

ESCO 2010 - Monday, June 28

- 8:45 Conference opening
- **9:00 - 10:40 Keynote Session** (chairman R. Hoppe)
 - 9:00 - 9:50 G. Hansen: Parallel Multiphysics Algorithms and Software for Computational Nuclear Engineering
 - 9:50 - 10:40 G. Varoquaux: From Scientific Computing to Research Applications: Doing New Science with Python
- 10:40 - 11:00 Coffee break
- **11:00 - 12:15 Contributed Session I-A** (chairman R. Hoppe)
 - 11:00 - 11:25 M. Hall: Increased Efficiency for Temporal Spherical Harmonic Thermal Photon Transport
 - 11:25 - 11:50 M. Möller: A Comparative Study of FCT Algorithms for Strongly Time-Dependent Flows with Application to an Idealized Z-pinch Implosion Model
 - 11:50 - 12:15 P. Sváček: Numerical Simulation of Flow Induced Vibrations of Channel Walls with Stabilized Finite Element Method
- **11:00 - 12:15 Contributed Session I-B** (chairman L. Bañas)
 - 11:00 - 11:25 A. Yeckel: Robust and Efficient Approximate Block Newton Method for Coupled Iterations of Black Box Nonlinear Solvers
 - 11:25 - 11:50 T. Vejchodský: Computing Guaranteed Upper Bounds of the Approximation Error
 - 11:50 - 12:15 J. Valdman: Fast Matlab Assembly of FEM Stiffness and Mass Matrices in 2D and 3D: Nodal Elements
- 12:15 - 13:30 Lunch
- **13:30 - 15:35 Contributed Session II-A** (chairman D. Kuzmin)
 - 13:30 - 13:55 M. Gurriss: A Newton-Like Finite Element Solver for Compressible Particle-Laden Gas Flows
 - 13:55 - 14:20 J. Fürst: Numerical Solution of 2D and 3D Unsteady Transonic Flows
 - 14:20 - 14:45 L. Beneš: Numerical Simulation of the Flow Through Channels with Tee-Junction
 - 14:45 - 15:10 A. Guardone: Numerical Simulation of Start-Up Vortex from an Airfoil Using a Conservative Unstructured Grid Adaptive Scheme
 - 15:10 - 15:35 J. Halama: Numerical Simulation of Turbine Cascade Flow with Blade-Fluid Heat Exchange
- **13:30 - 15:35 Contributed Session II-B** (chairman G. Varoquaux)
 - 13:30 - 13:55 S. Dascalu: Visual Software Environment in Support of Model Interoperability for Climate Change Research in Nevada
 - 13:55 - 14:20 O. Čertík: FEMhub Online Numerical Methods Laboratory
 - 14:20 - 14:45 M. Paprocki: A New Online Interactive Web Notebook Based on ExtJS
 - 14:45 - 15:10 A. Paoluzzi: Geometry and Physics Modeling with Python
 - 15:10 - 15:35 R. Cimrman: Modeling Compression of Porous Medium in Ducts with Rate-Dependent Friction Conditions
- 15:35 - 16:00 Coffee break
- **19:00 - 23:00 Welcome reception (Spilka)**
 - Includes demonstration of historical firearms, historical fencing, and a flame show (by the Kargen group).

