

CURRICULUM OF THE SCIENTIFIC ACTIVITY

GIOVANNA BONFANTI¹

PERSONAL DATA

Born in Cremona (Italy) on December 27th, 1965.

CURRENT POSITION

Associate Professor of Mathematical Analysis at the University of Brescia (Italy) since 01/03/2005.

EDUCATION

- March 1989: Degree in Mathematics (summa cum laude), Università Cattolica del Sacro Cuore, Brescia, Italy.
- June 1989 - December 1991 : Research fellowship, Department of Mathematics, Faculty of Engineering, University of Brescia, Italy.
- January 1992 - September 1993: Research fellowship, Department of Mathematics, Faculty of Engineering, University of Brescia, Italy.

FORMER POSITION

September 1993 - February 2005: Assistant Professor of Mathematical Analysis, Department of Mathematics, Faculty of Engineering, University of Brescia, Italy.

RESEARCH INTERESTS

- Modelling and analytical investigation (existence, uniqueness, regularity, longtime behaviour of the solutions, asymptotic analyses with respect to physical and/or geometrical parameters) of PDEs systems describing
 - phase field problems with or without memory;
 - solid-liquid and solid-solid phase transitions;
 - non-smooth phase transition and phase separation phenomena;
 - contact problems with adhesion and friction;
 - delamination and damage problems;
 - thermoviscoelastic systems.
- Analysis of well-posedness and regularity for abstract hyperbolic and Schroedinger-type differential equations, with applications to evolution problems in variable domains.

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RESEARCH EXPERIENCES ABROAD

- Laboratoire de Mécanique et d'Acoustique CNRS – Aix-Marseille Université, Marseilles.
October 2012 (scientific collaboration with Prof. Marius Cocou) and April 2015 (scientific collaboration with Prof. Frédéric Lebon).
- Instituto Superior Técnico, Lisbon. July 1995, December 1996 and October 1997 (scientific collaboration with Prof. João A.C. Martins).

LIST OF PUBLICATIONS

Papers published on peer-reviewed journals or collections

- [1] E. BONETTI, G. BONFANTI, F. LEBON, *Derivation of imperfect interface models coupling damage and temperature*, Computers and Mathematics with Applications. DOI: 10.1016/j.camwa.2018.09.027 (2018), to appear.
- [2] E. BONETTI, G. BONFANTI, R. ROSSI, *Global existence for a nonlocal model for adhesive contact*, Applicable Analysis. 97 (2018), 1315–1339.
- [3] E. BONETTI, G. BONFANTI, F. LEBON, R. RIZZONI, *A model of imperfect interface with damage*, Meccanica. 52 (2017) 1911–1922.
- [4] C. BAUZET, E. BONETTI, G. BONFANTI, F. LEBON, G. VALLET, *A global existence and uniqueness result for a stochastic Allen-Cahn equation with constraint*, Math. Methods Appl. Sci. 40 (2017), 5241–5261.
- [5] G. BONFANTI, F. LUTEROTTI, *Global well-posedness for a phase transition model with irreversible evolution and acceleration forces*, Springer INdAM Series. 22 (2017), 97–117.
- [6] E. BONETTI, G. BONFANTI, R. ROSSI, *Modeling via the internal energy balance and analysis of adhesive contact with friction in thermoviscoelasticity*, Nonlinear Anal. Real World Appl. 22 (2015), 473–507.
- [7] E. BONETTI, G. BONFANTI, R. ROSSI, *Analysis of a model coupling volume and surface processes in thermoviscoelasticity*, Discrete Contin. Dyn. Syst. Ser. A., 35 (2015), no. 6, 2349–2403.
- [8] E. BONETTI, G. BONFANTI, R. ROSSI, *Analysis of a temperature-dependent model for adhesive contact with friction*, Phys. D 285 (2014), 42–62.
- [9] G. BONFANTI, F. LUTEROTTI, *A well-posedness result for irreversible phase transitions with a nonlinear heat flux law*, Discrete Contin. Dyn. Syst. Ser. S., 6 (2013), no. 2, 331–351.
- [10] E. BONETTI, G. BONFANTI, R. ROSSI, *Analysis of a unilateral contact problem taking into account adhesion and friction*, J. Differential Equations, 253 (2012) 438–462.
- [11] E. BONETTI, G. BONFANTI, R. ROSSI, *Long-time behaviour of a thermomechanical model for adhesive contact*, Discrete Contin. Dyn. Syst. Ser. S., 4 (2011) 273–309.

