SNA'21 Programme

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SEMINAR ON NUMERICAL ANALYSIS
Modelling and Simulation of Challenging Engineering Problems

WINTER SCHOOL
*Methods of Numerical Mathematics and Modelling,
High-Performance Computing, Numerical Linear Algebra*

Monday - January 25, 2021   ZOOM Meeting Id: 997 6370 6462

9:30 – 9:45   **Conference opening**

9:45 – 11:15   Winter school - chairman J. Kruis

F. Magoulès: Asynchronous iterative methods: I - Theory and algorithms

Coffee break

11:30 – 12:30   Winter school - chairman S. Sysala

I. Pultarová: Iterative solvers for the stochastic Galerkin method

Lunch break

14:00 – 15:20   Lectures - chairwoman I. Pultarová

P. Exner: Stochastic modeling of EGS using continuum-fracture approach

M. Hokr: Flow and transport in a single fracture calculated from laserscan or tomography data

J. Kruis: Uncertainties in geotechnical problems described by fuzzy sets

J. Malík: Determination of initial stress tensor

Coffee break

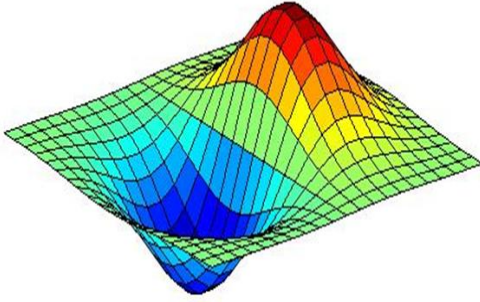15:50 – 17:30   Lectures - chairman V. Kučera

J. Egermaier: On the parameter in augmented Lagrangian preconditioning for isogeometric discretizations of the NSE

E. Turnerová: Stabilized IgA-based method for RANS equations and k-ω turbulence model

L. Vacek: Numerical solution of macroscopic traffic flow models on networks using numerical fluxes at junctions

O. Winter: Numerical approximation between fluid flow and a vibrating airfoil

V. Skala: Geometry algebra and conditionality of linear system of equations

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Tuesday - January 26, 2021

9:30 – 11:00   Winter school - chairman P. Arbenz

F. Magoulès: Asynchronous iterative methods: II - Parallel implementation and applications

Coffee break

11:15 – 12:45   Winter school - chairman P. Tichý

J. Papež: On the algebraic error in numerical solution of partial differential equations I

Lunch break

14:00 – 15:20   Lectures - chairman B. Sousedík

H. Štekbauer: A correct and efficient algorithm for impacts of bodies

J. Vala: On a distributed computing platform for a class of contact - impact problems

D. Lukáš: 3-dimensional wire-basket domain decomposition combined with multigrid

J. Mandel: Simple finite elements and multigrid for efficient mass-consistent wind downscaling in a coupled fire-atmosphere model
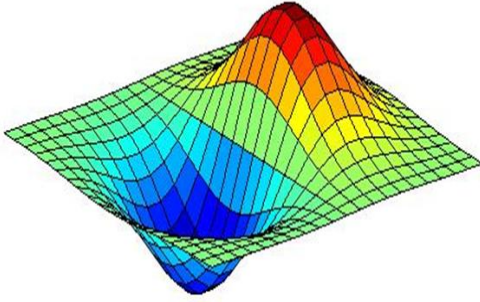
Coffee break

15:50 – 17:10   Lectures - chairman D. Lukáš

K. Tůma: Finite element phase-field model for multivariant martensitic transformation at finite-strain

D. Černá: Galerkin method using spline wavelets for second-order integro-differential equations

D. Janovská: Curve integral of Filippov vector field

E.J. Kansa: Results solving the ill-conditioned Hilbert equation systems of rank 36

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SEMINAR ON NUMERICAL ANALYSIS

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Thursday - January 28, 2021

9:30 – 11:00 Winter school - chairwoman I. Hnětynková

J. Papež: On the algebraic error in numerical solution of partial differential equations II

Coffee break

11:15 – 12:45 Winter school - chairman M. Rozložník

I. Hnětynková: Regularization of large discrete inverse problems by iterative projection methods

Lunch break

14:00 – 15:40 Lectures - chairman J. Papež

T. Gergelits: Generalized spectrum of second order differential operators

P. Vacek: Multilevel methods with inexact solver on the coarsest level

E. Havelková: Parameter choice methods for inner-outer regularization in Single Particle Analysis

M. Ladecký: Guaranteed two-sided bounds on all eigenvalues of preconditioned elliptic problems

M. Outrata: Preconditioning the stage equations of implicit Runge Kutta methods

Coffee break

16:00 – 17:20 Lectures - chairman R. Kučera

V. Janovský: Analysis of pattern formation using numerical continuation

Š. Papáček: Mathematics and Optimal control theory meet Pharmacy: Towards application of special techniques in modeling, control and optimization of biochemical networks

J. Radová: Inverse problem for nonlinear Gao beam and elastic foundation

S. Sysala: An abstract inf-sup problem with bilinear Lagrangian and convex constraints and its applications

17:20 – 18:00   **Conference closing** and discussion