

## Curriculum Vitae

**Name:** RNDr. Miroslav Šilhavý, DrSc.

**Birth:** November 5, 1949, Třebíč, Czech Republic

**Nationality:** Czech Republic

**Permanent Address:**

Suchý vršek 2135,

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**Positions:**

Director of Research,

Mathematical Institute,

Academy of Sciences of the Czech Republic,

Žitná 25,

115 67 Prague 1,

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(employed there since 1977)

**Education and Degrees:**

1973 graduated at the Charles University, Prague, in Physics

1978 Ph.D. received from the Czechoslovak Academy of Sciences

1991 degree Doctor of Science received from the Charles University (DrSc., the highest scientific degree in the Czech Republic)

**Major International Visits and Visiting Positions:**

- Stekhlov Institute of Mathematics of the Academy of Sciences of the USSR, Moscow, Leningrad, USSR (1980, 1 month)
- S. Banach International Centre of Mathematics & Institute of Fundamental Technological Research (Polish Academy of Sciences) Warsaw, Poland (1981, 1 month; 1982, 2 weeks, 1983, 1 month)
- Institute for Mathematics and its Applications, University of Minnesota, Minneapolis, USA (1983, 4 months)
- University of Padova, Italy (1984/1985, 3 months)
- Heriot-Watt University, Edinburgh, Scotland (1985, 1 month)
- Institute INCREST, Bucharest, Romania (1985, 2 weeks)
- Istituto CNUCE, CNR, Pisa, Italy (1986, 3 months; 1988, 7 weeks; 1990, 7 weeks; 1991, 6 weeks; 1993, 6 weeks; 1997, 2 months)
- University of Valencia, Spain (1987, 1 week)
- Helsinki University of Technology, Espoo, Finland (1988, 1 month)

- University of Kentucky, Lexington, Kentucky, Carnegie Mellon University, Pittsburgh, Pennsylvania, and University of Minnesota, Minneapolis, USA (1991, 1 month)
- Northern Illinois University, DeKalb, Illinois; also visited Carnegie Mellon University, Pittsburgh, Pennsylvania, University of Minnesota, Minneapolis (1993, altogether 5 weeks)
- Carnegie Mellon University, Pittsburgh, Pennsylvania (academic year 1993/94)
- Weierstrass Institute, Berlin (1998, 4 weeks)
- University of Nottingham (1998, 4 months)
- Università di Roma III (2000, 4 months)
- Università di Pisa (2000, 2 months)
- Federal University of Rio de Janeiro (2001, 3 months)
- University of Kentucky (2002, 1 semester)
- University of Pisa (2003–2006, 3 years)
- University of Florence (2006, 1 month)
- CNUCE, CNR, Pisa (2006, 10 days)
- University of Florence (2007, 12 weeks)
- CNUCE, CNR, Pisa (2007, 10 days)
- University of Florence (2008, 12 weeks)
- University of Dresden (2008, 1 week)
- University of Udine (2009, 1 month)
- University of Florence (2011, 1 month)
- University of Florence (2012, 4 months)
- ISTI CNR Pisa (2012, 2 weeks)
- University of Florence (2013, 4 weeks)
- Ben Gurion University, Beer Sheva (2013, 1 month)

### **International Lectures:**

#### Meetings and Conferences:

- *A condition equivalent to the existence of nonequilibrium entropy and temperature for materials with internal variables*, Euromech conference, Jablonna 1977
- *On the Clausius inequality*, EUROMECH 111, Marienbad, 1978
- *On the foundations of thermodynamics*, Symposium Trends in applications of mathematics in mechanics, Bratislava, 1982
- *Foundations of thermodynamics*, Workshop Laws and Structure of Thermodynamics, Minneapolis, 1983 (invited)
- *Phase transitions in non-simple bodies*, Mathematical theories of fluids, Oberwolfach, 1984
- *An admissibility criterion for shocks and propagating phase boundaries via thermodynamics of non-simple materials*, Mathematical theories of fluids, Oberwolfach, 1987
- *Il'yushin's conditions in non-isothermal plasticity*, International conference on mechanics, physics and structure of materials, Thessaloniki, 1990

