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Soggetti	Algorithms Electronic digital computers—Evaluation Computer arithmetic and logic units Numerical analysis Image processing—Digital techniques Computer vision System Performance and Evaluation Arithmetic and Logic Structures Numerical Analysis Computer Imaging, Vision, Pattern Recognition and Graphics
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Nota di contenuto	Programming the LU Factorization for a Multicore System with Accelerators -- Efficient Two-Level Preconditioned Conjugate Gradient Method on the GPU -- Parallelization of the QR Decomposition with Column Pivoting Using Column Cyclic Distribution on Multicore and GPU Processors -- A High Performance SYMV Kernel on a Fermi-core GPU -- Optimizing Memory-Bound SYMV Kernel on GPU Hardware Accelerators -- Numerical Simulation of Long-Term Fate of CO2 Stored in Deep Reservoir Rocks on Massively Parallel Vector Supercomputer -- High Performance Simulation of Complicated Fluid Flow in 3D Fractured Porous Media with Permeable Material Matrix Using LBM -- Parallel Scalability Enhancements of Seismic Response and Evacuation

Simulations of Integrated Earthquake Simulator -- QMC=Chem: A Quantum Monte Carlo Program for Large-Scale Simulations in Chemistry at the Petascale Level and beyond -- Optimizing Sparse Matrix Assembly in Finite Element Solvers with One-Sided Communication -- Implementation and Evaluation of 3D Finite Element Method Application for CUDA -- A Service-Oriented Architecture for Scientific Computing on Cloud Infrastructures -- Automatic Generation of the HPC Challenge's Global FFT Benchmark for Blue Gene/P -- High Performance CPU Kernels for Multiphase Compressible Flows -- Efficient Algorithm for Linear Systems Arising in Solutions of Eigenproblems and Its Application to Electronic-Structure -- Control Formats for Unsymmetric and Symmetric Sparse Matrix–Vector Multiplications on Open MP Implementations -- Sparsification on Parallel Spectral Clustering -- A Multi GPU Read Alignment Algorithm with Model-Based Performance Optimization -- Parallel Smoother Based on Block Red-Black Ordering for Multigrid Poisson Solver -- Accelerating the Reorthogonalization of Singular Vectors with a Multi-core Processor.

Sommario/riassunto

This book constitutes the thoroughly refereed post-conference proceedings of the 10th International Conference on High Performance Computing for Computational Science, VECPAR 2012, held in Kope, Japan, in July 2012. The 28 papers presented together with 7 invited talks were carefully selected during two rounds of reviewing and revision. The papers are organized in topical sections on CPU computing, applications, finite element method from various viewpoints, cloud and visualization performance, method and tools for advanced scientific computing, algorithms and data analysis, parallel iterative solvers on multicore architectures.