- [12] G. BONFANTI, M. FABRIZIO, J.E. MUNOZ RIVERA, M.G. NASO, *On the energy decay for a thermoelastic contact problem involving heat transfer*, J. Thermal Stresses, 33 (2010), no. 11, 1049–1065.
- [13] E. BONETTI, G. BONFANTI, R. ROSSI, *Thermal effects in adhesive contact: modelling and analysis*, Nonlinearity., 22 (2009) 2697–2731.
- [14] G. BONFANTI, M.G. NASO, *A dynamic contact problem between two thermoelastic beams*, Applied and industrial mathematics in Italy III, Ser. Adv. Math. Appl. Sci., World Sci. Publ., Hackensack, NJ, 2009, pp.123–133.
- [15] G. BONFANTI, J.E. MUNOZ RIVERA, M.G. NASO, *Global existence and exponential stability for a contact problem between two thermoelastic beams*, J. Math. Anal. Appl., 345 (2008), no. 1, 186–202.
- [16] E. BONETTI, G. BONFANTI, AND R. ROSSI, *Global existence for a contact problem with adhesion*, Math. Meth. Appl. Sci., 31 (2008) 1029–1064.
- [17] E. BONETTI, G. BONFANTI, *Well-posedness results for a model of damage in thermoviscoelastic materials*. Ann. I. H. Poincaré - AN, 25 (2008) 1187-1208.
- [18] E. BONETTI, G. BONFANTI, R. ROSSI, *A problem of adhesive contact with thermal effects*. In “International Conference on Mathematics and Continuum Mechanics”, Porto, Portugal, 2008, 79-84, Centro Internacional de Matematica, A. Ferreira, I. Figueiredo, J. Videman Eds.
- [19] E. BONETTI, G. BONFANTI, R. ROSSI, *Well-posedness and long-time behaviour for a model of contact with adhesion*, Indiana Univ. Math. J., 56 (2007) 2787-2819.
- [20] G. BONFANTI, F. LUTEROTTI, *Well-posedness results and asymptotic behavior for a phase transition model taking into account microscopic accelerations*, J. Math. Anal. Appl. 320 (2006) no. 1, 95-107.
- [21] G. BONFANTI, F. LUTEROTTI, *Global solution to a phase transition model with microscopic movements and accelerations in one space dimension*. Commun. Pure Appl. Anal. 5 (2006), no. 4, 763-777.
- [22] G. BONFANTI, F. LUTEROTTI, *Global solution to a one dimensional phase transition model with strong dissipation*. In “Dissipative phase transitions”, 43-64, Ser. Adv. Math. Appl. Sci., 71, World Sci. Publ., Hackensack, NJ, 2006.
- [23] E. BONETTI, G. BONFANTI, *Asymptotic analysis for vanishing acceleration in a thermoviscoelastic system*, Abstr. Appl. Anal., 2 (2005) 105-120.
- [24] G. BONFANTI, F. LUTEROTTI, *Convergence results to a phase transition model with vanishing microscopic acceleration*, Math. Models Methods Appl. Sci., 14 (2004) 375-392.
- [25] G. BONFANTI, M. FRÉMOND, F. LUTEROTTI, *Existence and uniqueness results to a phase transition model based on microscopic accelerations and movements*, Nonlinear Anal. Real World Appl., 5 (2004) 123-140.
- [26] E. BONETTI, G. BONFANTI, *Existence and uniqueness of the solution to a 3D thermoviscoelastic system*, Electron. J. Differential Equations, 50 (2003), 1-15.