- *On thermodynamics of elastic–plastic materials*, Plasticity '91, Grenoble, 1991
- *Energy principles and equations of motion*, Meeting of the Society for Natural Philosophy, Pittsburgh, 1993 (invited)
- *Convexity conditions for orthogonally invariant stored energies*, Fourth Meeting on Current Ideas in Mechanics and Related Fields, Krakow, 1997
- *On the pseudoelastic hysteresis*, Third Microcolloquium on Microstructures, Pisa, 1999 (invited)
- *Rank 1 convexity and relaxation of isotropic functions*, Partial Differential Equations and Applications, Olomouc, Czech Republic, 1999 (invited)
- *Arrow of time for nonequilibrium systems*, 12th Annual Meeting of the Academia Europea, Prague, June 15–17, 2000 (invited)
- *Convexity properties and relaxation of isotropic stored energies and sets of deformation gradients*, Computational Mechanics of Solid Materials at Large Strains, Stuttgart, July 20–24, 2001 (invited)
- *Dissipation postulates in finite–deformation plasticity*, 15<sup>th</sup> AIMETA Congress of Theoretical and Applied Mechanics, Taormina, September 26–29, 2001 (invited)
- *Relaxation in a class of  $SO(n)$ –invariant energies related to nematic elastomers*, Annual Italian Mechanics Research Group Meeting, Bressanone, December 15–18, 2001 (invited)
- *An  $O(n)$  invariant rank 1 convex function that is not polyconvex*, Geometry, Continua and Microstructure 6, Belgrade, September 20–23, 2002 (invited)
- *Dislocation walls in crystals under single slip*, Third GAMM Seminar on Microstructures 2004, Stuttgart, January 8–10, 2004 (invited)
- *Normal traces of divergence measure vectorfields*, The Rational Modeling of Materials and Structures, Reggio Calabria, June 30–July 3, 2005 (invited)
- *Stresses in continuous bodies interpreted as measures*, AIMETA meeting, Florence, 11–15 September 2005 (invited)
- *Phase equilibria in isotropic solids*, Meeting of the Society for Natural Philosophy, Bari, October 2005 (invited)
- *Liquefaction points and the occurrence of effective liquid response in nonelliptic solids*, A meeting in honor of G. Capriz, Rome, October 2005 (invited)
- *Integration of measures and admissible stress fields for masonry bodies*, Seventh Meeting “Unilateral problems in structural analysis,” Palmanova, June 17–19, 2010 (invited)
- *Phase transitions with interfacial energy: interface null lagrangians, polyconvexity, and existence*, GMA Meeting “AIMETA Materials”, Udine 23–24 February, 2011 (plenary lecture, invited)
- *The effective energy in the Allen–Cahn model with deformation*, Meeting in honor of C. Davini, Udine 25–26 February, 2011 (invited)
- *A variational approach to phase interfaces with interface energy*, 2nd International Conference on Material Modelling. August 31st–September 2nd, 2011, Paris

- *Dual Variational Problems and Limit Analysis for Masonry Bodies*, ISIMM 2012 – STAMM XVIII Mechanics – New challenges, September 3–September 6, 2012, Haifa, Israel

Universities and Research Institutions:

- Course of lectures *Plasticity*, CNUCE, Pisa, 1986
- Course of lectures *Foundations of thermodynamics*, Technological University of Valencia, 1987
- Course of lectures *Foundations of thermodynamics*, Helsinki University of Technology, Otaniemi, 1988
- Course of lectures *Foundations of thermodynamics*, CNUCE, Pisa, 1990
- Course of lectures *Multipolar fluids*, DeKalb, Illinois, USA, 1993
- Altogether estimated 150 hours of international lectures and courses at various institutions, some listed in Item “Selected International Visits and Visiting Positions.”

