Section 16: Applications

Invited Lectures

Thursday, 20 August **MA 005**

17:15 – 18:00 **Graeme Walter Milton,** The University of Utah, Salt Lake City, USA
Exact relations for composites: towards a complete solution *(I: p.191)*
Chair: Krzysztof Wilmanski

Friday, 21 August **H 2032**

16:15 – 17:00 **William J. Cook (also Section 17),** Rice University, Houston, USA
The Traveling Salesman Problem *(I: p.186)*
Chair: Günter M. Ziegler

Saturday, 22 August **H 1028**

14:00 – 14:45 **Thomas Yizhao Hou,** California Institute of Technology, Pasadena, USA
Numerical Study of Free Interface Problems Using Boundary Integral Methods *(I: p.189)*
Chair: Vladimir V. Shaidurov

15:00 – 15:45 **Leslie Frederick Greengard,** Courant Institute, New York University, New York, USA
A new version of the fast Gauss transform *(I: p.189)*
Chair: Gregory Beylkin

Monday, 24 August **H 1028**

15:00 – 15:45 **Marco Avellaneda (also Section 12),** Courant Institute, New York University, New York, USA
Inverse Problems in Quantitative Financial Modeling *(I: p.140)*
Chair: George C. Papanicolaou

Monday, 24 August **H 2032**

16:15 – 17:00 **Gérard M. Iooss,** Institut Universitaire de France, Valbonne, France
Travelling water-waves, as a paradigm for bifurcations in reversible infinite dimensional "dynamical" systems *(I: p.184)*
Chair: Klaus Kirchgässner

17:15 – 18:00 **Ulf Grenander,** Brown University, Providence, USA
Strategies for Seeing *(I: p.183)*
Chair: Friedrich Götze

Tuesday, 25 August **H 2032**

14:00 – 14:45 **Andreas W.M. Dress,** Universität Bielefeld, Bielefeld, Germany
The Tree of Life and Other Affine Buildings *(I: p.186)*
Chair: Hanfried Lenz

15:00 – 15:45 **Bonnie Berger,** Massachusetts Institute of Technology, Cambridge, USA
Sequence-based Methods for Protein Folding *(I: p.185)*
Chair: Michiel Hazewinkel

Tuesday, 25 August **MA 001**

17:15 – 18:00 **Rolf Rannacher,** Universität Heidelberg, Heidelberg, Germany
Mathematics in Numerical Flow Simulation *(I: p.192)*
Chair: Rolf Jeltsch

Wednesday, 26 August **H 2032**

16:15 – 17:00 **Frank Hoppensteadt,** Arizona State University, Tempe, USA
Canonical Models in Mathematical Neuroscience *(I: p.187)*
Chair: Karl Sigmund

17:15 – 18:00 **Charles S. Peskin,** Courant Institute, New York University, New York, USA
How to Catch and Transport a Chromosome *(I: p.188)*
Chair: Willi Jäger

Short Communications and Poster Sessions

Short Communications **Wednesday, 19 August**

Phase Transition and Free Boundary Value Problems **H 106**
Chair: Jürgen Socolowsky

14:00 – 14:15 **Nikolaus Bubner,** WIAS, Berlin, Germany
Phase Transitions in Shape Memory Alloys *(p.320)*
14:15 – 14:30 **Olaf Klein,** Weierstraß Institute for Applied Analysis and Stochastic, Berlin, Germany
Approximation results for phase–field systems *(p.326)*
14:30 – 14:45 **Jürgen Socolowsky,** Fachhochschule Brandenburg, Brandenburg/Havel, Germany
On a perturbed two-layer free surface flow down an inclined plane *(p.332)*

Coding and Image Compression **H 112**
Chair: John K. Karlof

14:00 – 14:15 **Alexander P. Petukhov,** St. Petersburg Technical University, St. Petersburg, Russia
Recursive wavelets and image compression *(p.330)*
14:15 – 14:30 **John K. Karlof,** University of North Carolina, Wilmington, NC, USA
A Coding Scheme for the Gaussian Multiple Access Channel *(p.325)*

