

Tuesday , June 30

08.30-09.30	Charlie Elliott, <i>Computational Surface Partial Differential Equations</i> , chair Stig Larsson room H3						
09.30-10.00	Coffee break						
Room	H1	H2	H3	H4	A114	A144	B153
10.00-12.00	M12 Biomechanics I	M13 Advances in numerical methods for non-Newtonian flows I	M11 Adaptivity for non-linear and non-smooth problems I	M14 HPC-driven numerical methods and applications I	M10 Theory and applications of non-conforming finite element methods	C12 PDE, methods and analysis II	C13 ODE, methods and analysis
12.00-13.00	Lunch						
13.00-14.00	Vit Dolejsi, <i>Discontinuous Galerkin finite element method: From numerical analysis to compressible flow simulation</i> , chair Miloslav Feistauer room H3						
14.00-15.00	Public lecture: Björn Engquist, TBA, chair Miloslav Feistauer room H3						
15.00-15.30	Coffee break						
15.30-17.30	M16 Biomechanics II	M17 Advances in numerical methods for non-Newtonian flows II	M15 Adaptivity for non-linear and non-smooth problems II	M18 HPC-driven numerical methods and applications II	C14 Stochastic differential equations	C16 PDE, methods and analysis III	C15 Finite element methods, I
Room	H1	H2	H3	H4	A114	A144	B153

Tuesday, June 30, Morning 10:00-12:00

M10: Minisymposium: Theory and applications of non-conforming finite element methods

Organizers: Emmanuil Georgoulis and Max Jensen

- 10:00-10:30 Max Jensen, Discontinuous Galerkin Methods for miscible displacement problems
- 10:30-11:00 Andrea Cangiani, Discontinuous Galerkin methods for reaction-diffusion systems with transmission conditions
- 11:00-11:30 Edward Hall, Discontinuous Galerkin methods for bifurcation phenomena in fluid flow through open systems
- 11:30-12:00 Omar Lakkis, A posteriori error control for discontinuous Galerkin methods in time-dependent problems

M11: Minisymposium: Adaptivity for non-linear and non-smooth problems, I

Organizers: Ralf Kornhuber and Andreas Veese

- 10:00-10:30 Andreas Veese, Introduction to adaptivity for non-linear and non-smooth problems
- 10:30-11:00 Sergey Repin, A posteriori estimates for variational inequalities
- 11:00-11:30 Qinsong Zou, Hierarchical error estimates for a Signorini problem
- 11:30-12:00 Barbara Wohlmuth, Adaptive refinement for variational inequalities

M12: Minisymposium: Biomechanics, I

Organizers: Gerhard A. Holzapfel and Axel Klawonn

- 10:00-10:30 Daniel Balzani, Modeling aspects of softening hysteresis in soft biological tissues
- 10:30-11:00 Simone Deparis, Algorithms for fluid-structure interaction problems: some comparisons and application to blood flow simulations

- 11:00-11:30 Andreas Menzel, An anisotropic micro-sphere approach applied to the modeling of soft biological tissues
- 11:30-12:00 Simone Scacchi, A two-level Newton-Krylov-Schwarz method for the bidomain reaction-diffusion system

M13: Minisymposium: Advances in numerical methods for non-Newtonian flows, I

Organizers: Erik Burman, Maxim Olshanskii, Stefan Turek

- 10:00-10:30 Erik Burman, Nitsche XFEM for the approximation of interface three field Stokes problems
- 10:30-11:00 Maxim Olshanskii, An algebraic solver for variable viscosity Stokes equations with application to the Bingham fluid problem
- 11:00-11:30 Pierre Saramito, Adaptive mesh procedures for viscoplastic and elastoviscoplastic fluid flows
- 11:30-12:00 A. Ouazzi, FEM techniques for viscoelastic flow problems for high We numbers

M14: Minisymposium: HPC-driven numerical methods and applications, I

Organizers: Svetozar Margenov, Maya Neytcheva

- 10:00-10:30 Yavor Vutov, Scalable PCG algorithms for numerical upscaling of voxel structures
- 10:30-11:00 Timo Heister, On robust parallel preconditioning for incompressible flow problems
- 11:00-11:30 Tijmen Collignon, Fast iterative solution of large nonsymmetric linear systems on grid computers
- 11:30-12:00 Maya Neytcheva, Scalable finite element-based sparse approximate inverses

C12: Contributed session: PDEs - methods and analysis II chair Mohammad Asadzadeh

- 10:00-10:20 Mikheil Tsiklauri, Construction of the third order of accuracy sequential type decomposition scheme and numerical computation for multidimensional inhomogeneous evolution problem
- 10:20-10:40 Alessandra Jannelli, Numerical methods for 3D advection-diffusion-reaction models
- 10:40-11:00 Gunilla Efrainsson, Stretched grids as buffer zones in aero-acoustic simulations
- 11:00-11:20 Vadim Lisitsa, Simulation of scattered waves on the base of low-reflection local temporal-spatial mesh refinement
- 11:20-11:40 Elena Sundkvist, Numerical solution of the Helmholtz equation using the discretized boundary integral equation
- 11:40-12:00 Christophe Berthon, A relaxation scheme to simulate gravitational flows