**Teaching and Pedagogical Activities:**

- 1979 semestral course *Analytical Mechanics* at the Pedagogical Faculty in České Budějovice, Czech Republic
- 1980–1993 directed 4 diploma works at the Charles University
- 1987 course *Continuum Thermodynamics* at the Charles University, Prague
- 1989 course of lectures *Electrodynamics of Deformable Media*, Institute of Thermomechanics of the Czechoslovak Academy of Sciences, Prague
- 1990 member of a group developing a curriculum for “Mathematical and Computer Modelling” at the Charles University
- 1991 semestral course *Relativistic Continuum Mechanics & Electrodynamics of Deformable Media* at the Charles University, Prague
- 1991, 1993 semestral courses *Continuum Thermodynamics* at the Charles University, Prague
- 1993 2 semestral courses *Linear Algebra* at the Carnegie Mellon University, Pittsburgh, Pennsylvania
- 1994 semestral course *Introduction to Continuum Mechanics* at the Carnegie Mellon University, Pittsburgh, Pennsylvania
- 2000 a course of lectures *Introduction to Phase Transitions in solids*, Università di Roma III
- 2000 a minicourse *Introduction to Continuum Thermodynamics*, Università di Roma III
- 2000 a course of lectures *Phase Transitions in solids*, Università di Pisa
- 2001 a course of lectures *Phase Transitions in solids*, Federal University of Rio de Janeiro
- 2002 a course of lectures *Energy minimization for isotropic nonlinear elastic bodies*, International Centre for Mechanical Sciences, Udine, July 15–19, 2002
- 2003 semestral course *Wave propagation*, Department of Mathematics, University of Pisa
- 2004 semestral course *Variational Principles in Mechanics*, Department of Mathematics, University of Pisa

- 2004 a course of lectures *Cauchy stress theorem: from tetrahedrons to fractals*, 29<sup>th</sup> Summer School in Mathematical Physics, Ravello, September 6–18, 2004.
- 2005 semestral course *Variational Principles in Mechanics*, Department of Mathematics, University of Pisa
- 2007 courses of lectures *Phase transitions with interfacial energy: interface null lagrangians and interface quasi- and poly-convexity* and *Isotropic energy functions: rank 1- and poly-convexity and relaxation*, Advanced School in “Poly-, Quasi- and Rank-One Convexity in Applied Mechanics,” September 24–28, 2007 in International Centre for Mechanical Sciences, Udine
- 2011 course of lectures *The mathematics of no-tension materials* Advanced School in “Mechanics of Masonry Structures,” October 3–October 7 in International Centre for Mechanical Sciences, Udine

#### **Administrative Work:**

- Member and Chairman of the Committee of the Grant Agency of the Academy of Sciences of the Czech Republic, 1995–1997
- Member of the Concil for Doctoral Studies “Mathematical and Computer Modelling,” Charles University, 1990–
- Member of the Council for Doctoral Studies in Physics, Charles University 2008–
- Member of the Executive Committee, “International Society for the Interaction between Mathematics and Mechanics, 2001–
- Member of the Thesis Committee, Dipartimento di Matematica, Università di Pisa, 2003–2006
- Member of the training team of “Multi-scale modelling and characterisation for phase transformations in advanced materials,” a Marie Curie Research Training Network, 2003–2008

#### **Editorial boards:**

- Member of the editorial board of “Technische Mechanik,” 2002–
- Member of the editorial board of “Mathematics and Mechanics of Solids,” 2007–
- Member of the advisory board of “Mathematics and Mechanics of Complex Systems,” 2012–
- Member of the editorial board of “Journal of the Calculus of Variations,” 2013–

#### **Awards:**

- 1979 Award from the Czechoslovak Academy of Sciences, for a collection of papers “Thermomechanics of inelastic properties of solids”
- 1982 Plaque from the Academy of Sciences for young scientists for a collection of papers “Mathematical foundations of thermodynamics of continuous media” (Items [7, 8] of the List of Publications, below)
- 1983 Premium of the Czech Literary Fund Foundation for Item [11] of the List of Publications

