# The 2001 International Conference on Computational Science

San Francisco, California, USA
May 28, 2001 – May 30, 2001

Conference Program

Sponsored by:
American Mathematical Society, USA
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Note: All contributed paper presentations are given a total of 20 minutes, including time for questions and answers. All minisymposia presentations are given a total of 30 minutes, including time for questions and answers.

**May 27, 2001**

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| 1100 – 1200 | Registration |
| 1200 – 1500 | Tutorials:<br>1. *Linear Algebra with Recursive Algorithms (LAWRA)* by Jerzy Waśniewski<br>2. *Problem Solving Environments* by David Walker<br>3. *Monte Carlo Numerical Methods* by Vassil Alexandrov and C. J. Kenneth Tan |
| 1500 – 1800 | Tutorials:<br>1. *Linear Algebra with Recursive Algorithms (LAWRA)* by Jerzy Waśniewski (continue)<br>2. *Cluster Computing* by Stephen L. Scott |
| 1500 – 1800 | Registration |
| 1900 – 2100 | Conference Reception |

**May 28, 2001**

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| 0800 – 0845 | Registration |
| 0845 – 0930 | Plenary Session: (Chair: Jack Dongarra)<br>1. Daniel Hitchcock (Department of Energy, USA) |
| 0940 – 1140 | Parallel Sessions/Workshops/Minisymposia:<br>1. Session: Tools and Environments for Parallel and Distributed Programming (Chairs: Jens Volkert and Dieter Kranzlmueller)<br>1. *Performance Optimization for Large Scale Computing: The Scalable VAMPIR Approach* Holger Brunst, Manuela Winkler, Wolfgang E. Nagel, Hans-Christian Hoppe<br>2. *TRaDe: Data Race Detection for Java* Mark Christiaens, Koen De Bosschere<br>3. *Automation of Data Traffic Control on DSM Architectures* Michael Frumkin, Haoqiang Jin, Jerry Yan<br>4. *The Monitoring and Steering Environment* Christian Glasner, Roland Huegl, Bernhard Reitinger, Dieter Kranzlmueller, Jens Volkert<br>5. *Token Finding Using Mobile Agents* Delbert Hart, Mihail E. Tudoreanu, Eileen Kraemer<br>6. *Load Balancing for the Electronic Structure Program GREMLIN in a very heterogenous ssh-connected WAN-Cluster of UNIX-type Hosts* Siegfried Hoefinger<br>2. Workshop: Intelligent Systems Design and Applications (Chairs: Ajith Abraham and Baikunth Nath)<br>1. *ALEC: An Adaptive Learning Framework for Optimizing Artificial Neural Networks* Ajith Abraham, Baikunth Nath<br>2. *Solving Nonlinear differential equations using Neural Network Method* Lucie P. Aarts, Peter Van der Veer<br>3. *Fuzzy Object Blending in 2D* Ahmet Cinar, Ahmet Arslan<br>4. *An Adaptive Neuro-Fuzzy Approach for Modeling and Control of Nonlinear Systems* Otman M. Ahtiwash, Mohd. Zaki Abdulmuin<br>5. *Genetic Programming Concerns: A Review* Maumita Bhattacharya, Baikunth Nath<br>6. *The Match Fit Algorithm - A Testbed for Computational Motivation of Attention* Joseph Greg Billock, Demetri Psaltis, Christof Koch<br>3. Workshop: Computational Geometry and Applications (Chair: Marina Gavrilova)<br>1. *Apollonius Tenth Problem as a Point Location Problem* Deok-Soo Kim, Donguk Kim, J. Ryu, K. Sugihara<br>2. *On generalized Voronoi diagram in Euclidean metric* M. Gavrilova<br>3. *Robust and Fast Algorithm for a Circle Set Voronoi Diagram in a Plane* Deok-Soo Kim, Donguk Kim, J. Ryu, K. Sugihara |

**May 28, 2001**

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<tr><td>0940 – 1140</td><td>
Parallel Sessions/Workshops/Minisymposia: (continue)

3. Workshop: Computational Geometry and Applications (Chair: Marina Gavrilova)

   4. *Graph Voronoi regions for interfacing planar graphs* Thomas Kaempke and Matthias Strobel
   5. *Crystal Voronoi Diagram and Its Applications to Collision-Free Paths* Kei Kobayashi, Kokichi Sugihara
   6. *REGTET: A program for computing regular tetrahedralizations* Javier Bernal

4. Session: Computational Methods (Chair: Osman Yasar)

   1. *Performance Tradeoffs in multi-tier formulation of a Finite Difference Method* Scott B. Baden, Daniel Shalit
   2. *On the Use of a Differentiated Finite Element Package for Sensitivity Analysis* Christian H. Bischof, H. Martin Buecker, Bruno Lang, Arno Rasch, Jakob W. Risch
   3. *Parallel Factorizations with Algorithmic Blocking* Jaeyoung Choi
   4. *Recent Progress in General Sparse Direct Solvers* Anshul Gupta
   5. *On efficient application of implicit Runge-Kutta methods to large-scale systems of index 1 differential-algebraic equations* Gennady Yu. Kulikov, A. A. Korneva
   6. *On the Efficiency of Nearest Neighbor Searching with Data Clustered in Lower Dimensions* Songrit Maneewongvatana, David M. Mount

5. Workshop: Complex Physical System Simulation (Chairs: Alexander V. Bogdanov, Yuriy E. Gorbachev, and Elena V. Stankova)

