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Disciplina	004/.35
Soggetti	Architecture, Computer Software engineering Algorithms Computer science—Mathematics Computer mathematics Computational complexity Computer System Implementation Software Engineering/Programming and Operating Systems Algorithm Analysis and Problem Complexity Mathematics of Computing Computational Mathematics and Numerical Analysis Complexity
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Nota di contenuto	Communications latency hiding techniques for a reconfigurable optical interconnect: Benchmark studies -- Multifrontal solvers within the PARASOL environment -- Parallelization of a 3D FD-TD code for the Maxwell equations using MPI -- Advanced calculations and visualization of enzymatic reactions with the combined quantum classical molecular dynamics code -- Memory access profiling tools for alpha-based architectures -- Parallelized block-structured Newton-type methods in dynamic process simulation -- Tuning the

performance of parallel programs on NOW's using performance analysis tool -- Numerical simulation of 3D fully nonlinear water waves on parallel computers -- Fluctuations in the defect creation by ion beam irradiation -- Parallelisation of an industrial hydrodynamics application using the PINEAPL library -- Hyper-rectangle selection strategy for parallel adaptive numerical integration -- Parallelising fuzzy queries for spatial data modelling on a Cray T3E -- Hyper-systolic implementation of BLAS-3 routines on the APE100/Quadrics machine -- Resource management for ultra-scale computational grid applications -- A ScaLAPACK-style algorithm for reducing a regular matrix pair to block Hessenberg-triangular form -- Parallel tight-binding molecular dynamics code based on integration of HPF and optimized parallel libraries -- Parallel computation of multidimensional scattering wavefunctions for Helmholtz/Schrodinger equations -- New serial and parallel recursive QR factorization algorithms for SMP systems -- Visualization of CFD computations -- Improving the performance of scientific parallel applications in a cluster of workstations -- On the parallelisation of non-linear optimisation algorithms for ophthalmical lens design -- Modelica—A language for equation-based physical modeling and high performance simulation -- Distributed georeferencing of remotely sensed Landsat-TM imagery using MPI -- Parallel test pattern generation using circuit partitioning in a shared-memory multiprocessor -- Parallel adaptive mesh refinement for large eddy simulation using the finite element method -- WSSMP: A high-performance serial and parallel symmetric sparse linear solver -- Recursive blocked data formats and BLAS's for dense linear algebra algorithms -- Superscalar GEMM-based level 3 BLAS—The on-going evolution of a portable and high-performance library -- Parallel solution of some large-scale eigenvalue problems arising in chemistry and physics -- An embarrassingly parallel ab initio MD method for liquids -- A new parallel preconditioner for the Euler equations -- Partitioning sparse rectangular matrices for parallel computations of  $Ax$  and  $A^T v$  -- NetLink: A modern data distribution approach applied to transparent access of high performance software libraries -- Modernization of legacy application software -- Parallel methods for fluid-structure interaction -- Parallel computing tests on large-scale convex optimization -- Parallel sparse matrix computations in the industrial strength PINEAPL library -- Massively parallel linear stability analysis with P\_ARPACK for 3D fluid flow modeled with MPSalsa -- Parallel molecular dynamics simulations of biomolecular systems -- A parallel solver for animal genetics -- Scheduling of a parallel workload: Implementation and use of the Argonne Easy Scheduler at PDC -- An algorithm to evaluate spectral densities of high-dimensional stationary diffusion stochastic processes with non-linear coefficients: The general scheme and issues on implementation with PVM -- High-performance simulation of evolutionary aspects of epidemics -- A parallel algorithm for computing the extremal eigenvalues of very large sparse matrices -- Technologies for teracomputing: A European option -- High Performance Fortran: Status and prospects -- PAVOR—Parallel adaptive volume rendering system -- Simulation steering with SCIRun in a distributed environment -- Addressing the requirements of ASCI-class systems -- A parallel genetic algorithm for the graphs mapping problem -- Parallel wavelet transforms -- Writing a multigrid solver using co-array Fortran -- Exploiting visualization and direct manipulation to make parallel tools more communicative -- Deploying fault-tolerance and task migration with NetSolve -- Comparison of implicit and explicit parallel programming models for a finite element simulation algorithm -- Parallel algorithms for triangular Sylvester

equations: Design, scheduling and scalability issues -- Fast and quantitative analysis of 4D cardiac images using a SMP architecture -- Ab initio electronic structure methods in parallel computers -- Iterative solution of dense linear systems arising from integral equations -- Comparison of partitioning strategies for PDE solvers on multiblock grids -- Ship design optimization -- parallelization strategies for the VMEC Program -- Rational Krylov algorithms for eigenvalue computation and model reduction -- Solution of distributed sparse linear systems using PPARSLIB -- Parallelization of the DAO atmospheric general circulation model -- Dynamic performance callstack sampling: Merging TAU and DAQV -- A parallel rational Krylov algorithm for eigenvalue computations -- Portable implementation of real-time signal processing benchmarks on HPC platforms -- Large scale active networks simulation -- Forward dependence folding as a method of communication optimization in SPMD Programs -- A parallel genetic clustering for inverse problems -- A parallel hierarchical solver for finite element applications -- Parallel computation and visualization of 3D, time-dependent, thermal convective flows -- Recursive formulation of Cholesky algorithm in Fortran 90 -- High performance linear algebra package for FORTRAN 90.

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### Sommario/riassunto

This book constitutes the carefully refereed proceedings of the 4th International Workshop on Applied Parallel Computing, PARA'98, held in Umea, Sweden, in June 1998. The 75 revised papers presented were carefully reviewed and selected for inclusion in the book. The papers address a variety of topics in large scale scientific and industrial-strength computing, in particular high-performance computing and networking; tools, languages, and environments for parallel processing; scientific visualization and virtual reality; and future directions in high-performance computing and communication.

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