

Lecture Notes in Computer Science

1401

Edited by G. Goos, J. Hartmanis and J. van Leeuwen

Peter Sloot Marian Bubak
Bob Hertzberger (Eds.)

High-Performance Computing and Networking

International Conference and Exhibition
Amsterdam, The Netherlands, April 21-23, 1998
Proceedings



Springer

Series Editors

Gerhard Goos, Karlsruhe University, Germany
Juris Hartmanis, Cornell University, NY, USA
Jan van Leeuwen, Utrecht University, The Netherlands

Volume Editors

Peter Sloot
Bob Hertzberger
University of Amsterdam, WINS
Kruislaan 403, 1098 SJ Amsterdam, The Netherlands
E-mail: {bob,peterslo}@fwi.uva.nl

Marian Bubak
University of Mining and Metallurgy
and Academic Computer Centre (CYFRONET)
ad. Mickiewicza 30, 30-059, Cracow, Poland
E-mail: bubak@uci.agh.edu.pl

Cataloguing-in-Publication data applied for

Die Deutsche Bibliothek - CIP-Einheitsaufnahme

High performance computing and networking : international conference and exhibition, Amsterdam, The Netherlands, April 21 - 23, 1998 ; proceedings / [The International Conference and Exhibition on High Performance Computing and Networking, HPCN Europe 1998]. Peter Sloot ... (ed.) - Berlin ; Heidelberg ; New York ; Barcelona ; Budapest ; Hong Kong ; London ; Milan ; Paris ; Santa Clara ; Singapore ; Tokyo : Springer, 1998
(Lecture notes in computer science ; Vol. 1401)
ISBN 3-540-64443-1

CR Subject Classification (1991): C.2.4, D.1-2, E.4,F.2, G.1-2, J.1-2, J.3, J.6, K.6

ISSN 0302-9743
ISBN 3-540-64443-1 Springer-Verlag Berlin Heidelberg New York

This work is subject to copyright. All rights are reserved, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, re-use of illustrations, recitation, broadcasting, reproduction on microfilms or in any other way, and storage in data banks. Duplication of this publication or parts thereof is permitted only under the provisions of the German Copyright Law of September 9, 1965, in its current version, and permission for use must always be obtained from Springer -Verlag. Violations are liable for prosecution under the German Copyright Law.

© Springer-Verlag Berlin Heidelberg 1998
Printed in Germany

Typesetting: Camera-ready by author
SPIN 10637087 06/3142 - 5 4 3 2 1 0 Printed on acid-free paper

Preface

The international HPCN Europe event originates from several initiatives in Europe, the United States of America, and Japan. The first HPCN Europe conference was organised in 1993 in Amsterdam. Since 1994, the foundation HPCN Europe and Royal Dutch Jaarbeurs have organised the HPCN Europe Conference and Exhibition as a travelling event throughout Europe. As of 1998, HPCN Europe will be held every year at the Amsterdam RAI conference centre, joining the Internet Working Event Exhibition of the RAI.

This year, the HPCN Europe event has undergone a complete facelift. HPCN Europe 98 provides five parallel tracks. The intention to further increase the focus of the event has resulted in two tracks with workshops presenting invited papers only and two other tracks presenting the submitted papers. In addition, one track will present the new emerging HPCN application field of Telemedicine.

The aim to concentrate even more than before on emerging (end-user) applications has resulted in two workshops and one mini conference on that topic. The Genome Computing workshop and the Modelling & Simulation of Complex Industrial Systems workshop will illustrate the important issues in those fields, whereas the first International Conference on Telemedical Information Society will discuss the state of the art in this emerging field. Enabling HPCN technology such as Virtual Reality and WEB will be given much attention during HPCN Europe 98. This is illustrated by a separate Virtual Reality workshop. That the more classical HPCN fields haven't been forgotten is illustrated by two workshops: "Eurotools" on tools and "HPF+" on languages. The papers of the last workshop are also included in these proceedings.

The conference proceedings include all the accepted papers and posters from all four conference tracks. More than 150 papers and 70 posters were received. The organisers are grateful for the hard work of the programme committee in selecting around 80 papers and 50 posters in the short time frame that was available. The organisers in particular would like to thank the conference chair P.M.A. Sloot as well as the chairs and co-chairs of the programme committee, M.A. Barak, A.V. Bogdanov, M. Bubak, G. Lonsdale, and R. Williams, under whose responsibility the final paper selection took place and who assembled this year's programme.