2004 Premium of the Editor in Chief of the Czechoslovak Mathematical Journal for Item [70] of the List of Publications

**Grants: #**

- 1991 Multipolar viscous fluids, 2 years (from the Czechoslovak Academy of Sciences)
- 1993 Thermodynamics, stability and dissipation inequalities for plastic materials, 3 years (from Academy of Sciences of the Czech Republic)
- 1996 Convexity conditions in nonlinear elasticity, 3 years (from Academy of Sciences of the Czech Republic)
- 2000 Microstructure, relaxation, phase transitions, and hysteresis in shape memory alloys, 3 years (from the Grant Agency of the Czech Republic)
- 2002 Member of the team, “Modelli Matematici per la Scienza dei Materiali,” 2 years (from Ministero dell’Istruzione, dell’Università e della Ricerca, Italy)
- 2003 Variational theory of microstructure, semiconvexity, phase transitions, and complex materials, 3 years (from Ministero dell’Istruzione, dell’Università e della Ricerca, Italy)
- 2006 Member of the team, “Mathematical Modeling, Mechanics & Materials,” 2 years (from Ministero dell’Istruzione, dell’Università e della Ricerca, Italy)

**Selected Research Supports:**

- Czech Literary Fund Foundation, 1977 (Jablonna; partial)
- Visiting Fellowship from NSF, 1983 (Minneapolis)
- Stipend and Visiting Professorships from CNR, 1984/1985, 1986, 1988, 1990, 1991, 1993 (Padova/Pisa)
- Visiting Fellowship from SERC, 1985 (Edinburgh, 1 month)
- Center for Nonlinear Analysis, Pittsburgh, 1993/94 (Pittsburgh; partial)
- Visiting Fellowship from EPSRC, 1998 (Nottingham)
- Visiting Professorships from Consorzio di Pisa di Recherche, 1998 (Pisa)
- Support for consultations in the dynamics of masonry structures from Consorzio di Pisa di Recherche, 1998 (Pisa)
- Support by the CNR Short-term Mobility project “Analisi dinamica di solidi elastici non lineari,” 2006
- Support by the University of Florence, Mechanics of masonry materials 2006, 2007, 2008, 2009, 2011

**Professional Interests:**

- calculus of variations, continuum mechanics, thermodynamics
- shock waves and phase transitions
- qualitative properties of the equations of continuum thermomechanics
- constitutive equations of plasticity
- fluid mechanics, non-Newtonian fluids
- thermodynamics of mixtures and chemical reactions

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# The grant system was established in Czechoslovakia/Czech Republic only in 1991.

- convexity properties of response functions, constitutive inequalities
- defective crystals
- continuum mechanics of regions with fractal boundaries
- mechanics of masonry materials

### List of Publications

#### Monograph:

- 1 *The mechanics and thermodynamics of continuous media* Berlin Springer (1997)

#### Editor of proceedings:

- 2 *Mathematical modelling of bodies with complicated bulk and boundary behavior* Naples University of Naples (2008)

#### Papers:

- 3 *On transformation laws for plastic deformations of materials with elastic range* Arch. Rational Mech. Anal. **63** (1977) 169–182
- 4 *A note on the existence of entropy in classical thermodynamics* Archives of Mechanics **29** (1977) 289–298
- 5 *A theory of inelastic behaviour of materials, Part I* Arch. Rational Mech. Anal. **65** (1977) 97–129 (Coauthor: J. Kratochvíl, Prague)
- 6 *A theory of inelastic behaviour of materials, Part II* Arch. Rational Mech. Anal. **65** (1977) 131–152 (Coauthor: J. Kratochvíl, Prague)
- 7 *Efficiency and the existence of entropy in classical thermodynamics* Arch. Rational Mech. Anal. **66** (1977) 73–81 (Coauthor: W. A. Day, Oxford)
- 8 *A condition equivalent to the existence of nonequilibrium entropy and temperature for materials with internal variables* Arch. Rational Mech. Anal. **68** (1977) 299–332
- 9 *On the Clausius inequality* In *Abstracts of EUROMECH III, Mariánské Lázně, 26.–28. září 1978* pp. 68 1978
- 10 *How many constitutive functions are necessary to determine a thermoelastic material?* Czech. J. Phys. **B29** (1979) 981–996
- 11 *On measures, convex cones, and foundations of thermodynamics. Part I* Czech. J. Phys. **B30** (1980) 841–861
- 12 *On measures, convex cones, and foundations of thermodynamics. Part II* Czech. J. Phys. **B30** (1980) 961–991
- 13 *O termodynamice reálných fyzikálních dějů* Cs. cas. fyz. **A31** (1981) 97–118 (Coauthor: J. Kratochvíl, Prague)
- 14 *On thermodynamics of non-equilibrium processes* J. Non-Equilib. Thermodyn. **7** (1982) 339–354 (Coauthor: J. Kratochvíl, Prague)
- 15 *On the second law of thermodynamics. Part I* Czech. J. Phys. **B32** (1982) 987–1010
- 16 *On the second law of thermodynamics. Part II* Czech. J. Phys. **B32** (1982) 1073–1099
- 17 *On the Clausius inequality* Arch. Rational Mech. Anal. **81** (1983) 221–243
- 18 *Thermodynamics of cyclic processes* In *Rational Thermodynamics, 2nd ed.* pp. 545–555 Springer New York 1984

