

# Curriculum vitae

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September 27, 2021

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## I. Scientific activity

### Personal data:

Date and place of birth:

Marital status:

Address:

Phone:

Fax:

E-mail:

Homepage:

### Current position:

- Full Professor of Mathematical Analysis, Department of Mathematics, University of Pavia (since April 2018). Head of Department (since October 2019).

### Former positions:

- PostDoc at the Department of Mathematics, University of Pavia (since January 2000 until January 2001).
- Assistant Professor of Mathematical Analysis, Faculty of Sciences, University of Pavia (since February 2001 until September 2006).
- Associate Professor of Mathematical Analysis, Department of Mathematics, University of Pavia (since October 2006 until March 2018).

### Studies:

- “Liceo Classico” (high school) G. Carducci of Milano (since 1985 until 1990). Bachelor diploma obtained in July 1990 with a mark of 60/60.
- Fellow of Collegio Ghislieri of Pavia (since 1990 until 1995).
- Diploma Course in Mathematics, University of Pavia (since 1990 until 1995). MSc Diploma in Mathematics obtained in January 1995 with a mark of 110/110, *cum laude*. Dissertation: “STUDIO DI UN PROBLEMA DI FRONTIERA LIBERA DI TIPO VORTICE IN SPAZI DI FUNZIONI ANALITICHE”, (“Study of a vortex free boundary problem in analytic function spaces”), advisor Prof. Alessandro Torelli.
- PhD in Mathematics, University of Milan (since 1995 until 1999). PhD Diploma in Mathematics obtained in January 2000. Dissertation: “TRANSMISSION PROBLEMS FOR NONLINEAR PARABOLIC SYSTEMS OF PHASE-FIELD TYPE”, advisor Prof. Gianni Gilardi.

### Awards and prizes:

- Awarded of CNR grant n. 209.01.60 for students of Mathematics.
- Awarded of prize “Vittorio Emanuele Galafassi” for the best diploma thesis in

Mathematics at Pavia University in 1994-1995.

**Invited talks at workshops or conferences:**

- International workshop “Multiscale Problems and Phase Transitions” (WIAS - Berlin, August 29-31, 2001): “EXISTENCE AND ASYMPTOTIC RESULTS FOR SOME NONLINEAR CAHN-HILLIARD-LIKE EQUATIONS”.
- National meeting: “Recenti Sviluppi nella Teoria delle Equazioni Differenziali” (Bologna, April 19-20, 2002): “PROBLEMI DI STEFAN RILASSATI PER LA TEMPERATURA ASSOLUTA”.
- Scientific meeting of GNFM (Montecatini Terme, February 17-19, 2003): “UN MODELLO DI DANNEGGIAMENTO PER MATERIALI ELASTICI”.
- PV-MI 2003, Seconda Giornata di Studio Università di Pavia - Politecnico di Milano “Equazioni Differenziali e Calcolo delle Variazioni” (Milano, December 11, 2003): “ATTRATTORE UNIVERSALE PER MODELLI DI PENROSE-FIFE PARABOLICI E PARABOLICI-IPERBOLICI”.
- International workshop “Evolution equations: Inverse and Direct Problems” (Cortona, June 21-25, 2004): “DIRECT AND INVERSE PROBLEMS FOR CONSERVED PHASE FIELD SYSTEMS WITH MEMORY”.
- International workshop “Inverse and Direct Problems” (Cortona, June 20-24, 2005): “SOME RESULTS ON DOUBLY NONLINEAR PARABOLIC PROBLEMS”.
- International workshop “Dynamics of Phase Transitions” (Berlin, WIAS, November 30 - December 3, 2005): “WELL-POSEDNESS AND  $\omega$ -LIMIT SETS FOR SOME DOUBLY NONLINEAR PARABOLIC PROBLEMS”.
- International workshop “AIMS’ Sixth International Conference on Dynamical Systems, Differential Equations and Applications” (Poitiers, June 25-28, 2006): “ATTRACTORS FOR DOUBLY NONLINEAR EQUATIONS”.
- International workshop “AIMS’ Sixth International Conference on Dynamical Systems, Differential Equations and Applications” (Poitiers, June 25-28, 2006): “ON THE LONG TIME BEHAVIOR OF SOME SINGULAR PHASE CHANGE MODELS”.
- International workshop on “Free Boundary Problems” (Chiba, Japan, November 26-30, 2007): “HYPERBOLIC RELAXATION OF THE CAHN-HILLIARD EQUATION”.
- International workshop “AIMS’ Seventh International Conference on Dynamical Systems, Differential Equations and Applications” (Arlington, TX, May 18-21, 2008): “ON THE LONG TIME BEHAVIOR OF SOME VARIANTS OF THE CAHN-HILLIARD EQUATION”.
- International workshop “AIMS’ Seventh International Conference on Dynamical Systems, Differential Equations and Applications” (Arlington, TX, May 18-21, 2008): “ASYMPTOTIC BEHAVIOR OF SOME SINGULAR PHASE TRANSITION SYSTEMS”.
- International workshop “DICOP 08 – Direct, Inverse and Control Problems for PDE’s” (Cortona, September 22-26, 2008): “ON THE CAHN-HILLIARD EQUATION WITH SINGULAR POTENTIAL AND DYNAMIC BOUNDARY CONDITIONS”.
- PV-MI 2008, Settima Giornata di Studio Università di Pavia - Politecnico di Milano

“Equazioni Differenziali e Calcolo delle Variazioni” (Pavia, November 28, 2008): “SUL MODELLO DI PHASE-FIELD CON CONDIZIONI AL BORDO DINAMICHE”.

