

“Non-Standard Numerical Methods for PDE’s”, Pavia June 29-July 2, 2010
Workshop Program and List of Participants

Workshop Program

Tuesday, June 29

- 08:30-09:00 WORKSHOP REGISTRATION
- 09:00-09:50 Douglas Arnold, *Hilbert Complexes and the Finite Element Exterior Calculus*
- 09:50-10:20 Martin Costabel, *Regularized Poincaré operator and p version approximation of the Maxwell eigenvalue problem*
- 10:20-10:50 COFFEE BREAK
- 10:50-11:20 Snorre Christiansen, *Mixed finite elements as inverse systems of differential forms*
- 11:20-11:50 Joachim Scöberl, *Nitsche-type Mortaring for Maxwells Equations*
- 11:50-12:20 Richard Falk, *Canonical Families of Finite Element Differential Forms and Their Properties*
- 12:20-14:00 LUNCH
- 14:00-14:50 Leszek Demkowicz, *Solution of dual-mixed elasticity equations using Arnold-Falk-Winther element and discontinuous Petrov-Galerkin method, a comparison*
- 14:50-15:20 Francesca Gardini, *Mimetic finite differences for eigenvalue problems*
- 15:20-15:50 Ragnar Winther, *Cochain projections in finite element exterior calculus*
- 15:50-16:10 COFFEE BREAK
- 16:10-16:30 Monique Dauge, *Skin effect in electromagnetism*
- 16:30-16:50 Holger Heumann, *High order Galerkin Methods for General Advection Problems*
- 16:50-17:10 Artur Palha, *Higher order cochain interpolation*
- 17:10-17:30 Jasper Kreeft, *Higher-order discretization of the Laplace-Beltrami operator*
- 17:30-17:50 Paolo Gatto, *Modeling of bone conduction of sound in the human head using hp-finite elements: code design and verification*

Wednesday, June 30

- 09:00-09:50 Peter Monk, *The solution of time harmonic wave equations using complete families of elementary solutions*
- 09:50-10:20 Timo Betcke, *Nonpolynomial FEM with MPSPACK*
- 10:20-10:50 COFFEE BREAK
- 10:50-11:20 Teemu Luostari, *A 3D plane wave basis for elastic wave problems*
- 11:20-11:50 Stefan Sauter, *A Posteriori Error Estimation for Highly Indefinite Helmholtz Problems*
- 11:50-12:20 Jens Markus Melenk, *Mapping properties of Helmholtz integral operators and their application to the hp-BEM*
- 12:20-14:00 LUNCH
- 14:00-14:50 Ralf Hiptmair, *Plane Wave Discontinuous Galerkin Methods*
- 14:50-15:20 Andrea Moiola, *Approximation by plane waves*
- 15:20-15:40 Clemens Hofreither, *A non-standard finite element method based on boundary integral operators*
- 15:40-16:10 COFFEE BREAK
- 16:10-16:30 Joel Phillips, *Quadrature for Finite Elements on Pyramids*
- 16:30-16:50 Aurora Mihaela Marica, *Localized solutions and filtering mechanisms for the discontinuous Galerkin semi-discretizations of the 1 – d wave equation*
- 16:50-17:10 Christoph Heinrich, *Finite Volume Methods on NURBS Geometries with Application to Fluid Flow and Fluid-Structure Interaction*

Thursday, July 1

- 09:00-09:50 Franco Brezzi, *Scalar products and reconstructions in MFD*
- 09:50-10:20 Gianmarco Manzini, *High-order accurate nodal formulation of the Mimetic Finite Difference Method for Elliptic Problems*
- 10:20-10:50 COFFEE BREAK
- 10:50-11:20 Mary F. Wheeler, *A Convergent MFME for Highly Distorted Hexahedra*
- 11:20-11:50 Ivan Yotov, *A Multiscale Mortar Multipoint Flux Mixed Finite Element Method*
- 11:50-12:20 Lourenço Beirão da Veiga, *Mimetic discretization of the diffusion problem: a higher order method and a posteriori error estimates*
- 12:20-14:00 LUNCH
- 14:00-14:50 Konstantin Lipnikov, *Mimetic finite difference method for solving PDEs on polygonal and polyhedral meshes*
- 14:50-15:20 Pavel Bochev, *Optimization-based computational models, or how to let someone else do the hard work*
- 15:20-15:40 Daniil Svyatskiy, *Analysis of the Discrete Maximum Principle in the Mimetic Finite Difference Method for Elliptic Problems*
- 15:40-16:00 Andrea Cangiani, *Mimetic Finite Difference methods for convection-diffusion problems*
- 16:00-16:20 Alessio Quaglino, *Towards a Mimetic Nonlinear Shearable Shell*
- 16:20-16:45 COFFEE BREAK
- 16:45-20:00 PANEL SESSION on “*Research Assessment: an International Outlook*”
- 20:30-22:30 SOCIAL DINNER

Friday, July 2

- 09:00-09:50 Elaine Cohen, *Analysis Aware Modeling for Isogeometric Analysis*
- 09:50-10:20 Bert Jüttler, *Dimensions and Bases of Bivariate Hierarchical Tensor-product Splines*
- 10:20-10:50 COFFEE BREAK
- 10:50-11:20 Alessandro Reali, *Isogeometric Analysis in Pavia*
- 11:20-11:50 John Evans, *Isogeometric Analysis in Fluid Dynamics: Divergence-Free Discretizations for the Stokes and Navier-Stokes Equations*
- 11:50-12:20 Judith Rivas, *Some estimates for hpk-refinement in Isogeometric Analysis*
- 12:20-14:00 LUNCH
- 14:00-14:50 Tor Dokken, *Locally Refined Splines*
- 14:50-15:20 Carla Manni, *Beyond NURBS: Non-Standard CAGD Tools in Isogeometric Analysis*
- 15:20-15:40 Peter Nørtoft Nielsen, *Isogeometric Shape Optimization*
- 15:40-16:10 COFFEE BREAK
- 16:10-16:30 Fehmi Cirak, *A unified subdivision discretization approach for thick and thin shells*
- 16:30-16:50 Ahmed Ratnani, *High-Order Spline Finite Element Solver for the Time Domain Maxwell equations*

List of Participants

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