Current Institutional Reports *

SIGNUM Newsletter Volume 33, Number 3

July 1998

Argonne National Laboratory

Math and Computer Science Division
Argonne National Laboratory
9700 Cass Avenue
Argonne, IL 60439
Attn: Dr. Gail Pieper
URL: *http://www-fp.mcs.anl.gov/division/publications/*

[1] M. Anitescu and R. Serban. A sparse superlinearly convergent SQP with applications to two-dimensional shape optimization. Preprint ANL/MCS-P706-0198, Argonne National Laboratory, February 1998.

[2] M. C. Ferris, M. P. Mesnier, and J. J. More'. NEOS and CONDOR: Solving optimization problems over the internet. Preprint ANL/MCS-P708-0398, Argonne National Laboratory, March 1998.

[3] P. Verlinden, D. M. Potts, and J. N. Lyness. Error expansions for multidimensional trapezoidal rules with Sidi transformations. Preprint ANL/MCS-P709-0298, Argonne National Laboratory, June 1998.

[4] W. L. Wan, T. F. Chan, and B. Smith. An energy-minimizing interpolation for robust multigrid methods. Preprint ANL/MCS-P710-0298, Argonne National Laboratory, May 1998.

[5] M. Anitescu, F. A. Potra, , and D. E. Stewart. Time-stepping for three-dimensional rigid body dynamics. Preprint ANL/MCS-P716-0498, Argonne National Laboratory, April 1998.

[6] L. A. Freitag and C. Ollivier-Gooch. A cost/benefit analysis of simplicial mesh improvement techniques as measured by solution efficiency. Preprint ANL/MCS-P722-0598, Argonne National Laboratory, July 1998.

Bell Labs

URL: *http://netlib.bell-labs.com/cm/cs/doc/nam.html*

[1] R. W. Freund. Reduced-order modeling techniques based on Krylov subspaces and their use in circuit simulation. Technical Report 98/3-02, Bell Labs, 1998.

Cambridge

Dept. of Applied Mathematics and
Theoretical Physics
University of Cambridge
Silver Street
Cambridge CB3 9EW
England
0223 337900
email: Karen@amtp.cam.ac.uk
URL: *http://www.damtp.cam.ac.uk/DAMTP/user/na/reports.html*

[1] A. Iserles. Lie groups and the computation of invariants. Technical Report NA1998/07, University of Cambridge, 1998.

[2] A. Iserles, S. P. Norsett, and A. F. Rasmussen. Reversibility and high-order Magnus methods. Technical Report NA1998/06, University of Cambridge, 1998.

[3] M. J. D. Powell. Recent research in cambridge on radial basis functions. Technical Report NA1998/05, University of Cambridge, 1998.

*Reports can be obtained by writing to the person or address given for the publishing institution. We recommend requesting reports by author, title, and number, since the information listed in this column has been transcribed at least once from the original sources. URLs included in the contact's address point to reports that are available online. SIGNUM Newsletter Institutional Reports columns and their BibTeX bibliographies are available online at *http://www.netlib.org/signum-reports/*

Center for Research on Parallel Computation (CRPC)

Theresa Chatman
Center for Research on Parallel
Computation
Rice University
P.O. Box 1892
Houston, Texas 77251-1892
URL: *http://softlib.rice.edu/CRPC/softlib/TRs_online.html*

[1] J. E. Dennis and Trond Steihaug. A Ferris-Mangasarian technique applied to linear least squares problems. Technical Report CRPC-TR98740, Center for Research on Parallel Computation, May 1998.

[2] Gerald Roth and Ken Kennedy. Loop fusion in high performance Fortran. Technical Report CRPC-TR98745, Center for Research on Parallel Computation, July 1998.

CERFACS

Centre Euròpe en de Recherche et de
Formation
Avancee en Calcul Scientifique
42, Avenue Gustave-Coriolis
31057 Toulouse Cedex,
France
Attn. Librarian: 010 33 61193131
email: library@cerfacs.fr
URL: *http://www.cerfacs.fr/algor/algo_reports.html*

[1] F. Mazzia and R. Alan McCoy. Numerical experiments with a shifted SSOR preconditioner for symmetric matrices. Technical Report TR_PA_98_12, CERFACS, 1998.

[2] P. Amestoy, I. S. Duff, J. Y. L'Excellent, and P. Plechac. PARASOL - An integrated programming environment for parallel sparse matrix solvers. Technical Report TR_PA_98_13, CERFACS, 1998.