Numerics for Wave Propagation **H 106**
Chair: Georg Hebermehl

15:00 – 15:15 **Rainer Schlundt,** WIAS, Berlin, Germany
On the Computation of Systems of Linear Algebraic Equations for Monolithic Microwave Integrated Circuits *(p.332)*
15:15 – 15:30 **Hüsnü Ata Erbay,** Instanbul Technical University, Instanbul, Turkey
A numerical study of the complex modified Korteweg-de Vries equation *(p.323)*
15:30 – 15:45 **Georg Hebermehl,** Weierstraß Institute, Berlin, Germany
On the Computation of Eigen Modes for Lossy Monolithic Microwave Integrated Circuits *(p.324)*

Short Communications — Thursday, 20 August

Non-linear Wave Propagation — **H 106**
Chair: Lokenath Debnath

14:00 – 14:15	**Mikhail Vasiliev,** Institute of Applied Mathematics, Moscow, Russia *Automodelling solutions to the equations of the viscous heat conductive gas flows*	*(p.333)*
14:15 – 14:30	**Mark C.W. Jones,** Queens University, Belfast, Great Britain *Coupled evolution equations and the stability of stratified flows*	*(p.325)*
14:30 – 14:45	**Lokenath Debnath,** University of Central Florida, Orlando, FL, USA *Resonant Phenomena in Linear and Nonlinear Water Waves*	*(p.321)*

Geophysical and Environmental Models — **H 106**
Chair: Jinqiao Duan

15:00 – 15:15	**Verdiana Grace Masanja,** University of Dar es Salaam, Dar es Salaam, Tanzania *A Mathematical Model and Simulation of Transport of Dust Particles in Dar es Salaam City*	*(p.329)*
15:15 – 15:30	**Vitaly G. Il'ichev,** Rostov State University, Rostov-on-Don, Russia *Delta-functions and analysis of ecological interactions in a variable environment*	*(p.324)*
15:30 – 15:45	**Jinqiao Duan,** Clemson University, Clemson, South Carolina, USA *Dynamical Behavior of Quasigeostrophic Models*	*(p.322)*

Short Communications — Friday, 21 August

Mathematical Models in Biology — **H 106**
Chair: Satoshi Takahashi

14:00 – 14:15	**Andrej Yu. Dubinsky,** Keldysh Institute of Applied Mathematics, Moscow, Russia *Mathematical Modelling of electron and proton Transport in Chloroplasts*	*(p.322)*
14:15 – 14:30	**Miguel Lara-Aparicio,** Universidad Nacional Autónoma de México, México D.F., México *Some mathematical aspects of the simulation of the motor circadian rhythm in crayfish*	*(p.327)*
14:30 – 14:45	**Satoshi Takahashi,** Osaka University, Toyonaka, Japan *The oscillation of lateral asymmetry in scale-eating fish*	*(p.333)*

Game Theory and Mathematical Economics — **H 106**
Chair: Paul J. Campbell

15:00 – 15:15	**Fausto Mignanego,** Università Cattolica Milano, Milano, Italy *Rationality of players and credibility of strategies in leader-follower games*	*(p.330)*
15:15 – 15:30	**Serguei Z. Levendorski,** Rostov State Academy of Economics, Rostov-on-Don, Russia *Generalizations of the Black-Scholes Formula for a Class of Truncated Lévy Processes*	*(p.327)*
15:30 – 15:45	**Paul J. Campbell,** Universität Augsburg, Augsburg, Germany *Klondike solitaire*	*(p.321)*

