
VOLUME 63 NUMBER 208



OCTOBER 1994

MATHEMATICS OF COMPUTATION

AMERICAN MATHEMATICAL SOCIETY

EDITED BY

James H. Bramble
Susanne C. Brenner
E. W. Cheney
James W. Demmel
Walter Gautschi, *Managing Editor*
Eugene Isaacson
James N. Lyness
Harald Niederreiter
Jorge J. Nocedal
Syvert P. Nørsett
Andrew M. Odlyzko
Frank W. J. Olver
John E. Osborn
Stanley Osher
Carl Pomerance
René Schoof
L. Ridgway Scott
Daniel Shanks
Chi-Wang Shu
Frank Stenger
Hans J. Stetter
G. W. Stewart
Nico M. Temme
Vidar Thomée
Lars B. Wahlbin
Hugh C. Williams
John W. Wrench, Jr.

PROVIDENCE, RHODE ISLAND USA

ISSN 0025-5718

Mathematics of Computation

This journal publishes research articles in computational mathematics. Areas covered include numerical analysis, the application of computational methods, algorithms for advanced computer architectures, computational number theory and algebra, and related fields. Table errata and reviews of books in areas related to computational mathematics are also included.

Subscription information. *Mathematics of Computation* is published quarterly. Subscription prices for Volumes 62 and 63 (1994) are \$262 list; \$210 institutional member; \$170 member of CBMS organizations; \$157 individual AMS member. A late charge of 10% of the subscription price will be imposed upon orders received from nonmember institutions and organizations after January 1 of the subscription year. Subscribers outside the United States and India must pay a postage surcharge of \$9; subscribers in India must pay a postage surcharge of \$18. Expedited delivery to destinations in North America \$13; elsewhere \$40.

Back number information. For back issues see the *AMS Catalog of Publications*.

Subscriptions and orders should be addressed to the American Mathematical Society, P. O. Box 5904, Boston, MA 02206-5904. *All orders must be accompanied by payment.* Other correspondence should be addressed to P. O. Box 6248, Providence, RI 02940-6248.

Unpublished Mathematical Tables. The editorial office of the journal maintains a repository of Unpublished Mathematical Tables (UMT). When a table is deposited in the UMT repository a brief summary of its contents is published in the section *Reviews and Descriptions of Tables and Books*. Upon request, the chairman of the editorial committee will supply copies of any table for a nominal cost per page. All tables and correspondence concerning the UMT should be sent to Walter Gautschi, Chairman, Editorial Committee, Mathematics of Computation, Department of Computer Sciences, Purdue University, West Lafayette, IN 47907.

Copying and reprinting. Individual readers of this publication, and nonprofit libraries acting for them, are permitted to make fair use of the material, such as to copy an article for use in teaching or research. Permission is granted to quote brief passages from this publication in reviews provided the customary acknowledgment of the source is given.

Republication, systematic copying, or multiple reproduction of any material in this publication (including abstracts) is permitted only under license from the American Mathematical Society. Requests for such permission should be addressed to the Manager of Editorial Services, American Mathematical Society, P. O. Box 6248, Providence, RI 02940-6248. Requests can also be made by e-mail to reprint-permission@math.ams.org.

The appearance of the code on the first page of an article in this journal indicates the copyright owner's consent for copying beyond that permitted by Sections 107 or 108 of the U.S. Copyright Law, provided that the fee of \$1.00 plus \$.25 per page for each copy be paid directly to the Copyright Clearance Center, Inc., 222 Rosewood Drive, Danvers, MA 01923. This consent does not extend to other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale.

Mathematics of Computation is published quarterly by the American Mathematical Society at 201 Charles Street, Providence, RI 02904-2213. Second-class postage is paid at Providence, Rhode Island. Postmaster: Send address changes to Mathematics of Computation, American Mathematical Society, P. O. Box 6248, Providence, RI 02940-6248.

© Copyright 1994 by the American Mathematical Society. All rights reserved.

Printed in the United States of America.

