

SEMINÁRIO

Centro de Matemática da Universidade do Porto
Seminários de Análise Numérica e Probabilidades e Estatística

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Dense Linear Algebra for Hybrid GPU-Multicore Systems

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Abstract: We highlight the trends leading to the increased appeal of using hybrid multicore+GPU systems for high performance computing. We present a set of techniques that can be used to develop efficient dense linear algebra algorithms for these systems. We illustrate the main ideas with the development of a hybrid LU factorization algorithm where we split the computation over a multicore and a graphic processor, and use particular techniques to reduce the amount of pivoting and communication between the hybrid components. We also show how mixed precision algorithms can be used for accelerating performance. Joint work with Jack Dongarra (University of Tennessee and Oak Ridge National Laboratory, USA) and Stan Tomov (University of Tennessee).