High-performance scientific computing: algorithms and applications

Michael W. Berry, editor

Abstrak

This book presents the state of the art in parallel numerical algorithms, applications, architectures, and system software. The book examines various solutions for issues of concurrency, scale, energy efficiency, and programmability, which are discussed in the context of a diverse range of applications. Features : includes contributions from an international selection of world-class authorities, examines parallel algorithm-architecture interaction through issues of computational capacity-based codesign and automatic restructuring of programs using compilation techniques, reviews emerging applications of numerical methods in information retrieval and data mining, discusses the latest issues in dense and sparse matrix computations for modern high-performance systems, multicores, manycores and GPUs, and several perspectives on the Spike family of algorithms for solving linear systems, and presents outstanding challenges and developing technologies, and puts these in their historical context.