Institute for Advanced Simulation
Jülich Supercomputing Centre

IAS Seminar

Topic: **FLAME - Modern Alternatives to (Sca)LAPACK**

Speaker: Robert van de Geijn, Institute for Computating Engineering and Sciences,
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Contents: With the arrival of multicore, many-core, and multi-accelerator architectures,
possibly in conjunction with heterogeneous clusters, a flexible alternative to
(Sca)LAPACK deserves consideration. As part of the FLAME project, we
have developed an alternative to LAPACK, libflame. It differentiates itself
in a number of ways from LAPACK: it is written in C (and requires no for-
tran compiler); it supports matrices stored in column and/or row-major order
(and general row and column stride); it incorporates families of algorithms for
each operation so that the best algorithm can be chosen for a given architec-
ture; it can be easily configured to use multicore and multiGPU via a runtime
system that schedules algorithms-by-blocks. Best of all, it achieves compet-
itive performance, often exceeding that of LAPACK and/or vendor libraries
and includes an optional LAPACK interface. Similarly, for massively parallel
architectures as well as distributed memory many-core architectures, an alter-
native to ScaLAPACK called Elemental has been developed. This new library
is coded in C++ and builds on many of the insights from the PLAPACK and
FLAME projects. In this talk, these and other FLAME-related developments
are showcased.

Time: Thursday, 12 April 2012, 14:00

Venue: Jülich Supercomputing Centre, Hörsaal, building 16.3, room 006

Anyone interested is cordially invited to participate in this seminar.

sgd Prof. Dr. Stefan Blügel