

Perspectives on Numerical Analysis, TKK, May 27–29, 2008

Program

Tuesday, May 27

8.30–9.15 Registration and coffee

9.15 Opening

9.30–11.00 Chair: Marlis Hochbruck

Ernst Hairer: *Achieving Brouwer's law with geometric integrators*

Ben Leimkuhler: *Thermal control of molecular dynamics*

Per Lötstedt: *Simulation of stochastic reaction-diffusion processes*

Coffee

11.30–13.00 Chair: David Kinderlehrer

Ivo Babuska: *The Penetration Function and its Application to Microscale Problems*

Alain Damlamian: *Homogenization of a variational problem on a domain with oscillating boundaries via periodic unfolding*

Michael Vogelius: *Cloaking and "near" cloaking of objects*

Lunch

14.00–15.30 Chair: Martin Hanke-Bourgeois

Gerhard Wanner: *Kepler, Newton and Numerical Analysis*

Barbara Keyfitz: *Multidimensional Conservation Laws: Speaking of Numerical Methods*

Bruce Kellogg: *Layers and corner singularities in singularly perturbed elliptic problems*

Coffee

16.00–18.00 Chair: Franco Brezzi

Thomas J.R. Hughes: *Isogeometric analysis: progress and challenges*

Axel Ruhe: *Rational Krylov algorithm for real matrix pencils with complex eigenvalues*

Rolf Rannacher: *Adaptive finite element discretization of PDE-based optimization problems*

L. Ridgeway Scott: *Automated FEM Discretizations for the Stokes Equation*

18.15–21.00 Get together at TKK Saha

Wednesday May 28

9.00–10.30 Chair: Ivo Babuska

Martin Hanke-Bourgeois: *Electric impedance tomography with only one pair of measurements*

Claes Johnson: *Blowup of Incompressible Euler Solutions*

Manil Suri: *The numerical analysis of fiction*

Coffee

11.00–12.30 Chair: Arieh Iserles

Rolf Jeltsch: *Essentially Optimal Explicit Runge-Kutta Methods for Hyperbolic-Parabolic Equations*

Evariste Sanchez-Palencia: *Anisotropic adaptive mesh procedure for computing very thin hyperbolic shells*

Christian Lubich: *Dynamical low-rank approximation*

Lunch

13.30–15.00 Chair: Ian Sloan

Christoph Schwab: *Space-Time Adaptive Wavelet Methods for Parabolic Evolution Problems*

Gennadi Vainikko: *What is the complexity of weakly singular integral equations?*

John E. Osborn: *Quadrature for Meshless Methods*

Coffee

15.30–17.00 Chair: Barbara Keyfitz

Björn Engquist: *A fast directional multi-pole method for wave equations*

Marlis Hochbruck: *Exponential Rosenbrock-type methods*

David Kinderlehrer: *New perspectives on microstructure evolution*

18.00 Boat trip to Conference Dinner (departure from the Radisson SAS dock near the hotel)

22.30 Bus trip back to Otaniemi

Thursday, May 29

9.00–10.30 Chair: Ernst Hairer

Leszek F. Demkowicz: *hp-Adaptive Finite Elements for Coupled Acoustics/Elasticity Problems*

Jukka Tuomela: *Multibody dynamics: from numerical to symbolic computations and back*

Donatella Marini: *A posteriori estimates for Discontinuous Galerkin methods*

Coffee

11.00–12.30 Chair: Per Lötstedt

Åke Björck: *Block Bidiagonal Decomposition and Least Squares Problems with Multiple Right-Hand Sides*

Jaroslav Zemánek: *Between Ritt and Kreiss*

Linda R. Petzold: *Stiffness in the Discrete Stochastic Simulation of Biochemical Systems*

Lunch

13.30–15.00 Chair: Gennadi Vainikko

Carl de Boor: *Issues in multivariate polynomial interpolation*

Ian Sloan: *High-dimensional challenges for numerical analysis*

Arieh Iserles: *Highly oscillatory Fredholm operators: from spectral methods to modified Fourier expansions*

Coffee

15.30–16.30 Chair: Gerhard Wanner

Juha Pohjanpelto: *Pseudogroups, Moving Frames, and Exterior Differential Systems*

Franco Brezzi: *Reduced symmetry elements in linear elasticity*

Closing