- 19 *Asymptotic stability in nonlinear viscoelasticity* Quart. Appl. Math. **42** (1984) 281–294 (Coauthor: C. E. Beevers, Edinburgh)
- 20 *Thermostatics of non-simple materials* Czech. J. Phys. **B34** (1984) 601–621
- 21 *An admissibility criterion for shocks and propagating phase boundaries via thermodynamics of non-simple materials. Part I* J. Non-Equilib. Thermodyn. **9** (1984) 177–186
- 22 *An admissibility criterion for shocks and propagating phase boundaries via thermodynamics of non-simple materials. Part II* J. Non-Equilib. Thermodyn. **9** (1984) 187–200
- 23 *Uniqueness and continuous dependence of equilibrium states in thermoelasticity* Archives of Mechanics **36** (1984) 463–471
- 24 *A non-commutative diagram in the theory of materials* Archives of Mechanics **36** (1984) 433–435
- 25 *Actions with the conservation property* Aplikace matematiky **30** (1985) 140–153
- 26 *Phase transitions in non-simple bodies* Arch. Rational Mech. Anal. **88** (1985) 135–161
- 27 *The existence of the flux vector and the divergence theorem for general Cauchy fluxes* Arch. Rational Mech. Anal. **90** (1985) 195–212 Reprinted in “Analysis and thermomechanics, a collection of papers dedicated to W. Noll,” pp. 203–220. Editors: B. D. Coleman, M. Feinberg & J. Serrin. Springer 1987
- 28 *Foundations of continuum thermodynamics* In *New Perspectives in Thermodynamics* pp. 33–48 Springer Berlin 1986
- 29 *On the concepts of mass and linear momentum in Galilean thermodynamics* Czech. J. Phys. **B37** (1987) 133–157
- 30 *On the admissibility of shocks and propagating phase boundaries in a van der Waals fluid* In *Material instabilities in continuum mechanics and related mathematical problems* pp. 481–493 Pergamon press Oxford 1988
- 31 *The asymptotic behaviour of classical solutions to the mixed initial-boundary value problem in finite thermoelasticity* Quart. Appl. Math. **46** (1988) 319–329 (Coauthor: C. E. Beevers, Edinburgh)
- 32 *On thermostatics of non-simple materials with memory* J. Non-Equilib. Thermodyn. **14** (1989) 83–97 (Coauthor: C. E. Beevers, Edinburgh)
- 33 *Mass, internal energy, and Cauchy’s equations of motion in frame-indifferent thermodynamics* Arch. Rational Mech. Anal. **107** (1989) 1–22
- 34 *Global solution to the ideal compressible heat conductive multipolar fluid* Comment. Univ. Carolinae **30** (1989) 551–564 (Coauthors: J. Nečas & A. Novotný, Prague)
- 35 *Mixture invariance and its applications* Arch. Rational Mech. Anal. **109** (1990) 299–321 (Coauthor: I. Samohýl, Prague). Reprinted in “Mechanics and thermodynamics of continua”. Editors: H. Markowitz, V. J. Mizel & D. R. Owen, pp. 301–323. Springer 1991
- 36 *On Cauchy’s stress theorem* Atti della Accademia dei Lincei. Classe di Scienze Fisiche, Matematiche e Naturali **9** (1990) 259–263
- 37 *Il’yushin’s conditions in non-isothermal plasticity* Arch. Rational Mech. Anal. **113** (1991) 121–163 (Coauthor: M. Lucchesi, Pisa)