[3] Hua Dai. Two algorithms for symmetric linear systems with multiple right-hand sides. Technical Report TR_PA_98_17, CERFACS, 1998.

[4] L.M. Carvalho, L. Giraud, and P. Le Tallec. Algebraic two-level preconditioners for the Schur complement method. Technical Report TR_PA_98_18, CERFACS, 1998.

[5] V. Fraysse, L. Giraud, and S. Gratton. A set of flexible GMRES routines for real and complex arithmetics. Technical Report TR_PA_98_20, CERFACS, 1998.

[6] P. R. Amestoy, I. S. Duff, and J. Y. L'Excellent. Multifrontal parallel distributed symmetric and unsymmetric solvers. Technical Report TR_PA_98_22, CERFACS, 1998.

[7] I. S. Duff and Henk A. van der Vorst. Preconditioning and parallel preconditioning. Technical Report TR_PA_98_23, CERFACS, 1998.

[8] F. Chaitin-Chatelin and S. Gratton. On the condition number associated with the polar factorization of a rectangular matrix. Technical Report TR_PA_98_25, CERFACS, 1998.

[9] F. Chaitin-Chatelin and S. Gratton. A note on the convergence of Gauss-Newton algorithm. Technical Report TR_PA_98_27, CERFACS, 1998.

[10] I. S. Duff. Direct methods. Technical Report TR_PA_98_28, CERFACS, 1998.

[11] H. Dai. A numerical method for solving inverse eigenvalue problems. Technical Report TR_PA_98_33, CERFACS, 1998.

[12] H. Dai. Some developments on parameterized inverse eigenvalue problems. Technical Report TR_PA_98_34, CERFACS, 1998.

[13] H. Dai. Block bidiagonalization methods for solving nonsymmetric linear systems with multiple right-hand sides. Technical Report TR_PA_98_35, CERFACS, 1998.

Delft University of Technology

Faculty of Technical Mathematics and
Informatics
Julianalaan 132
2628 BL DELFT
The Netherlands
phone +31152784568

URL:
http://www.twi.tudelft.nl/Publications/

[1] Ji-Ming Peng. A smoothing function and its applications. Technical Report 98-03, Delft University of Technology, 1998.

[2] Jiming Peng, Cornelis Roos, and Tamas Terlaky. New complexity analysis of the primal-dual Newton method for linear optimization. Technical Report 98-05, Delft University of Technology, 1998.

[3] Freerk A. Lootsma. The assignment of grades in multi-criteria decision analysis. Technical Report 98-06, Delft University of Technology, 1998.

[4] J. Frank and C. Vuik. Parallel implementation of a multiblock method. Technical Report 98-11, Delft University of Technology, 1998.

[5] C. Vuik, A. Segal, and J. A. Meijerink. An efficient preconditioned CG method for the solution of layered problems with extreme contrasts in the coefficients. Technical Report 98-20, Delft University of Technology, 1998.

[6] H. Bavinck and J. Koekoek. Differential operators having symmetric orthogonal polynomials as eigenfunctions. Technical Report 98-23, Delft University of Technology, 1998.

Eidgenössiche Technische Hochschule

Seminar für Angewandte Mathematik
ETH-Zentrum
CH-8092 Zürich
URL: *ftp://ftp.sam.math.ethz.ch/pub/sam-reports/*

[1] N. P. Hancke, J. M. Melenk, and C. Schwab. A spectral Galerkin method for hydrodynamic stability problems. Technical Report 98-06, Eidgenössiche Technische Hochschule, 1998.

[2] C. Lage. Concept oriented design of numerical software. Technical Report 98-07, Eidgenössiche Technische Hochschule, 1998.

Institute for Computer Applications in Science and Engineering (ICASE)

NASA Langley Research Center
Hampton, VA 23665
Attn: Ms. Barbara Kraft
URL: *http://www.icase.edu/docs/library/reports/rdp/*

[1] Claudio Canuto, Anita Tabacco, and Karsten Urban. The wavelet element method part II: Realization and additional features in 2D and 3D. Technical Report NASA/CR-1998-207637 ICASE Report No. 98-17, Institute for Computer Applications in Science and Engineering, April 1998.