These proceedings reflect the results of all this work, whereas a collection of the best papers will later be selected for publication in FGCS of North-Holland. The organisers were pleased to observe the high quality of the submitted contributions.

This event would not have been possible without the broad and personal support and the invaluable suggestions and contributions of the members of the programme committee, and the advisory board. The face and focus of the HPCN Europe event was realised by the HPCN Europe 1998 organising committee.

The organisation would like to express its gratitude to the programme and conference secretariats, Laura Lotty, Maarten Prins, Lodewijk Bos, and Emmy van Rijen. They would like to thank the computer support group of the WINS Faculty of the University of Amsterdam as well as SARA, in particular Ger Poletiek and Jaap Hollenberg for all the support in electronic communication. The organisers acknowledge the help of the Dutch HPCN foundation, the UvA, and the RAI for supporting the event.

February 1998

Bob Hertzberger
On behalf of the organising committee

Committees

HPCN Europe '98 Organising Committee

Bob Hertzberger, University of Amsterdam
HPCN Europe '98 event chair

Peter Sloot, University of Amsterdam
Conference chair

Marc van Aalst, LanMasters BV
Exhibition organisation

Emmy van Rijen and Walther Hesselink,
Conference Office, University of Amsterdam
Conference organisation

Margaret Cecil-Wright, HPCnet,
Parallel Applications Centre, Southampton
ITIS workshop organisation

Lodewijk Bos
Conference organisation

Maarten Prins, University of Amsterdam
Conference organisation

Jon Mountjoy, University of Amsterdam
Conference organisation

HPCN Europe '98 Programme Committee

P.M.A. Sloot	University of Amsterdam – Conference Chair
G. Lonsdale	NEC Europe Ltd., Germany
A.V. Bogdanov	Chair Industrial & General Applications Institute for High Performance Computing and Databases St. Petersburg, Russia
R. Williams	Co-Chair Industrial & General Applications Caltech USA – Chair Computational Science
M. Bubak	University of Cracow, Poland – Chair Computer Science
M.A. Barak	Hebrew University of Jerusalem, Israel
B. Madahar	Co-Chair Computer Science GEC Macconi, UK

H. Afsarmanesh	University of Amsterdam	E.G. Kerckhoffs	University Delft
F. Arlabosse	Framentec Paris	H. Liddell	QMC London
A. Bachem	University Cologne	P. Messina	California Institute of Technology
T. Bemmerl	TU Aachen	J. Murphy	BAe
A. Bode	University Munich	D. Olesen	University Copenhagen
F. Breiteneckerk	University Vienna	M. Pantano	University of Vienna
H. Burkhardt	University Basel	D. Parkinson	QMC London
J. Dongarra	University of Tennessee	R. Perrot	University Belfast
I. Duff	DRAL	A. Quarteroni	CRS4 Cagliari
J. Eliot	Smith Associates	A. Rheinefeld	University Paderborn
D. Fritzson	SKF Engineering	A. Reuter	University Stuttgart
	Nieuwegein	D. Roose	University Leuven
W. Gentzsch	University of Regensburg, Genias	G. Serazzi	Politecnico di Milano
L.O. Hertzberger	University of Amsterdam	H. Sips	University Delft
A. Hey	University Southampton	O. Thomas	GMD
A. Hoekstra	University of Amsterdam	U. Trottenberg	GMD
G. Hoffman	ECMWF	C. Upstill	PAC
F. Hossfeld	KFA	H. v.d. Vorst	University Utrecht
		M. Vanneschi	University of Pisa
		Kam-Fai Wong	University Hong Kong

HPCN Europe '98 Workshop Chairs

Andy Marsh (Information Society on International Telemedicine)

Jaap Kaandorp (Virtual Reality)

Mario Pantano (High Performance Fortran +)

Jean Louis Pazat (Eurotools)

Geleyn Meijer and L.O. Hertzberger (Modelling & Simulation of Complex Industrial Systems)

Jan Noordik (Genome Computing)

