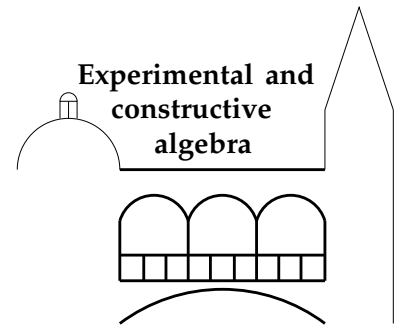


Graduiertenkolleg

Experimentelle und konstruktive Algebra



Kolloquiumsvortrag

Dienstag, 21. November 2017, 14:00 Uhr, Hörsaal III

JENDRIK BRACHTER (LEHRSTUHL D FÜR MATHEMATIK):
A parallel algorithm for Gaussian elimination

The Gaussian elimination algorithm is one of the key tools in many areas of scientific computing and as such has been adapted to a multitude of different cases of interest. Since Gaussian elimination is heavily employed as a basic subroutine in many of those contexts it is necessary to design versions of the algorithm which allow for high performance implementations.

A general approach here is to exploit the multi-core architecture of modern computers by developing parallel algorithms. I will present a parallel version of the Gaussian elimination algorithm over finite fields currently being developed by G. Nebe, A. Niemeyer and R. Parker which aims for exceptional performance when working with huge input matrices. The idea here will be to subdivide the input matrix row- and columnwise into small blocks rather than working with batches of full length rows and to organize the algorithm in tasks which operate on those blocks and which can be executed (up to certain dependencies) in parallel. I will first explain the key ideas behind this approach and afterwards give some insight in task-based parallel computing and my HPCGAP implementation of the presented algorithm.

Wir laden alle Interessierten herzlich ein.