

TABLE OF CONTENTS

Preface	XI
Invited Lectures	1
Large scale structural analysis on massively parallel computers <i>P.E. Bjørstad and J. Cook</i>	3
Data-parallel BLAS as a basis for LAPACK on massively parallel computers <i>P.E. Bjørstad and T. Sørøvik</i>	13
Large-scale nonlinear constrained optimization <i>A.R. Conn, N. Gould and Ph.L. Toint</i>	21
Trading off parallelism and numerical stability <i>J.W. Demmel</i>	49
Subband filtering : CORDIC modulation and systolic quadrature mirror filter tree <i>E.F. Depreitere</i>	69
A parallel image rendering algorithm and architecture based on ray tracing and radiosity shading <i>E.F. Depreitere and L.-S. Shen</i>	91
Reduction and approximation of linear computational circuits <i>P. Dewilde and A.-J. van der Veen</i>	109
The look-ahead Lanczos process for large nonsymmetric matrices and related algorithms <i>R.W. Freund</i>	137
Case studies of real-time processing in robotics <i>W.M. Gentleman</i>	165
Adaptive signal processing with emphasis on QRD-least squares lattice <i>S. Haykin</i>	183

A direct method for reordering eigenvalues in the generalized real Schur form of a regular matrix pair (A, B) <i>B. Kågström</i>	195
Block shift invariance and efficient system identification algorithms <i>N. Kalouptsidis</i>	219
Computing the singular value decomposition on a fat-tree architecture <i>T.J. Lee, F.T. Luk and D.L. Boley</i>	231
A new matrix decomposition for signal processing <i>F.T. Luk and S. Qiao</i>	241
The linear algebra of perfect reconstruction filtering <i>M. Stewart and G. Cybenko</i>	249
Determining rank in the presence of error <i>G.W. Stewart</i>	275
Approximation with Kronecker products <i>C.F. Van Loan and N. Pitsianis</i>	293
Some linear algebra issues in large-scale optimization <i>M.H. Wright</i>	315
Contributed Lectures	339
Direct and inverse unitary eigenproblems in signal processing : an overview <i>G.S. Ammar, W.B. Gragg and L. Reichel</i>	341
Block implementations of the symmetric QR and Jacobi algorithms <i>P. Arbenz and M. Oettli</i>	345
Linear algebra for large-scale information retrieval applications <i>M.W. Berry</i>	347
Matched filter vs. least-squares approximation <i>L.H.J. Bierens</i>	349

Reordering diagonal blocks in real Schur form <i>A.W. Bojanczyk and P. Van Dooren</i>	351
Placing zeroes and the Kronecker canonical form <i>D.L. Boley and P. Van Dooren</i>	353
Analysis of the recursive least squares lattice algorithm <i>J.R. Bunch and R.C. LeBorne</i>	355
Adaptive Chebyshev iteration based on modified moments <i>D. Calvetti, G.H. Golub and L. Reichel</i>	357
Continuous realization methods and their applications <i>M.T. Chu</i>	359
Asymptotic behavior of orthogonal polynomials <i>T. Dehn</i>	361
CADCS and parallel computing <i>F. Dumortier, A. Van Cauwenberghe and L. Boullart</i>	363
Eigenvalue roulette and random test matrices <i>A. Edelman</i>	365
On numerical methods for unitary eigenvalue problems <i>H. Faßbender</i>	369
Accurate singular values and differential qd algorithms <i>K.V. Fernando and B.N. Parlett</i>	371
Orthogonal projection and total least squares <i>R.D. Fierro and J.R. Bunch</i>	375
Gauss quadratures associated with the Arnoldi process and the Lanczos algorithm <i>R.W. Freund and M. Hochbruck</i>	377
An implementation of the QMR method based on coupled two-term recurrences <i>R.W. Freund and N.M. Nachtigal</i>	381

Computationally efficient homotopies for the H^2 model order reduction problem <i>Y. Ge, L.T. Watson, E.G. Collins Jr. and L.D. Davis</i>	385
A fast algorithm for QR decomposition of Toeplitz matrices <i>G.O. Glentis</i>	387
Unitary Hessenberg methods for Toeplitz approximations and applications <i>Ch. He and A. Bunse-Gerstner</i>	389
Perturbation theory and backward error for $AX - XB = C$ <i>N.J. Higham</i>	391
Fast transforms and elliptic problems <i>T. Huckle</i>	393
An interior-point method for minimizing the maximum eigenvalue of a linear combination of matrices <i>F. Jarre</i>	395
The lattice-ladder with generalized forgetting <i>J. Kadlec</i>	397
Solving a least squares problem with boundary constraints <i>L. Kaufman</i>	399
Estimating the extremal eigenvalues and condition number by the Lanczos algorithm with a random start <i>J. Kuczyński and H. Woźniakowski</i>	401
A generalized ADI iterative method <i>N. Levenberg and L. Reichel</i>	403
Quaternions and the symmetric eigenvalue problem <i>N. Mackey</i>	405
Application of the Gauss-Seidel iteration to the RLS algorithm <i>Ö. Morgül and A. Malas</i>	407
Ranks of submatrices of a matrix and its inverse <i>C.C. Paige and M. Wei</i>	409

A QRD-based least-squares algorithm for multipulse antenna array signal processing <i>I.K. Proudler</i>	411
On displacement structures for covariance matrices and lossless functions <i>P.A. Regalia and F. Desbouvries</i>	413
Application of vector extrapolation and conjugate gradient type methods to the semiconductor device problem <i>W.H.A. Schilders</i>	415
Accurate symmetric eigenreduction by a Jacobi method <i>I. Slapničar</i>	417
The order-recursive Chandrasekhar equations for fast square-root Kalman filtering <i>D.T.M. Slock</i>	419
Hybrid iterative methods based on Faber polynomials <i>G. Starke</i>	421
Aspects of implementing a 'C' matrix library <i>D.E. Stewart</i>	423
Intermediate fill-in in sparse QR decomposition <i>M. Tuma</i>	425
Shifting strategies for the parallel QR algorithm <i>D.S. Watkins</i>	427
List of Participants	429
Authors Index	437