- 38 *Multipolar viscous fluids* Quart. Appl. Math. **49** (1991) 247–265 (Coauthor: J. Nečas, Prague)
- 39 *Thermodynamics of elastic-plastic materials* In *Anisotropy and localization of plastic deformation, Proceedings of Plasticity '91* pp. 560–564 Elsevier New York 1991
- 40 *Global solution to the compressible isothermal multipolar fluid* J. Math. Anal. Appl. **162** (1991) 223–241 (Coauthors: J. Nečas & A. Novotný, Prague)
- 41 *Cauchy's stress theorem and tensor fields with divergences in  $L^p$*  Arch. Rational Mech. Anal. **116** (1991) 223–255
- 42 *Energy principles and the equations of motion in Galilean thermomechanics* Czech.J. Phys. **42** (1992) 363–374
- 43 *Multipolar viscoelastic materials and the symmetry of the coefficients of viscosity* Applications of Mathematics **37** (1992) 383–400
- 44 *Global solution to the viscous compressible barotropic multipolar gas* Theoretical and Computational Fluid Dynamics (1992)
- 45 *Thermoplastic materials with combined hardening* Int. J. Plasticity **9** (1993) 291–315 (Coauthor: M. Lucchesi, Pescara)
- 46 *A note on Onsager's relations* Quart. Appl. Math. **52** (1994) 469–479
- 47 *A phenomenological theory of phase transitions in solids* In *Metastable behaviour of fluids and critical phenomena, Lecture notes and recommended literature* pp. 109–128 Institute of thermomechanics Prague 1996
- 48 *Polar decomposition of rank 1 perturbations in two dimensions* Mathematics and mechanics of solids **3** (1998) 107–112
- 49 *On isotropic rank 1 convex functions* Proc. Royal Soc. Edinburgh **129A** (1999) 1081–1105
- 50 *Convexity conditions for rotationally invariant functions in two dimensions* In *Applied nonlinear analysis* pp. 513–530 Kluwer Academic/Plenum Publishers New York, Boston, Dordrecht, London, Moscow 1999
- 51 *On the compatibility of wells* J. Elasticity **55** (1999) 11–17
- 52 *Elastic scalar invariants in the theory of defective crystals* Proc. Royal Soc. London A **455** (1999) 4333–4346 (Coauthor: G. P. Parry, Nottingham)
- 53 *Invariant line integrals in the theory of defective crystals* Atti della Accademia dei Lincei. Classe di Scienze Fisiche, Matematiche e Naturali **IX/XI** (2000) 111–140 (Coauthor: G. P. Parry, Nottingham)
- 54 *Differentiability properties of isotropic functions* Duke Math. J. **104** (2000) 367–373
- 55 *On rank one connectedness, for planar objective functions* J. Elasticity **58** (2000) 177–189 (Coauthor: G. P. Parry, Nottingham)
- 56 *Differentiability properties of objective isotropic functions* J. Elasticity **58** (2000) 225–232
- 57 *Rank 1 perturbations of deformation gradients* Int. J. Solids Structures **38** (2001) 943–965
- 58 *Rotationally invariant rank 1 convex functions* Applied Mathematics & Optimization **44** (2001) 1–15
- 59 *Rank 1 Convex hulls of isotropic functions in dimension 2 by 2* Mathematica Bohemica **126** (2001) 521–529