⊗ The paper used in this book is acid-free and falls within the guidelines established to ensure permanence and durability.

♻ Printed on recycled paper.

This publication was typeset using AMS-TEX ,
the American Mathematical Society's $\text{T}_{\text{E}}\text{X}$ macro system.

10 9 8 7 6 5 4 3 2 1 99 98 97 96 95 94

NOTICE TO SUBSCRIBERS

Starting with the 1995 subscription year, *Mathematics of Computation* will change to an annual volume numbering system. The number of issues per year will not change, but they will all be contained in one volume. The 1995 subscription for *Mathematics of Computation* will consist of Vol. 64, Nos. 209–212 instead of Vol. 64, Nos. 209 and 210—Vol. 65, Nos. 211 and 212.

INDEXES TO VOLUMES 62 AND 63

AUTHOR INDEX

<i>Author</i>	<i>Title</i>	<i>Vol.</i>	<i>Page</i>
ABERTH, OLIVER	Computation of topological degree using interval arithmetic, and applications	62	171
AMODIO, PIERLUIGI & MAZZIA, FRANCESCA	Backward error analysis of cyclic reduction for the solution of tridiagonal systems	62	601
ANDERSON, MALCOLM R.	<i>See:</i> EDMONDSON, GENET M., SEBERRY, JENNIFER & ANDERSON, MALCOLM R.	62	351
ARORA, K.	<i>See:</i> LAVOIE, J. L., GRONDIN, F., RATHIE, A. K. & ARORA, K.	62	267
BAI, ZHAOJUN	Error analysis of the Lanczos algorithm for the nonsymmetric eigenvalue problem	62	209
BAILEY, RALPH W.	Polar generation of random variates with the t -distribution	62	779
BAINES, M. J.	Algorithms for optimal discontinuous piecewise linear and constant L_2 fits to continuous functions with adjustable nodes in one and two dimensions	62	645
BARTOLOMEO, J. & HE, MATTHEW	On Faber polynomials generated by an m -star	62	277
BAUM, ULRICH & CLAUSEN, MICHAEL	Computing irreducible representations of super-solvable groups	63	351
BENDALI, A. & SOULAH, M.	Consistency estimates for a double-layer potential and application to the numerical analysis of the boundary-element approximation of acoustic scattering by a penetrable object	62	65
BERNARD, PIERRE, TALAY, DENIS & TUBARO, LUCIANO	Rate of convergence of a stochastic particle method for the Kolmogorov equation with variable coefficients	63	555
BOCHEV, PAVEL B. & GUNZBURGER, MAX D.	Analysis of least squares finite element methods for the Stokes equations	63	479
BOUKADIDA, T. & LEROUX, A. Y.	A new version of the two-dimensional Lax-Friedrichs scheme	63	541
BRAMBLE, JAMES H. & KING, J. THOMAS	A robust finite element method for nonhomogeneous Dirichlet problems in domains with curved boundaries	63	1
BRAMBLE, JAMES H., LEYK, ZBIGNIEW & PASCIAK, JOSEPH E.	The analysis of multigrid algorithms for pseudo-differential operators of order minus one	63	461
BRENNER, SUSANNE C.	A nonconforming mixed multigrid method for the pure traction problem in planar linear elasticity	63	435
BRENT, RICHARD P.	On the periods of generalized Fibonacci recurrences	63	389
BROWKIN, J. & BRZEZIŃSKI, J.	Some remarks on the abc -conjecture	62	931
BRUNNER, HERMANN	Iterated collocation methods for Volterra integral equations with delay arguments	62	581