   1. *The NORMA language application to solution of strong nonequilibrium transfer processes problem with condensation of mixtures on the multiprocessors system* A. N. Andrianov, K. N. Efimkin, V. Yu. Levashov, I. N. Shishkov
   2. *Complex situations simulation when testing intelligence system knowledge base* A. B. Degtyarev, A. V. Boukhanovsky, Yu. I. Nechaev
   3. *Numerical Investigation of Quantum Chaos in the Problem of Multichannel Scattering in Three Body System* A. V. Bogdanov, A. S. Gevorkyan, A. A. Udalov
   4. *Cellular Automata as a Mesoscopic Approach to Model and Simulate Complex Systems* P. M. A. Sloot, A. G. Hoekstra
   5. *Distributed Simulation of Amorphous Hydrogenated Silicon Films: Numerical Experiments on a Linux Based Computing Environment* Yu. E. Gorbachev, M. A. Zatevakhin, A. A. Ignatiev, V. V. Krzhizhanovskaya, V. Kh. Protopopov, N. V. Solokolva
   6. *Performance Prediction for Parallel Local Weather Forecast Programs* Wolfgang Joppich and Herrmann Mierendorff
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| 0940 – 1140 | Parallel Sessions/Workshops/Minisymposia: (continue)<br><br>6. Session: Digital Imaging Applications (Chairs: J. A. Rod Blais, Gary F. Margrave, and Hilary Alto)<br>1. *An Area-based Stereo Matching using Adaptive Search Range and Window Size* Han-Suh Koo and Chang-Sung Jeong<br>2. *An Image Registration Algorithm Based on Cylindrical Prototype Model* Joong-Jae Lee, Gye-Young Kim, Hyung-Il Choi<br>3. *Automatic Real-Time XRII Local Distortion Correction Method for Digital Linear Tomography* Christian Forlani, Giancarlo Ferrigno<br>4. *Meeting the Computational Demands of Nuclear Medical Imaging using Commodity Clusters* Wolfgang Karl, Martin Schulz, Martin Volk and Sibylle Ziegler<br>5. *Densification of Digital Terrain Elevations Using Shape from Shading with Single Satellite Imagery* Mohammad A. Rajabi, J. A. Rod Blais<br>6. *PC-Based system for calibration, Reconstruction, Processing and Visualization of 3D Ultrasound Data Based on a Magnetic-Field Position and Orientation Sensing System* Emad Boctor, A. Saad, Dar-Jen Chang, K. Kamel, A. M. Youssef |
| 1140 – 1200 | Coffee Break |
| 1200 – 1245 | Plenary Session: (Chairs: C. J. Kenneth Tan and Vassil Alexandrov)<br><br>1. Kokichi Sugihara (University of Tokyo, Japan)<br>2. Vaidy Sunderam (Emory University, USA) |
| 1245 – 1330 | Lunch |
| 1330 – 1550 | Parallel Sessions/Workshops/Minisymposia:<br><br>1. Session: Tools and Environments for Parallel and Distributed Programming (Chairs: Jens Volkert and Dieter Kranzlmueller)<br>1. *DeWiz - Modular Debugging for Supercomputers and Computational Grids* Dieter Kranzlmüller<br>2. *Fiddle: a Flexible Distributed Debugger Architecture* João Lourenco, José C. Cunha<br>3. *Visualization of Distributed Java Applications for Performance Debugging* F.-G. Ottogalli, C. Labbe, V. Olive, B. de Oliveira Stein, J. Chassin de Kergommeaux, J.-M. Vincent<br>4. *Achieving Performance Portability with SKaMPI for High-Performance MPI Programs* Ralf H. Reussner, Gunnar T. Hunzelmann<br>5. *Cyclic Debugging Using Execution Replay* Michiel Ronsse, Mark Christiaens, Koen De Bosschere<br>6. *Visualizing the Memory Access Behavior of Shared Memory Applications on NUMA Architectures* Jie Tao, Wolfgang Karl, Martin Schulz<br>7. *CUMULVS Viewers for the ImmersaDesk and AVS/Express* Torsten Wilde, Raymond E. Flanery, James Kohl |

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|---|---|
| 1330 – 1550 | Parallel Sessions/Workshops/Minisymposia: (continue)<br><br>2. Workshop: Intelligent Systems Design and Applications (Chairs: Ajith Abraham and Baikunth Nath)<br>1. *Automatic Implementation and Simulation of Qualitative Cognitive Maps* João Paulo Carvalho, José Alberto Tome<br>2. *Inclusion Based Approximate Reasoning* Chris Cornelis, Etienne E. Kerre<br>3. *Attractor Density Models with Application to Analyzing the Stability of Biological Neural Networks* Christian Storm, Walter J. Freeman<br>4. *MARS: Still An Alien Planet in Soft Computing?* Ajith Abraham, Dan Steinberg<br>5. *Data Reduction Based on Spatial Partitioning* Gongde Guo, Hui Wang, David Bell<br>6. *Alternate Soft Computing Methods in Reservoir Simulation* Guadalupe L. Janoski, Andrew H. Sung, Reid B. Grigg<br>7. *Intuitionistic Fuzzy Sets in Intelligent Data Analysis for Medical Diagnosis* Eulalia Szmidt, Janusz Kacprzyk<br><br>3. Workshop: Computational Geometry and Applications (Chair: Marina Gavrilova)<br>1. *Exploring an Unknown Polygonal Environment with Bounded Visibility* Amitava Bhattacharya, Sabir Ghosh, Sudeep Sarkar<br>2. *Multiply guarded guards in orthogonal art galleries* T. S. Michael, Val Pinciu<br>3. *Illuminating polygons with vertex* $\Pi$*-floodlights* Csaba D. Toth<br>4. *Reachability on a region bounded by two attached squares* Ali Mohades, Mohammadreza Razzazi<br>5. *An Efficient Algorihm to Calculate the Monkowski Sum of Convec 3D Polyhedra* Henk Bekker, Jos B. T. M. Roerdink<br>6. *Fast Maintenance of Rectilinear Centers* Sergei Bespamyatnikh, Michael Segal<br>7. *Parallel Optimal Weighted Links* Ovidiu Daescu<br><br>4. Session: Computational Methods (Chair: Vassil Alexandrov)<br>1. *A spectral element method for Oldroyd-B fluid in a contraction channel* Sha Meng, Xin Kai Li, Gwynne Evans<br>2. *SSE Based Parallel Solution for Power Systems Network Equations* Y. F. Fung, M. Fikret Ercan, T. K. Ho, W. L. Cheung<br>3. *Implementation of Symmetric Nonstationary Phase-shift Wavefield Extrapolator on an Alpha Cluster* Yanpeng Mi, Gary F. Margrave<br>4. *Generalized high-level synthesis of wavelet-based digital systems via nonlinear I/O data space transformations* Dongming Peng, Mi Lu<br>5. *Solvable Map Method for Integrating Nonlinear Hamiltonian Systems* Govindan Rangarajan, Minita Sachidanand |

