

# SPAA 2009 Program

## Monday, August 10, 2009

17:30-pm-20:30pm SPAA Reception (Rozsa Centre)

## Tuesday, August 11, 2009

**8:20am-10:00am: Multiprocessor Scheduling** (ICT 122)

*Session Chair: Cynthia Phillips*

8:20am: Speed Scaling of Processes with Arbitrary Speedup Curves on a Multiprocessor

*Ho-Leung Chan, Jeff Edmonds, and Kirk Pruhs*

8:45am: The Bell is Ringing in Speed-Scaled Multiprocessor Scheduling

*Gero Greiner, Tim Nonner, and Alexander Souza*

9:10am: Mapping Filtering Streaming Applications With Communication Costs

*Kunal Agrawal, Anne Benoit, Fanny Dufosse, and Yves Robert*

9:35am: Scheduling to Minimize Staleness and Stretch in Real-Time Data Warehouses

*Mohammad Hossein Bateni, Lukasz Golab, MohammadTaghi Hajiaghayi, and Howard Karloff*

**10:00am-10:30am: Coffee Break**

**10:30am-11:00am: Brief Announcements I** (ICT 122)

*Session Chair: Kirk Pruhs*

10:30am: Brief Announcement: Parameterized Maximum and Average Degrees in Topic-Based Publish-Subscribe Overlay Network Design

*Melih Onus and Andrea W. Richa*

10:40am: Brief Announcement: Good Programming in Transactional Memory: Game Theory Meets Multicore Architecture

*Raphael Eidenbenz and Roger Wattenhofer*

10:50am: Brief Announcement: At-Most-Once Semantics in Asynchronous Shared Memory

*Sotirios Kentros, Aggelos Kiayias, Nicolas Nicolaou, and Alexander Shvartsman*

**11:10am-12:10pm: Keynote Talk (ICT 102)**

*Session Chair: Maurice Herlihy*

Memory Models: A Case for Rethinking Parallel Languages and Hardware  
*Sarita V. Adve*

**12:10pm-1:45pm: Lunch**

12:20pm: Industry sponsored lunch for *students, postdocs, and employees of industrial sponsors* (Dining Centre, Alberta Room)  
*Lunch on your own for everyone else.*

**1:45pm-3:15pm: Invited Session on Industrial Applications of Algorithms (ICT 102)**

*Session Chair: Marcos Aguilera*

1:45pm: The Life and Times of a ZooKeeper  
*Flavio Junqueira and Benjamin Reed*  
Yahoo! Research

2:15pm: Cassandra - Structured Storage System over a P2P Network  
*Avinash Lakshman and Prashant Malik*  
Facebook, Inc.

2:45pm: Pregel: A System for Large-Scale Graph Processing  
*Grzegorz Malewicz, Matthew H. Austern, Aart J. C. Bik, James C. Dehnert, Ilan Horn, Naty Leiser, and Grzegorz Czajkowski*  
Google

**3:15pm-3:45pm: Coffee Break**

**3:45pm-5:00pm: Transactional Memory I (ICT 122)**

*Session Chair: Victor Luchangco*

3:45pm: Towards Transactional Memory Semantics for C++  
*Tatiana Shpeisman, Ali-Reza Adl-Tabatabai, Robert Geva, Yang Ni, and Adam Welc*

4:10pm: On Avoiding Spare Aborts in Transactional Memory  
*Dmitri Perelman and Idit Keidar*

4:35pm: Inherent Limitations on Disjoint-Access Parallel Implementations of Transactional Memory  
*Hagit Attiya, Eshcar Hillel, and Alessia Milani*

**6:00pm: Banquet** (Calgary Zoo)

## **Wednesday, August 12, 2009**

**8:20am-10:00am: Concurrency Mechanisms** (ICT 122)

*Session Chair: Jeremy Fineman*

8:20am: Reducers and Other Cilk++ Hyperobjects

*Matteo Frigo, Pablo Halpern, Charles E. Leiserson, and Stephen Lewin-Berlin*

**(SPAA Best Paper Award)**

8:45am: Beyond Nested Parallelism: Tight Bounds on Work-Stealing

Overheads for Parallel Futures

*Daniel Spoonhower, Guy E. Blelloch, Robert Harper, and Phillip B. Gibbons*

9:10am: Scalable Reader-Writer Locks

*Yossi Lev, Victor Luchangco, and Marek Olszewski*

9:35am: The Weakest Failure Detector for Wait-free Dining Under Eventual

Weak Exclusion

*Srikanth Sastry, Scott Pike, and Jennifer Welch*

**10:00am-10:30am: Coffee Break**

**10:30am-11:00am: Brief Announcements: Performance of Parallel Algorithm** (ICT 122)

*Session Chair: Jeremy Fineman*

10:30am: Brief Announcement: Low-Depth Cache-Oblivious Algorithms

*Guy Blelloch, Phillip Gibbons, and Harsha Vardhan Simhadri*

10:40am: Brief Announcement: A Lower Bound on the Parallelism of Depth-

Restricted Work Stealing

*Jim Sukha*

10:50am: Brief Announcement: TeraByte TokuSampleSort Sorts 1TB in 197s

*Bradley Kuszmaul*

**11:10am-12:10am: Keynote Talk** (ICT 102)

*Session Chair: Cynthia Phillips*

Emerging Challenges and Opportunities in Parallel Computing: The Cretaceous Redux?

