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International Conference

Programs and Algorithms of Numerical Mathematics 13

in honor of Ivo Babuška's 80th birthday

under the auspices of Prof. Václav Pačes,
the President of the Academy of Sciences of the Czech Republic

Mathematical Institute, Academy of Sciences,
Žitná 25, Prague, Czech Republic
May 28 – 31, 2006

CONFERENCE PROGRAM

Sunday, May 28

Social Program

10.00 – 12.00 A. Šolcová: A walk through mathematical and physical sights in Prague. (The interested participants will meet in the lobby of Alabastr hotel, Školská 20, at 10.00.)

Chairman: K. Segeth

14.00 – 14.15 Opening

14.15 – 15.00 I. Babuška: Meshless and generalized FEM. Some theoretical results and applications

15.00 – 15.30 M. Feistauer: On some aspects of the discontinuous Galerkin method for the solution of convection-diffusion problems

15.30 – 16.00 Coffee Break

Chairman: M. Feistauer

16.00 – 16.45 J. Brandts: Linear algebra and geometry of simplicial finite elements in four space dimensions

16.45 – 17.15 I. Marek: Computing the plates and some related questions

17.15 – 18.00 B. Guo: Approximation theory in Jacobi-weighted spaces and its application to the *h-p* FEM

Monday, May 29

Chairman: M. Práger

9.00 – 9.45 R. Stenberg: A family of C^0 finite elements for Kirchhoff plates

9.45 – 10.15 I. Hlaváček: Uncertain input data problems and the worst scenario method

10.15 – 11.00 Coffee Break

Chairman: B. Guo

11.00 – 11.45 S. Korotov: Computational technologies for reliable computer simulations

11.45 – 12.05 P. Burda: Some applications of a priori and a posteriori error estimates for FEM solution of Navier-Stokes equations

12.05 – 14.00 Lunch Break

SHORT COMMUNICATIONS

Chairman: I. Marek

14.00 – 14.20 J. Chleboun: On a Sandia structural mechanics challenge problem

14.20 – 14.40 V. Janovský: On a traffic problem

14.40 – 15.00 L. Lukšan: Interior-point method for large-scale l_1 optimization

15.00 – 15.20 J. Dalík: Lagrange finite elements in dimensions one and two

15.20 – 15.50 Coffee Break

Chairman: P. Burda

15.50 – 16.10 P. Šolín: On the role of reference maps in the *hp*-FEM

16.10 – 16.30 P. Sváček: On finite element method application in aeroelasticity

16.30 – 16.50 J. Červený: On multiple-level constrained approximation in the *hp*-FEM

16.50 – 17.10 T. Vejchodský: Discrete Green's function and maximum principles

Social Program

18.00 – 21.00 Conference Dinner (restaurant *U Seminaristy*, Spálená 45, Praha 1, metro station: Národní třída, 15 min walk from Mathematical Institute)

Tuesday, May 30

Chairman: J. Brandts

9.00 – 9.45 M. Ainsworth: Diagonal scaling of discrete differential forms

9.45 – 10.30 H.G. Roos: Stabilization methods for convection-diffusion problems on layer adapted meshes

10.30 – 11.00 Coffee Break

11.00 – 11.10 Presentation of the Medal of the Ministry of Education, Youth, and Sports to Prof. Ivo Babuška

SHORT COMMUNICATIONS

Chairman: M. Ainsworth

11.10 – 11.30 T. Roubíček: Modelling of rate-independent martensitic transformation processes in shape-memory alloys

11.30 – 11.50 P. Knobloch: A computational comparison of methods diminishing spurious oscillations in finite element solutions of convection-diffusion equations

11.50 – 12.10 K. Segeth: On some a posteriori error estimation results for the method of lines

12.10 – 14.00 Lunch Break

Chairman: H.G. Roos

14.00 – 14.20 Z. Strakoš: On numerical stability of iterative methods for solving large scale linear algebraic systems