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| 1330 – 1550 | Parallel Sessions/Workshops/Minisymposia: (continue)<br><br>4. Session: Computational Methods (Chair: Vassil Alexandrov)<br>  6. *A Parallel ADI Method for a Nonlinear Equation Describing Gravitational Flow of Ground Water* I. V. Schevtschenko<br>  7. *The Effect of the Cusp on the Rate of Convergence of the Rayleigh-Ritz Method* Harry F. King, Ioana Sirbu<br><br>5. Workshop: Complex Physical System Simulation (Chairs: Alexander V. Bogdanov, Yuriy E. Gorbachev, and Elena V. Stankova)<br>  1. *Peculiarities of computer simulation and representation of temporal spatial metocean fields* A. B. Degtyarev, A. V. Boukhanovsky, V. A. Rozhkov<br>  2. *Adaptive High-Performance Method for Numerical Simulation of Unsteady Complex Flows with Number of Strong and Weak Discontinuities* Alexander Vinogradov, Vladimir Volkov, Vladimir Gidaspov, Alexander Muslaev, Peter Rozovski<br>  3. *High-performance Algorithms for Quantum Systems Evolution* Alexander V. Bogdanov, Ashot S. Gevorkyan, Elena N. Stankova<br>  4. *A Modular Collaborative Parallel CFD Workbench* K. L. Wong, A. J. Baker<br>  5. *Plasma Modeling of Ignition for Combustion Simulations* Osman Yasar<br>  6. *Parallel CFD Computing using Shared Memory OpenMP* Hong Hu, Edward L. Turner<br><br>6. Session: Climate Modeling (Chairs: John A. Taylor and J. Walter Larson)<br>  1. *The DOE Parallel Climate Model – Computational Highways and Backroads* Thomas Bettge, Anthony Craig, Rodney James, Vince Wayland<br>  2. *Conceptualizing a Collaborative Problem-Solving Environment for Regional Climate Modeling* G. Chin Jr., R. Leung, K. Schuchardt, D. Gracio<br>  3. *Computational Design and Performance of the Fast Ocean Atmosphere Model, Version 1* Robert Jacob, Chad Schafer, Ian Foster, Michael Tobis, John Anderson<br>  4. *The Model Coupling Toolkit* J. W. Larson, R. L. Jacob, I. T. Foster, J. Guo<br>  5. *Parallelization of a Subgrid Orographic Precipitation Scheme in an MM5-based Regional Climate Model* L. Ruby Leung, John G. Michalakes, Xindi Bian<br>  6. *Resolution dependence in modeling extreme weather events* John Taylor, Jay Larson<br>  7. *A Data Broker for Distributed Computing Environments* L. A. Drummond, J. Demmel, C. R. Mechoso, H. Robinson, K. Sklower, J. A. Spahr |

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| 1550 – 1600 | Coffee Break |
| 1600 – 1645 | Plenary Session: (Chair: Jack Dongarra)<br>1. James Glimm (State University of New York at Stony Brook, USA) |
| 1700 – 1820 | Parallel Sessions/Workshops/Minisymposia:<br>1. Session: Multimedia (Chair: Rachel J. McCrindle)<br>1. *Visualisations: Functionality and Interaction* Claire Knight, Malcolm Munro<br>2. *The MultiMedia Maintenance Management ($M^4$) System* Rachel J. McCrindle<br>3. *DMEFS Web Portal: A METOC Application* Avichal Mehra, Jim Corbin<br>4. *The Validation Web Site: a collaboratory over the Internet* A. Violi, X. Chen, G. Lindstrom, E. Eddings, A. F. Sarofim<br>2. Session: Optimization (Chair: Vassil Alexandrov)<br>1. *Heuristic Solutions for the Multiple-Choice Multi-Dimension Knapsack Problem* Md. Mostofa Akbar, Eric G. Manning, Gholamali C. Shoja, Shahadat Khan<br>2. *Applying Evolutionary Algorithms to Combinatorial Optimization Problems* Enrique Alba Torres, Sami Khuri<br>3. *Tuned Annealing for Optimization* Mir M. Atiqullah, S. S. Rao<br>4. *A Hybrid Global Optimization Algorithm Involving Simplex and Inductive Search* Chetan Offord, Zeljko Bajzer<br>3. Session: Computational Science Education (Chair: Osman Yasar)<br>1. *Computational Science Education: Standards, Learning Outcomes and Assessment* Osman Yasar<br>2. *Learning Computational Methods for Partial Differential Equations from the Web* Andre Jaun, Johan Hedin, Thomas Johnson, Michael Christie, Lars-Erik Jonsson, Mikael Persson, Laurent Villard<br>3. Computational Engineering and Science Program at the University of Utah Aaron Fogelson, Carleton DeTar, Christopher Johnson, Christopher Sikorski<br>4. Session: Architecture-Specific Automatic Performance Tuning (Chairs: Katherine Yelick and James Demmel)<br>1. *Towards an Accurate Model for Collective Communications* Sathish Vadhiyar, Graham Fagg, Jack Dongarra<br>2. *A Family of High-Performance Matrix Multiplication Algorithms* John Gunnels, Greg Henry, Robert van de Geijn<br>3. *Performance Evaluation of Heuristics for Scheduling Pipelined Multiprocessor Tasks* M. Fikret Ercan, Ceyda Oguz, Yu-Fai Fung<br>4. *Automatic Performance Tuning in the UHFFT Library* Dragan Mirkovic, Lennart Johnsson |