- International workshop “6th European Conference on Elliptic and Parabolic Problems” (Gaeta, May 25-29, 2009): “ON THE CAHN-HILLIARD MODEL WITH INERTIAL EFFECTS”.
- International workshop “6th European Conference on Elliptic and Parabolic Problems” (Gaeta, May 25-29, 2009): “ON A PHASE-FIELD MODEL FOR TWO-PHASE COMPRESSIBLE FLUIDS”.
- International workshop “AIMS’ Eighth International Conference on Dynamical Systems, Differential Equations and Applications” (Dresden, May 25-28, 2010): “ATTRACTORS FOR REACTION-DIFFUSION SYSTEMS IN UNBOUNDED DOMAINS”.
- International workshop “AIMS’ Eighth International Conference on Dynamical Systems, Differential Equations and Applications” (Dresden, May 25-28, 2010): “A NONISOTHERMAL MODEL FOR NEMATIC LIQUID CRYSTALS”.
- International workshop “Dissipative PDEs in Bounded and Unbounded Domains and Related Attractors” (Edinburgh, September 20-24, 2010): “ON A FOURTH ORDER DEGENERATE PARABOLIC EQUATION”.
- “Week on liquid crystals” (Prague, October 5-8, 2010): “SOME NONISOTHERMAL MODELS FOR NEMATIC LIQUID CRYSTALS”.
- Workshop for the 5th anniversary of the Nečas Centre (Prague, December 17, 2010) “ON SOME DOUBLY NONLINEAR GENERALIZATIONS OF THE CAHN-HILLIARD EQUATION”.
- International workshop “INDI2011, Interfaces and Discontinuities in Solids, Liquids and Crystals” (Gargnano, Italy, June 20-23, 2011): “WEAK SOLUTIONS AND SMOOTHING EFFECTS FOR SOME EQUATIONS AND SYSTEMS WITH VERY-FAST DIFFUSION PROPERTIES”.
- International conference on “Mathematical Models and Analytical Problems in Special Materials” (Rome, April 16-20, 2012): “ON SOME NONISOTHERMAL MODELS FOR NEMATIC LIQUID CRYSTALS”.
- International conference “Structural Nonlinear Dynamics and Diagnosis – CNSDD 2012” (Marrakech, Morocco, April 30 - May 2, 2012): “ON A CLASS OF NONISOTHERMAL MODELS FOR NEMATIC LIQUID CRYSTALS”.
- International workshop “PDEs for multiphase advanced materials” (Cortona, Italy, September 17-21, 2012): “ON SOME CAHN-HILLIARD MODELS WITH NONLINEAR DIFFUSION”.
- International workshop “EQUADIFF 13” (Prague, August 26-30, 2013): “A NONISOTHERMAL MODEL FOR TWO-PHASE FLUIDS”.
- International workshop “Recent Trends in Classical and Complex Fluids” (Brighton, September 5-7, 2013): “ON A NONISOTHERMAL MODEL FOR TWO-PHASE FLUIDS”.
- International workshop “8th EU Conference on Elliptic and Parabolic Problems” (Gaeta, May 26-30, 2014): “A CLASS OF NONISOTHERMAL MODELS FOR TWO-PHASE FLUIDS”.

- International workshop “Conference on Partial Differential Equations” (Novacella/Neustift, May 29 - June 1, 2014): “ON A FRACTIONAL CAHN-HILLIARD EQUATION”.
- International workshop “Two Days Workshop on LC-Flows” (Pavia, March 24-25, 2014): “ON SOME NONISOTHERMAL MODELS FOR NEMATIC LIQUID CRYSTALS”.
- International workshop “RIPE 60 - Rate Independent Processes and Evolution Workshop” (Prague, June 24-26, 2014): “ON A GENERAL CLASS OF DOUBLY NON-LINEAR EQUATIONS”.
- International workshop “10th AIMS International Conference” (Madrid, July 7-11, 2014): “A SINGULAR HEAT EQUATION WITH DYNAMIC BOUNDARY CONDITIONS”.
- International workshop “Conference on Partial Differential Equations” (Munich, March 25-29, 2015): “STRONGLY DAMPED WAVE EQUATION WITH CONSTRAINT”.
- Indam-ERC Workshop “Special Materials in Complex Systems” (Rome, May 18-22, 2015): “ON SOME SECOND ORDER EQUATIONS WITH CONSTRAINT TERMS”.
- International workshop “Infinite-dimensional Dynamics, Dissipative Systems, and Attractors” (Nizhny Novgorod, July 13-17, 2015): “ON A FRACTIONAL CAHN-HILLIARD EQUATION”.
- International workshop “9th European Conference on Elliptic and Parabolic Problems” (Gaeta, May 23-27, 2016): “ON SOME CAHN-HILLIARD MODELS WITH SINGULAR DIFFUSION”.
- International workshop “Entropy methods, dissipative systems, and applications” (Erwin Schrödinger Institute, Vienna, June 13-17, 2016): “ON SOME SINGULAR VARIANTS OF THE CAHN-HILLIARD MODEL”.
- International workshop “1st Joint Meeting Brazil – Italy in Mathematics” (Rio de Janeiro, August 29 - September 2, 2016): “ON THE FRACTIONAL CAHN-HILLIARD EQUATION”.
- “International Conference on Elliptic and Parabolic Problems” (Gaeta, May 22-26, 2017): “THERMODYNAMICALLY CONSISTENT MODELS FOR COMPLEX FLUIDS”.
- International workshop “Implicitly Constituted Materials: Modeling, Analysis and Computing” (Rožtoky, July 31 - August 4, 2017): “ON A THERMODYNAMICALLY CONSISTENT MODEL FOR TWO-PHASE FLUIDS”.
- International workshop dedicated to Eduard Feireisl on the occasion of his 60th birthday (Prague, December 18, 2017): “SOME RESULTS ON THE FUNCTIONALIZED CAHN-HILLIARD EQUATION”.
- International workshop “SMACS2018 – Special Materials and Complex Systems” (Gargnano, June 18-22, 2018): “ON SOME LONG-STANDING QUESTIONS RELATED TO DAMAGE MODELS”.
- International workshop “The 12th AIMS Conference on Dynamical Systems, Differential Equations and Applications” (Taipei, July 5-9, 2018): “A MODEL FOR COMPLEX FLUIDS WITH INERTIAL EFFECTS”.
- International workshop “The 12th AIMS Conference on Dynamical Systems, Differential Equations and Applications” (Taipei, July 5-9, 2018): “ON A MULTI-COM-

PONENT MODEL FOR TUMOR GROWTH”.

- Workshop “Bilbao Workshop on Theoretical Fluid Dynamics” (Bilbao, February 27, 2019): “ON SOME MATHEMATICAL MODELS FOR TUMOR GROWTH”.
- International workshop “PDEs for Biology Systems” (Sevilla, April 8-10, 2019): “ON SOME MATHEMATICAL MODELS FOR TUMOR GROWTH”.
- International workshop “Recent Advances in Phase-Field Modeling: from Engineering to Biology” (Pavia, May 8-10, 2019): “ON A MODEL FOR DAMAGE”.