Table of Contents

1. Industrial and General Applications

Technology Transfer within the ProHPC TTN at ENS Lyon <i>C. Barberet, L. Brunie, F. Desprez, G. Lebourgeois, Y. Robert, S. Ubéda, K. Van Heumen</i>	3
Competence Management in Engineering Environments with HPCN <i>W. Loeve, M.E.S. Vogels</i>	13
A NICE HPCN Centre for Flow Simulation <i>R. Groothuizen, H. van der Ven</i>	23
Industrial Applications of High Performance Computing – The Experiences from HWW <i>J. Stadler</i>	30
High Performance Neurocomputing: Industrial and Medical Applications of the RAIN System <i>D. Anguita, A. Boni, M. Chirico, F. Giudici, A.M. Scapolla, G. Parodi</i>	34
An Intranet Solution for Geographically Dispersed Educational Centres: PINCEL-NET <i>J.C. González, J. Herrera, S. García, F.H. Priano, J. Roda, C. Rodríguez</i>	44
EUROMED - A 21st Century WWW-based Telemedical Information Society <i>A. Marsh</i>	54
CAMD and TeleEEG: Software Tools for Telemedicine Applications <i>L. Grandinetti, D. Conforti, L. De Luca</i>	64
Distributed Audio-Visual Content Development <i>A. Meliones, A. Karidis, S. Perrakis, V. Siganos, C. Skelton</i>	74
High Performance Roadvehicle Optimized Aerodynamic Design: Application of Parallel Computing to Car Design <i>M. Beccaria, G. Buresti, A. Ciampa, G. Curci, G. Lombardi, W. Gentzsch, D. Lombardo, G. Manacorda, H.-G. Paap, A. Viceré</i>	86

Parallel Simulation of Turbulent Fluid Flow in a Mixing Tank <i>J. Derksen, H. Van den Akker</i>	96
Simulation of Patch Array Antennas through the Implementation of Finite-Difference Time-Domain (FD-TD) Algorithm on Distributed Memory Massively Parallel Systems <i>P. Palazzari, P. D'Atanasio, F. Ragusini</i>	105
Atmospheric Data Assimilation on Distributed-Memory Parallel Supercomputers <i>C.H.Q. Ding, P.M. Lyster, J.W. Larson, J. Guo, A. da Silva</i>	115
A Barotropic Global Ocean Model and Its Parallel Implementation on Unstructured Grids <i>H. Öksüzoglu, A.G.M. van Hees</i>	125
Distributed Engineering Systems in Coastal Zone Management <i>S. Hummel, I.J.P. Elshoff, A.E. Mynett</i>	133
HPCN and Air Quality Modeling <i>J.G. Blom, W.M. Lioen, J.G. Verwer</i>	141
Parallel Implementation of a Meteorological Model on a SIMD Architecture <i>S. Nicastro, F. Valentinotti</i>	151
2. Computational Science	
A Parallel Simulator of the Immune Response <i>M. Bernaschi, F. Castiglione, S. Succi</i>	163
Parallel Lattice-Boltzmann Simulation of Fluid Flow in Centrifugal Elutriation Chambers <i>D. Kandhai, D. Dubbeldam, A.G. Hoekstra, P.M.A. Sloot</i>	173
Running a Code for Lattice Quantum Chromodynamics Efficiently on CRAY T3E Systems <i>N. Attig, S. Güsken, P. Lacock, T. Lippert, K. Schilling, P. Ueberholz, J. Viehoff</i>	183
Implementation of a Bi-Parallel Monte Carlo Device Simulation on Two Architectures <i>F. Banse, J.-L. Dekeyser, R. Fauquembergue, F. Dessenne</i>	193
Parallel Plasma Simulation in High Performance Fortran <i>B. Di Martino, S. Briguglio, G. Vlad, P. Sguazzero</i>	203