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| 1700 – 1820 | Parallel Sessions/Workshops/Minisymposia: (continue)<br>5. Session: Computational Methods (Chair: Hilary Alto)<br>1. *The AGEB Algorithm for solving the Heat Equation in Three Space Dimensions and Its Parallelization using PVM* Elankovan Sundararajan, Mohd Salleh Sahimi<br>2. *A pollution adaptive mesh generation algorithm in r-h version of the finite element method* Soo Bum Pyun, Hyeong Seon Yoo<br>3. *An Information Model for the Representation of Multiple Biological Classifications* Neville Yoon, John Rose<br>4. *A Precise Integration Algorithm for Matrix Riccati Differential Equations* Wan-Xie Zhong, Jianping Zhu |

**May 29, 2001**

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| 0800 – 0845 | Registration |
| 0845 – 0930 | Plenary Session: (Chair: Jack Dongarra)<br>1. Ken Kennedy (Rice University, USA) |
| 0940 – 1140 | Parallel Sessions/Workshops/Minisymposia:<br>1. Workshop: High Performance and Parallel Computing in Manufacturing and Testing Environments (Chair: Dale Shires)<br>1. *Time-Accurate Turbine Engine Simulation in a Parallel Computing Environment* M. A. Chappell, B. K. Feather<br>2. *Influences on the Solution Process for Large, Numeric-Intensive Automotive Simulations* Myron Ginsberg<br>3. *Large Scale Process Modeling Simulations in Liquid Composite Molding* Ram Mohan, Dale Shires, Andrew Mark<br>4. *An Object-Oriented Software Framework for Execution of Real-Time, Parallel Algorithms* Brent Spears, Brett Gossage<br>5. *A Multiagent Architecture Addresses the Complexity of Industry Process Re-engineering* J. K. Debenham<br>6. *Diagnosis Algorithms for a Symbolically Modeled Manufacturing Process* N. Rakoto-Ravalontsalama<br>2. Workshop: Intelligent Systems Design and Applications (Chairs: Ajith Abraham and Baikunth Nath)<br>1. *Design of a Fuzzy Controller Using Genetic Algorithm for Stator Flux Estimation* Mehmet Karakose, Mehmet Kaya, Erhan Akin<br>2. *Object Based Image Ranking Using Neural Networks* Gour C. Karmakar, Mahbubur R. Syed, Laurence S. Dooley<br>3. *A Genetic Approach For Two Dimensional Packing With Constraints* Wee Sng Khoo, P. Saratchandran, N. Sundararajan<br>4. *Task Environments for the Dynamic Development of Behavior* Derek Harter, Robert Kozma<br>5. *Wavelet Packet Multilayer Perceptron for Chaotic Time series prediction - Effects of Weights Initialization* Kok Keong Teo, Lipo Wang, Zhiping Lin<br>6. *Genetic Line Search* S. Lozano, J. J. Dominguez, F. Guerrero, K. Smith<br>3. Workshop: Computational Geometry and Applications (Chair: Marina Gavrilova)<br>1. *Computational Methods for Geometric Processing Applications to Industry* Andrés Iglesias, Akemi Gálvez, Jaime Puig-Pey<br>2. *On a Nearest-Neighbor Problem in Minkowski and Power Metrics* M. Gavrilova<br>3. *Discrete Local Fairing of B-spline Surfaces* Seok Yong Hong, Chung Seong Hong, Hyun Chan Lee |

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| 0940 – 1140 | Parallel Sessions/Workshops/Minisymposia: (continue)<br><br>3. Workshop: Computational Geometry and Applications (Chair: Marina Gavrilova)<br>4. *Computing Optimal Hatching Directions in Layered Manufacturing* M. C. Hon, R. Janardan, J. Schwerdt, M. Smid<br>5. *Robustness Issues in Surface Reconstruction* T. Dey, Joachim Giesen, Wulue Zhao<br>6. *The Voronoi-Delaunay Approach for Modeling the Packing of Balls in a Cylindrical Container* V. A. Luchnikov, N. N. Medvedev, M. L. Gavrilova<br><br>4. Session: Simulation Techniques and Applications (Chair: Ray Gallager)<br>1. *N-Body Simulation on Hybrid Architectures* P. M. A. Sloot, P. F. Spinnato, G. D. van Albada<br>2. *Quantum mechanical simulation of vibration-torsion-rotation levels of methanol* Yun-Bo Duan<br>3. *SimulationVisualization Complexes as Generic Exploration Environment* Elena Zudilova<br>4. *Efficient Random Process Generation for Reliable Simulation of Complex Systems* A. S. Rodionov, H. Choo, H. Y. Youn<br>5. *Replicators and Complementarity: Solving The Simplest Complex System Without Simulation* Anil Menon<br>6. *Numerical Simulation of Quantum Distributions: Instability and Quantum Chaos* G. Yu. Kryuchkyan, H. H. Adamyan, S. B. Manvelyan<br><br>5. Session: Architecture-Specific Automatic Performance Tuning (Chairs: Katherine Yelick and James Demmel)<br>1. *A Modal Model of Memory* Nick Mitchell, Larry Carter, Jeanne Ferrante<br>2. *Fast Automatic Generation of DSP Algorithms* Markus Pueschel, Bryan Singer, Manuela Veloso, Jose Moura<br>3. *Cache-Efficient Multigrid Algorithms* Sriram Sellappa, Sid Chatterjee<br>4. *Statistical Models for Automatic Performance Tuning* Richard Vuduc, James Demmel, Jeff Bilmes<br>5. *Optimizing Sparse Matrix Computations for Register Reuse in Sparsity* Eun-Jin Im, Katherine Yelick<br>6. *Rescheduling for Locality in Sparse Matrix Computations* Michelle Mills Strout, Larry Carter, and Jeanne Ferrante<br><br>6. Workshop: Collaborative Computing (Chairs: Vaidy Sunderam, Roger Loader and James Pascoe)<br>1. *On Group Communication Systems: Insight, a Primer and a Snapshot* P. A. Gray, J. S. Pascoe<br>2. *Overview of the InterGroup Protocols* K. Berket, D. A. Agarwal, P. M. Melliar-Smith, L. E. Moser<br>3. *Introducing Fault-Tolerant Group Membership Into The Collaborative Computing Transport Layer* R. J. Loader, J. S. Pascoe, V. S. Sunderam |