[2] Jan Nordstrom and Mark H. Carpenter. Boundary and interface conditions for high order finite difference methods applied to the Euler and Navier-Stokes equations. Technical Report NASA/CR-1998-207681 ICASE Report No. 98-19, Institute for Computer Applications in Science and Engineering, May 1998.

[3] Dimitri J. Mavriplis. Three-dimensional high-lift analysis using a parallel unstructured multigrid solver. Technical Report NASA/CR-1998-207682 ICASE Report No. 98-20, Institute for Computer Applications in Science and Engineering, May 1998.

[4] Stephen Guattery and Gary L. Miller. Graph embeddings and Laplacian eigenvalues. Technical Report NASA/CR-1998-208425 ICASE Report No. 98-23, Institute for Computer Applications in Science and Engineering, June 1998.

[5] Stephen Guattery. Graph embeddings, symmetric real matrices, and generalized inverses. Technical Report NASA/CR-1998-208462 ICASE Report No. 98-34, Institute for Computer Applications in Science and Engineering, August 1998.

University of Manchester (UMIST)

Department of Mathematics
University of Manchester
Oxford Road
Manchester, M13 9PL, England

Attn:
Technical Report Secretary: 061 275 5800
email: francesca@ma.man.ac.uk
URL: *ftp://ftp.ma.man.ac.uk/pub/narep/*

[1] David Kay and David Silvester. A-posteriori error estimation for stabilised mixed approximations of the Stokes equations. Numerical Analysis Report No. 316, University of Manchester (UMIST), December 1997.

[2] Françoise Tisseur and Jack J. Dongarra. Parallelizing the divide and conquer algorithm for the symmetric tridiagonal eigenvalue problem on distributed memory architectures. Numerical Analysis Report No. 317, University of Manchester (UMIST), March 1998.

[3] Anthony J. Cox and Nicholas J. Higham. Row-wise backward stable elimination methods for the equality constrained least squares problem. Numerical Analysis Report No. 319, University of Manchester (UMIST), March 1998.

[4] Anthony J. Cox and Nicholas J. Higham. Backward error bounds for constrained least squares problems. Numerical Analysis Report No. 321, University of Manchester (UMIST), April 1998.

[5] Neville J. Ford and Volker Wulf. The use of boundary locus plots in the identification of bifurcation points in numerical approximation of delay differential equations. Numerical Analysis Report No. 322, University of Manchester (UMIST), March 1998.

[6] Neville J. Ford and Volker Wulf. Numerical Hopf bifurcation for the delay logistic equation. Numerical Analysis Report No. 323, University of Manchester (UMIST), April 1998.

[7] Sheung Hun Cheng and Nicholas J. Higham. The nearest definite pair for the Hermitian generalized eigenvalue problem. Numerical Analysis Report No. 325, University of Manchester (UMIST), May 1998.

Minnesota Supercomputer Institute

University of Minnesota
1200 Washington Avenue South
Minneapolis, MN 55415
or fax (612)624-8861
URL: *http://www.msi.umn.edu/Reports/reporthead.html*

[1] A. A. Johnson and T. E. Tezduyar. Parallel computing methods for large-scale 3D simulation of fluid-object interactions. Research Report UMSI 98/23, University of Minnesota Supercomputing Institute, February 1998.

[2] B. Cockburn, P. A. Gremaud, and X. Yang. A priori error estimates for numerical methods for scalar conservation laws. Part III: Multidimensional flux-splitting monotone schemes on non-cartesian grids. Research Report UMSI 98/28, University of Minnesota Supercomputing Institute, February 1998.

[3] I. Gyler, M. Behr, and T. E. Tezduyar. Parallel finite element computation of free-surface flows. Research Report UMSI 98/41, University of Minnesota Supercomputing Institute, March 1998.

[4] A. A. Johnson and T. E. Tezduyar. Direct numerical simulation of fluid-particle flow with 1000 spheres. Research Report UMSI 98/47, University of Minnesota Supercomputing Institute, March 1998.

[5] S. Mittal, S. K. Aliabadi, and T. E. Tezduyar. Parallel computation of unsteady compressible flows with the EDICT. Research Report UMSI 98/48, University of Minnesota Supercomputing Institute, March 1998.

[6] A. A. Johnson and T. E. Tezduyar. Advanced mesh generation and update methods for 3D flow simulations. Research Report UMSI 98/53, University of Minnesota Supercomputing Institute, March 1998.

