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Introduction to Parallel Computing and Programming

Abstract

This workshop will present the most fundamental concepts, methods, and technologies of high-performance computing systems and the necessary parallel programming associated with it. After introducing the basic terminology and vocabulary, an overview about parallel computer architectures is given introducing shared memory, distributed memory, and hybrid computer systems including latest trends like many-core CPUs and hardware acceleration via GPUs. Next, the basics of parallel programming are explained including an introduction to message-passing with the industry standards MPI. Basic knowledge in a sequential programming language like C, C++ or Fortran is helpful to better understand the examples presented during the workshop.