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0940 – 1140 Parallel Sessions/Workshops/Minisymposia: (continue)

6. Workshop: Collaborative Computing (Chairs: Vaidy Sunderam, Roger Loader and James Pascoe)

    4. *Distributed Name Service in Harness* T. Tyrakowski, V. S. Sunderam, M. Migliardi
    5. *Fault Tolerant MPI for the HARNESS MetaComputing System* G. E. Fagg, A. Bukovsky, S. Vadhiyar, J. J. Dongarra
    6. *A Harness Control Application for Hand-Held Devices* T. Tyrakowski, V. S. Sunderam, M. Migliardi

1140 – 1200 Coffee Break

1200 – 1245 Plenary Session: (Chairs: J. A. Rod Blais, Benjoe A. Juliano, and Peter Sloot)

1. Pierre L'Ecuyer (University of Montreal, Canada)
2. Peter Kacsuk (MTA SZTAKI Research Institute, Hungary)
3. Stefan Unger (Sun Microsystems, USA)

1245 – 1330 Lunch

1330 – 1600 Parallel Sessions/Workshops/Minisymposia:

1. Session: Multi-Spectral Scene Generation and Projection (Chair: James B. Johnson, Jr.)

    1. *JAVELIN Integration Flight Simulation (IFS)* Charles Bates
    2. *A Multi-Spectral Test and Simulation Facility to Support Missile Development, Production, and Surveillance Programs* James Johnson, Jerry Ray
    3. *Correlated, Real Time Multi-Spectral Sensor Test and Evaluation (T&E) In An Installed Systems Test Facility (ISTF) Using High Performance Computing* John Kriz, Greg McGraner, Tom Joyner
    4. *Infrared Scene Projector Digital Model Development* Mark A. Manzardo, Brett Gossage, J. Brent Spears, Kenneth G. LeSueur
    5. *Infrared Scene Projector Digital Model Mathematical Description* Mark A. Manzardo, Brett Gossage, J. Brent Spears, Kenneth G. LeSueur
    6. *Distributed Test Capability using Infrared Scene Projector Technology* David R. Anderson, Ken Allred, Kevin Dennen, Tim Clardy, Patrick Roberts, William R. Brown, Ellis E. Burroughs, Kenneth G. LeSueur
    7. *Development of Infrared and Millimeter Wave Scene Generators for the P3I BAT High Fidelity Flight Simulation* William Phillips, Marsha Drake

2. Workshop: Collaborative Computing (Chairs: Vaidy Sunderam, Roger Loader and James Pascoe)

    1. *Flexible Class Loader Framework: Sharing Java Resources in Harness System* D. Kurzyniec, V. S. Sunderam
    2. *Mobile Wide Area Wireless Fault-Tolerance* J. S. Pascoe, G. Sibley, V. S. Sunderam, R. J. Loader

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<tr><td>1330 – 1600</td><td>
Parallel Sessions/Workshops/Minisymposia: (continue)

