

Facing the multicore-challenge II : aspects of new paradigms and technologies in parallel computing

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Abstrak

This state-of-the-art survey features topics related to the impact of multicore, manycore, and coprocessor technologies in science and for large-scale applications in an interdisciplinary environment. The papers cover issues of current research in mathematical modeling, design of parallel algorithms, aspects of microprocessor architecture, parallel programming languages, hardware-aware computing, heterogeneous platforms, manycore technologies, performance tuning, and requirements for large-scale applications. The contributions presented in this volume offer a survey on the state of the art, the concepts and perspectives for future developments. They are an outcome of an inspiring conference conceived and organized by the editors at the Karlsruhe Institute Technology (KIT) in September 2011. The twelve revised full papers presented together with two contributed papers focus on combination of new aspects of microprocessor technologies, parallel applications, numerical simulation, and software development; thus they clearly show the potential of emerging technologies in the area of multicore and manycore processors that are paving the way towards personal supercomputing and very likely towards exascale computing.