- [27] G. BONFANTI, M. FRÉMOND, F. LUTEROTTI, *Local solutions to the full model of phase transitions with dissipation*, Adv. Math. Sci. Appl., 11 (2001), 791-810.
- [28] M.L. BERNARDI, G. BONFANTI, F. LUTEROTTI, *Abstract Schroedinger-type equations with lower order terms*, Commun. Appl. Anal., 5 (2001), 77-90.
- [29] G. BONFANTI, M. FRÉMOND, F. LUTEROTTI, *Global solution to a nonlinear system for irreversible phase changes*, Adv. Math. Sci. Appl., 10 (2000), 1-24.
- [30] G. BONFANTI, F. LUTEROTTI, *Asymptotic analysis to a phase-field model with a nonsmooth memory kernel*, J. Convex Anal., 6 (1999), 41-57.
- [31] G. BONFANTI, F. LUTEROTTI, *Global solution to a phase-field model with memory and quadratic nonlinearity*, Adv. Math. Sci. Appl., 9 (1999), 523-538.
- [32] M.L. BERNARDI, G. BONFANTI, F. LUTEROTTI, *On some abstract variable domain hyperbolic differential equations*, Ann. Mat. Pura Appl., 174 (1998), 209-239.
- [33] G. BONFANTI, F. LUTEROTTI, *Regularity and convergence results for a phase-field model with memory*, Math. Methods Appl. Sci., 21 (1998), 1085-1105.
- [34] G. BONFANTI, P. COLLI, M. GRASSELLI, F. LUTEROTTI, *Nonsmooth kernels in a phase relaxation problem with memory*, Nonlinear Anal., 32 (1998) 455-465.
- [35] M.L. BERNARDI, G. BONFANTI, F. LUTEROTTI, *Abstract Schroedinger-type differential equations with variable domain*, J. Math. Anal. Appl., 211 (1997), 84-105.
- [36] G. BONFANTI, *A n degree of freedom frictional contact problem in linear elasticity with vanishing viscosity*, Quad. Sem. Mat. Brescia, 4 (1997), 1-20.
- [37] G. BONFANTI, *A vanishing viscosity approach to a two degree-of-freedom contact problem in linear elasticity with friction*, Ann. Univ. Ferrara - Sez. VII -Sc. Mat., 42 (1996), 127-154.
- [38] G. BONFANTI, *A noncoercive friction problem with tangential applied forces in three dimensions*, Boll. Un. Mat. Ital. (7) 7-B (1993), 149-165.

PREPRINTS

- [39] E. BONETTI, G. BONFANTI, M. COLTURATO, R. ROSSI, *Analysis of a system for nonlocal adhesive contact with thermal effects*, in preparation.
- [40] G. BONFANTI, E. DAVOLI, R. ROSSI, *Analysis of a rate-independent delamination system for visco-elastic Kirchhoff-Love plates*, in preparation.
- [41] E. BONETTI, G. BONFANTI, C. LICHT, R. ROSSI, *An asymptotic model for the dynamics of two linearly elastic bodies connected by a heavy thin soft viscoelastic layer*, in preparation.

TALKS AT INTERNATIONAL WORKSHOPS, CONFERENCES AND RESEARCH INSTITUTES

Invited speaker to a number of international workshops, conferences and research institutes. The most relevant talks follow.

