic shells*. International Journal of Nonlinear Mechanics.
<http://dx.doi.org/10.1016/j.ijnonlinmec.2012.09.007>.
2. G. NAPOLI, L. VERGORI: *Extrinsic Curvature Effects on Nematic Shells*. Physical Review Letters 108 (2012) 207803
3. G. NAPOLI, L. VERGORI: *Surface free energies for nematic shells*. Physical Review E 85 (2012) 061701.
4. K.R. RAJAGOPAL, G. SACCOMANDI, L. VERGORI: *Flow of fluids with pressure and shear dependent viscosity down an inclined plane*. Journal of Fluid Mechanics 706 (2012), pp 173–189.
5. K.R. RAJAGOPAL, G. SACCOMANDI, L. VERGORI: *Stability of Rayleigh-Bénard convection in a porous medium*. Zeitschrift für angewandte Mathematik und Physik 62 (2011), pp. 149–160.
6. K.R. RAJAGOPAL, G. SACCOMANDI, L. VERGORI: *Couette flow with frictional heating in a fluid with temperature and pressure dependent viscosity*. International Journal of Heat and Mass Transfer 54 (2011), pp. 783–789.
7. K.R. RAJAGOPAL, G. SACCOMANDI, L. VERGORI: *Linear stability of Hagen-Poiseuille flow in a chemically reacting fluid*. Computer & Mathematics with Applications 61 (2011), pp. 460–469.
8. K.R. RAJAGOPAL, G. SACCOMANDI, L. VERGORI: *A systematic approximation for the equations governing convection-diffusion in a porous medium*. Nonlinear Analysis: Real World Applications 11 (2010), pp. 2366–2375.
9. G. SACCOMANDI, L. VERGORI: *Piezo-viscous flows over an inclined surface*. Quarterly Journal of Applied Mathematics 68 (2010), pp. 747–763.

10. L. VERGORI: *Flows at small Reynolds and Froude numbers*. International Journal of Engineering Science 11 (2010), pp. 1659–1670.
11. L. VERGORI: *Couette and Poiseuille flows in bitumen*. Proceedings of the 15th Conference on Waves and Stability in Continuous Media, World Scientific, Singapore (2010) ISBN 981-4317-41-1, pp. 359–364.
12. G. NAPOLI, L. VERGORI: *Equilibrium of nematic vesicles*. Journal of Physics A 43 (2010) 445207.
13. S. RIONERO, L. VERGORI: *Long-time behaviour of fluid motions in porous media according to Brinkman model*. Acta Mechanica 210 (2010), pp. 221–240.
14. K.R. RAJAGOPAL, G. SACCOMANDI, L. VERGORI: *On the Oberbeck-Boussinesq approximation for fluids with pressure-dependent viscosities*. Nonlinear Analysis: Real World Applications 10 (2009), pp. 1139–1150.
15. K.R. RAJAGOPAL, G. SACCOMANDI, L. VERGORI: *Stability analysis of the Rayleigh-Bénard convection for a fluid with temperature and pressure dependent viscosity*. Zeitschrift für angewandte Mathematik und Physik 60 (2009), pp. 739–755.
16. L. VERGORI: *Spectral geometry for the Jacobi operator of the identity map*. Note di Matematica, vol. 28, n. 1 (2008), pp. 29-42.
17. D. PERRONE, L. VERGORI: *Stability of contact metric manifolds and unit vector fields of minimum energy*. Bull. Austral. Math. Soc. Vol. 76 (2006) pp. 269-283.
18. S. RIONERO, L. VERGORI: *A note on the nonlinear stability of laminar MHD flows in a porous medium in the presence of Brinkman law*. Rend. Acc. Sc. fis. mat. Napoli, Vol. LXXIII, (2006) pp. 387-402.

Submitted paper

1. K.R. RAJAGOPAL, G. SACCOMANDI, L. VERGORI: *Unsteady flows of fluids with pressure dependent viscosity*. Under consideration for publication in Journal of Mathematical Analysis and Applications.