#### Communications at workshops or conferences:

- International workshop “Phase Change with Convection: Modelling and Validation” (Warsaw, June 24-26, 1999): “CONVERGENCE OF PHASE-FIELD EQUATIONS TO THE STEFAN MODEL”.
- XVI Congresso UMI (Naples, September 13-18, 1999): “UN PROBLEMA DI PHASE-FIELD CONSERVATO CON MEMORIA”.
- International workshop “Phase Transitions and Interfaces in Evolution Equations” (S.ta Margherita Ligure, February 14-18, 2000): “SOME RESULTS ON IRREVERSIBLE PHASE CHANGE MODELS”.
- National meeting “Equazioni Integrodifferenziali alle Derivate Parziali e Applicazioni” (Salò, June 23-24, 2000): “ALCUNI RISULTATI SUL MODELLO DI PHASE FIELD CONSERVATO CON MEMORIA”.
- National workshop “Simmetrie, Forme Geometriche, Evoluzione, e Memoria nelle Equazioni alle Derivate Parziali” (Taormina, February 7-10, 2001): “MODELLI DI CAMPO DI FASE CONSERVATIVI CON MEMORIA”.
- National workshop “Problemi a Frontiera Libera” (Montecatini, June 14-15, 2001): “ANALISI DI UN MODELLO DI SEPARAZIONE DI FASE IN LEGHE BINARIE”.
- National workshop “Modelli Matematici e Problemi Analitici per Materiali Speciali” (Cortona, June 25-29, 2001): “TRANSIZIONI DI FASE IRREVERSIBILI: MODELIZZAZIONE E RISULTATI MATEMATICI”.
- International workshop “Fourth European Conference on Elliptic and Parabolic Problems - Theory and Applications” (Gaeta, September 24-28, 2001): “A PHASE CHANGE SYSTEM IN BINARY ALLOYS”.
- International workshop “Free Boundary Problems: Theory and Applications” (Trento, June 5-8, 2002): “LOCAL SOLUTION TO FRÉMOND’S MODEL FOR DAMAGE IN ELASTIC MATERIALS” (poster session).
- National workshop “Modelli Matematici e Problemi Analitici per Materiali Speciali” (Salò, July 4-6, 2002): “LIMITI SINGOLARI DI UN MODELLO DI PENROSE-FIFE CON MEMORIA”.
- National workshop “Free Boundary Problems in the Applied Sciences” (Montecatini Terme, April 10-11, 2003): “CONTINUOUS DEPENDENCE AND ASYMPTOTIC ANALYSIS FOR SOME SYSTEMS OF PENROSE-FIFE TYPE”.
- National workshop “Materiali Speciali e Memorie: Problemi Modellistici e Analitici” (Salò, July 3-5, 2003): “ALCUNI RISULTATI SULL’EQUAZIONE DI CAHN-HILLIARD”.

CON MOBILITÀ NON COSTANTE”.

- XVII Congresso UMI (Milan, September 8-13, 2003): “ESISTENZA DELL’ATTRATTORE UNIVERSALE PER ALCUNI MODELLI DI PENROSE-FIFE”.
- International conference “FBP 2004 – Free Boundary Problems in Biomathematics, Multiscaling, Infinite-Dimensional Dynamical Systems” (Montecatini, June 10-12, 2004): “NONISOTHERMAL PHASE SEPARATION MODELS BASED ON A MICROFORCE BALANCE”.
- “EVEQ 2004 – Sixth International Summer School on Evolution Equations (Praga, July 12-16, 2004): “SOME RESULTS ON PDE’S SYSTEMS FOR DAMAGING PHENOMENA”.
- International workshop “Dissipative models in phase transitions” (Cortona, September 5-11, 2004): “LONG TIME BEHAVIOR OF CAGINALP’S MODEL WITH SINGULAR POTENTIAL”.
- National workshop “Modellizzazione matematica ed analisi dei problemi a frontiera libera” (Montecatini, September 29 - October 1, 2005): “ON A NONLOCAL PARABOLIC-HYPERBOLIC PHASE FIELD MODEL”.
- International workshop “Mathematical Models and Analytical Problems for Special Materials” (Salò, July 13-15, 2006): “ATTRACTORS FOR CAHN-HILLIARD EQUATIONS WITH NONCOSTANT MOBILITY”.
- XVIII Congresso UMI (Bari, September 24-29, 2007): “RILASSAMENTO IPERBOLICO DELL’EQUAZIONE DI CAHN-HILLIARD”.
- International workshop on “Phase-field Models in Fluid Mechanics” (Regensburg, February 14-16, 2011): “ON A CAHN-HILLIARD MODEL WITH NONLINEAR DIFFUSION”.

#### Talks given at Universities or Research institutes:

- Dipartimento di Matematica, Università di Trento (April 3, 2000): “ALCUNI MODELLI DI TRANSIZIONE DI FASE”.
- IMATI-CNR, Pavia (December 7, 2000): “MODELLI DI SEPARAZIONE DI FASE IN SOLIDI SOGGETTI A FORZE TERMOELASTICHE”.
- Weierstrass Institute for Applied Analysis and Stochastics, Berlin (December 13, 2000): “SOME RESULTS ON PHASE SEPARATION MODELS WITH THERMOELASTIC EFFECTS”.
- Mathematical Institute of the Academy of Sciences of the Czech Republic, Prague (March 9, 2004): “GLOBAL ATTRACTORS FOR SINGULAR PHASE CHANGE SYSTEMS OF PENROSE - FIFE TYPE”.
- Département Mathématique, Université Paris Sud 11 (September 7, 2006): “ATTRACTORS FOR A CLASS OF DOUBLY NONLINEAR EQUATIONS”.
- Mathematical Institute of the Charles University in Prague, Nečas Seminar on Continuum Mechanics (October 4, 2010): “ON A CLASS OF FOURTH ORDER DEGENERATE PARABOLIC EQUATIONS”.
- University of Kobe, Kobe Analysis Seminar (May 25, 2012): “CAHN-HILLIARD

SYSTEMS WITH NONLINEAR DIFFUSION”.

