Fifth SIAM Workshop on
Combinatorial Scientific Computing
(CSC11)
May 19-21, 2011, Darmstadt, Germany
http://www.siam.org/meetings/csc11/

Scientific Program

Thursday, May 19, 2011

• 2pm: Plenary Lecture (joint with SIAM OP11) [room spectrum A]
  Thomas F. Coleman (University of Waterloo): Efficient Automatic
  Differentiation for Nonlinear Systems and Continuous Optimization (by
  using graphs)

• 3pm: CSC 11 Opening [room 2.04, titan(ium)]

• 3.15pm-4.15pm: 3 Contributed Lectures [room 2.04, titan(ium)]
  – Jean-Paul Watson, Ali Pinar, Richard Chen, Genetha Gray, John
    Sirola, and Patricia Hough: Computational Challenges in Optimization
    for Electrical Grid Operations and Planning
  – Caslav Ilic, Stephan Schmidt, Nicolas Gauger, and Volker Schulz:
    Detailed Aerodynamic Shape Optimization Based on an Adjoint Method
    with Shape Derivatives
  – Hans Mittelmann: Computing Strong Bounds in Combinatorial
    Optimization

• 4.15pm-4.45pm: coffee break [room 0.03, copernicum]

• 4.45pm-5.45pm: 3 Contributed Lectures [room 2.04, titan(ium)]
  – Suely Oliveira and David Stewart: Clustering via optimization
  – Assefaw Gebremedhin, Umit Catalyurek, John Feo, Mahantesh
    Halappanavar, and Alex Pothen: Multithreaded Algorithms for Graph
    Coloring
  – Ebadollah Varnik, Lukas Razik, and Uwe Naumann: Fast Conservative
    Estimation of Hessian Sparsity

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• 5.45pm-8pm: Poster Session (+ drinks) [room 0.03, copernicium]

- Haim Avron and Sivan Toledo: *Randomized algorithms for estimating the trace of an implicit symmetric positive semi-definite matrix*
- Bas Fagginger Auer and Rob Bisseling: *A Geometric Approach to Parallelising Sparse LU Decomposition*
- Johannes Lotz and Uwe Naumann: *Reversing the Data Flow of Computer Programs*
- Michael Weitzel, Sebastian Niedenführ, Katharina Nöh, and Wolfgang Weichert: *High-Performance Simulation of Isotope Labeling Experiments for Metabolic Flux Estimation*
- Ali Pinar: *The Inhibiting Bisection Problem*
- Ali Pinar and Isabelle Stanton: *Sampling Graphs with a Prescribed Joint Degree Distribution Using Markov Chains*
- Robert Luce: *On fill and flops in symmetric Gaussian elimination*
- Satoru Iwata and Mizuyo Takamatsu: *On Kronecker Canonical Form of Mixed Matrix Pencils*
- David Gleich, Reid Andersen, and Vahab Mirrokni: *Overlapping clusters for distributed computation*
- Ilya Safro: *Multiscale approach for network compression-friendly ordering*
- Martin Buecker, Simon Lessenich, and Michael Luelfesmann: *A collection of web-based educational models for interactively exploring algorithms in combinatorial scientific computing*
- Tobias Steinle, Jadran Vrabec, and Andrea Walther: *Simulation of particle-filled hollow spheres*
- Kamila Ghidetti, Lucia Catabriga, Maria Claudia Boeres, and Maria Cristina Rangel: *A study of the influence of sparse matrices reordering algorithms for ILU(p) preconditioner on the GMRES method*
- Curtis Janssen, Helgi Adalsteinsson, Scott Cranford, Joseph Kenny, Ali Pinar, David Evensky, and Jackson Mayo: *A Simulator for Large-scale Parallel Computer Architectures*
- Madan Sathe, Giorgos Kollias, Olaf Schenk, and Ananth Grama: *A Scalable Parallel Framework for Graph Similarity*
- Benjamin Letschert and Andrea Walther: *Parallelization of ADOL-C for MPI-parallel function evaluations*
- Ali Cevahir, Cevdet Aykanat, Ata Turk, and B. Barla Cambazoglu: *Site-Base Partitioning and Repartitioning Techniques for Parallel PageRank Computation*
- Johannes Huber, Uwe Naumann, Olaf Schenk, Ebadollah Varnik, and Andreas Wächter: *Algorithmic Differentiation and Nonlinear Optimization for an Inverse Medium Problem*
Friday, May 20, 2011

