

Scientific Computing

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Seminar - Software Issues in Computational Science and Engineering - August 15-16, 2007

This workshop addressed challenging research issues regarding software for numerical computations. CBC organized the workshop in cooperation with Uppsala University.

Total number of participants: 43

Number of different nationalities represented: 12

Total number of speakers: 14

Total number of talks: 14

Program Committee:

Michael Thuné, Uppsala University (Chair),

Sverker Holmgren, Uppsala University

Hans Petter Langtangen, Simula Research Laboratory and University of Oslo

Program:

Wednesday, August 15, 2007

08:30 Registration

09:00 Opening Remarks

Session 1

Chair: Sverker Holmgren

09:15 Keynote 1: Bill Gropp, Argonne National Laboratory

Building a Successful Scalable Parallel Numerical Library: Lessons From the PETSc Library

10:15 Break

10:45 Gerhard Zumbusch, Friedrich-Schiller-Universität Jena

Domain-Specific Parallel Programming Models for Numerical Computation

11:15 Dominik Goeddeke, Universität Dortmund

Minimally Invasive Integration of GPUs to Improve Multigrid Solver Performance on a Cluster

11:45 Lunch

Session 2

Chair: Hans Petter Langtangen

13:00 Christoph Pflaum, Universität Erlangen

Expression Templates and Applications

13:30 Malin Ljungberg, Simula Research Laboratory

Requirements on PDE Solver Components for Multi-Physics Simulations

14:00 Tiago Quintino, von Karman Institute for Fluid Dynamics

Runtime Automatic Generation of Template Static Binded Code

14:30 Break

15:00 Anders Logg, Simula Research Laboratory

Finite Element Code Generation: Simplicity, Generality, Efficiency

15:30 Ioan Muntean, TU München

Software Engineering meets Scientific Computing—Group Projects in CSE Education

16:00 Kent-André Mardal, Simula Research Laboratory

Finite Elements with Symbolic Computations and Code Generation

16:30 Adjourn for day

18:30 Workshop dinner at Restaurant Eklundshof

Thursday, August 16, 2007**Session 3**

Chair: Michael Thuné

09:00 Richard Hanson and Fred Krogh, Visual Numerics, Inc.

Solving Constrained Differential-Algebraic Systems Using Projections

09:30 Pearu Peterson, Simula Research Laboratory

The G3 F2PY for connecting Python and Fortran 90 programs

10:00 Break

10:30 Bo Kågström, Umeå University

RECSY and SCASY library software: recursive blocked and parallel algorithms for Sylvester-type matrix equations with some applications

11:00 Magne Haveraaen, University of Bergen

Coordinate-Free Numerics: All Your Variation Points for Free?

11:30 Break

11:45 Keynote 2: Sverker Holmgren, Uppsala University and Swedish National Infrastructure for Computing

Computational Science and Engineering Software in the Multi-core Era

12:45 Closing Remarks

13:00 Workshop closes

For more information, please visit [Uppsala University](http://www.uppsala.se)