- Waseda University, Tokyo, Waseda University Analysis Seminar (May 26, 2012): “ON A CLASS OF NONISOTHERMAL MODELS FOR NEMATIC LIQUID CRYSTALS”.
- Xi’an Jiaotong-Liverpool University, Suzhou (March 18, 2016): “ON SOME SECOND ORDER EQUATIONS WITH CONSTRAINT”.
- NYU Shanghai (March 24, 2016): “ON SOME SECOND ORDER EQUATIONS WITH CONSTRAINT”.
- Fudan University, Shanghai (March 29, 2016): “ON THE HYPERBOLIC RELAXATION OF THE CAHN-HILLIARD EQUATION”.
- Università di Modena (July 5, 2016): “ALCUNE EQUAZIONI DEL SECONDO ORDINE CON TERMINI SINGOLARI”.
- Università di Catania (June 13, 2019): “ALCUNI RISULTATI SULL’EQUAZIONE DI CAHN-HILLIARD CON DIFFUSIONE NON LINEARE”.

#### PhD Courses or Summer Schools taught outside Pavia:

- University of Modena and Reggio Emilia, Dipartimento di Scienze Fisiche, Informatiche e Matematiche, Summer School “Dissipative Dynamical Systems and Applications”, Modena, September 3-7, 2018: course on “Evolution equations with singular nonlinear terms”.
- University of Vienna, Fakultät für Mathematik, March 25-29, 2019: PhD course on “Evolutionary equations with singular nonlinear terms”.

#### Research visits:

- Weierstrass Institute for Applied Analysis and Stochastics, Berlin (December 11-17, 2000).
- Mathematical Institute of the Academy of Sciences of the Czech Republic, Prague (March 1 - May 31, 2004; July 18-24, 2005; February 9-12, 2009).
- Université Paris-Sud - Orsay (September 4-8, 2006).
- Université de Poitiers (June 1-14, 2008).
- University of Kobe (May 22 - June 1, 2012; September 22 - October 3, 2014; April 2-10, 2015).
- Fudan University, Shanghai (March 7 - April 6, 2016).
- Tohoku University, Sendai (April 11-21, 2017 and September 9-20, 2018).
- Basque Center for Applied Mathematics, Bilbao (February 25 - March 1, 2019).

#### Organization of workshops or conferences:

- International workshop “Evolution Problems – in memory of Brunello Terreni” (Rapallo, March 26-27, 2004): member of organizing committee.
- International workshop “Direct and Inverse Problems in Evolution Equations” (Rimini, March 17-19, 2005): member of organizing committee.
- International workshop “Phase Variations 2009” (Pavia, May 21-22, 2009): member



of organizing committee.

- International workshop “DIMO2013 – Diffuse Interface Models” (Levico Terme, September 10-13, 2013): member of organizing committee.
- International workshop “Conference on Partial Differential Equations”, (Novacella/Neustift, May 29 - June 1, 2014): member of organizing committee.
- “International Conference on Elliptic and Parabolic Problems” (Gaeta, May 22-26, 2017): organizer of a Minisymposium on “Nonlinear PDEs for multiphase materials and complex fluids”.

#### Editorial activity:

- **AIMS Mathematics**: member of Editorial Board;
- **Journal of Mathematical Analysis and Applications**: member of Editorial Board;
- **Special volume** “Solvability, Regularity, and Optimal Control of Boundary Value Problems for PDEs. In Honour of Prof. Gianni Gilardi”, Springer INdAM Series 22: member of Editorial Board.

#### Reviewer for the following journals:

- Advances in Differential Equations
- Annali di Matematica Pura e Applicata
- Applicable Analysis
- Applied Mathematics and Optimization
- Applications of Mathematics
- Asymptotic Analysis
- Calculus of Variations and Partial Differential Equations
- Central European Journal of Mathematics
- Communications in Mathematical Sciences
- Communications on Pure and Applied Analysis
- Computers & Mathematics with Applications
- Discrete and Continuous Dynamical Systems
- Discrete and Continuous Dynamical Systems – Series B
- Discrete and Continuous Dynamical Systems – Series S
- Electronic Journal of Differential Equations
- International Journal of Differential Equations
- Journal of Applied Mathematics
- Journal of Differential Equations
- Journal of Hyperbolic Equations
- Journal of Integral Equations and Applications
- Journal of Mathematical Analysis and Applications
- Journal of Physics A

- Journal of Statistical Physics
- Mathematical Methods in the Applied Sciences
- Mathematical Models and Methods in Applied Sciences
- Mathematische Nachrichten
- Nonlinear Analysis Series A – Theory, Methods and Applications
- Nonlinear Analysis: Real World Applications
- Set-Valued Analysis
- SIAM Journal on Mathematical Analysis
- Zeitschrift für Angewandte Mathematik und Physik.

**Research projects:**

- Coordinator of the GNAMPA Project 2008 “Equazioni di evoluzione nelle scienze dei materiali come sistemi dinamici infinito-dimensionali” (“Evolution equations in materials sciences as infinite-dimensional dynamical systems”).
- Italian coordinator of the 2008 Project “Modelli matematici in scienza dei materiali – Modèles mathématiques en science des matériaux”, in the framework of the Galileo-Galilée Italy-France scientific collaboration program (the French coordinator was Alain Miranville from Poitiers University).
- Coordinator of the GNAMPA Project 2017 “Modelli ad interfaccia diffusa per processi di crescita tumorale” (“Diffuse interface models for tumor growth processes”).