2. Workshop: Collaborative Computing (Chairs: Vaidy Sunderam, Roger Loader and James Pascoe)
   3. *Tools For Collaboration In Metropolitan Wireless Networks* G. Sibley, V. S. Sunderam
   4. *A Repository System With Secure File Access For Collaborative Environments* P. A. Gray, S. Chandramohan, V. S. Sunderam
   5. *Authentication Service Model Supporting Multiple Domains in Distributed Computing* Kyung-Ah Chang
   6. *Performance and stability analysis of a message oriented reliable multicast for distributed virtual environments in Java* Gunther Stuer, Jan Broeckhove, Frans Arickx
   7. *Secure and Efficient Key Escrow Protocols for Mobile Communications* Byung-Rae Lee, Tai-Yun Kim
3. (1330 – 1500) Minisymposium: Phylogenetic Inference for Genome Rearrangement Data (Chair: Laura Salter)
   1. *Evolutionary puzzles: an introduction to genome rearrangement* Mathieu Blanchette
   2. *High-Performance Algorithmic Engineering for Computational Phylogeny* Bernard M. E. Moret, David A. Bader, Tandy Warnow
   3. *Phylogenetic Inference from Mitochondrial Genome Arrangement Data* Donald L. Simon, Bret Larget
3. (1500 – 1600) Minisymposium: Monte Carlo Numerical Methods (Chairs: Ivan Dimov and Aneta Karaivanova)
   1. *Parallel High-dimensional Integration: Quasi Monte-Carlo versus Adaptive Cubature Rules* Rudolf Schürer
   2. *Path integral Monte Carlo simulations and analytical approximations for high-temperature plasmas* V. Filinov, M. Bonitz, D. Kremp, W. D. Kraeft, V. Fortov
4. Session: Computational Models of Natural Language Arguments (Chairs: Floriana Grasso and Chris Reed)
   1. *Modelling Natural Language Arguments* F. Grasso, C. Reed
   2. *GEA: a Complete, Modular System for Generating Evaluative Arguments* G. Carenini
   3. *Argumentation in Explanations to Logical Problems* A. Fiedler, H. Horacek
   4. *Analysis of the Argumentative Effect of Evaluative Semantics in Natural Language* S. Gavenko
   5. *Getting Good Value: Facts, Values and Goals in Computational Linguistics* M. Gilbert
   6. *An Empirical Study of Multimedia Argumentation* N. Green
   7. *Exploiting Uncertainty and Incomplete Knowledge in Deceptive Argumentation* V. Carofiglio, F. de Rosis
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| 1330 – 1600 | Parallel Sessions/Workshops/Minisymposia: (continue)<br>5. (1330 – 1450) Session: Computational Finance (Chair: Christiane Lemieux)<br>1. *Construction of Multinomial Lattice Random Walks for Optimal Hedges* Yumi Yamada<br>2. *On Parallel Pseudo-random Number Generation* C. J. K. Tan<br>3. *A General Framework for Trinomial Trees* Ali Lari-Lavassani, Bradley D. Tifenbach<br>4. *On the Use of Quasi-Monte Carlo Methods in Computational Finance* Christiane Lemieux, Pierre L'Ecuyer<br>5. (1450 – 1550) Session: Novel Models for Parallel Computation (Chair: Frank Dehne)<br>1. *A Cache Simulator for Distributed Shared Memory Systems* Florian Schintke, Jens Simon, Alexander Reinefeld<br>2. *On the effectiveness of D-BSP as a bridging model of parallel computation* G. Bilardi, C. Fantozzi, A. Pietracaprina, G. Pucci<br>3. *Coarse Grained Parallel On-Line Analytical Processing (OLAP) For Data Mining* F. Dehne, T. Eavis, A. Rau-Chaplin<br>6. Session: Environmental Modeling (Chair: Zahari Zlatev)<br>1. *Methods of sensitivity theory and inverse modeling for estimation of source parameters and risk/vulnerability areas* Alexander Baklanov<br>2. *The simulation of photochemical smog episodes in Hungary and Central Europe using adaptive gridding models* Alison Tomlin<br>3. *Numerical Solution of the Aerosol Condensation/Evaporation Equation* Khoi Nguyen, Donald Dabdub<br>4. *Efficient treatment of large-scale air pollution models on supercomputers* Zahari Zlatev<br>5. *Control of Black Carbon, the Most Effective Means of Slowing Global Warming* Mark Z. Jacobson<br>6. *Comparison of Two Schemes for the Redistribution of Moments for Modal Aerosol Model Applications* U. Shankar, A. L. Trayanov<br>7. *A Scale-Dependent Dynamic Model for Scalar Transport in the Atmospheric Boundary Layer* Fernando Porté-Agel, Qiao Qin |
| 1600 – 1645 | Plenary Session: (Chair: Jack Dongarra)<br>1. Chris Johnson (University of Utah, USA) |
| 1645 – 1700 | Coffee Break |

**May 29, 2001**

<table>
<tr><td>1700 – 1830</td><td>

Parallel Sessions/Workshops/Minisymposia:

1. Session: High Performance Computational Tools and Environments (Chair: Vassil Alexandrov)
    1. *Pattern search methods for molecular geometry problems* Pedro Alberto, Fernando Nogueira, Luis Vicente
    2. *In-situ Bioremediation: Advantages of Parallel Computing and Graphical Investigating Techniques* M. C. Baracca, P. Ornelli, G. Clai
    3. *Adaptive Load Balancing for MPI Programs* Milind A. Bhandarkar, L. V. Kale, Eric de Sturler, Joel Hoeflinger
    4. *Performance and Irregular Behavior of Adaptive Task Partitioning* Elise de Doncker, Rodger Zanny, Karlis Kaugars, Laurentiu Cucos
2. Session: High Performance Computational Tools and Environments (Chairs: Larry Davis, Cathy McDonald, and Valerie Thomas)
    1. *Enabling Interoperation of High Performance, Scientific Computing Applications: Modeling Scientific Data With The Sets and Fields (SAF) Modeling System* Mark C. Miller, James F. Reus, Robb P. Matzke, William J. Arrighi, Larry A. Schoof, Ray T. Hitt, Peter K. Espen
    2. *Optimizing Register Spills for Eager Functional Languages* S. Mishra, K. Sikdar, M. Satpathy
    3. *A Protocol for Multi-Threaded Processes with Choice in $\pi$-calculus* Kazunori Iwata, Masato Suzuki, Naohiro Ishi
    4. *Mapping Parallel Programs onto Distributed Computer Systems With Faulty Elements* Michail S. Tarkov, Youngsong Mun, Hyung-Il Choi
3. Minisymposium: Monte Carlo Numerical Methods (Chairs: Ivan Dimov and Aneta Karaivanova)
    1. *A Feynman-Kac Path-Integral Implementation for Poisson's Equation* Chi-Ok Hwang, Michael Mascagni
    2. *Relaxed Monte Carlo Linear Solver* C. J. K. Tan, V. Alexandrov
    3. *Finding Steady State of Safety Systems Using the Monte Carlo Method* Ray Gallagher
4. Workshop: Soft Computing: Systems and Applications (Chairs: Benjoe A. Juliano and Reneé S. Renner)
    1. *More autonomous hybrid models in Bang$^2$* Roman Neruda, Pavel Krusina, Zuzana Petrová
    2. *Model generation of neural network ensembles using two-level cross-validation* Sang Vasupongayya, R. S. Renner, Benjoe Juliano
    3. *Noise-Induced Signal Enhancement in Heterogeneous Neural Networks* Michael J. Barber, Babette K. Dellen
    4. *A Comparison of Neural Networks and Classical Discriminant Analysis in Predicting Students' Mathematics Placement Examination Scores* Stephen J. Sheel, Deborah Vrooman, R. S. Renner, Shanda K. Dawsey