[7] V. F. de Almeida and L. E. Scriven. The domain deformation method for analysis of two-phase flows. Research Report UMSI 98/58, University of Minnesota Supercomputing Institute, April 1998.

[8] T. E. Tezduyar and S. K. Aliabadi. EDICT for computation of unsteady flows with interfaces. Research Report UMSI 98/68, University of Minnesota Supercomputing Institute, April 1998.

[9] Y. Osawa, V. Kalro, and T. E. Tezduyar. A multi-domain computational method for wake flows. Research Report UMSI 98/69, University of Minnesota Supercomputing Institute, April 1998.

[10] S. K. Aliabadi and T. E. Tezduyar. 3D simulations of two-fluid and free-surface flows with the stabilized-finite-element/interface-capturing method. Research Report UMSI 98/71, University of Minnesota Supercomputing Institute, April 1998.

[11] A. A. Johnson and T. E. Tezduyar. Mesh generation and update methods in 3D flow simulation and modeling. Research Report UMSI 98/72, University of Minnesota Supercomputing Institute, April 1998.

[12] W. Sturek, D. M. Pressel, and M. Behr. Comments on CFD code performance on scaleable architectures. Research Report UMSI 98/73, University of Minnesota Supercomputing Institute, April 1998.

[13] S. K. Aliabadi and T. E. Tezduyar. Stabilized-finite-element/interface-capturing technique for parallel computation of unsteady flows with interfaces. Research Report UMSI 98/85, University of Minnesota Supercomputing Institute, May 1998.

[14] Y. Osawa, V. Kalro, and T. E. Tezduyar. Multi-domain parallel computation of wake flows. Research Report UMSI 98/90, University of Minnesota Supercomputing Institute, May 1998.

[15] Y. Saad, M. Yeung, J. Erhel, and F. Guyomarc'h. A deflated version of the conjugate gradient algorithm. Research Report UMSI 98/97, University of Minnesota Supercomputing Institute, May 1998.

[16] Y. Saad and J. Zhang. Enhanced multi-level block ILU preconditioning strategies for general sparse linear systems. Research Report UMSI 98/98, University of Minnesota Supercomputing Institute, May 1998.

[17] W. Alda, W. Dzwinel, J. Kitowski, J. Moscinski, M. Pogoda, and D. A. Yuen. Complex fluid-dynamical phenomena modeled by large-scale molecular dynamics simulations. Research Report UMSI 98/104, University of Minnesota Supercomputing Institute, June 1998.

[18] R. Glowinski, T. W. Pan, T. I. Hesla, and D. D. Joseph. A distributed lagrange multiplier/fictitious domain method for particulate flows. Research Report UMSI 98/114, University of Minnesota Supercomputing Institute, June 1998.

[19] Y. Saad and J. Zhang. BILUTM: A domain-based multi-level block ILUT preconditioner for general sparse matrices. Research Report UMSI 98/118, University of Minnesota Supercomputing Institute, June 1998.

Oxford

Numerical Analysis Group
Oxford University Computing Laboratory
Wolfson Building
Parks Road
Oxford OX1 3QD, England
0865 273885
email: Bette.Byrne@comlab.ox.ac.uk
URL: *http://www.comlab.ox.ac.uk/oucl/publications/natr.html*

[1] Peter Monk and Endre Suli. The adaptive computation of far-field patterns by a posteriori estimation of linear functionals. Technical Report NA-98/02, Oxford, 1998.

[2] Maria Elena Schonbek and Endre Suli. Decay of the total variation and Hardy norms of solutions to parabolic conservation laws. Technical Report NA-98/03, Oxford, 1998.

[3] F.S. Chaudhry and D. C. Handscomb. Smooth motion of a rigid triangle in R2. Technical Report NA-98/04, Oxford, 1998.

[4] F. S. Chaudhry and D. C. Handscomb. Smooth numerical representation of the motion of two linked rigid rods in R2 and R3. Technical Report NA-98/05, Oxford, 1998.

[5] Franco Brezzi, T. J. R. Hughes, Donatella Marini, Alessandro Russo, and Endre Suli. A priori error analysis of a finite element method with residual-free bubbles for advection dominated equations. Technical Report NA-98/07, Oxford, 1998.

[6] Lloyd N. Trefethen and Tobin A. Driscoll. Schwarz-Christoffel mapping in the computer era. Technical Report NA-98/08, Oxford, 1998.