- Roma (Italy), INDAM (Istituto Nazionale di Alta Matematica), March, 2019, Workshop “Mathematical Modeling and Analysis of degradation and restoration in Cultural Heritage MACH2019”, “*Modelling and analysis for contact problems with adhesion*”.
- Palaiseau (France), ENSTA ParisTech, Palaiseau, September 2015, Colloquium Lagrangianum 2015, “*Modeling and analysis for a class of phase transition problems*”.
- Madrid (Spain), July 2015, 9th European Solid Mechanics Conference, “*A contact problem with adhesion and friction in thermoviscoelasticity*”.
- Roma (Italy), INDAM (Istituto Nazionale di Alta Matematica), May, 2015, “*A class of contact problems in thermoviscoelasticity*”.
- Madrid (Spain), July 2014, 10th AIMS Conference on Dynamical Systems, Differential Equations and Applications (Special Session: Variational energy and entropy approaches in non-smooth thermomechanics) “*Analysis of a model for adhesive contact in thermoviscoelasticity*”.
- Amboise (France), June 2013, EUROMECH - Colloquium 548 - Direct and variational methods for nonsmooth problems in mechanics, “*Modelling and analysis for a contact problem with adhesion and friction*”.
- Marseille (France), October 2012, Laboratoire de Mécanique et d’Acoustique CNRS Aix-Marseille Université, “*Analysis of a temperature-dependent model for adhesive contact with friction*”.
- Cortona (Italy), September 2012, “*A temperature-dependent model for adhesive contact with friction*”, INDAM Workshop PDEs for multiphase advanced materials- ADMAT2012.
- Torino (Italy), June 2012, “*An irreversible phase transition problem with a nonlinear heat flux law*”, SIMAI 2012.
- Gargnano (Italy), June 2011, “*A unilateral contact problem coupling adhesion and friction*”, INDI2011, “Interfaces and discontinuities in solids, liquids and crystals”.
- Cagliari (Italy), June 2010, “*On the energy decay in a contact problem between two thermoelastic beams*”, Symposium “Control and stabilization of nonlinear evolutionary systems”, joint SIMAI/SEMA Conference on Applied and Industrial Mathematics.
- Cagliari (Italy), June 2010, “*A unilateral contact problem coupling friction and adhesion*”, Symposium “Mathematical models for smart materials and other applications”, joint SIMAI/SEMA Conference on Applied and Industrial Mathematics.
- Pavia (Italy), May 2009, “*Analysis of a thermomechanical model for adhesive contact*”, PV09 - Phase Variations in Pavia.
- Porto (Portugal), February 2008, “*A problem of adhesive contact with thermal effects*”, International Conference on Mathematics and Continuum Mechanics.

- Cortona (Italy), September 2007, “*Analysis of a problem of adhesive contact with thermal effects*”, Mathematical Models for Complex Systems.
- Poitiers (France), June 2006, “*Well-posedness results for a model of contact with adhesion*”, Sixth AIMS Conference “Dynamical Systems, Differential Equations and Applications”.
- Montecatini Terme (Italy), April 2003, “*Existence and uniqueness results for a 3D thermo-viscoelastic system*”, Free boundary problems in the applied sciences.
- Torino (Italy), September 1997: “*Phase-field models with memory*”, Three days on phase transitions.
- Pont-à-Mousson (France), June 1997, “*Nonsmooth kernels in a phase relaxation problem with memory*”, Third European Conference on Elliptic and Parabolic Problems.

TALKS AT NATIONAL WORKSHOPS, CONFERENCES AND RESEARCH INSTITUTES

Invited speaker to a number of national workshops, conferences and research institutes. The most relevant talks follow.

- IMATI-CNR Institute, Pavia (Italy), May 2005, “*Risultati di buona posizione per un problema di contatto con adesione*”, Seminario di Matematica Applicata.
- IMATI-CNR Institute, Pavia (Italy), May 2002, “*Studio asintotico di modelli di transizione di fase al tendere a zero delle accelerazioni microscopiche*”, Seminario di Matematica Applicata.
- Aci Reale (Italy), November 2001, “*Risultati di esistenza e di unicità per un modello di transizione di fase che tiene conto di accelerazioni e movimenti microscopici*”, IX Incontro nazionale sui problemi di tipo iperbolico.
- Salò (Italy), June 2000, “*Risultati analitici relativi a modelli di phase-field con memoria*”, Giornate di studio sulle equazioni integrodifferenziali alle derivate parziali e applicazioni.
- Montecatini Terme (Italy), February 1998, “*Analisi asintotica per un problema di transizione di fase con memoria*”, Problemi non lineari in Analisi e nelle applicazioni.
- Torino (Italy), October 1996, “*Equazioni astratte del tipo di Schroedinger con dominio variabile*”, Giornate di studio sui problemi iperbolici.
- Montecatini Terme (Italy), July 1996: “*Studio di un modello quasistatico per un problema di contatto con attrito in viscoelasticità*”, Problemi nonlineari in Analisi e nelle applicazioni.