Parallel Implementation of a Lattice Boltzmann Algorithm for the Electrostatic Plasma Turbulence <i>G. Fogaccia</i>	213
Evaluations of HPF for Practical Scientific Algorithms on T3E <i>C.H.Q. Ding</i>	223
Data Parallel Simulations of the Magnetohydrodynamics of Plasma Loops <i>R. Keppens, S. Poedts, J.P. Goedbloed</i>	233
Parallelization of a Block Tridiagonal Solver in HPF on an IBM SP2 <i>A. van der Ploeg</i>	242
Parallel HPF-MPI Implementation of the TBSCM Poisson Solver <i>J.-Y. Berthou, L. Plagne</i>	252
Efficient Distributed Execution of Computationally Intensive Tasks <i>A.N. Meliones, I. Barosan, T.T. Varvarigou</i>	262
On the Effectiveness of Different Diffusive Load Balancing Policies in Dynamic Applications <i>A. Corradi, L. Leonardi, F. Zambonelli</i>	274
Load Balancing and Locality in Hierarchical N-Body Algorithms on Distributed Memory Architectures <i>F. Baiardi, P. Becuzzi, P. Mori, M. Paoli</i>	284
A Dynamic Task Distribution and Engine Allocation Strategy for Distributed Execution of Logic Programs <i>G. Xirogiannis, H. Taylor</i>	294
Scheduling Strategy to Improve Response Time for Web Applications <i>L. Cherkasova</i>	305
A New A* Based Optimal Task Scheduling in Heterogeneous Multiprocessor Systems Applied to Computer Vision <i>D.A.L. Piriyakumar, C.S.R. Murthy, P. Levi</i>	315
Mechanisms for Global Processor and Memory Management on a NoW <i>F. André, C. Morin, M.-T. Segarra</i>	324
Lessons Learned when Comparing Shared Memory and Message Passing Codes on Three Modern Parallel Architectures <i>J.M. MacLaren, J.M. Bull</i>	337

Asynchronous Parallel Discontinuous Finite Element Method <i>D. Aharoni, A. Barak</i>	347
Comparison Between Substructure Method and Domain Decomposition Method <i>K. Kitagawa, H. Nakamura, G. Yagawa</i>	358
Comparison of Different Computer Platforms for Running the Versatile Advection Code <i>G. Tóth, R. Keppens</i>	368
Parallelization of NAS Benchmarks for Shared Memory Multiprocessors <i>A. Waheed, J. Yan</i>	377
The Photon4D Distributed Engine: A Distribution Layer for High Quality Rendering in Shared Virtual Immersion <i>F. Diard</i>	387
Real-Time Visualization of Large Data Sets on NLR's NEC SX-4 <i>H. van der Ven, B. Schultheiss, S. Doi, H. Matsumoto, K. Sugihara, T. Takei</i>	397
Visual Clustering of Multidimensional and Large Data Sets Using Parallel Environments <i>J. Blasiak, W. Dzwinel</i>	403
Application of HPC to Medium-size Stochastic Systems with Non-linear Constraints in Finance <i>G.S. Hodgson, P. Dzwig, H.M. Liddell, D. Parkinson</i>	411
Parallel Extrapolation Methods and Their Application in Chemical Engineering <i>U. Nowak, R. Ehrig, L. Oeverdieck</i>	419
Kriging Interpolation on High-Performance Computers <i>K.E. Kerry, K.A. Hawick</i>	429
Transpose Algorithm for FFT on APE/Quadratics <i>T. Lippert, K. Schilling, F. Toschi, S. Trentmann, R. Tripiccione</i>	439
A Parallel Technique for Partitioning Nodes of Weighted Graphs <i>M.-T. Kechadi, D.F. Hegarty</i>	449
A Scalable Parallel Algorithm for Matching Pursuit Signal Decomposition <i>G. Dodero, V. Gianuzzi, M. Moscati, M. Corvi</i>	458

3. Computer Science

A High Performance Distributed Database System for Enhanced Internet Services <i>A.J.H. Peddemors, L.O. Hertzberger</i>	469
Efficiency of Standard Software Architectures for Java-Based Access to Remote Databases <i>N. Zingirian, M. Maresca, S. Nalin</i>	479
Mining Multi-Dimensional Data for Decision Support <i>J.M. Donato, J.C. Schryver, G.C. Hinkel, R.L. Schmoyer Jr., N.W. Grady, M.R. Leuze</i>	489
A High Performance Object-Oriented Distributed Parallel Database Architecture <i>D. Taniar, Y. Jiang</i>	498
Towards an Ideal Data Placement Scheme for High Performance Object-Oriented Database Systems <i>D. Taniar</i>	508
A Client/Server Approach for HPC Applications within a Networking Environment <i>P. Beaugendre, T. Priol, G. Allion, D. Delavaux</i>	518
High-Performance Computer Management Based on Java <i>V. Sander, D. Erwin, V. Huber</i>	526
URSA MAJOR: Exploring Web Technology for Design and Evaluation of High-Performance Systems <i>I. Park, R. Eigenmann</i>	535
A Software Architecture for Deploying High Performance Solution on the Internet <i>J. Chatratichat, J. Darlington, Y. Guo, S. Hedvall, M. Köhler, A. Saleem, J. Sutiwaraphun, D. Yang</i>	545
Paraflow: A Dataflow Distributed Data-Computing System <i>R. Williams, B. Sears</i>	556
SISCI-Pthreads SMP-like Programming on an SCI-cluster <i>M. Schulz</i>	566