Rutherford Appleton Laboratory

Atlas Centre
Attn. L. Miles

Rutherford Appleton Laboratory
Didcot
Oxon OX11 0QX
England: 0235 445790
URL: *http://www.rl.ac.uk/departments/ccd/numerical/reports/reports.html*

[1] J. A. Scott. On ordering elements for a frontal solver. Technical Report RAL-TR-98-031, Rutherford Appleton Laboratory, 1998.

[2] P. Amestoy, I. Duff, J.-Y. L'Excellent, and P. Plechac. PARASOL an integrated programming environment for parallel sparse matrix solvers. Technical Report RAL-TR-98-039, Rutherford Appleton Laboratory, 1998.

[3] P. Amestoy, I. Duff, and J.-Y. L'Excellent. Multifrontal parallel distributed symmetric and unsymmetric solvers. Technical Report RAL-TR-1998-051, Rutherford Appleton Laboratory, 1998.

[4] I. S. Duff and H. A. van der Vorst. Preconditioning and parallel preconditioning. Technical Report RAL-TR-1998-052, Rutherford Appleton Laboratory, 1998.

[5] I. S. Duff. Direct methods. Technical Report RAL-TR-1998-054, Rutherford Appleton Laboratory, 1998.

[6] J. A. Scott. A new row ordering strategy for frontal solvers. Technical Report RAL-TR-1998-056, Rutherford Appleton Laboratory, 1998.

Stanford University

SCCM Program, MC 9025
Stanford University
Gates Building 2B
Stanford, CA 94305-9025, USA
Phone: (415) 723-3125
Fax: (415) 723-2411
e-mail: info@sccm.stanford.edu
URL: *http://www-sccm.stanford.edu/tech_reports.html*

[1] A. Melman. Bounds on the extreme eigenvalues of real symmetric Toeplitz matrices. Technical Report SCCM-98-07, Stanford University, 1998.

[2] T. Shardlow and A. M. Stuart. A perturbation theory for ergodic properties of Markov chains. Technical Report SCCM-98-08, Stanford University, 1998.

[3] D. Calvetti, G. H. Golub, W. B. Gragg, and L. Reichel. Computation of Gauss-Kronrod quadrature rules. Technical Report SCCM-98-09, Stanford University, 1998.

[4] G. H. Golub, P. C. Hansen, and D. P. O'Leary. Tikhonov regularization and total least squares. Technical Report SCCM-98-10, Stanford University, 1998.

[5] A. Melman. Extreme eigenvalues of real symmetric Toeplitz matrices. Technical Report SCCM-98-11, Stanford University, 1998.

[6] Zhaojun Bai and Gene H. Golub. Some unusual matrix eigenvalue problems. Technical Report SCCM-98-12, Stanford University, 1998.

[7] Michael Drexler. Approximate analytic matrix factorisations as preconditioners for Newton's method. Technical Report SCCM-98-13, Stanford University, 1998.

[8] H. Lamba. Dynamical systems and adaptive timestepping ODE solvers. Technical Report SCCM-98-14, Stanford University, 1998.

[9] Martin J. Gander and Gene H. Golub. Minimizing norms to solve the frequency assignment problem. Technical Report SCCM-98-15, Stanford University, 1998.

[10] Gene H. Golub and Denis Vanderstraeten. On the preconditioning of matrices with a dominant skew-symmetric component. Technical Report SCCM-98-16, Stanford University, 1998.

[11] A. M. Stuart and J. O. Warren. Analysis and experiments for a computational model of a heat bath. Technical Report SCCM-98-17, Stanford University, 1998.

University of Strathclyde

Department of Mathematics
Livingstone Tower
26 Richmond Street
Glasgow G1 1XH: 041 552 4400
URL:
http://www.maths.strath.ac.uk/reports/

[1] M. F. Tome, A. Castelo, J. Murakami, J. A. Cuminato, R. Minghim, M. C. F. Oliveira, and S. McKee. Numerical simulation of axisymmetric free surface flows. Technical Report 1998/9, University of Strathclyde, 1998.

[2] A. Castelo, M. F. Tome, S. McKee, and J. A. Cuminato. Freeflow: An integrated simulation system for three-dimensional free surface flows. Technical Report 1998/19, University of Strathclyde, 1998.

[3] A. Ramage. A note on parameter choice and iterative convergence for stabilised discretisations of advection-diffusion problems in three dimensions. Technical Report 1998/32, University of Strathclyde, 1998.