PEER-REVIEWED RESEARCH PROJECTS (SELECTED)

2017 Coordinator of Project GNAMPA 2017 (Gruppo Nazionale per l’Analisi Matematica, la Probabilità e le loro Applicazioni) funded by INDAM (Istituto Nazionale di Alta Matematica, Italy)

Title: *Problemi di riduzione dimensionale nell’ambito del contatto con adesione e analisi del caso dinamico*

2017 Coordinator of project and scientific collaboration with the Visiting Professor Caroline Bauzet (Laboratoire de Mécanique et d'Acoustique CNRS – Aix-Marseille Université, Marseille) funded by University of Brescia, Italy.

Title: *Stochastic differential equations for phase transition problems*

2016-2017 Coordinator of project and scientific collaboration with the Visiting Professor Frédéric Lebon (Laboratoire de Mécanique et d'Acoustique CNRS – Aix-Marseille Université, Marseille) funded by INDAM (Istituto Nazionale di Alta Matematica, Italy).

Title: *Damage problems in bulk domains and interfaces*

2015 Coordinator of project and scientific collaboration with the Visiting Professor Christian Licht (Laboratoire de Mécanique et Genie Civil (LMGC), Université de Montpellier 2) funded by INDAM (Istituto Nazionale di Alta Matematica, Italy).

Title: *Contact with adhesion: modeling and analysis*

2016 Participant to Project GNAMPA 2016 (Gruppo Nazionale per l'Analisi Matematica, la Probabilità e le loro Applicazioni) funded by INDAM (Istituto Nazionale di Alta Matematica, Italy)

Title: *Analisi di processi inelastici nella meccanica dei solidi e delle cellule: proprietà fini delle soluzioni*

2014-2015 Participant to Project “Galileo Program 2015- Project number 32288WH” by the Université Franco-Italienne.

Title: *Damage evolution modeling for simulation of monumental stone deterioration aimed at the mechanical stabilization, conservation and promotion of historical and artistic patrimony of French and Italian countries*

1998-2010 Participant to a number of Research National Projects funded by MIUR and CNR (Italy).

EDITORIAL ACTIVITY

- Member of the Editorial Board of *Advances in Mathematical Physics*, Hindawi Publishing Corporation (since 2016).

REFEREEING ACTIVITY

Referee for the following journals:

- Advances in Differential Equations
- Advances in Mathematical Physics
- Communications on Pure and Applied Analysis
- Discrete and Continuous Dynamical Systems
- Electronic Journal of Differential Equations

- European Journal of Applied Mathematics
- Journal of Elasticity
- Mathematical Methods in the Applied Sciences
- Nonlinear Analysis: Theory, Methods & Applications
- Nonlinear Analysis Series B: Real World Applications

ORGANIZING ACTIVITY

Organization of the Conferences:

2009 *Mathematical Models and Analytical Problems for Special Materials*, Brescia, July 2009.

2006 *Mathematical Models and Analytical Problems for Special Materials*, Salò, July 2006.

2004 *Modelli matematici e problemi analitici per materiali speciali*, Salò, July 2004.

2000 *IperBS2000: Giornate di Studio su Problemi Iperbolici*, Brescia, November-December 2000.

TEACHING ACTIVITY

The teaching experience includes several courses in Mathematical Analysis at the Faculty of Engineering of the University of Brescia (since 1998) and the publication of the related course notes.

May 10, 2019

Giovanna Bonfanti