- 60 *On the nonconvex potentials for elastic–plastic materials* (2001) Preprint, 2001
- 61 *Monotonicity of rotationally invariant convex and rank 1 convex functions* Proc. Royal Soc. Edinburgh **132A** (2002) 419–435
- 62 *An  $O(n)$  invariant rank 1 convex function that is not polyconvex* Theor. Appl. Mech. **28–29** (2002) 331–342
- 63 *Relaxed energy for transversely isotropic two-phase materials* J. Elasticity **67** (2002) 187–204 (Coauthor: C. Padovani, Pisa)
- 64 *Semiconvexity of invariant functions of rectangular matrices* Calc. Var. **17** (2003) 75–84
- 65 *On the hysteresis in martensitic transformations* In *Rational Continua, Classical and New. A collection of papers dedicated to Gianfranco Capriz* M. Brocato, P. Podio-Guidugli (ed). pp. 151–168 Springer Berlin 2003
- 66 *Work conditions and energy functions for ideal elastic–plastic materials* In *Advances in multifield theories of continua with substructure* pp. 1–32 Birkhäuser Basel 2003
- 67 *On  $SO(n)$ –Invariant Rank 1 Convex Functions* J. Elasticity **71** (2003) 235–246
- 68 *Rank 1 convex hulls of rotationally invariant functions* In *Proceedings of the IUTAM Symposium on Computational Mechanics of Solid Materials at Large Strains* pp. 21–32 Kluwer Academic New York 2003
- 69 *Energy minimization for isotropic nonlinear elastic bodies* In *Multiscale modeling in continuum mechanics and structured deformations* pp. 1–51 Springer Wien New York 2004
- 70 *On the semiconvexity properties of rotationally invariant functions in two dimensions* Czech. Math. J. **54** (2004) 559–571
- 71 *Dislocation walls in crystals under single slip* Computer Methods in Applied Mechanics and Engineering **193** (2004) 5385–5409 (Coauthor: F. P. Duda, Rio de Janeiro.)
- 72 *Maxwell’s relation for isotropic bodies* In *Mechanics of material forces* pp. 281–288 Springer 2005
- 73 *Singular equilibrated stress fields for no-tension panels* In *Lecture notes in applied and computational mechanics, vol. 23* pp. 255–265 Springer 2005 (Coauthors: M. Lucchesi, N. Zani, Florence.)
- 74 *Divergence measure fields and Cauchy’s stress theorem* Rend. Sem. Mat. Padova **113** (2005) 15–45
- 75 *Stress state for heavy masonry panels* In *Proceedings of the “Colloquium Lagrangianum,” Venezia, 2004* Springer 2005 (Coauthors: M. Lucchesi, N. Zani, Florence. To appear.)
- 76 *Stress fields for axisymmetric no-tension bodies* In *Proceedings of XVII<sup>th</sup> AIMETA Congress, Florence, 2005* 2005 (Coauthors: M. Lucchesi, N. Zani, Florence.)
- 77 *Phase equilibria in isotropic solids* (2005) (Preprint, Department of Mathematics, University of Pisa.)
- 78 *Normal traces of divergence measure vectorfields on fractal boundaries* (2005) (Preprint, Dipartimento di Matematica, University of Pisa, October 2005.)