14.20 – 14.40 R. Blaheta: Strengthened CBS inequalities and iterative solvers

14.40 – 15.00 M. Kocurek: The use of basic iterative methods for bounding a solution of a system of linear equations with an M-matrix and positive right side

15.00 – 15.20 D. Janovská: The analytic singular value decomposition

15.20 – 15.50 Coffee Break

Chairman: E. Vitásek

15.50 – 16.10 D. Lukáš: On a multigrid preconditioned augmented lagrangians applied to the Stokes and optimization problems

16.10 – 16.30 J. Dobiáš: Scalable algorithms for contact problems with geometrical and material nonlinearities

16.30 – 16.50 R. Kohut: Parallel two-level solution of thermoelasticity problems

16.50 – 17.10 Wei Chen: What is the smallest possible constant in Céa's lemma?

17.10 – 18.10 POSTER SESSION

M. Beneš, P. Mayer: Numerical analysis of mathematical model of heat and moister transport in concrete at high temperatures

L. Dubcová: Numerical simulation of interaction of fluids and solid bodies

M. Hokr: Benchmark calculations of variable-density flow in porous media

M. Kočvara: Semidefinite programming and structural optimization

M. Křížek: Simplicial meshes in $\mathbb{R}^d$

R. Kučera: An algorithm for solving nonsymmetric saddle-point linear systems arising in FDM

P. Kůs: Solution of convection–diffusion equations with adaptive methods of higher order in space and time

J. Maděra: Computational simulation of water and salt movement and salt crystallization in sandstone used for historical masonry

Z. Morávková: Numerical realization of contact problems between two bodies and with nonmonotone friction

P. Punčochářová: Unsteady numerical solution for viscous compressible flows in a channel

J. Šístek: SemiGLS stabilization of FEM for solving Navier-Stokes equations

Wednesday, May 31

SHORT COMMUNICATIONS

Chairman: R. Stenberg

9.00 – 9.20 J. Vala: Uncertainties in measurement of thermal technical characteristics of building insulations

9.20 – 9.40 T. Kozubek: Fictitious domain approach for the numerical realization of PDEs with stochastic data and geometry

9.40 – 10.00 V. Kučera: The discontinuous Galerkin method for low-Mach flows

10.00 – 10.20 A. Prachař: Numerical integration in the discontinuous Galerkin method for elliptic problems

10.20 – 10.50 Coffee Break

Chairman: S. Korotov

10.50 – 11.10 V. Dolejší: An efficient implementation of the semi-implicit discontinuous Galerkin method for compressible flow simulation

11.10 – 11.30 J. Dobeš: A second order unconditionally positive space-time residual distribution method for solving compressible flows on moving meshes

11.30 – 11.50 P. Váchal: Arbitrary lagrangian-eulerian (ALE) methods in compressible fluid dynamics

11.50 – 12.10 T. Neustupa: Incompressible flow through a cascade of profiles

12.10 – 14.00 Lunch Break

Chairman: J. Chleboun

14.00 – 14.20 J. Fořt: Numerical solution of transonic flow of wet steam by fractional step method

14.20 – 14.40 L. Beneš: Numerical modeling of flow and pollution dispersion over real topography

14.40 – 15.00 V. Prokop: Numerical solution of Newtonian flow in bypass and non-Newtonian flow in branching channels

15.00 – 15.20 J. Fürst: Finite volume WLSQR scheme and its applications for transonic flows

15.20 – 15.50 Coffee Break

Chairman: P. Knobloch

15.50 – 16.10 J. Pospíšil: Numerical approaches to parameter estimates in stochastic evolution equations driven by fractional Brownian motion

16.10 – 16.30 A. Hannukainen: A posteriori error estimation in terms of linear functionals for elliptic type boundary value problems

16.30 – 16.50 F. Duderstadt: A challenge to engineers: The Babuška-Paradox

16.50 – 17.10 J. Mlýnek: The application of the thermal balance method to the computing of warming up in electric machines

17.10 – 17.30 V. Mošová: Why are the meshless methods used?