April 2016

Diego Grandi, Curriculum vitae

Contact

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Born March 1,1975. Italian citizenship.

Education

Habilitation, Fakultát fúr Mathematik der Universität Wien, 2016.

Abilitazione Scientifica Nazionale, 01/A4 - II Fascia, from 03-12-2013 to 03-12-2019.

Ph.D. in *Mathematics* (advisor Prof. M. Fabrizio), University of Bologna, 08-07-2009.

Diploma di Licenza in Fisica, Scuola Normale Superiore of Pisa, 26-11-1999.

Degree in Physics, University of Pisa, 27-09-1999.

Research interests

Main research fields: Mathematical models for special materials, Continuum Thermomechanics, Phase transitions.

Main keywords: Phase transformations, Phase-field models, Binary mixtures, Shape-memory alloys, Plasticity, Rate-independent evolution equations.

Positions

2013 - today *Assistant professor*, Faculty of Mathematics, University of Vienna

2012 - 2013 *post-doctoral fellow*, IMATI - CNR, Pavia

2011 - 2012 *post-doctoral fellow*, Department of Mathematics, University of Brescia

2009 - 2011 *post-doctoral fellow*, Department of Mathematics, University of Bologna

Grants

- G.N.F.M-INdAM Grant *Young Researchers Project: Ginzburg-Landau models for non-isothermal phase transitions*, 2008- 2009. Principal Investigator.

- G.N.F.M-INdAM Grant *Young Researchers Project: Mathematical models for phase transitions in special materials*, 2009- 2010. Participant.
- G.N.F.M-INdAM Grant *Young Researchers Project: Phase field models for brine channels formation in sea ice*, 2011- 2012. Participant.
- G.N.F.M-INdAM Grant *Young Researchers Project: Free energies and hysteresis for special materials*, 2012- 2013. Participant.

Seminars since 2012

1. *Modeling shape memory alloys at finite strains: solvability and linearization*,
   Nečas Seminar on Continuum Mechanics, Mathematical Institute of the Charles University, Prague, 4 April 2016, Prague.
   (Invited)
2. *Global existence for finite strain plasticity based on the plastic metric tensor*,
   Department of Mathematics, University of Ferrara, 26 January 2016.
   (Invited)
3. *Existence for finite-strain gradient plasticity within a Cauchy-Green strain formulation*,
   STAMM14 - Symposium on Trends in Applications of Mathematics to Mechanics, Poitiers (France), 8-11 September 2014.
   (Invited)
4. *A phenomenological model for microstructure-dependent inelastic behavior in shape memory alloys*,
   13th GAMM Seminar on Microstructures, Bochum (Germany), 17-18 January 2014;
5. *A phase-field model for shape memory alloys at macroscopic scale: uni-axial deformation tests under different control conditions*,
   Congresso Nazionale SIMAI 2012, Turin (Italy), 25-27 June 2012.
   (Invited)
6. *A phase field approach to solidification and solute separation in water solutions*,
   Workshop INdAM: Mathematical Models and Analytical Problems in Special Materials, Rome, 16-20 April 2012.

Publications

17. M. Fabrizio, D. Grandi and L. Molari, Water Evaporation and Condensation by a Phase-Field Model, J. Non-Equilib. Thermodyn. 2016, published online, DOI: 10.1515/jnet-2016-0004.
16. D.Grandi, U.Stefanelli, Finite plasticity in $P^{\top}P$, *arXiv:1509.08681v1.*
15. D.Grandi, U.Stefanelli, The Souza-Auricchio model for shape-memory alloys, *Discrete and Continuous Dynamical Systems - Series S* (2014), **8** (2015), 727-743.
14. D.Grandi, U.Stefanelli, A phenomenological model for microstructure-dependent inelasticity in shape-memory alloys, *Meccanica*, **49** (2014), 2265-2283.

13. C.Giorgi, D.Grandi, V.Pata, On the Green-Naghdi Type III heat conduction model, *Discrete and Continuous Dynamical Systems - Series B*, **19** (2014), 2133-2143.

12. V.Berti, M.Fabrizio, D.Grandi, A phase field model for brine channels in sea ice, *Physica B*, **425** (2013), 100-104.

11. D. Grandi, A phase field approach to solidification and solute separation in water solutions, *ZAMP*, **64** (2013), 1611-1624.

10. A.Berti, V.Berti, D.Grandi, A thermodynamic approach to isotropic-nematic phase transitions in liquid crystals, *Meccanica*, **48** (2013), 983-991.

9. V.Berti, M.Fabrizio, D.Grandi, A phase field model for liquid-vapour phase transition, *Discrete and Continuous Dynamical Systems - Series S*, **6** (2013), 317-330.

8. V.Berti, D.Grandi, A non isothermal phase-field model for the ferromagnetic phase transition, *Mathematical Methods in the Applied Sciences*, **36** (2013), 1342-1349.

7. M.Maraldi, L.Molari, D.Grandi, A Non-isothermal Phase-field Model for Shape Memory Alloys: Numerical Simulations of Superelasticity and Shape Memory Effect Under Stress-controlled Conditions, *Journal of Intelligent Material Systems and Structures*, **23** (2012), 1083-1092.

6. M.Maraldi, L.Molari, D.Grandi, A macroscale, phase-field model for shape memory alloys with non-isothermal effects: Influence of strain-rate and environmental conditions on the mechanical response, *Acta Materialia* **60** (2012), 179-191.

5. M.Maraldi, L.Molari, D.Grandi, A unified thermodynamic framework for the modelling of diffusive and displacive phase transitions, *International Journal of Engineering Science* **50** (2012), 31-45.

4. A.Berti, V.Berti, D.Grandi, Well-posedness of an isothermal diffusive model for binary mixtures of incompressible fluids *Nonlinearity* **24** (2011), 3143.

3. V.Berti, M.Fabrizio, D.Grandi, Hysteresis and Phase Transitions for 1D and 3D Models in Shape Memory Alloys, *Journal of Mathematical Physics*, **51** (2010), 062901-1 - 062901-13.

2. V.Berti, M.Fabrizio, D.Grandi, Phase transitions in shape memory alloys: A non-isothermal Ginzburg-Landau model, *Physica D-Nonlinear Phenomena*, **239** (2010), 95-102.

1. F.Daghia, M.Fabrizio, D.Grandi, A non isothermal Ginzburg-Landau model for phase transitions in shape memory alloys, *Meccanica*, **45** (2010), 797-807.

Didactic activity

I have been teaching assistant (with blackboard lessons, review sessions, examination sessions) for several undergraduate courses.
From 2006 to 2011 I have been teaching assistant for eight one-semester courses in *Rational Mechanics* and one course in *Applied Mathematics* at the Engineering Faculty of University of Bologna.
In 2012-2013 I have been teaching assistant for a *Calculus* course at the Engineering Faculty of University of Pavia.
In 2014-2016 I led Exercise Courses in:

Linear Algebra (2014, summer semester)

Modeling (2015, winter semester)

Stochastic (2015, summer semester)

Real Analysis in several variables and Complex Analysis in one variable (2015, sommer semester)

Algebra (2016, summer semester)

Stochastic (2016, summer semester)

for bachelor students at the Faculty of Mathematics of the University of Vienna.