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**May 29, 2001**

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| 1700 – 1830 | Parallel Sessions/Workshops/Minisymposia: (continue)<br><br>5. Workshop: Global and Cluster Computing – Internals and Usage (Chairs: Toni Cortes and Peter Kacsuk)<br><br>1. *Extension of Macrostep Debugging Methodology Towards Metacomputing Applications* R. Lovas, V. S. Sunderam<br>2. *The Policy Machine for Security Policy Management* Vincent Hu, David Ferraiolo, Deborah Frincke<br>3. *Improving Java Server Performance with Interruptlets* David Craig, Steven Carroll, Fabian Breg, Constantine Polychronopoulos<br>4. *A new approach to engineering design* Christophe Prud'homme, Dimitrios Rovas, A. T. Patera |
| 1930 – 2130 | Conference Dinner |

**May 30, 2001**

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|---|---|
| 0845 – 0930 | Plenary Session: (Chair: Jack Dongarra)<br>1. Ed Seidel (Max-Planck-Institut für Gravitationsphysik, Germany) |
| 0940 – 1140 | Parallel Sessions/Workshops/Minisymposia:<br>1. Workshop: Global and Cluster Computing – Internals and Usage (Chairs: Toni Cortes and Peter Kacsuk)<br>1. *Protocols and Software for Exploiting Myrinet Clusters* P. Geoffray, C. Pham, L. Prylli, B. Tourancheau, R. Westrelin<br>2. *Cluster Configuration Aided by Simulation* Dieter F. Kvasnicka, Helmut Hlavacs, Christoph W. Ueberhuber<br>3. *Capacity and Capability Computing using Legion* Anand Natrajan, Marty Humphrey, Andrew Grimshaw<br>4. *Component Object Based Single System Image Middleware for Metacomputer Implementation of Genetic Programming via Clusters* Ivan Tanev, Takashi Uozomi, Dauren Akhmetov<br>5. *Application Monitoring in the Grid with GRM and PROVE* Z. Balaton, P. Kacsuk, N. Podhorski<br>6. *The Prioritized and Distributed Synchronization in the Structured Groups* M. Trehel, A. Housni<br>2. Workshop: Intelligent Systems Design and Applications (Chairs: Ajith Abraham and Baikunth Nath)<br>1. *HARPIC, An Hybrid Architecture Based on Representations, perceptions and Intelligent Control: A way to provide Autonomy to Robots* Dominique Luzeaux, Andre Dalgalarrondo<br>2. *Hybrid Intelligent Systems for Stock Market Analysis* Ajith Abraham, Baikunth Nath, Mahanti P. K.<br>3. *On the emulation of Kohonen's self-organization via single-map Metropolis-Hastings algorithms* Jorge Muruzábal<br>4. *Quasi Analog Formal Neuron and Its Learning Algorithm Hardware* Karen M. Nazaryan<br>5. *Producing Non-Verbal Output for an Embodied Agent in an Intelligent Tutoring System* Roger Nkambou, Yan Laporte<br>6. *C-Evolving a Neural-Net Evaluation Function by Combining Genetic Algorithms with Reinforcement Learning* Joshua A. Singer<br>3. Workshop: Soft Computing: Systems and Applications (Chairs: Benjoe A. Juliano and Renee S. Renner)<br>1. *Neural Belief Propagation Without Multiplication* Michael J. Barber<br>2. *Fuzzy logic basis in high performance decision support systems* A. V. Bogdanov, A. B. Degtyarev, Yu. I. Nechaev<br>3. *Scaling of Knowledge in Random Conceptual Networks* Lora J. Durak, Alfred W. Hubler |

**May 30, 2001**

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<tr><td>0940 – 1140</td><td>Parallel Sessions/Workshops/Minisymposia: (continue)

3. Workshop: Soft Computing: Systems and Applications (Chairs: Benjoe A. Juliano and Renee S. Renner)
    4. *Implementation of Kolmogorov learning algorithm for feedforward neural networks* Roman Neruda, Arnost Stedry, Jitka Drkosova
    5. *Identification of MIMO Systems by Input-Output Takagi-Sugeno Fuzzy Models* Nirmal Singh, Renu Vig, J. K. Sharma
4. Session: Novel Models for Parallel Computation (Chair: Frank Dehne)
    1. *Architecture independent analysis of parallel programs* A. Grama, V. Kumar, S. Ranka, V. Singh
    2. *Strong fault-tolerance: parallel routing in networks with faults* J. Chen, E. Oh
    3. *Parallel algorithm design with coarse grained synchronization* V. Ramachandran
    4. *Parallel bridging models and their impact on algorithm design* F. Meyer auf der Heide, R. Wanka
    5. *A coarse grained parallel algorithm for maximal cliques in circle graphs* E. Caceres, S. W. Wong, J. L. Szwarcfiter
    6. *Parallel Models and Job Characterization for System Scheduling* X. Deng, H. Ip, K. Law, J. Li, W. Zheng, S. Zhu
5. Minisymposium: Computational Science Applications and Case Studies (Chairs: Larry Davis, Cathy McDonald, and Valerie B. Thomas)
    1. *Recent Developments of Coupled CFD/CSD Methodology* Joseph D. Baum, Hong Luo, Eric L. Mestreau, Dmitri Sharov, Rainald Loehner, Daniele Pelessone, Charles Charman
    2. *Towards a Coupled Environmental Prediction System* Julie L. McClean, Wieslaw Maslowski, Mathew E. Maltrud
    3. *Parallelization of an Adaptive Mesh Refinement Method for Low Mach Number Combustion* Charles A. Rendleman, Vince E. Beckner, Mike J. Lijewski
    4. *Combustion Dynamics of Swirling Turbulent Flames* Suresh Menon, Vaidyanathan Sankaran, Christopher Stone
6. Session: Molecular Dynamics (Chairs: Ben Liemkuhler and Brian Laird)
    1. *Simulations of surfactant-enhanced spreading* Sean McNamara, Joel Koplik, Jayanth R. Banavar
    2. *MDT – The Molecular Dynamics Test Set* Eric Barth
    3. *Numerical Methods for the Approximation of Path Integrals Arising in Quantum Statistical Mechanics* Steve D. Bond
    4. *The Multigrid N-Body Solver* David J. Hardy
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**May 30, 2001**