- **8.30am**: Plenary Lecture [room 2.07, aurum]
  Burkhard Monien (Paderborn University): *Recent Trends in Graph Partitioning for Scientific Computing*

- **9.30am-10.10am**: 2 Contributed Lectures [room 2.07, aurum]
  - Steve Reinhardt, John Gilbert, Adam Lugowski, and Aydin Buluc: *Enabling Non-Graph-Expert Use of Very-large-scale Graph Analysis*
  - Nicholas Edmonds and Andrew Lumsdaine: *Scalable Parallel Solution Techniques for Data-Intensive Problems in Distributed Memory*

- **10.10am-10.40am**: coffee break [room 0.03, copernicum]

- **10.40am-noon**: 4 Contributed Lectures [room 2.07, aurum]
  - Erin Carson, Nicholas Knight, and James Demmel: *Hypergraph Partitioning for Computing Matrix Powers*
  - Andreas Stathopoulos, Costas Bekas, and Alessandro Curioni: *Toward architecture aware graph partitioning*
  - Iain S. Duff and Bora Ucar: *On Hypergraph Partitioning based Sparse Matrix Ordering*
  - Roxana Ionutiu, Joost Rommes, and Wil Schilders: *Graph partitioning with separation of terminals*

- **noon-2pm**: lunch break [restaurant CALLA]

- **2pm-3.20pm**: 4 Contributed Lectures [room 2.07, aurum]
  - Andreas Griewank and Felix Dalkowski: *On Piecewise Linearization by Algorithmic Differentiation*
  - Iain S. Duff and Kamer Kaya: *Preconditioners based on Strong Components*
  - Alex Druinsky and Sivan Toledo: *Computing Selected Eigenvalues of Banded Symmetric Matrices*
  - Haim Avron, Alex Druinsky, and Sivan Toledo: *Dispersive Lanczos*

- **3.20pm-3.50pm**: coffee break [room 0.03, copernicum]

- **3.50pm-5.10pm**: 4 Contributed Lectures [room 2.07, aurum]
  - Patrick Amestoy, Iain Duff, Jean-Yves L’Excellent, Francois-Henry Rouet, and Bora Ucar: *Parallel computation of entries of A-1*
  - Ioannis Koutis, Gary Miller, and Richard Peng: *Approaching optimality for solving SDD linear systems*
  - Aydin Buluc and John Gilbert: *Parallel Sparse Matrix Indexing and Assignment*
Patrick R. Amestoy, Alfredo Buttari, Abdou Guermouche, Jean-Yves L’Excellent, and Bora Ucar: The minimum degree ordering with dynamical constraints

- 5.10pm-6.40pm: Business meeting [room 2.07, aurum]
- 7.30pm: Conference Dinner [Ratskeller]

Saturday, May 21, 2011

- 8.30pm: Plenary Lecture [room 2.07, aurum]
  Trond Steihaug (Bergen University): Sparse Matrix Structures and Higher Derivatives

- 9.30am-10.10am: 2 Contributed Lectures [room 2.07, aurum]
  - Jieqiu Chen, Paul Hovland, and Robert Luce: Optimal Derivative Accumulation Using Mixed Integer Programming
  - Viktor Mosenkis, Elmar Peise, and Uwe Naumann: Branch and Bound for Optimal Jacobian Accumulation

- 10.10am-10.40am: coffee break [room 0.03, copernicum]

- 10.40am-noon: 4 Contributed Lectures [room 2.07, aurum]
  - Albert-Jan Yzelman and Rob Bisseling: Cache-oblivious sparse matrix-vector multiplication
  - Grey Ballard, James Demmel, Olga Holtz, and Oded Schwartz: Graph Expansion and Communication Costs of Fast Matrix Multiplication
  - Siva Rajamanickam, Erik Boman, and Michael Heroux: A Hybrid Parallel Solver Framework For General Sparse Linear Systems
  - Ichitaro Yamazaki, Xiaoye Li, Francois-Henry Rouet, and Bora Ucar: Combinatorial Problems in a Parallel Hybrid Linear Solver

- noon: End of CSC11 [room 2.07, aurum]

- 2pm-4pm: Social Event: Guided Tour [Mathildenhöhe]