C13: Contributed session: ODEs - methods and analysis chair Michael Hanke

- 10:00-10:20 Jan Mach, Quantitative analysis of numerical solution for the Gray-Scott model
- 10:20-10:40 Jeremy Schiff, Generalized Cayley maps and multistep Lie group methods
- 10:40-11:00 Ali Sendur, An epsilon-uniform method for singular perturbation problems on equidistant meshes without exact solution
- 11:00-11:20 Etienne Emmrich, Time discretization of nonlinear evolution equations
- 11:20-11:40 Ewa Weinmüller, Solving differential algebraic equations with singularities
- 11:40-12:00 Rosanna Campagna, On the numerical approximation of the Laplace transform function from real samples and its inversion

Tuesday, June 30, Afternoon 15:30-17:30

M15: Minisymposium: Adaptivity for non-linear and non-smooth problems, II

Organizers: Ralf Kornhuber and Andreas Veese

- 15:30-16:00 Kunibert Siebert, Analysis of conforming adaptive finite elements for nonlinear problems
- 16:00-16:30 Andrea Bonito, Geometrically consistent mesh modifications
- 16:30-17:00 Christian Kreuzer, A convergent adaptive Uzawa finite element method for the nonlinear Stokes problem
- 17:00-17:30 Ralf Kornhuber, Hierarchical error estimates for non-smooth problems

M16: Minisymposium: Biomechanics, II

Organizers: Gerhard A. Holzapfel and Axel Klawonn

- 15:30-16:00 Oliver Rheinbach, Iterative substructuring in biomechanics

- 16:00-16:30 Tim Ricken, Multiphase modeling in biomechanics for growth and remodeling
- 16:30-17:00 Jonas Stålhand, Parameter identification in arterial models using clinical data
- 17:00-17:30 Marko Vendelin, Mechanoenergetics of actomyosin interaction analyzed by cross-bridge model

M17: Minisymposium: Advances in numerical methods for non-Newtonian flows, II

Organizers: Erik Burman, Maxim Olshanskii, Stefan Turek

- 15:30-16:00 Sebastian Boyaval, A new stability criterium for finite-element schemes of Oldroyd-like models and a new efficient variance reduction technique for micro-macro dumbbell-models
- 16:00-16:30 Roland Glowinski, On the numerical simulation of some visco-plastic flows
- 16:30-17:00 Jaroslav Hron, Monolithic FEM techniques for nonlinear flow with temperature, pressure and shear-dependent viscosity
- 17:00-17:30 Ping Lin, Energy-law preserving C0 finite element methods for simulation of liquid crystal and multi-phase flows

M18: Minisymposium: HPC-driven numerical methods and applications, II

Organizers: Svetozar Margenov, Maya Neytcheva

- 15:30-16:00 Mats Holmström, Hybrid modeling of plasmas
- 16:00-16:30 Daniel Spångberg, Parallel MD simulations of ion solvation phenomena
- 16:30-17:00 Biplab Sanyal, Modeling of materials properties using high performance computation
- 17:00-17:30 Bernd Dammann, Scientific Computations on GPUs

C14: Contributed session: Stochastic differential equations chair Fabio Nobile

- 15:30-15:50 Adnan Khan, Homogenization theory for transport of particles in a strong mean flow with periodic fluctuations
- 15:50-16:10 Tudor Udrescu, Adaptive wavelet-based approximation for the solution of the chemical master equation
- 16:10-16:30 Vaclav Finek, Adaptive wavelet methods for gene models
- 16:30-16:50 Shev MacNamara, Stochastic modeling of T cell homeostasis for two competing clonotypes via the master equation
- 16:50-17:10 Mario Annunziato, High order numerical method for piecewise deterministic processes with ENO scheme
- 17:10-17:30 Håkon Hoel, Adaptive multi level Monte Carlo simulation

C15: Contributed session: Finite element methods I chair Max Jensen

- 15:30-15:50 Denise de Siqueira, Adaptive high order finite element methods in $H(\text{div})$ and $H(\text{curl})$
- 15:50-16:10 Andreas Schröder, A posteriori error estimation in mixed finite element methods for Signorini's problem
- 16:10-16:30 Pedro Galán del Sastre, A comparison of semi-Lagrangian and Lagrange-Galerkin methods with high order finite elements
- 16:30-16:50 Fredrik Edelvik, Source localization in the human brain based on finite element methods
- 16:50-17:10 Masahisa Tabata, A mass-conservative characteristic finite element scheme of second order in time for convection-diffusion problems

C16: Contributed session: PDEs - methods and analysis III chair Sonia Gomes

- 15:30-15:50 Bärbel Janssen, Analysis of a variant of the fractional-step timestepping-scheme: Comparison to other schemes and application to fluid flow
- 15:50-16:10 Torsten Adolph, Numerical stabilization of the melt front for laser beam cutting
- 16:10-16:30 Raimondas Ciegis, Predictor-corrector iterative algorithms for solution of parabolic problems on graphs
- 16:30-16:50 Natalia Petrovskaya, Local least-squares reconstruction in higher order schemes on anisotropic meshes
- 16:50-17:10 Jörg Frochte, A numerical method for a nonlinear spatial population model with a continuous delay
- 17:10-17:30 Livia Marcellino, Ultrasound image sequence segmentation via motion estimation