Interaction of Non-linear Waves — **H 106**
Chair: Brian T. Hayes

17:15 – 17:30	**Motlatsi Pius Ramollo,** National University of Lesotho, Roma, Lesotho *On the motion of a bore across a barrier*	*(p.331)*
17:30 – 17:45	**Saadet Erbay,** Instanbul Technical University, Instanbul, Turkey *Nonlinear interaction between long and short waves in a generalized elastic solid*	*(p.323)*
17:45 – 18:00	**Brian T. Hayes,** Duke University, Durham, NC, USA *Stress-Controlled and Velocity-Controlled Shear Waves in a Saturated Granular Medium*	*(p.323)*

Short Communications — Monday, 24 August

Control of Processes and Systems — **H 106**
Chair: Mihai M. Vladimirescu

14:00 – 14:15	**Juergen Borchardt,** Weierstraß Institute, Berlin, Germany *Large-scale Dynamic Process Simulation of Chemical Plants*	*(p.320)*
14:15 – 14:30	**Elena I. Lyashenko,** Kiev University, Kiev, Ukraine *Optimal control of biotechnological process*	*(p.328)*
14:30 – 14:45	**Mihai M. Vladimirescu,** Comdev Ltd. Space Group, Cambridge, Ontario, Canada *Rotative Actuators Robustness*	*(p.333)*

Short Communications — Tuesday, 25 August

Applications in Mechanics — **H 106**
Chair: Vadim D. Potapov

16:15 – 16:30	**Mikhail Dmitrievich Kovalev,** Moscow State University of Forestry, Mytishchi, Russia *Stability of hinged schemes and frameworks*	*(p.326)*
16:30 – 16:45	**Xing Li,** Freie Universität Berlin, Berlin, Germany *Doubly Periodic Punctured Plane Elasticity Problem with Relative Displacement*	*(p.327)*
16:45 – 17:00	**Vadim D. Potapov,** Moscow State University, Moscow, Russia *Stability of systems under stochastic parametric excitation*	*(p.331)*

Short Communications — Wednesday, 26 August

Optimization — **H 106**
Chair: Uwe T. Zimmermann

14:00 – 14:15	**Ludwig Cromme,** Technische Universität Cottbus, Cottbus, Germany *Optimization of a Production Line in Brown Coal Industry*	*(p.321)*
14:15 – 14:30	**Ludwig Kohaupt,** Technische Fachhochschule Berlin, Berlin, Germany *Optimization for an Exhaust Emission Problem by the Simplex Method* *— A Report on Work from the Automotive Industry -*	*(p.326)*
14:30 – 14:45	**Uwe T. Zimmermann,** Technische Universität Braunschweig, Braunschweig, Germany *Hard Integer Programming Problems from Railroad Planning*	*(p.334)*

Numerical Applications of Matrix Theory — **H 106**
Chair: Dmitrii O. Logofet

15:00 – 15:15	**Igor N. Lyashenko,** Kiev University, Kiev, Ukraine *О неотрицательных решениях межотраслевой модели Леонтьева-Форда*	*(p.329)*
15:15 – 15:30	**Dmitrii O. Logofet,** IFARAN, Moscow, Russian Federation *When matrix “flowers” help proving theorems on stability*	*(p.328)*
15:30 – 15:45	**Gennady Victorovich Alferov,** St. Petersburg State University, St. Petersburg, Russia *Motion Planning for Multi — Agent Systems in the Time — Varying Environments*	

Poster Session — Wednesday, 19 August

16:15 – 18:00 — **MA 144**

Attia A. Ashour, Cairo University, Giza, Egypt
Solution for Certain Three Dimensional Boundary Value Problems with Mixed Boundaries *(p.320)*

Wolfgang Dreyer, Weierstraß-Institut, Berlin, Germany
Evolution of Shock Structures in Gases and Solids *(p.322)*

Rolf Hünlich, WIAS, Berlin, Germany
Modelling and simulation in the technology of power devices *(p.324)*

Sophia R.-J. Jang, Dept. of Mathematics & Statistics, Texas University, Lubbock, TX, USA
The dynamics of a variable-yield nutrient-plankton model *(p.325)*