Copper Country Summer Workshop on Numerical Analysis and Inverse Problem

On occasion of the 70th birthday of Prof. David Colton

Monday, Aug. 12, 2013

- 8:30am - 8:50am, Registration
- 8:50am - 9:00am, Opening Remarks, Mark Gockenbach
- 9:00am - 10:20am, Plenary Talks. Chair: Peter Monk
  - 9:00am - 9:40am, Susanne Brenner, $C^0$ interior penalty methods
  - 9:40am - 10:20am, Plamen Stefanov, The identification problem in SPECT-theory and numerics
- 10:20am - 10:40am, Coffee Break
- 10:40am - 12:00pm, Invited Talks. Chair: Weimin Han
  - 10:40am - 11:00am, Xiu Ye, An introduction of new finite element methods: Weak Galerkin methods
  - 11:00am - 11:20am, Constantin Bacuta, A Cascadic Algorithm for Saddle Point Problems
  - 11:20am - 11:40am, Jintao Cui, A Nonconforming Finite Element Method for an Acoustic Fluid-Structure Interaction Problem
  - 11:40am - 12:00pm, Li-yeng Sung, $P1$ Finite Element Methods for Two Dimensional Time Harmonic Maxwell Equations
- 12:00pm - 2:00pm Lunch Break
- 2:00pm - 2:40pm, Plenary Talk. Chair: William Layton,
  - 2:00pm - 2:40pm, Weimin Han, Variational Principles, A Posteriori Error Estimates and Differential Approximations in Radiative Transfer
- 2:40pm - 3:40pm, Invited Talks. Chair: Di Liu
  - 2:40pm - 3:00pm, Peijun Li, Near-Field Imaging of Infinite Rough Surfaces
  - 3:00pm - 3:20pm, Hongyu Liu, Locating multiple multi-scale electromagnetic scatterers
  - 3:20pm - 3:40pm, Kui Ren, Inverse coefficient problem for transport in stochastic environments
- 3:40pm - 4:00pm, Coffee Break
- 4:00pm - 5:00pm, Invited Talks. Chair: Peijun Li
  - 4:00pm - 4:20pm, Chunxiong Zheng, Global geometrical optics approximation to the high frequency Helmholtz equation in discontinuous medium
• 4:20pm - 4:40pm, Gerard Awanou, Standard Lagrange elements for the numerical resolution of the Monge-Ampere equation
• 4:40pm - 5:00pm, Mahadevan Ganesh, A model reduction algorithm for efficient simulation of a class of parametrized 3D electromagnetic forward models
• 5:00pm - 5:20pm, Hengguang Li, Regularity and Multigrid Analysis for Laplace-Type Axisymmetric Equations

• 6:00pm - 8:00pm, Workshop Banquet

Tuesday, Aug. 13, 2013

• 9:00am - 9:40am, Plenary Talks. Chair: Susanne Brenner
  – 9:00am - 9:40am, William Layton, Algorithms for calculation of flow ensembles
  – 9:40am - 10:20am, Fioralba Cakoni, Transmission Eigenvalues in Inverse Scattering Theory
• 10:20am - 10:40am, Coffee Break
• 10:40am - 12:00pm, Invited Talks. Chair: John Scotland
  – 10:40am - 11:00am, Xia Ji, A Multi-Level Method for Transmission Eigenvalues of Anisotropic Media
  – 11:00am - 11:20am, Allan Struthers, Contour Integral Based Algorithms for Interior Transmission Eigenvalues
  – 11:20am - 11:40am, Yukun Guo, A time domain approach to the linear sampling method
  – 11:40am - 12:00pm, Andriy Synyavskyy, A linear sampling method for visualization of the boundary of an impenetrable object using near-field scattering data
• 12:00pm - 2:00pm Lunch Break
• 2:00pm - 2:40pm, Plenary Talk. Chair: Plamen Stefanov
  – 2:00pm - 2:40pm, John Scotland, TBD
• 2:40pm - 3:40pm, Invited Talks. Chair: Haomin Zhou
  – 2:40pm - 3:00pm, Mark Stuff, Approaches to some non-linear inverse problems, motivated by ranging remote sensing methods
  – 3:00pm - 3:20pm, Jingfang Jiang, Forward and Inverse Problems in Ultrasound-based Quantitative Pulpation Imaging
  – 3:20pm - 3:40pm, Bilal Chanane, Boundary Control of Nonlinear Parabolic Equation
• 3:40pm - 4:00pm Coffee Break
• 4:00pm - 5:20pm, Invited Talks. Chair: Hongyu, Liu
  – 4:00pm - 4:20pm, Haomin Zhou, An Efficient Numerical Methods for Inverse Source Problems with Applications in Fluorescence Tomography
  – 4:20pm - 4:40pm, Wenyuan Liao, Solving full-waveform inversion problem through PDE-constrained optimization
  – 4:40pm - 5:00pm, Sum Chow, Numerical solutions to scattering problems
  – 5:00pm - 5:20pm, Di Liu, Multiscale modeling and computation of nano optical responses
Wednesday, Aug. 14, 2013

- Plenary Talk. Chair: Fioralba Cakoni
  - 9:00am - 9:40am, Jijun Liu, *Total variation regularization for backward time-fractional diffusion problem*

- 9:40am - 10:40am, Invited Talks. Chair: Chunxiong Zheng
  - 9:40am - 10:00am, Wenjun Ying, *A kernel-free boundary integral method for Elliptic PDEs*
  - 10:00am - 10:20am, Yang Yang, *Discontinuous Galerkin method for hyperbolic equations involving δ-singularities*
  - 10:20am - 10:40am, Liwei Xu, *Variational Methods for the Fluid-Structure Interaction Problem*

- 10:40am - 11:00am, Coffee Break

- 11:00am - 12:00pm, Invited Talks. Chair: Zhengfu Xu
  - 11:00am - 11:20am, Yulong Xing, *Energy conserving discontinuous Galerkin methods for the wave propagation problems*
  - 11:20am - 11:40am, Tong Sun, *Numerical smoothness for PDE error analysis*
  - 11:40am - 12:00pm, Xiaoming He, *Parallel, non-iterative, multi-physics domain decomposition methods for time-dependent Stokes-Darcy system*