Curriculum Vitae

Name: RNDr. Miroslav Šilhavý, DrSc.

Birth: November 5, 1949, Třebíč, Czech Republic

Positions:

Director of Research,
Mathematical Institute,
Academy of Sciences of the Czech Republic,
Žitná 25,
115 67 Prague 1,
Czech Republic
(since 1977, with frequent leaves of absence)

Education:

1973 Charles University, Prague, Physics
1978 Ph.D. from the Czechoslovak Academy of Sciences
1991 Doctor of Science form the Charles University

Selected International Visits and Visiting Positions:

1977–2010 about 30 visits & visiting positions in various universities and institutes in Moscow, Leningrad, Warsaw, Minnesota, Padova, Edinburgh, Oxford, Bucharest, Pisa, Valencia, Helsinki, Lexington, Pittsburgh, DeKalb, Berlin, Nottingham, Roma, Rio de Janeiro, Florence, Dresden, Udine. These range from short stays up to positions extending over entire academic years or the 3 years stay as a visiting professor at the Department of Mathematics, University of Pisa
2011, 2012, 2013 University of Florence (stays about 4–8 weeks each)
2013 Ben Gurion University, Beer Sheva (1 month)
2014 ISTI CNR Pisa (2 weeks)
2014 Federal University of Rio de Janeiro (2 weeks)

International Lectures:

Meetings and Conferences:

1977–2014 about 15 talks at various conferences in Jablonna, Marienbad, Bratislava, Oberwolfach, Thessalonniki, Grenoble, Krakow, Palmanova, Paris, Haifa

Invited and Plenary talks:

– *Foundations of thermodynamics,* Workshop Laws and Structure of Thermodynamics, Minneapolis, 1983
– *Energy principles and equations of motion,* Meeting of the Society for Natural Philosophy, Pittsburgh, 1999
– *On the pseudoelastic hysteresis,* Third Microcolloquium on Microstructures, Pisa, 1999

- *Rank 1 convexity and relaxation of isotropic functions,* Partial Differential Equations and Applications, Olomouc, 1999
- *Arrow of time for nonequilibrium systems,* 12th Annual Meeting of the Academia Europea, Prague, June 15–17, 2000
- *Convexity properties and relaxation of isotropic stored energies and sets of deformation gradients,* Computational Mechanics of Solid Materials at Large Strains, Stuttgart, 2001
- *Dissipation postulates in finite–deformation plasticity,* 15^{th} AIMETA Congress of Theoretical and Applied Mechanics, Taormina, 2001
- *Relaxation in a class of SO(n)–invariant energies related to nematic elastomers,* Annual Italian Mechanics Research Group Meeting, Bressanone, 2001
- *An O(n) invariant rank 1 convex function that is not polyconvex,* Geometry, Continua and Microstructure 6, Belgrade, 2002
- *Dislocation walls in crystals under single slip,* Third GAMM Seminar on Microstructures 2004, Stuttgart, 2004
- *Normal traces of divergence measure vectorfields,* The Rational Modeling of Materials and Structures, Reggio Calabria, 2005
- *Stresses in continuous bodies interpreted as measures,* AIMETA meeting, Florence, 2005
- *Phase equilibria in isotropic solids,* Meeting of the Society for Natural Philosophy, Bari, 2005
- *Liquefaction points and the occurrence of effective liquid response in nonelliptic solids,* A meeting in honor of G. Capriz, Rome, 2005
- *Phase transitions with interfacial energy: interface null lagrangians, polyconvexity, and existence,* GMA Meeting "AIMETA Materials", 2011
- *The effective energy in the Allen–Cahn model with deformation,* Meeting in honor of C. Davini, Udine, 2011
- *Phase Transitions with Interfacial Energy: Interface Null Lagrangians, Polyconvexity, and Existence,* 51st Meeting of the Society for Natural Philosophy-Tribute to James Serrin, Minneapolis, Minnesota, 2013
- *Stresses in Solids as Measures,* 52nd Meeting of the Society for Natural Philosophy, Rio de Janeiro

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:

1979–2000 about 10 semestral courses on various subjects at the Pedagogical Faculty in České Budějovice, Charles University, Institute of Thermomechanics, Carnegie Mellon University, Pittsburgh, Universita 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

2003–2005 5 semestral courses *Wave propagation, Variational Principles in Mechanics,* Department of Mathematics, University of Pisa

2004 a course of lectures *Cauchy stress theorem: from tetrahedrons to fractals,* 29^{th} Summer School in Mathematical Physics, Ravello, September 6–18, 2004.

2007, 2011 courses of lectures *Phase transitions with interfacial energy: interface null lagrangians and interface quasi– and poly–convexity, Isotropic energy functions: rank 1– and poly– convexity and relaxation, and The mathematics of no–tension materials* at Advanced Schools in "Poly–, Quasi– and Rank–One Convexity in Applied Mechanics" and "Mechanics of Masonry Structures" in the 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 Council 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, 2001–2008
- Member of the Thesis Committee, Dipartimento di Matematica, Universita 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
- Chairman, Society for Natural Philosophy (an international society for the promotion of mathematics in mechanics)

Editorial boards:

- Technische Mechanik, 2002–
- Mathematics and Mechanics of Solids, 2007–
- Mathematics and Mechanics of Complex Systems, 2012–
- 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 Plaquette from the Academy of Sciences for young scientists for a collection of papers "Mathematical foundations of thermodynamics of continuous media"
1983 Premium of the Czech Literary Fund Foundation
2004 Premium of the Editor in Chief of the Czechoslovak Mathematical Journal

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 Richerche, 1998 (Pisa)
– Support for consultations in the dynamics of masonry structures from Consorzio di Pisa di Richerche, 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, 2012, 2013
– Short term mobility program of CNR, 2008, 2010, 2012, 2013

Professional Interests:

- calculus of variations
- mathematical methods in the theory of deformable solids
- phase transitions in solids
- functional analysis
- complex analysis
- plasticity
- thermodynamics