### III. Publications

#### Articles published (or in press) in peer-reviewed scientific journals

1. G. Schimperna, *Weak solution to a phase-field transmission problem in a concentrated capacity*, *Math. Methods Appl. Sci.*, **22** (1999), 1235–1254.
2. G. Schimperna, *Some convergence results for a class of nonlinear phase-field evolution equations*, *J. Math. Anal. Appl.*, **250** (2000), 406–434.
3. G. Schimperna, *Singular limit of a transmission problem for the parabolic phase-field model*, *Appl. Math.*, **45** (2000), 217–238.
4. G. Schimperna, *Abstract approach to evolution equations of phase-field type and applications*, *J. Differential Equations*, **164** (2000), 395–430.
5. F. Luterotti, G. Schimperna, U. Stefanelli, *Existence result for a nonlinear model related to irreversible phase changes*, *M<sup>3</sup>AS – Math. Models Methods Appl. Sci.*, **11** (2001), 808–825.
6. P. Colli, G. Gilardi, M. Grasselli, G. Schimperna, *The conserved phase-field system with memory*, *Adv. Math. Sci. Appl.*, **11** (2001), 265–291.
7. P. Colli, G. Gilardi, M. Grasselli, G. Schimperna, *Global existence for the conserved phase field model with memory and quadratic nonlinearity*, *Portugal. Math.*, **58** (2001), 159–170.
8. P. Colli, F. Luterotti, G. Schimperna, U. Stefanelli, *Global existence for a class of generalized systems for irreversible phase changes*, *NoDEA – Nonlinear Differential Equations Appl.*, **9** (2002), 255–276.
9. F. Luterotti, G. Schimperna, U. Stefanelli, *Global solution to a phase field model with irreversible and constrained phase evolution*, *Quart. Appl. Math.*, **60** (2002), 301–316.
10. E. Bonetti, P. Colli, W. Dreyer, G. Gilardi, G. Schimperna, J. Sprekels, *On a model for phase separation in binary alloys driven by mechanical effects*, *Phys. D*, **165** (2002), 48–65.
11. Ph. Laurençot, G. Schimperna, U. Stefanelli, *Global existence of a strong solution to the one-dimensional full model for irreversible phase transitions*, *J. Math. Anal. Appl.*, **271** (2002), 426–442.
12. G. Savaré, G. Schimperna, *Domain perturbations and estimates for the solutions of second order elliptic equations*, *J. Math. Pures Appl.*, **81** (2002), 1071–1112.
13. E. Bonetti, W. Dreyer, G. Schimperna, *Global solution to a generalized Cahn-Hilliard equation with viscosity*, *Adv. Differential Equations*, **8** (2003), 231–256.

14. E. Rocca, G. Schimperna, *The conserved Penrose-Fife system with Fourier heat flux law*, *Nonlinear Anal.*, **53** (2003), 1089–1100.
15. F. Luterotti, G. Schimperna, U. Stefanelli, *A generalized phase relaxation model with hysteresis*, *Nonlinear Anal.*, **55** (2003), 381–398.
16. E. Rocca, G. Schimperna, *Singular limit of a conserved Penrose-Fife model with special heat flux law and memory effects*, *Asymptot. Anal.*, **36** (2003), 285–301.
17. D. Kessler, J.-F. Scheid, G. Schimperna, U. Stefanelli, *Study of a system for the isothermal separation of components in a binary alloy with change of phase*, *IMA J. Appl. Math.*, **69** (2004), 233–257.
18. E. Bonetti, G. Schimperna, *Local existence for Frémond's model of damage in elastic materials*, *Contin. Mech. Thermodyn.*, **16** (2004), 319–335.
19. P. Colli, G. Gilardi, E. Rocca, G. Schimperna, *On a Penrose-Fife phase-field model with non-homogeneous Neumann boundary conditions for the temperature*, *Differential Integral Equations*, **17** (2004), 511–534.
20. E. Rocca, G. Schimperna, *Universal attractor for a Penrose-Fife system with special heat flux law*, *Mediterr. J. Math.*, **1** (2004), 109–121.
21. G. Schimperna, U. Stefanelli, *A quasi-stationary phase field model with micro-movements*, *Appl. Math. Optim.*, **50** (2004), 67–86.
22. E. Rocca, G. Schimperna, *Universal attractor for some singular phase transition systems*, *Phys. D*, **192** (2004), 279–307.
23. E. Feireisl, G. Schimperna, *Large time behaviour of solutions to Penrose-Fife phase change models*, *Math. Methods Appl. Sci.*, **28** (2005), 2117–2132.
24. A. Miranville, G. Schimperna, *Nonisothermal phase separation based on a microforce balance*, *Discrete Contin. Dyn. Syst. Ser. B*, **5** (2005), 753–768.
25. E. Bonetti, G. Schimperna, A. Segatti, *On a doubly nonlinear model for the evolution of damaging in viscoelastic materials*, *J. Differential Equations*, **218** (2005), 91–116.
26. A. Miranville, G. Schimperna, *Global solution to a phase transition model based on a microforce balance*, *J. Evol. Equ.*, **5** (2005), 253–276.
27. A. Lorenzi, E. Rocca, G. Schimperna, *Direct and inverse problems for a parabolic integro-differential system of Caginalp type*, *Adv. Math. Sci. Appl.*, **15** (2005), 227–263.
28. M. Grasselli, H. Petzeltová, G. Schimperna, *Long time behavior of solutions to the Caginalp system with singular potential*, *Z. Anal. Anwend.*, **25** (2006), 51–72.
29. E. Rocca, G. Schimperna, *Global attractor for a parabolic-hyperbolic Penrose-Fife phase field system*, *Discrete Contin. Dyn. Syst.*, **15** (2006), 1193–1214.

