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Nota di contenuto	Part I Challenges of Modern HPC Systems: Performance and Energy

Efficiency Analysis -- Feasibility study of future HPC systems for memory-intensive applications: Hiroaki Kobayashi -- Analysing the Performance Improvements of Optimizations on Modern HPC Systems: Kazuhiko Komatsu, Toshihide Sasaki, Ryusuke Egawa, Hiroyuki Takizawa and Hiroaki Kobayashi -- Power consumption of kernel operations: Dmitry Khabi and Uwe Küster -- Part II Frameworks and Libraries for Simulations on New-Generation Computing Systems -- Lattice Boltzmann Simulations On Complex Geometries: Simon Zimny, Kannan Masilamani, Kartik Jain and Sabine Roller -- IMD – A Typical Massively Parallel Molecular Dynamics Code for Classical Simulations – Structure, Applications, Latest Developments: Johannes Roth -- Evaluation of FastFlow Technology for Real-World Application: Kamran Idrees, Mathias Nachtmann, Colin W. Glass -- Storage and indexing of fine grain, large scale data sets: Ralf Schneider -- Part III Computational Engineering Applications and Multi-Physics Simulations -- Direct Numerical Simulations of Film Cooling in a Supersonic Boundary-Layer Flow on Massively-Parallel Supercomputers: Michael Keller and Markus J. Kloker -- Large scale numerics uncovering new states of matter: A. Moreno, J. M. P. Carmelo, and A. Muramatsu -- Towards Simulation of Electrodialytic Sea Water Desalination: Kannan Masilamni, Jens Zudrop and Sabine Roller -- A regional climate model simulation for EURO- CORDEX with the WRF model: Kirsten Warrach-Sagi, Thomas Schmitalla, Hans-Stefan Bauer, Volker-Wulfmeyer. .

Sommario/riassunto

This book presents the state of the art in high-performance computing and simulation on modern supercomputer architectures. It covers trends in hardware and software development in general and specifically the future of high-performance systems and heterogeneous architectures. The application contributions cover computational fluid dynamics, material science, medical applications and climate research. Innovative fields like coupled multi-physics or multi-scale simulations are presented. All papers were chosen from presentations given at the 16th Workshop on Sustained Simulation Performance held in December 2012 at HLRS, University of Stuttgart, Germany and the 17th Workshop on Sustained Simulation Performance at Tohoku University in March 2013.