ESCO 2010 - Tuesday, June 29

- **9:00 - 10:40 Keynote Session** (chairman G. Hansen)
 - 9:00 - 9:50 Z. Bittnar: Marriage of Material and Structure Engineering via Multiscale Methods and Python Interface
 - 9:50 - 10:40 W. Mitchell: A Summary of *hp*-Adaptive Finite Element Strategies
- 10:40 - 11:00 Coffee break
- **11:00 - 12:15 Contributed Session I-A** (chairman G. Hansen)
 - 11:00 - 11:25 A. Aabloo: *hp*-Finite Element Model of Poisson and Nernst-Planck System of Equations
 - 11:25 - 11:50 O. Čertík: A Consistent Approach to Automatic Mesh Refinement and Derefinement in Adaptive *hp*-FEM for Time-Dependent Problems
 - 11:50 - 12:15 O. Benedix: Adaptive Solution of the Optimal Control Problem of Young Concrete Hydration
- **11:00 - 12:15 Contributed Session I-B** (chairman J. Cao)
 - 11:00 - 11:25 A. Dimier: Coupling of Elmer and PhreeqC to Simulate Multi-phase Geochemical Transport
 - 11:25 - 11:50 A. Zubov: Mathematical Modeling of Transport Processes in Reconstructed Polyolefin Particles
 - 11:50 - 12:15 J. Kosek: Mathematical Modeling of DC Electro-Osmotic Micro-Pumps
- 12:15 - 13:30 Lunch
- **13:30 - 15:35 Contributed Session II-A** (chairman K. Kozel)
 - 13:30 - 13:55 J. Kruis: Efficient Numerical Methods for Multiphysics Coupled Problems in Civil Engineering
 - 13:55 - 14:20 T. Koudelka: Thermo-Mechanical Analysis of a Prestressed Concrete Containment
 - 14:20 - 14:45 T. Krejčí: Modelling of Coupled Heat and Moisture Transfer in Soils
 - 14:45 - 15:10 M. Beneš: Analysis of Coupled Transport Phenomena in Concrete at Elevated Temperatures
 - 15:10 - 15:35 M. Pultar: Numerical Modelling of Problems of Fire Engineering
- **13:30 - 15:35 Contributed Session II-B** (chairman A. Dimier)
 - 13:30 - 13:55 M. Ehrhardt: Finite Volume Methods for the Simulation of PEM Fuel Cells
 - 13:55 - 14:20 J. Cao: Numerical Simulation of PEM Fuel Cell Performance
 - 14:20 - 14:45 T. Horváth: Multiphysics Models of PEM-Fuels Cells
 - 14:45 - 15:10 T. Szabó: Heterogenous Parameter Distribution in a Fuel Cell Model
 - 15:10 - 15:35 L. Bañas: Numerical Approximation of a Phase Field Model for Incompressible Fluid Flows
- 15:35 - 16:00 Coffee break
- 16:00 - 16:30 Poster session

ESCO 2010 - Wednesday, June 30

- **9:00 - 9:50 Keynote Session** (chairman W. Mitchell)
 - R. Hoppe: Domain Decomposition and Balanced Truncation Model Reduction for Shape Optimization of the Stokes System
- 9:50 - 10:10 Coffee break
- **10:10 - 11:25 Contributed Session I-A** (chairman W. Mitchell)
 - 10:10 - 10:35 P. Neumann: Coupled Approaches for Fluid Dynamic Problems Using the PDE Framework Peano
 - 10:35 - 11:00 A. Terrel: Code Generation with FEniCS for Complex Fluids
 - 11:00 - 11:25 M. Januszewski: Sailfish: an Open-Source Fluid Dynamics Solver for GPUs
- **10:10 - 11:25 Contributed Session I-B** (chairman A. Aabloo)
 - 10:10 - 10:35 I. Pultarová: Algebraic Multilevel Preconditioning for Coarse Problems Involved in Domain Decomposition Methods
 - 10:35 - 11:00 J. Šístek: Selection of Corners for the BDDC Method
 - 11:00 - 11:25 J. Trefilík: An Example of LDA Method of Residual Distribution Schemes Using Non-Lagrange Elements
- 11:25 - 13:00 Lunch
- **13:00 - 17:00 Software Workshop**
 - 13:00 - 13:45 Fenics
 - 13:45 - 14:30 Hermes/Agros
 - 14:30 - 15:15 Peano
 - 15:15 - 16:00 Sailfish
 - 16:00 - 16:45 SfePy