*Bruce Hendrickson*

**12:10pm-1:45pm: Lunch BBQ** (Dining Centre Patio)

**1:45pm-3:25pm: Graph Labeling/Coloring** (ICT 122)

*Session Chair: Kirk Pruhs*

1:45pm: Weak Graph Coloring: Distributed Algorithms and Applications

*Fabian Kuhn*

2:10pm: On Randomized Representations of Graphs Using Short Labels

*Pierre Fraigniaud and Amos Korman*

2:35pm: Routing without Ordering

*Bernadette Charron-Bost, Antoine Gaillard, Jennifer Welch, and Josef Widder*

3:00pm: On the Complexity of the Regenerator Placement Problem in Optical Networks

*Michele Flammini, Alberto Marchetti Spaccamela, Gianpiero Monaco, Luca Moscardelli, and Shmuel Zaks*

**3:25pm-3:55pm: Coffee Break**

**3:55pm-4:15pm: Brief Announcements: Algorithms Meets Hardware** (ICT 122)

*Session Chair: Tatiana Shpeisman*

3:55pm: Brief Announcement: Performance Potential of an Easy-to-Program PRAM-On-Chip Prototype Versus State-of-the-Art Processor

*George Caragea, A. Beliz Saybasili, Xingzhi Wen, and Uzi Vishkin*

4:05pm: Brief Announcement: The Impact of Classical Electronics Constraints on a Solid-State Logical Qubit Memory

*James Levy, Anand Ganti, Cynthia Phillips, Benjamin Hamlet, Malcolm Carroll, Andrew Landahl, Thomas Gurrieri, and Robert Carr*

**4:15pm-5:55 pm: Network Organization and Design** (ICT 122)

*Session Chair: Christian Scheideler*

4:15pm: Finding Similar Users in Social Networks

*Aviv Nisgav and Boaz Patt-Shamir*

4:40pm: A Randomized,  $O(\log w)$ -Depth 2-Smoothing Network

*Marios Mavronicolas and Thomas Sauerwald*

5:05pm: Field-Split Parallel Architecture for High Performance Multi-Match Packet Classification Using FPGAs  
*Weirong Jiang and Viktor Prasanna*

5:30pm: Distributed Algorithms for QoS Load Balancing  
*Heiner Ackermann, Simon Fischer, Martin Hoefer, and Marcel Schöngens*

**20:30 Business Meeting** (ICT 116)

## **Thursday, August 13, 2009**

**8:20am-9:35am: Transactional Memory II** (ICT 122)

*Session Chair: Tatiana Shpeisman*

8:20am: NZTM: Nonblocking Zero-indirection Transactional Memory  
*Fuad Tabba, Mark Moir, James Goodman, Andrew Hay, and Cong Wang*

8:45am: Optimizing Transactions for Captured Memory  
*Aleksandar Dragojevic, Yang Ni, and Ali-Reza Adl-Tabatabai*

9:10am: A Lightweight In-Place Implementation for Software Thread-Level Speculation  
*Cosmin E. Oancea, Alan Mycroft, and Tim Harris*

**9:35am-10:05am: Coffee Break**

**10:05am-11:20am: High-Performance Parallel Computation** (ICT 122)

*Session Chair: Vitus Leung*

10:05am: Parallel Sparse Matrix-Vector and Matrix-Transpose-Vector Multiplication Using Compressed Sparse Blocks  
*Aydin Buluç, Jeremy T. Fineman, Matteo Frigo, John R. Gilbert, and Charles E. Leiserson*

10:30am: Communication-Optimal Parallel and Sequential Cholesky Decomposition  
*Grey Ballard, James Demmel, Olga Holtz, and Oded Schwartz*

10:55am: Dynamic External Hashing: The Limit of Buffering  
*Zhewei Wei, Ke Yi, and Qin Zhang*

**11:25am-12:15pm: Local Distributed Computation** (ICT 122)

*Session Chair: Victor Luchangco*

11:25am: An Optimal Local Approximation Algorithm for Max-Min Linear Programs

*Patrik Floreen, Joel Kaasinen, Petteri Kaski, and Jukka Suomela*

11:50am: Gradient Clock Synchronization in Dynamic Networks

*Fabian Kuhn, Thomas Locher, and Rotem Oshman*

**12:15pm-2:00pm: Lunch** (Dining Centre, Alberta Room)

**2:00pm-3:40pm: Fault Tolerance and Reliability** (ICT 122)

*Session Chair: Fabian Kuhn*

2:00pm: Remote Storage with Byzantine Servers

*Marcos Aguilera and Ram Swaminathan*

2:25pm: Locally Scalable Randomized Consensus for Synchronous Crash Failures

*Bogdan Chlebus and Dariusz R. Kowalski*

2:50pm: A DoS-Resilient Information System for Dynamic Data Management

*Matthias Baumgart, Christian Scheideler, and Stefan Schmid*

3:15pm: Classifying Peer-to-Peer Networking Coding Schemes

*Arne Vater, Christian Schindelhauer, and Christian Ortloff*

**3:40pm-4:10pm: Coffee Break**

**4:10pm-5:50pm: Scheduling and Resource Management** (ICT 122)

*Session Chair: Vitus Leung*

4:10pm: Buffer Management for Colored Packets with Deadlines

*Yossi Azar, Uriel Feige, Iftah Gamzu, Thomas Moscibroda, and Prasad Raghavendra*

4:35pm: Competitive Buffer Management for Multi-Queue Switches in QoS Networks using Packet Buffering Algorithms

*Koji Kobayashi, Shuichi Miyazaki and Yasuo Okabe*

5:00pm: Approximation Algorithms for Time-Constrained Scheduling on Line Networks

*Harald Raecke and Adi Rosen*

5:25pm: Power-Aware Online File Allocation in Mobile Ad Hoc Networks

*Jan Mehler and Friedhelm Meyer auf der Heide*