30. M. Grasselli, H. Petzeltová, G. Schimperna, *Convergence to stationary solutions for a parabolic-hyperbolic phase-field system*, *Commun. Pure Appl. Anal.*, **5** (2006), 827–838.
31. G. Schimperna, U. Stefanelli, *Positivity of the temperature for phase transitions with micro-movements*, *Nonlinear Anal. Real World Appl.*, **8** (2007), 257–266.
32. G. Schimperna, A. Segatti, U. Stefanelli, *Well-posedness and long-time behavior for a class of doubly nonlinear equations*, *Discrete Contin. Dyn. Syst.*, **18** (2007), 15–38.
33. M. Grasselli, H. Petzeltová, G. Schimperna, *Asymptotic behavior of a nonisothermal viscous Cahn-Hilliard equation with inertial term*, *J. Differential Equations*, **239** (2007), 38–60.
34. M. Grasselli, H. Petzeltová, G. Schimperna, *A nonlocal phase-field system with inertial term*, *Quart. Appl. Math.*, **65** (2007), 451–469.
35. G. Schimperna, *Global attractors for Cahn-Hilliard equations with nonconstant mobility*, *Nonlinearity*, **20** (2007), 2365–2387.
36. G. Schimperna, A. Segatti, *Attractors for the semiflow associated with a class of doubly nonlinear parabolic equations*, *Asymptot. Anal.*, **56** (2008), 61–86.
37. G. Gilardi, A. Miranville, G. Schimperna, *On the Cahn-Hilliard equation with irregular potentials and dynamic boundary conditions*, *Comm. Pure Appl. Anal.*, **8** (2009), 881–912.
38. A. Miranville, G. Schimperna, *Generalized Cahn-Hilliard equations for multicomponent alloys*, *Adv. Math. Sci. Appl.*, **19** (2009), 131–154.
39. G. Schimperna, *Global and exponential attractors for the Penrose-Fife system*, *M<sup>3</sup>AS – Math. Models Methods Appl. Sci.*, **19** (2009), 969–991.
40. P. Colli, D. Hilhorst, F. Issard-Roch, G. Schimperna, *Long time convergence for a class of variational phase field models*, *Discrete Contin. Dyn. Syst.*, **25** (2009), 63–81.
41. M. Grasselli, G. Schimperna, S. Zelik, *On the 2D Cahn-Hilliard equation with inertial term*, *Comm. Partial Differential Equations*, **34** (2009), 137–170.
42. M. Grasselli, G. Schimperna, A. Segatti, S. Zelik, *On the 3D Cahn-Hilliard equation with inertial term*, *J. Evol. Eq.*, **9** (2009), 371–404.
43. E. Feireisl, H. Petzeltová, E. Rocca, G. Schimperna, *Analysis of a phase-field model for two-phase compressible fluids*, *M<sup>3</sup>AS – Math. Models Methods Appl. Sci.*, **20** (2010), 1129–1160.
44. A. Miranville, G. Schimperna, *On a doubly nonlinear Cahn-Hilliard-Gurtin system*, *Discrete Contin. Dyn. Syst. Ser. B*, **14** (2010), 675–697.

45. M. Grasselli, A. Miranville, G. Schimperna, *The Caginalp phase-field system with coupled dynamic boundary conditions and singular potentials*, *Discrete Contin. Dyn. Syst.*, **28** (2010), 67–98.
46. D. Pražák, M. Grasselli, G. Schimperna, *Attractors for reaction-diffusion systems in unbounded domains via the method of short trajectories*, *J. Differential Equations*, **249** (2010), 2287–2315.
47. M. Grasselli, G. Schimperna, S. Zelik, *Trajectory and smooth attractors for Cahn-Hilliard equations with inertial term*, *Nonlinearity*, **23** (2010), 707–737.
48. G. Gilardi, A. Miranville, G. Schimperna, *Long time behavior of the Cahn-Hilliard equation with irregular potentials and dynamic boundary conditions*, *Chinese Annals of Mathematics Series B*, **31** (2010), 679–712.
49. M. Grasselli, A. Miranville, R. Rossi, G. Schimperna, *Analysis of the Cahn-Hilliard equation with a chemical-potential dependent mobility*, *Comm. Partial Differential Equations*, **36** (2011), 1193–1238.
50. E. Feireisl, E. Rocca, G. Schimperna, *On a non-isothermal model for nematic liquid crystals*, *Nonlinearity*, **24** (2011), 243–257.
51. G. Goldstein, A. Miranville, G. Schimperna, *A Cahn-Hilliard model in a domain with non-permeable walls*, *Phys. D*, **240** (2011), 754–766.
52. E. Feireisl, M. Frémond, E. Rocca, G. Schimperna, *A new approach to non-isothermal models for nematic liquid crystals*, *Arch. Rational Mech. Anal.*, **205** (2012), 651–672.
53. G. Schimperna, S. Zelik, *Existence of solutions and separation from singularities for a class of fourth order degenerate parabolic equations*, *Trans. AMS*, **365** (2013), 3799–3829.
54. H. Petzeltová, E. Rocca, G. Schimperna, *On the long-time behavior of some mathematical models for nematic liquid crystals*, *Calc. Var. PDE*, **46** (2013), 623–639.
55. G. Schimperna, A. Segatti, S. Zelik, *Asymptotic uniform boundedness of energy solutions to the Penrose-Fife model*, *J. Evol. Eq.*, **12** (2012), 863–890.
56. G. Schimperna, I. Pawłow, *On a class of Cahn-Hilliard models with nonlinear diffusion*, *SIAM J. Math. Anal.*, **45** (2013), 31–63.
57. M. Grasselli, G. Schimperna, *Nonlocal phase-field systems with general potentials*, *Discrete Contin. Dyn. Syst.*, **33** (2013), 5089–5106.
58. G. Schimperna, I. Pawłow, *A Cahn-Hilliard equation with singular diffusion*, *J. Differential Equations*, **254** (2013), 779–803.
59. E. Feireisl, E. Rocca, G. Schimperna, A. Zarnescu, *Evolution of non-isothermal Landau-de Gennes nematic liquid crystal flows with singular potential*, *Commun. Math. Sci.*, **12** (2014), 317–343.