Works in progress

1. M. DESTRADE, R.W. OGDEN, L. VERGORI: *Straightening of a sector of a circular cylinder of incompressible elastic material into a rectangular block and considerations of stability.*
2. M. DESTRADE, L. VERGORI: *Finite Element models of anisotropic hyperelastic solids are not compatible with anisotropic linear elasticity.*
3. M. DESTRADE, J. MURPHY, L. VERGORI: *Bending of an inhomogeneous circular cylindrical sector.*
4. K.R. RAJAGOPAL, L. VERGORI: *On the stability and uniqueness of the flow of a fluid through porous media.*
5. G. NAPOLI, L. VERGORI: *Cholesteric nematic shells and surface chirality.*

Talks

- *A systematic approximation for the equations governing convection and viscous dissipation in a piezoviscous fluid*, University of Limerick, Ireland, October 2012.
- *Convection and viscous dissipation in piezoviscous fluids*, National University of Ireland Galway, June 2012.
- *Stability analysis of Rayleigh-Bénard convection in a porous medium*, XVI Conference on Waves and Stability in Continuous Media, Brindisi, Italy, June 2011.
- *Rayleigh-Bénard convection of a piezo-viscous fluid saturating a porous medium*, Università del Salento, Lecce, Italy, June 2010.
- *Nonlinear traveling waves in viscoelastic solids*, XXXIV Scuola estiva di Fisica Matematica, Ravello, Italy, September 2009.
- *Stability analysis of Rayleigh-Bénard convection for a fluid with temperature and pressure dependent viscosity* XV Conference on Waves and Stability in Continuous Media, Mondello, Italy, June 2009.
- *On the Oberbeck-Boussinesq approximation in piezo-viscous fluids* Università del Salento, Lecce, Italy, November 2007.

- *On the stability of MHD laminar flows in a porous medium*, XXXII Scuola estiva di Fisica Matematica, Ravello, September 2007.

Poster

Stability of contact Riemannian manifolds and unit vector fields of minimum energy, Recent Advances in Differential Geometry, Lecce, Italy, June 2007.

Workshops and Schools

- *September 3 - 7, 2012*: Modeling and Simulation in Soft Tissue Biomechanics: from Structure to Macroscopic Response. Summer School coordinated by Gerhard A. Holzapfel and Ray W. Ogden. Graz University of Technology, Austria.
- *May 5, 2012*: Elasticity day, One-Day Workshop on Mathematical Modelling in Solid Mechanics organised by Liverpool University, LJMU and sponsored by RCMM, Liverpool, United Kingdom.
- *June 12 - 18, 2011*: WASCOM 2011, 16th International Conference on Waves and Stability in Continuous Media, Brindisi, Italy.
- *September 14 - 26, 2009*: XXXIV Scuola estiva di Fisica Matematica, Ravello, Italy.
- *28th June - 1st July, 2009*: WASCOM 2009, 15th International Conference on Waves and Stability in Continuous Media, Mondello, Italy.
- *September 8-20, 2008*: XXXIII Scuola estiva di Fisica Matematica, Ravello, Italy.
- *September 10 - 22, 2007*: XXXII Scuola estiva di Fisica Matematica, Ravello, Italy.
- *June 13 - 16, 2007*: Recent advances in Differential Geometry, Lecce, Italy.
- *February 5 - 8, 2007*: School on Lorentzian Geometry, Santiago de Compostela, Spain.
- *February 5 - 8, 2007*: IVth International Meeting on Lorentzian Geometry, Santiago de Compostela, Spain.

- *February 12 - 15, 2006*: Linear Propagation and Stability in Thermodynamical Processes of Continuous Media, Bressanone, Italy.
- *September 12 - 24, 2005*: XXX Italian Mathematical Physics Summer School, Ravello, Italy.

Expertise

Journal reviewer: International Journal of Engineering Science; International Journal of Non-Linear Mechanics; Chemical Engineering & Technology; The Quarterly Journal of Mechanics and Applied Mathematics; International Journal of Engineering, Science and Technology; Mathematics and Computers in Simulation.

Project proposal reviewer: Post-doc research project proposal for the Czech Science Foundation, Czech Republic.

Conference as co-organiser: WASCOM 2011, 16th International Conference on Waves and Stability in Continuous Media, June 12 - 18 2011, Brindisi, Italy.