

International Workshop on Verified Computations and Related Topics  
7 - 10 March 2009 University of Karlsruhe (TH) Germany

PROGRAM

March 7 (Sat.)

8:50-9:00 Opening

Linear Algebra 9:00-10:30 [Chair: Gerhard Heindl]

9:00-9:45 Götz Alefeld  
"Error Bounds for Complementarity Problems Using Feasible Vectors"

9:45-10:30 Andreas Frommer  
"Computing enclosures for the matrix square root"

10:30-11:00 Coffee Break

Linear Algebra 11:00-12:30 [Chair: Shin'ichi Oishi]

11:00-11:45 Guenter Mayer  
"The solution sets of some structured matrices"

11:45-12:30 Walter Krämer  
"Solving Large Linear Interval System"

LUNCH

PDE Analysis 14:30-16:00 [Chair: Piotr Zgliczyński]

14:30-15:15 Filomena Pacella  
"Computer assisted proofs for semilinear elliptic equations"

15:15-16:00 P. Joseph McKenna  
"Some conjectures on semilinear elliptic equations: theorems, computations and verification"

16:00-16:30 Coffee Break

PDE Analysis 16:30-18:00 [Chair: Arnold Neumaier]

16:30-17:15 Yasuhide Fukumoto  
"Linear and weakly nonlinear stability of an elliptic flow from the viewpoint of Hamiltonian spectra"

17:15-18:00 Wolfgang Reichel  
"A-priori bounds for discretized nonlinear elliptic boundary value problems"

18:00- Welcome Party (Room 133)

## PROGRAM

### March 8 (Sun.)

	PDE Eigenvalue 9:00-10:30 [Chair: P. Joseph McKenna]
9:00-9:45	B. Malcolm Brown "Eigenvalue enclosures and exclosures for non-self-adjoint problems in hydrodynamics"
9:45-10:30	Yoshitaka Watanabe "A computer-assisted stability proof for the Orr-Sommerfeld problem with Poiseuille flow"
10:30-11:00	Coffee Break
	PDE Eigenvalue 11:00-12:30 [Chair: Filomena Pacella]
11:00-11:30	Michael Plum " Band-gaps for 3D Photonic Crystals: A Computer-Assisted Approach (Part I)"
11:30-12:00	Henning Behnke "Band-gaps for 3D Photonic Crystals: A Computer-Assisted Approach (Part II)"
12:00-12:30	Kaori Nagatou "Spectral Problem on 3-D Maxwell's Equations"
	LUNCH
	Interval Arithmetic 14:30-16:00 [Chair: Walter Krämer]
14:30-15:15	Ulrich Kulisch "Practical Interval Arithmetic"
15:15-16:00	Gerhard Heindl "On Verification Problems in Digital Filter Design"
16:00-16:30	Coffee Break
	Interval Arithmetic 16:30-18:00 [Chair: Guenter Mayer]
16:30-17:15	Siegfried M. Rump "Error-Free Transformations and ill-conditioned problems"
17:15-18:00	Shin'ichi Oishi "Some Applications of Verified Numerical Computations and Error Free Transformations"

## PROGRAM

### March 9 (Mon.)

	PDE Verification [Chair: Nobito Yamamoto]
9:00-9:45	Vu Hoang "Enclosures for Single-Shock Solutions of Burgers' Equation"
9:45-10:30	Mitsuhiro T. Nakao "On the numerical verification method of solutions for evolutional equations"
10:30-11:00	Coffee Break
	PDE Verification 11:00-11:45 [Chair: Gianni Arioli]
11:00-11:45	Piotr Zgliczyński "Rigorous numerics for dissipative PDEs"
11:45-12:30	Arnold Neumaier "Towards optimization-based error bounds for PDEs"
	LUNCH
	Algebra 14:30-15:15 [Chair: Siegfried M. Rump]
14:30-15:15	Masanobu Kaneko "On the "values" of the elliptic modular j-function at real quadratics"
15:15-16:00	Frank Herrlich "Origamis and Dessins d'Enfants"
16:00-16:30	Coffee Break
	Algebra 16:30-17:15 [Chair: Andreas Frommer]
16:30-17:15	Gabriela Schmithüsen "A side trip of origamis into Outer Space"
17:15-18:00	Masato Wakayama "Arithmetics on non-commutative harmonic oscillators"
19:00-	Banquet

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March 10 (Tue.)

	ODE, Dynamical system etc. 9:00-10:30 [Chair: Henning Behnke]
9:00-9:45	Markus Neher "Taylor model methods for the verified integration of ODEs"
9:45-10:30	Nobito Yamamoto "Verified Computatuion of Closed Orbits of Dynamical Systems"
10:30-11:00	Coffee Break
	ODE, Dynamical system etc. 11:00-13:15 [Chair: B. Malcolm Brown]
11:00-11:45	Setsuo Taniguchi "Eigenvalues in stochastic oscillatory integrals"
11:45-12:30	Andreas Rauh "Applications of Verified DAE Solvers in Engineering"
12:30-13:15	Gianni Arioli "A functional analytic approach to computer assisted proofs"
13:15-13:25	Closing