60. A. Miranville, E. Rocca, G. Schimperna, A. Segatti, *The Penrose-Fife phase-field model with coupled dynamic boundary conditions*, *Discrete Contin. Dyn. Syst.*, **34** (2014), 4259–4290.
61. G. Akagi, G. Schimperna, *Subdifferential calculus and doubly nonlinear evolution equations in  $L_p$ -spaces with variable exponents*, *J. Funct. Anal.*, **267** (2014), 173–213.
62. M. Eleuteri, E. Rocca, G. Schimperna, *On a non-isothermal diffuse interface model for two-phase flows of incompressible fluids*, *Discrete Contin. Dyn. Syst.*, **35** (2015), 2497–2522.
63. E. Feireisl, E. Rocca, G. Schimperna, A. Zarnescu, *Nonisothermal nematic liquid crystal flows with the Ball-Majumdar free energy*, *Ann. Mat. Pura Appl.* (4), **194** (2015), 1269–1299.
64. G. Schimperna, A. Segatti, S. Zelik, *On a singular heat equation with dynamic boundary conditions*, *Asymptot. Anal.*, **97** (2016), 27–59.
65. M. Dai, E. Feireisl, E. Rocca, G. Schimperna, M.E. Schonbek, *On asymptotic isotropy for a hydrodynamic model of liquid crystals*, *Asymptot. Anal.*, **97** (2016), 189–210.
66. G. Akagi, G. Schimperna, A. Segatti, *Fractional Cahn-Hilliard, Allen-Cahn and porous medium equations*, *J. Differential Equations*, **261** (2016), 2935–2985.
67. M. Eleuteri, E. Rocca, G. Schimperna, *Existence of solutions to a two-dimensional model for nonisothermal two-phase flows of incompressible fluids*, *Ann. Inst. H. Poincaré Anal. Non Linéaire*, **33** (2016), 1431–1454.
68. R. Scala, G. Schimperna, *On the viscous Cahn-Hilliard equation with singular potential and inertial term*, *AIMS Mathematics*, **1** (2016), 64–76.
69. R. Scala, G. Schimperna, *A contact problem for viscoelastic bodies with inertial effects and unilateral boundary constraints*, *European J. Appl. Math.*, **28** (2017), 91–122.
70. M. Dai, E. Feireisl, E. Rocca, G. Schimperna, M.E. Schonbek, *Analysis of a diffuse interface model of multispecies tumor growth*, *Nonlinearity* **30** (2017), 1639–1658.
71. E. Bonetti, E. Rocca, R. Scala, G. Schimperna, *On the strongly damped wave equation with constraint*, *Comm. Partial Differential Equations*, **42** (2017), 1042–1064.
72. E. Feireisl, E. Rocca, G. Schimperna, A. Zarnescu, *On a hyperbolic system arising in liquid crystals modeling*, *J. Hyperbolic Differ. Equ.*, **15** (2018), 15–35.
73. S. Frigeri, K.F. Lam, E. Rocca, G. Schimperna, *On a multi-species Cahn-Hilliard-Darcy tumor growth model with singular potentials*, *Commun. Math. Sci.*, **16** (2018), 821–856.
74. G. Akagi, G. Schimperna, A. Segatti, L.V. Spinolo, *Quantitative estimates on localized finite differences for the fractional Poisson problem, and applications to regularity and spectral stability*, *Commun. Math. Sci.*, **16** (2018), 913–961.

75. G. Akagi, G. Schimperna, A. Segatti, *Convergence of solutions for the fractional Cahn-Hilliard system*, *J. Funct. Anal.*, **276** (2019), 2663–2715.
76. G. Favre, G. Schimperna, *On a Navier-Stokes-Allen-Cahn model with inertial effects*, *J. Math. Anal. Appl.*, **475** (2019), 811–838.
77. A. Miranville, E. Rocca, G. Schimperna, *On the long time behavior of a tumor growth model*, *J. Differential Equations*, **267** (2019), 2616–2642.
78. M. Eleuteri, S. Gatti, G. Schimperna, *Regularity and long-time behavior for a thermodynamically consistent model for complex fluids in two space dimensions*, *Indiana Univ. Math. J.*, **68** (2019), 1465–1518.
79. G. Schimperna, H. Wu, *On a class of sixth-order Cahn-Hilliard type equations with logarithmic potential*, *SIAM J. Math. Anal.*, **52** (2020), 5155–5195.
80. E. Feireisl, E. Rocca, G. Schimperna, A. Zarnescu, *Nonlinear electrokinetics in nematic electrolytes*, *Discrete Contin. Dyn. Syst. Ser. S*, **14** (2021), 219–241.
81. A. Marveggio, G. Schimperna, *On a non-isothermal Cahn-Hilliard model based on a microforce balance*, *J. Differential Equations*, **274** (2021), 924–970.
82. G. Akagi, G. Schimperna, *Local well-posedness for Frémond’s model of complete damage in elastic solids*, preprint arXiv:2006.14240 (2020), *European J. Appl. Math.*, in press.
83. A. Giorgini, K.F. Lam, E. Rocca, G. Schimperna, *On the existence of strong solutions to the Cahn-Hilliard-Darcy system with mass source*, preprint arXiv:2009.13344 (2020), *SIAM J. Math. Anal.*, in press.

### Preprints

84. R. Lasarzik, E. Rocca, G. Schimperna, *Weak solutions and weak-strong uniqueness for a thermodynamically consistent phase-field model*, preprint arXiv:1907.12816 (2019).
85. G. Schimperna, *On the Cahn-Hilliard-Darcy system with mass source and strongly separating potential*, preprint (2021).

### Papers published in (refereed) Conference proceedings

86. G. Schimperna, *Convergence of phase-field equations to the Stefan model*, Proceedings of the PCC99 ESF-AMIF Workshop (Warsaw, Poland, 24-27/6/1999), T. A. Kowalewski, F. Stella, J. Banaszek, J. Szmyd editors, IPPT-PAN Reports, **5** (1999), 131–134.
87. J.-F. Scheid, G. Schimperna, *Regularity and uniqueness results for a phase change problem in binary alloys*, Proceedings of the “Fourth European Conference on Elliptic and Parabolic Problems - Rolduc and Gaeta 2001”, World Sci. Publishing, River Edge, NJ, 2002, 475–484.



88. F. Luterotti, G. Schimperna, U. Stefanelli, *Local solution to Fremond's full model for irreversible phase transitions*, Proc. "Modelli Matematici e Problemi Analitici per Materiali Speciali", Cortona, 25-29 giugno 2001, "Mathematical Models and Methods for Smart Materials", M. Fabrizio, B. Lazzari & A. Morro (eds.), Ser. Adv. Math. Appl. Sci. 62, World Scientific Publishing Co. 2002, 323–328.

89. F. Luterotti, G. Schimperna, U. Stefanelli, *Existence results for a phase transition model based on microscopic movements*, Differential equations: inverse and direct problems, 245–263, Lect. Notes Pure Appl. Math., 251, Chapman & Hall/CRC, Boca Raton, FL, 2006.

### PhD Thesis

90. G. Schimperna, *Transmission Problems for Nonlinear Parabolic Systems of Phase-field Type*, PhD Thesis, University of Pavia, 2000.

## IV. Teaching

Teaching activity is reported by year and in reverse chronological order. All the listed courses have been taught at Pavia University.

### Academic Year 2021/22 (planned):

- “ANALISI MATEMATICA 2”, Diploma Course in Mathematics, 9ECTS.
- “MATEMATICA”, Diploma Course in Biology, 6ECTS.

### Academic Year 2020/21:

- “ANALISI MATEMATICA 3”, Diploma Course in Mathematics, 9ECTS.
- “MATEMATICA”, Diploma Course in Biology, 6ECTS.