A Common Messaging Layer for MPI and PVM over SCI <i>B.G. Herland, M. Eberl, H. Hellwagner</i>	576
Distributed Shared-Memory for a Workstation Cluster with a High Speed Serial Interface <i>H. Nakajo, H. Tanaka, Y Nakanishi, M. Kohata, Y. Kaneda</i>	588
DISCWorld: A Distributed High Performance Computing Environment <i>K.A. Hawick, H.A. James, C.J. Patten, F.A. Vaughan</i>	598
Utilizing the Metaserver Architecture in the Ninf Global Computing System <i>H. Nakada, H. Takagi, S. Matsuoka, U. Nagashima, M. Sato, S. Sekiguchi</i>	607
Supercomputing at the Desktop: An Improved Interface Using Internet Facilities <i>B. Bühlmann, H. Bieri</i>	617
A Framework for Parallel Programming in Java <i>P. Launay, J.-L. Pazat</i>	628
Effects of Network Bandwidth on Performance in Software DSM Systems <i>A. Aggarwal, D. Grunwald</i>	638
A Parallel Continuous Media Server for Internet Environments <i>F. Cortés Gómez, R. Lüling</i>	648
On the Construction of Low Cost Multicast Trees with Bandwidth Reservation <i>D. Cavendish, A. Fei, M. Gerla, R. Rom</i>	658
COMPASSION: A Parallel I/O Runtime System Including Chunking and Compression for Irregular Applications <i>J. Carretero, J. No, S.-s. Park, A. Choudhary, P. Chen</i>	668
Dynamic Gateways: A Novel Approach to Improve Networking Performance and Availability on Parallel Servers <i>F. B. Maciel, N. Sagawa, T. Tanaka</i>	678
I/O Performance in Hybrid MIMD+SIMD Machines <i>P. Cremonesi, C. Gennaro, R. Marega</i>	688
Lazy and Differential Replication in a Recoverable Distributed Shared Memory System <i>N. Osawa, T. Yuba</i>	698

A Framework to Support Parallel and Distributed Debugging <i>J.C. Cunha, J. Lourenço, J. Vieira, B. Moscão, D. Pereira</i>	708
Application Execution Steering Using On-the-fly Performance Prediction <i>D.J. Kerbyson, E. Papaefstathiou, G.R. Nudd</i>	718
The GRED Graphical Editor for the GRADE Parallel Program Development Environment <i>P. Kacsuk, G. Dózsa, T. Fadgyas, R. Lovas</i>	728
A Multimedia System for the Investigation of Mapping Algorithms <i>N. Mirenkov, O.G. Monakhov, O.J. Chunikhin</i>	738
Interprocedural Array Alignment Analysis <i>E. Laure, B. Chapman</i>	747
Data Prefetching for Non-linear Memory References <i>C.-H. Chi, C.M. Cheung</i>	757
Memory Efficiency of Parallel Programs and Memory Bounded Speedup <i>M.A. Kartawidjaja, A.G. Hoekstra</i>	766
Communication Performance Optimisation Requires Minimising Variance <i>S.R. Donaldson, J.M.D. Hill, D.B. Skillicorn</i>	776
Virtual Parallelism Allows Relaxing the Synchronization Constraints of SIMD Computing Paradigm <i>M. Migliardi, P. Baglietto, M. Maresca</i>	784
4. HPF+ Workshop	
HPF+ High Performance Fortran for Advanced Industrial Applications <i>S. Benkner</i>	797
Integration of a Compilation System and a Performance Tool: The HPF+ Approach <i>M. Calzarossa, L. Massari, A. Merlo, M. Pantano, D. Tessera</i>	809
Parallelizing Irregular Applications with the Vienna HPF+ Compiler VFC <i>S. Benkner, K. Sanjari, V. Sipkova, B. Velkov</i>	816
Multiple Data Parallelism with HPF and KeLP <i>J.H. Merlin, S.B. Baden, S.J. Fink, B.M. Chapman</i>	828