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| 0940 – 1140 | Parallel Sessions/Workshops/Minisymposia: (continue)<br>6. Session: Molecular Dynamics (Chairs: Ben Liemkuhler and Brian Laird)<br>5. *Do your hard-spheres have tails? A molecular dynamics integration algorithm for systems with mixed hard-core/continous potentials* Brian B. Laird<br>6. *An Improved Dynamical Formulation for Constant Temperature and Pressure Dynamics, with Application to Particle Fluid Models* Benedict J. Leimkuhler |
| 1140 – 1200 | Coffee Break |
| 1200 – 1245 | Plenary Session: (Chairs: C. J. Kenneth Tan and Reneé S. Renner)<br>1. José E. Moreira (IBM T. J. Watson Research Center, USA)<br>2. Cliff Addison (Fujitsu European Centre for Information Technology, UK) |
| 1245 – 1330 | Lunch |
| 1330 – 1550 | Parallel Sessions/Workshops/Minisymposia:<br>1. Session: Computational Physics in the Undergraduate Curriculum (Chairs: Denis Donnelly and Rubin Landau)<br>1. *Computation in Undergraduate Physics: The Lawrence Approach* David Cook<br>2. *Integrating Computational Science into the Physics Curriculum* Harvey Gould<br>3. *Musical Acoustics and Computational Science* N. Giordano, J. Roberts<br>4. *Developing Components and Curricula for a Research-Rich Undergraduate Degree in Computational Physics* Rubin H. Landau<br>5. *Physlets: Java Tools for a Web-Based Physics Curriculum* Wolfgang Christian<br>6. *Using Computer-Based Technology to Address Issues of Learning, Evaluation, Access and Remediation in an Engineering Circuit Analysis Course* Jean-Pierre R. Bayard<br>7. *What Real scientists Need to Know About HPC – Circa 2001* Donald Frederick<br>2. Workshop: Intelligent Systems Design and Applications (Chairs: Ajith Abraham and Baikunth Nath)<br>1. *Modeling the effect of premium changes on insurance customer retention rates using neural networks* Ai Cheo Yeo, Kate A. Smith, R. J. Willis, M. Brooks<br>2. *On the Predictability of Rainfall in Kerala - An Application of ABF Neural Network* Ninan Sajith Philip, K. Babu Joseph<br>3. *A Job Shop Scheduling Problem with Fuzzy Processing Times* Feng-Tse Lin<br>4. *Speech Synthesis Using Neural Networks Trained by an Evolutionary Algorithm* Trandafir Moisa, Dan Ontanu, Adrian Hoia Dediu |

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|---|---|
| 1330 – 1550 | Parallel Sessions/Workshops/Minisymposia: (continue)<br><br>2. Workshop: Intelligent Systems Design and Applications (Chairs: Ajith Abraham and Baikunth Nath)<br>    5. *A Two Phase Fuzzy Mining and Learning Algorithm for Adaptive Learning Environment* Chang Jiun Tsai, S. S. Tseng, Chih-Yang Lin<br>    6. *Applying Genetic Algorithms and other Heuristic Methods to Handle PC Configuration Problems* Vincent Tam, K. T. Ma<br>    7. *Forecasting Stock Market Performance Using Hybrid Intelligent System* Jenny Xiaodan Wu, Ming Fung, Andrew Flitman<br><br>3. Session: Computational Chemistry (Chair: Antonio Laganà)<br>    1. *Ab-Initio Kinetics of Heterogeneous Catalysis: NO +N+ O/Rh(111)* A. P. J. Jansen, C. G. M. Hermse, F. Frechard, J. J. Lukkien<br>    2. *Parallel Methods in Time Dependent Approaches to Reactive Scattering Calculations* Valentina Piermarini, Leonardo Pacifici, Stefano Crocchianti, Antonio Laganà, Giuseppina D'Agosto, Sergio Tasso<br>    3. *Interpolating Wavelets in Kohn-Sham Electronic Structure Calculations* A. J. Markvoort, R. Pino, P. A. J. Hilbers<br>    4. *Molecular polarizability of Si/Ge/GaAs clusters and nanostructures* Francisco Torrens<br>    5. *Supporting Car-Parrinello Molecular Dynamics Application with UNICORE* Valentina Huber<br><br>4. Session: Program and Visualization (Chair: Brian J. d'Auriol)<br>    1. *Immersive Visualization using AVS/Express* Ian Curington<br>    2. *Visualizing High-Resolution climate data* Sheri Voelz, John Taylor<br>    3. *Exploratory Study of Scientific Visualization Techniques for Program Visualization* Brian J. d'Auriol, Claudia V. Casas, Pramod Kumar Chikkappaiah, L. Susan Draper, Ammar J. Esper, Jorge López, Rajesh Molakaseema, Seetharami R. Seelam, René Saenz, Qian Wen, Zhengjing Yang<br>    4. *VisBench: A Framework for Remote Data Visualization and Analysis* Randy W. Heiland, M. Pauline Baker, Danesh K. Tafti<br>    5. *The Problem of Time Scales in Computer Visualization* Mark Burgin, Damon Liu, Walter Karplus<br>    6. *Making Movies: Watching Software Evolve through Visualisation* James Westland Chain, Rachel J. McCrindle |
| 1550 – 1600 | Coffee Break |
| 1600 – 1730 | Round Table Discussion and Closing Remarks |

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