- 79 *A new class of equilibrated stress fields for no-tension bodies* Journal of Mechanics of Materials and Structures **1** (2006) 503–539 (Coauthors: M. Lucchesi, N. Zani, Florence.)
- 80 *Fluxes across parts of fractal boundaries* Milan Journal of Mathematics **74** (2006) 1–45
- 81 *Generalized Baker–Ericksen Inequalities* J. Elasticity **85** (2006) 39–44 (Coauthor R. Fosdick, Minneapolis.)
- 82 *Zeros of the polyconvex hull of powers of the distance and  $s$ -polyconvexity* J. Convex Anal. **14** (2007) 319–344
- 83 *Ideally soft nematic elastomers* Networks and Heterogeneous Media **2** (2007) 279–311 (Preprint MU: Relaxation in a class of  $SO(n)$ -invariant energies related to nematic elastomers, 2001)
- 84 *On the rank 1 convexity of stored energy functions of physically linear stress–strain relations* J. Elasticity **86** (2007) 235–243 (Coauthors: A. Bertram, T. Bohlke, Magdeburg.)
- 85 *A note on equilibrated stress fields for no-tension bodies under gravity* Quarterly of Applied Mathematics **65** (2007) 605–624 (Coauthors: M. Lucchesi, N. Zani, Florence.)
- 86 *On the balance equation for stresses concentrated on curves* J. Elasticity **90** (2008) 209–223 Coauthors: M. Lucchesi, N. Zani, Florence
- 87 *Normal currents: structure, duality pairings and div–curl lemmas* Milan Journal of Mathematics **76** (2008) 275–306
- 88 *Integration of measures and admissible stress fields for masonry bodies* Journal of Mechanics of Materials and Structures **3** (2008) 675–696 Coauthors: M. Lucchesi, N. Zani, Florence
- 89 *Processes in masonry bodies and the dynamical significance of collapse* Mathematics and Mechanics of Solids **13** (2008) 573–610 (Coauthors C. Padovani and G. Pasquinelli, Pisa)
- 90 *Cauchy’s stress theorem for stresses represented by measures* Continuum Mechanics and Thermodynamics **20** (2008) 75–96
- 91 *Divergence measure vectorfields: their structure and the divergence theorem* In *Mathematical modelling of bodies with complicated bulk and boundary behavior* M. Šilhavý (ed). pp. 217–237 University of Naples Naples 2008
- 92 *Equilibrated divergence measure stress tensor fields for heavy masonry bodies* European Journal of Mechanics A/Solids **28** (2009) 223–232 Coauthors: M. Lucchesi, N. Zani, Florence
- 93 *The divergence theorem for divergence measure vectorfields on sets with fractal boundaries* Mathematics and Mechanics of Solids **14** (2009) 445–455
- 94 *Phase transitions with interfacial energy: convexity conditions and the existence of minimizers* In *Poly-, Quasi- and Rank-One Convexity in Applied Mechanics* J. Schröder, P. Neff (ed). pp. 177–240 Springer Wien New York 2010
- 95 *Phase transitions with interfacial energy: interface null lagrangians, polyconvexity, and existence* In *IUTAM Symposium on Variational Concepts with Applications to the Mechanics of Materials* K. Hackl (ed). pp. 233–244 Springer Dordrecht 2010

- 96 *An energetic view on the limit analysis of normal bodies* Quart. Appl. Math. **68** (2010) 713–746 Coauthors: M. Lucchesi, Florence, and C. Padovani, Pisa
- 97 *The effective energy in the Allen–Cahn model with deformation* Interfaces and Free Boundaries **13** (2011) 255–270
- 98 *Integration of parametric measures and the statics of masonry panels* Annals of Solid and Structural Mechanics **2** (2011) 33–44 Coauthors: M. Lucchesi and N. Zani, Florence
- 99 *Equilibrium of Phases with Interfacial Energy: A Variational Approach* J. Elasticity **105** (2011) 271–303
- 100 *Equilibrium problems and limit analysis for masonry beams* J. Elasticity **106** (2012) 165–188 Coauthors: M. Lucchesi and N. Zani, Florence.
- 101 *Stress state for heavy masonry panels with openings* In *Mechanics, models and methods in civil engineering* M. Fremond and F. Maceri (ed). pp. 79–88 2011 Coauthors: M. Lucchesi and N. Zani, Florence
- 102 *On the choice of functions spaces in the limit analysis for masonry bodies* Journal of Mechanics of Materials and Structures **7** (2012) 795–836 Coauthors: M. Lucchesi and N. Zani, Florence
- 103 *A direct approach to fiber and membrane reinforced bodies. Part I. Stress concentrated on curves for modelling fiber reinforced materials* Continuum Mech. Thermodyn. **25** (2013) 537–558 Coauthors: M. Lucchesi and N. Zani, Florence
- 104 *Coaxiality of stress and strain in anisotropic no-tension materials* Meccanica **48** (2013) 487–489 Coauthor: C. Padovani, Pisa
- 105 *A direct approach to fiber and membrane reinforced bodies. Part II. Membrane reinforced bodies* Continuum Mech. Thermodyn. (2013) Coauthors: M. Lucchesi and N. Zani, Florence, DOI 10.1007/s00161-013-0305-x
- 106 *Collapse mechanisms and the existence of equilibrium solutions for masonry bodies* Mathematics and Mechanics fo Solids (2013) Preprint, Institute of Mathematics ASCR Prague. DOI:10.1177/1081286513488618