5. Posters

Modelling Genetic Search Agents with a Concurrent Object-Oriented Language <i>R. Slootmaekers, H. Van Wulpén, W. Joosen</i>	843
Coordination Facilities to Enhance Concurrency of Race Free Parallel Algorithms <i>A.E. Doroshenko</i>	854
Dynamic Load Balancing within a Parallel Iterative Linear System Solver <i>P. Christen</i>	857
Size Segregation of Granular Materials in a 3D Rotating Drum <i>C.M. Dury, R. Knecht, G.H. Ristow</i>	860
LES and DNS on Parallel and Vector Platforms <i>M. Pourquié</i>	863
High-Level Versus Low-Level DO-loop Parallelization: Results for One Testcase of a Multi-block Solver on a Shared Memory Parallel Vector Computer <i>P. Wijnandts, M.E.S. Vogels</i>	866
Numerical Simulation of Strain Solitons in Elastic Wave Guides Using Vector and Massive Parallel Supercomputers <i>A.V. Bukhanovsky, A.M. Samsonov</i>	869
Experiments with MRAI Time Stepping Schemes on a Distributed Memory Parallel Environment <i>M.A. Botchev</i>	872
Molecular Dynamics Using p-threads <i>G. Chillemi, N. Sanna</i>	875
Finite Element Message-Passing/DSM Simulation Algorithm for Parallel Computers <i>J. Płazek, K. Banas, J. Kitowski</i>	878
Large-Scale Molecular Dynamics Experiments on Cray T3E System <i>W. Dzwinel, W. Alda, J. Kitowski, J. Moscinski, M. Pogoda, D.A. Yuen</i>	881
Porting the Flame Front Propagation Problem on GAMMA <i>G. Ciaccio, V. DiMartino, P. Lanucara</i>	884

Parallel Finite Element Structural Analysis Code Using DDM <i>K. Garatani, H. Nakamura, G. Yagawa</i>	887
Building a Software Platform for Distributed VR Applications <i>K. Demuynck, J. Broeckhove, F. Arickx</i>	890
Distributed and Parallel Direct Simulation Monte Carlo of Rarefied Gas Flows <i>A.V. Bogdanov, N.Y. Bykov, G.A. Lukianov</i>	893
Solving Diophantine Equations on a Network of Workstations <i>R. Sakellariou</i>	896
Interferometric SAR Phase Unwrapping by Parallel Tempering on a APE100/Quadrics Supercomputer <i>S. Stramaglia, G. Pasquariello, L. Guerriero, A. Distante</i>	898
Numerical Simulation by Means of Supercomputers <i>E.N. Stankova, E.V. Zudilova</i>	901
Highly Stable Localized ILU Preconditioning for Unstructured Grids <i>K. Nakajima, H. Nakamura, H. Okuda</i>	904
Efficient Implementation of a Lanczos Eigenvalue Solver on a Cray T3E-900 <i>M. Horoi, R. Enbody</i>	907
A Parallel Fast Direct Solver with Applications <i>R.A.E. Mäkinen, T. Rossi, J. Toivanen</i>	910
ScaFiEP: The Scalable Finite Element Package <i>F.J. Lingen</i>	913
Software for Partitioning Finite Element Meshes <i>C. Greenough, R. Fowler</i>	916
First Principle Calculations of Quantum Chaos and Its Self-Organisation in the Framework of 1D Model of Random Quantum Reactive Harmonic Oscillator <i>A.V. Bogdanov, A. Gevorkyan, A. Grigoryan</i>	919
Parallel Genetic Evolution of Membership Functions and Rules for a Fuzzy Controller <i>G. Mondelli, G. Castellano, G. Attolico, C. Distante</i>	922