### Academic Year 2019/20:

- “ANALISI MATEMATICA 3”, Diploma Course in Mathematics, 9ECTS.
- “MATEMATICA”, Diploma Course in Biology, 6ECTS.

### Academic Year 2018/19:

- “ANALISI MATEMATICA 3”, Diploma Course in Mathematics, 9ECTS.
- “MATEMATICA”, Diploma Course in Biology, 6ECTS.

### Academic Year 2017/18:

- “ANALISI MATEMATICA 3”, Diploma Course in Mathematics, 9ECTS.
- “MATEMATICA”, Diploma Course in Biology, 6ECTS.

### Academic Year 2016/17:

- “VARIATIONAL METHODS FOR EVOLUTION EQUATIONS”, PhD course, 16 hours.
- “ANALISI FUNZIONALE”, Graduate Course in Mathematics, 9ECTS.
- “MATEMATICA”, Diploma Course in Biology, 6ECTS.

### Academic Year 2015/16:

- “ANALISI FUNZIONALE”, Graduate Course in Mathematics, 9ECTS.
- “MATEMATICA”, Diploma Course in Biology, 6ECTS.

### Academic Year 2014/15:

- “ANALISI FUNZIONALE”, Graduate Course in Mathematics, 9ECTS.
- “MATEMATICA”, Diploma Course in Biology, 6ECTS.

### Academic Year 2013/14:

- “ANALISI FUNZIONALE”, Graduate Course in Mathematics, 9ECTS.
- “MATEMATICA”, Diploma Course in Biology, 6ECTS.

**Academic Year 2012/13:**

- “COMPLEMENTI DI ANALISI MATEMATICA II”, Undergraduate Course in Physics, 6ECTS.
- “MATEMATICA”, Diploma Course in Biology, 6ECTS.
- “ANALISI FUNZIONALE ED EQUAZIONI DIFFERENZIALI”, Graduate Course in Mathematics, 3ECTS.

**Academic Year 2011/12:**

- “EQUAZIONI DI EVOLUZIONE”, Graduate Course in Mathematics, 6ECTS.
- “MATEMATICA”, Diploma Course in Biology, 6ECTS.

**Academic Year 2010/11:**

- “COMPLEMENTI DI ANALISI MATEMATICA II”, Undergraduate Course in Physics, 6ECTS.
- “MATEMATICA”, Diploma Course in Biology, 6ECTS.

**Academic Year 2009/10:**

- “EQUAZIONI DI EVOLUZIONE”, Graduate Course in Mathematics, 3ECTS.
- “COMPLEMENTI DI ANALISI MATEMATICA DI BASE”, Diploma Course in Physics, 5ECTS.
- “MATEMATICA”, Diploma Course in Biology, 6ECTS.

**Academic Year 2008/09:**

- “COMPLEMENTI DI ANALISI MATEMATICA DI BASE”, Diploma Course in Physics, 5ECTS.
- “ISTITUZIONI DI MATEMATICHE”, Diploma Course in Biology, 5ECTS.

**Academic Year 2007/08:**

- “INTRODUZIONE AI PROBLEMI PER EQUAZIONI ALLE DERIVATE PARZIALI”, Diploma Course in Mathematics, 5ECTS.
- “ANALISI MATEMATICA D”, Diploma Course in Mathematics, 3ECTS.
- “ISTITUZIONI DI MATEMATICHE”, Diploma Course in Biology, 5ECTS.

**Academic Year 2006/07:**

- “EQUAZIONI DIFFERENZIALI E SISTEMI DINAMICI”, Diploma Courses in Mathematics and in Physics.
- “ISTITUZIONI DI MATEMATICHE”, Diploma Course in Biology.

**Academic Year 2005/06:**

- “EQUAZIONI DIFFERENZIALI E SISTEMI DINAMICI” Diploma Courses in Mathematics and in Physics.
- “ISTITUZIONI DI MATEMATICHE”, Diploma Course in Biology.

**Academic Year 2004/05:**

- “EQUAZIONI DIFFERENZIALI E SISTEMI DINAMICI” (in collaboration with Pierluigi Colli), Diploma Courses in Mathematics and in Physics.
- “ISTITUZIONI DI MATEMATICHE”, Diploma Course in Biology.

**Academic Year 2003/04:**

- Exercise course of “CONCETTI DI ANALISI MATEMATICA DI BASE”, Diploma Courses in Mathematics and in Physics.
- “EQUAZIONI DIFFERENZIALI E SISTEMI DINAMICI”, Diploma Course in Physics.
- “COMPLEMENTI DI ANALISI MATEMATICA DI BASE” (in collaboration with Daniele Boffi), Diploma Course in Physics.

**Academic Year 2002/03:**

- “EQUAZIONI DIFFERENZIALI E SISTEMI DINAMICI” (in collaboration with Alessandro Torelli), Diploma Course in Mathematics.
- “EQUAZIONI DIFFERENZIALI E SISTEMI DINAMICI”, Diploma Course in Physics.
- “COMPLEMENTI DI ANALISI MATEMATICA DI BASE” (in collaboration with Daniele Boffi), Diploma Course in Physics.

**Academic Year 2001/02:**

- “STRUMENTI INFORMATICI E MATEMATICI DI BASE” (mathematical part only), Diploma Course in Mathematics.
- “EQUAZIONI DIFFERENZIALI E SISTEMI DINAMICI”, Diploma Course in Physics.

**Academic Year 2000/01:**

- “TEORIA DELLE FUNZIONI”, part 2 (in collaboration with Gianni Gilardi), Diploma Course in Mathematics.
- Exams of “ANALISI MATEMATICA II”, Diploma Course in Physics.
- Exercise course of “ANALISI MATEMATICA A”, Faculty of Engineering.
- Course of “MATEMATICA, FISICA E STATISTICA” (mathematical part only), Diploma Course in Sport Sciences.

**Academic Year 1999/2000:**

- Exercise course of “ANALISI MATEMATICA 1”, Faculty of Engineering.
- Course of “MATEMATICA, FISICA E STATISTICA” (mathematical part only), Diploma Course in Sport Sciences.

**Academic Year 1998/99:**

- Exercise course of “ANALISI MATEMATICA 1”, Faculty of Engineering.