ESCO 2010 - Thursday, July 1

- **9:00 - 9:50 Contributed Session I-A** (chairman K. Adamiak)
 - 9:00 - 9:25 A. Bossavit: A Differential-Geometric Approach to Magneto-Elastic Coupling, in Continuous and Discrete Form
 - 9:25 - 9:50 M. Bergot: Higher-Order Pyramidal Finite Elements for Electromagnetics
- **9:00 - 9:50 Contributed Session I-B** (chairman V. Kučera)
 - 9:00 - 9:25 H. Klimach: Parallel Fluid-Fluid Coupling with Discrete Points
 - 9:25 - 9:50 C. Vass: Numerical Modeling of Laser-Induced Backside Wet Etching Procedure
- 9:50 - 10:10 Coffee break
- **10:10 - 12:15 Contributed Session II-A** (chairman A. Bossavit)
 - 10:10 - 10:35 D. Farina: Thermal Expansion as a Parameter for Sensitivity Analysis of Waveguide Filters
 - 10:35 - 11:00 K. Adamiak: Numerical Simulation of Electrodynamics Flow and Particle Transport in Electrostatic Precipitator
 - 11:00 - 11:25 P. Karban: Modeling of Rotational Induction Heating of Nonmagnetic Cylindrical Billets
 - 11:25 - 11:50 P. Kropfík: Induction Heating of Thin Metal Plates in Time-Varying External Magnetic Field Formulated as Nonlinear Hard-Coupled Problem
 - 11:50 - 12:15 V. Kotlan: Optimized Regulation of Field Current in Thermoelastic Actuator for Accurate Setting of Position
- **10:10 - 12:15 Contributed Session II-B** (chairman P. Sváček)
 - 10:10 - 10:35 V. Kučera: Simulation of Compressible Flow in Time-Dependent Domains
 - 10:35 - 11:00 J. Huml: Numerical Solution of Inviscid Transonic Flows in a 2D and 3D Channel
 - 11:00 - 11:25 R. Honzátko: Incompressible Viscous Flow at Various Velocities in Interaction with a Vibrating Profile
 - 11:25 - 11:50 L. Lobovský: Analysis of Fluid-Structure Interaction By Means of SPH Method
 - 11:50 - 12:15 J. Karel: Numerical Solution of 2D Streamer Propagation by Finite Volume Method on Unstructured Grid
- 12:15 - 13:30 Lunch
- **13:30 - 15:10 Contributed Session III-A** (chairman R. Cimrman)
 - 13:30 - 13:55 M. Hanuš: FE and FV Methods for Efficient Neutronics Analysis
 - 13:55 - 14:20 I. Tomaschuk: The Modeling of Dissimilar Welding of Immiscible Materials by Using Phase Field Method
 - 14:20 - 14:45 V. Kalusová: Distribution of the Internal Fields in Nanostructured Mixed Phase Silicon Thin Films
 - 14:45 - 15:10 A. Lutowska: Model Order Reduction for Complex High-Tech Systems
- **13:30 - 15:10 Contributed Session III-B** (chairman A. Yeckel)
 - 13:30 - 13:55 S. Vepa: Numerical Investigation of Deformable Composite Structures Under Slamming Loads
 - 13:55 - 14:20 M. Mahmood: Well-Balanced High Order Discontinuous Galerkin Scheme for Shallow Water Flows on Unstructured Meshes
 - 14:20 - 14:45 I. Sládek: Numerical Validation Study Devoted to 2D/3D Pollution Dispersion Over a Single 2D Hill
 - 14:45 - 15:10 J. Šimonek: Numerical Simulation of 2D and 3D Stratified Flows in Atmospheric Boundary Layer
- 15:10 - 15:30 Coffee break
- **19:00 - 21:00 Farewell reception**

ESCO 2010 - Friday, July 2

- **9:00 - 9:50 Contributed Session I-A** (chairman D. Farina)
 - 9:00 - 9:25 M. Bouajaji: High-Order Discontinuous Galerkin Method for the Time-Harmonic Maxwell Equations
 - 9:25 - 9:50 R. Perrussel: Hybridizable Discontinuous Galerkin Method for the Maxwell Equations
- **9:00 - 9:50 Contributed Session I-B** (chairman T. Vejchodský)
 - 9:00 - 9:25 J. Respondek: Application of the Method Of Lines to Study Some Parabolic Partial Differential Equations Properties
 - 9:25 - 9:50 K. Segeth: A Comparison of A Posteriori Error Estimates for Some Problems Solved by the FEM
- 9:50 - 10:10 Coffee break
- **10:10 - 12:15 Contributed Session II-A** (chairman P. Solin)
 - 10:10 - 10:35 A. Kučerová: Uncertainty Updating in the Description of Coupled Heat and Moisture Transport in Heterogeneous Materials
 - 10:35 - 11:00 J. Sýkora: Multiscale Analysis of Coupled Transport Processes in Masonry Structures
 - 11:00 - 11:25 A. Veress: Coupled Problem of the Inverse Design and Constrained Optimization
 - 11:25 - 11:50 I. Gölgeleyen: Numerical Solution of an Inverse Problem for a Transport-Like Equation and Related Integral Geometry Problem along Geodesics
 - 11:50 - 12:15 F. Gölgeleyen: Approximate Solution Methods for an Inverse Problem for the Kinetic Equation
- **12:15 Conference closing**
- 12:30 - 14:00 Lunch