



International Conference  
**Applications of Mathematics 2018**

*August 22–25, 2018*

*Institute of Mathematics, Czech Academy of Sciences,  
Žitná 25, Prague, CZ-115 67, Czech Republic*

**CONFERENCE PROGRAM**

**Wednesday, August 22**

13.00 – 14.00 Registration

*Chair: Michal Křížek*

14.00 – 14.10 Opening

14.10 – 14.40 JAN BRANDTS

Subdirect sums of matrices and inverse nonnegativity

14.40 – 15.10 SERGEY KOROTOV

Main results on the longest-edge  $n$ -section algorithms

15.10 – 15.40 HEHU XIE

A multigrid method for semilinear problem

15.40 – 16.10 Coffee break

*Chair: Jan Brandts*

16.10 – 16.40 SHUHUA ZHANG

$L^\infty$  error estimates of rectangular mixed finite element methods for  
bilinear optimal control problems

16.40 – 17.10 KEVIN LULI

Variational problems on arbitrary sets

## Thursday, August 23

*Chair: Gabriel R. Barrenechea*

- 9.00 – 9.30 SERGEY DOLGOV  
Solving large ODEs with conservation laws by low rank decompositions
- 9.30 – 10.00 JEAN-PHILIPPE LESSARD  
Spatial periodic orbits in the equilateral circular restricted four body problem: computer-assisted proofs of existence
- 10.00 – 10.30 MICHAL KRÍŽEK  
Regular tessellations of maximally symmetric hyperbolic manifolds
- 10.30 – 11.00 Coffee break

*Chair: Sergey Korotov*

- 11.00 – 11.30 GABRIEL R. BARRENECHEA  
A divergence-free low-order finite element method for a generalised Boussinesq problem
- 11.30 – 12.00 WEIWEI SUN  
New analysis on Galerkin FEMs for nonlinear parabolic PDEs
- 12.00 – 14.00 Lunch break

*Chair: Jean-Philippe Lessard*

- 14.00 – 14.30 XUEFENG LIU  
Guaranteed eigenvalue estimation for differential operators
- 14.30 – 15.00 MANTING XIE  
Computable error estimates for a nonsymmetric eigenvalue problem
- 15.00 – 15.30 TOMÁŠ VEJCHODSKÝ  
Flux reconstructions for lower bounds on eigenvalues
- 15.30 – 16.00 Coffee break

*Chair: Tomáš Vejchodský*

- 16.00 – 16.30 LUKA GRUBIŠIĆ  
Eigenvalue problems on a metric graph with applications in modeling of endovascular stents
- 16.30 – 17.00 CHUN'GUANG YOU  
A parallel auxiliary subspace method for eigenvalue problems
- 17.00 – 17.30 STANISLAV SYSALA  
Reliable computation in geotechnical stability analysis
- 18.00 – 23.00 Conference dinner, U Seminaristy Restaurant, Spálená St. 45

## Friday, August 24

*Chair: Antti Hannukainen*

- 9.00 – 9.30 JIŘÍ VALA  
Optimization approaches to some problems of building design
- 9.30 – 10.00 ANDRII KHRABUSTOVSKYI  
Operator estimates for the crushed ice problem
- 10.00 – 10.30 ISTVÁN FARAGÓ  
Numerical modelling of epidemic propagation processes
- 10.30 – 11.00 Coffee break

*Chair: Sergey Dolgov*

- 11.00 – 11.30 ANTTI HANNUKAINEN  
Condensed pole interpolation method
- 11.30 – 12.00 JAKUB ŠÍSTEK  
Introducing distributed memory task-based programming to the PLASMA numerical library
- 12.00 – 14.00 Lunch break

*Chair: István Faragó*

- 14.00 – 14.20 KAREL SEGETH  
Computational experiments with smooth interpolation by polyharmonic splines
- 14.20 – 14.40 JON EIVIND VATNE  
Piecewise linear and multilinear interpolation on product elements
- 14.40 – 15.00 BANGWEI SHE  
A convergent numerical method for the compressible Navier-Stokes system
- 15.00 – 15.20 MANUEL BORREGALES  
Effective numerical schemes for poromechanics
- 15.20 – 15.50 Coffee break

*Chair: Jakub Šístek*

- 15.50 – 16.10 MARIUS PAUL BRUCHHÄUSER  
Goal-oriented error control for stabilized finite element methods
- 16.10 – 16.30 MONIKA BALÁZSOVÁ  
Space-time discontinuous Galerkin method for the solution of fluid-structure interaction
- 16.30 – 16.50 RAN XU  
An overlapped domain decomposition method for pre-stack reverse time migration in seismic exploration
- 16.50 – 17.10 MARIA A. IVANCHUK  
Using epsilon-nets for solving the linear classification problem

## **Saturday, August 25**

10.00 – 12.00 A walk through the Old Town