Transposon Element Technique Applied to GA-based John Muir's Trail Test <i>A.V. Spirov, A.S. Kadyrov</i>	925
Remote Control of Virtual Environments via Low-Bandwidth Connections <i>T. Jung</i>	929
Performance Evaluation and Modelling of MPI Communications on the Meiko CS-2 <i>G. Folino, G. Spezzano, D. Talia</i>	932
Divide and Partial Broadcast Method for Parallel Collection Join Queries <i>D. Taniar, J. Wenny Rahayu</i>	937
DPFS: A Data-Parallel File System Environment <i>D. Sueur, J.-L. Dekeyser, P. Marquet</i>	940
Visual Edition of HPF Mappings with HPF-Builder <i>C. Lefebvre</i>	943
Adaptive Bandwidth Scheduling in B-ISDN <i>H.D. Hoang</i>	946
The DOTPAR Project: Towards a Framework Supporting Domain Oriented Tools for Parallel and Distributed Processing <i>J.C. Cunha, P. Medeiros, J. Lourenço, V. Duarte, J. Vieira, B. Moscão, D. Pereira, R. Vaz</i>	952
Coordination Facilities to Enhance Concurrency of Race Free Parallel Algorithms <i>A.E. Doroshenko</i>	955
Parallel Simulation of a Bluff-Body-Stabilized Non-premixed Syngas Flame <i>T.W.J. Peeters, P.P.J. Stroomer</i>	958
Extending Data Prefetching to Co-operative Caching <i>C.-H. Chi, S.C. Lau</i>	961
Lattice Gas Automata Simulation on HP/Convex Exemplar SPP1600 <i>R. Slota, J. Mościński</i>	963
The Improved RAID 5 with the Disk Cache Using the Load-Balanced Destage Algorithm <i>Y.-S. Chang, B.-Y. Kim</i>	966

The Multilevel Interactive Objects Approach to Model and Mesh Large Planar Antennas and Arrays: A Full-JAVA Tool <i>G. Gheri, J.R. Mosig</i>	969
High Performance Sets <i>H. Kosch, L. Böszörményi</i>	972
Evaluation of Two Compiler-Based Approaches for the Parallelisation of an MPEG-2 Decoder <i>A. Laffitte, R. Sakellariou, J.R. Gurd</i>	975
WebSolver: User Friendly Metacomputing <i>E. Lindström, U. Widmark</i>	978
NetLink: Software Libraries at Your Fingertip <i>I. Holmqvist, E. Lindström</i>	981
Data Modelling Based Scheduling in a Parallel Video Server <i>A. Mostefaoui, L. Brunie</i>	984
GAPS: A Compiler Framework for Genetic Algorithm (GA) Optimised Parallelisation <i>A. Nisbet</i>	987
A High Performance Modular File System <i>A. Agahi, R. Russell, G. Utard</i>	990
Dynamically Trace Scheduled VLIW Architectures <i>A. Ferreira de Souza, P. Rounce</i>	993
Semantic Parallelism for Documentary Database Systems <i>N. Biscondi</i>	996
Development of Core Deformation Analysis Program by Using Parallel Algorithm <i>H. Negishi, K. Tsukimori, K. Matsubara, T. Sato</i>	999
Application of HPCN Infrastructure in Ship Hydrodynamics Analysis <i>H.T.M. van der Maarel</i>	1002
SPINEware: A Practical and Holistic Approach to Metacomputing <i>E.H. Baalbergen</i>	1008
A Real-Time Web-Site for Diagnostic Imaging <i>M. Agostiniani, L. Azzarelli, M. Chimenti, O. Salvetti</i>	1012

Secure Telemedicine Applications <i>D. Polemi, A. Marsh</i>	1015
High Performance SAR Processing on a Heterogeneous Distributed Environment <i>F.P. Lovergine, N. Veneziani</i>	1018
The 3DHeartView Project <i>The 3DHeartView Team</i>	1021
Optimisation of Electromagnetic Design Using HPCN <i>C.P. Riley, R.C.F. McLatchie, R. Janssen, A. Longo, T. Gutiérrez, S. Casado, J. Simkin, P. Brochet, G. Molinari, P. Alotto, J.-F. Lemoine, G. Drago</i>	1024
The EUROMED Project <i>A. Marsh</i>	1028
An Interface Device to Support a Distributed Parallel System for the StrongARM Microprocessor <i>B.C. O'Neill, G. Coulson, K.L. Wong, R. Hotchkiss, J.H. Ng, S. Clark, P.D. Thomas</i>	1031
List of Authors	1035