



PLASMA and MAGMA

software libraries for numerical linear algebra

10–11 September, 2018

VŠB – Technical University of Ostrava
IT4Innovations building, training room

Lecturers

Piotr Luszczek (University of Tennessee, USA)
Jakub Šístek (The University of Manchester, UK;
Institute of Mathematics of the CAS, Czech Republic)

PLASMA (Parallel Linear Algebra Software for Multicore Architectures) and MAGMA (Matrix Algebra on GPU and Multicore Architectures) are software libraries made by the Innovative Computing Laboratory at University of Tennessee mainly to address solution of large dense linear problems on today's heterogeneous architectures. The libraries offer functions for solving systems of linear equations with symmetric positive definite as well as general square matrices. Also included are linear least squares solvers, eigenvalue computations, and singular value decomposition.

The main purpose of PLASMA is to address the shortcomings of the widely used LAPACK when running on multicore processors, multi-socket systems of multicore processors, and manycore processors with shared memory. On the other hand, MAGMA aims at utilizing off-load oriented accelerators, especially GPUs. The libraries support both real and complex arithmetic in single and double floating-point precision.

Monday 10 September 2018

09:30–10:00 registration
10:00–11:30 Overview of HPC hardware
for linear algebra
11:30–13:00 lunch break
13:00–14:30 Basics of PLASMA
14:30–15:00 coffee break
15:00–16:30 Advanced topics in PLASMA
16:30–17:00 coffee break
17:00–18:00 Basics of MAGMA

Tuesday 11 September 2018

09:00–10:30 Advanced topics in MAGMA
10:30–11:00 coffee break
11:00–12:30 Q&A and Hands-on session
with PLASMA and MAGMA
12:30–13:45 lunch break
13:45–15:30 Q&A and Hands-on session
with PLASMA and MAGMA