

Friday, July 3

08.30-09.30	Carsten Carstensen, <i>Computational challenges in the Calculus of Variations</i> , chair Rolf Stenberg room H3						
09.30-10.00	Coffee break						
Room	H1	H2	H3	H4	A114	A144	B153
10.00-12.00	M32 Finite elements for convection-diffusion problems III	M31 Embedded boundary methods for time-dependent problems	M29 Finite element software development	M28 Numerical methods for option pricing	M30 Numerical methods for multi-dimensional Lagrangian schemes	C32 PDE, methods and analysis IV	
12.00-13.00	Lunch						
13.00-14.00	Martin Berggren, <i>Numerical shape and topology optimization for loudspeakers and brass instruments</i> , chair Per Lötstedt room H3						
14.00-15.00	C35 Linear Algebra II	C36 Integral equations	C33 Finite element methods III	C34 High performance computing III			
Room	H1	H2	H3	H4	A114	A144	B153

Friday, July 3, Morning 10:00-12:00

M28: Minisymposium: Numerical methods for option pricing

Organizers: Cornelis W. Oosterlee, Jari Toivanen

- 10:00-10:30 Cornelis W. Oosterlee, On efficient methods for pricing options with and without early exercise
- 10:30-11:00 Karel In't Hout, ADI finite difference schemes for the Heston PDE with correlation term
- 11:00-11:30 Jari Toivanen, Pricing American options under the Bates model
- 11:30-12:00 Chen Bin, Copula of the characteristic functions: an innovative use of Copula

M29: Minisymposium: Finite element software development

Organizer: Anders Logg

- 10:00-10:30 Anders Logg, DOLFIN: Automated finite element computing
- 10:30-11:00 Guido Kanschat, Integrating forms and functionals: towards efficient and reusable structures
- 11:00-11:30 Oliver Sander, Domain decomposition with DUNE
- 11:30-12:00 Kristian Oelgaard, Finite element tensor representations through automated modeling

M30: Minisymposium: Numerical methods for multi-dimensional Lagrangian schemes

Organizers: Pierre-Henri Maire, Raphaël Loubère

- 10:00-10:30 Pierre-Henri Maire, Cell-centered and staggered discretizations of the multi-dimensional Lagrangian hydrodynamics by means of sub-cell force formulation
- 10:30-11:00 Raphaël Loubère, ReALE : an automatic reconnection ALE method via Voronoi tessellation
- 11:00-11:30 Pavel Váchal, formulation of staggered multidimensional Lagrangian schemes by means of cell-centered approximate Riemann solver
- 11:30-12:00 Gilles Kluth, Lagrangian discretization of hyperelastic systems and introduction of plasticity

M31: Minisymposium: Embedded boundary methods for time-dependent problems

Organizer: Daniel Appelö

- 10:00-10:30 Daniel Appelö, A compact high-order embedded boundary method for the wave equation
- 10:30-11:00 Marco Kupiainen, An embedded boundary method for compressible Navier-Stokes/LES equations
- 11:00-11:30 Mark Lyon, On FC-AD PDE solvers for complex domains and boundary conditions with normal derivatives

M32: Minisymposium: Finite elements for convection-diffusion problems, III

Organizers: Miloslav Feistauer, Petr Knobloch

- 10:00-10:30 Erik Burman, Finite element methods with symmetric stabilization for the transient convection-diffusion-reaction equation
- 10:30-11:00 Daniela Capatina, Finite element discretization of the Giesukus model for polymer flows
- 11:00-11:30 Veronika Sobotikova, Curved elements in the DGFEM for nonlinear convection-diffusion problems in 2D
- 11:30-12:00 Petr Svacek, Stabilized methods for nonlinear convection diffusion problems in fluid-structure interactions

C32: Contributed session: PDEs - methods and analysis IV chair Raul Tempone

- 10:00-10:20 David Doyen, A space-time discretization for dynamic contact problems with cohesive forces
- 10:20-10:40 Alla Shymanska, Numerical calculations of electron optical systems
- 10:40-11:00 Fred Vermolen, A mathematical model for wound contraction and closure
- 11:00-11:20 Christoph Kirsch, Towards a micro-scale simulation of convective gel drying
- 11:20-11:40 Kenichi Kamijo, Numerical and practical method for statistical quality control using local fractal dimension in discrete time series
- 11:40-12:00 Vadim Lisitsa, Sonic log simulation in anisotropic media

Friday, July 3, Afternoon 14:00-15:00

C33: Contributed session: Finite element methods III chair Axel Målqvist

- 14:00-14:20 Rolf Stenberg, Analysis of finite element methods for the Brinkman problem
- 14:20-14:40 Juho Könnö, Analysis of the Brinkman problem with $H(\text{div})$ -conforming finite elements
- 14:40-15:00 Mika Juntunen, Benchmarking finite element methods for the Brinkman problem

C34: Contributed session: High performance computing III chair Maya Neytcheva

- 14:00-14:20 Andreas Hellander, Monte Carlo simulation of biochemical reaction networks on the Cell Broadband Engine
- 14:20-14:40 Vasily Voronov, Machine learning approach to performance tuning of parallel power grid simulator
- 14:40-15:00 Manuel J Castro-Díaz, A high order finite volume numerical scheme for shallow water system: An efficient implementation on GPUs and applications to real geophysical flows

C35: Contributed session: Linear algebra II chair Owe Axelsson

- 14:00-14:20 Pavel Jiraneck, A posteriori error estimates and stopping criteria for iterative solvers
- 14:20-14:40 Juan M. Pena, Recent advances on eigenvalue localization
- 14:40-15:00 Lukas Zedek, The use of principal component analysis for reduction of dimension of reactive transport model

C36: Contributed session: Integral equations chair Per Lötstedt

- 14:00-14:20 Nuray Bozkaya, The time-domain BEM solution of nonlinear reaction-diffusion equations
- 14:20-14:40 Vladimir Vasilyev, Calderon-Zygmund singular integrals in continuous and discrete situations
- 14:40-15:00 Marek Kolk, Numerical solution of Volterra integral equations with weakly singular kernels which may have a boundary singularity