AUTHOR INDEX

<i>Author</i>	<i>Title</i>	<i>Vol.</i>	<i>Page</i>
BRUNO, OSCAR P. & REITICH, FERNANDO	Approximation of analytic functions: a method of enhanced convergence	63	195
BRZEZIŃSKI, J.	<i>See:</i> BROWKIN, J. & BRZEZIŃSKI, J.	62	931
BUCHMANN, J., POHST, M. & v. SCHMETTOW, J. GRAF	On unit groups and class groups of quartic fields of signature (2, 1)	62	387
BUTLER, GREG	An inductive schema for computing conjugacy classes in permutation groups	62	363
CASPERSON, DAVID & MCKAY, JOHN	Symmetric functions, m -sets, and Galois groups	63	749
CHAMBERS, LL. G.	A quick way of obtaining an approximate solution to a Sturm-Liouville problem	62	577
CHANG, CHING LUNG	An error estimate of the least squares finite ele- ment method for the Stokes problem in three dimensions	63	41
CHEN, PENGYUAN	Approximate zeros of quadratically convergent al- gorithms	63	247
CHUI, C. K., LI, XIN & MHASKAR, H. N.	Neural networks for localized approximation . .	63	607
CIKÁNEK, PETR	A special extension of Wieferich's criterion . . .	62	923
CLAUSEN, MICHAEL	<i>See:</i> BAUM, ULRICH & CLAUSEN, MICHAEL . . .	63	351
COCKBURN, BERNARDO, COQUEL, FRÉDÉRIC & LEFLOCH, PHILIPPE	An error estimate for finite volume methods for multidimensional conservation laws	63	77
COCKBURN, BERNARDO & TRIANDAF, IOANA	Error estimates for a finite element method for the drift-diffusion semiconductor device equa- tions: the zero diffusion case	63	51
COHEN, HENRI & MARTINET, JACQUES	Heuristics on class groups: some good primes are not too good	63	329
COOLS, R.	<i>See:</i> VERLINDEN, P. & COOLS, R.	63	717
COPPERSMITH, DON	Solving homogeneous linear equations over $GF(2)$ via block Wiedemann algorithm	62	333
COQUEL, FRÉDÉRIC	<i>See:</i> COCKBURN, BERNARDO, COQUEL, FRÉDÉRIC & LEFLOCH, PHILIPPE	63	77
COUTURE, RAYMOND & L'ECUYER, PIERRE	On the lattice structure of certain linear congru- ential sequences related to AWC/SWB genera- tors	62	799
CRANDALL, RICHARD & FAGIN, BARRY	Discrete weighted transforms and large-integer arithmetic	62	305
CREMONA, J. E. & WHITLEY, E.	Periods of cusp forms and elliptic curves over imaginary quadratic fields	62	407
CROUZEIX, M., LARSSON, S. & THOMÉE, V.	Resolvent estimates for elliptic finite element op- erators in one dimension	63	121
DIAZ Y DIAZ, F.	<i>See:</i> SCHWARZ, A., POHST, M. & DIAZ Y DIAZ, F.	63	361
DREZNER, ZVI	Computation of the trivariate normal integral . .	62	289
DUIJVESTIJN, A. J. W.	Simple perfect squared squares and 2×1 squared rectangles of order 25	62	325
DUMMIT, D. S. & HAYES, DAVID	Rank-one Drinfeld modules on elliptic curves . .	62	875

AUTHOR INDEX

<i>Author</i>	<i>Title</i>	<i>Vol.</i>	<i>Page</i>
EDMONDSON, GENET M., SEBERRY, JENNIFER & ANDERSON, MALCOLM R.	On the existence of Turyn sequences of length less than 43	62	351
EHRICH, SVEN	Error bounds for Gauss-Kronrod quadrature formulae	62	295
EICHENAUER-HERRMANN, JÜRGEN	Improved lower bounds for the discrepancy of inverse congruential pseudorandom numbers	62	783
EICHENAUER-HERRMANN, JÜRGEN	On generalized inverse congruential pseudorandom numbers	63	293
EICHENAUER-HERRMANN, JÜRGEN & ICKSTADT, KATJA	Explicit inverse congruential pseudorandom numbers with power of two modulus	62	787
ERNVALL, R. & METSÄNKYLÄ, T.	Computation of the zeros of p -adic L -functions. II	62	391
FAGIN, BARRY	<i>See:</i> CRANDALL, RICHARD & FAGIN, BARRY	62	305
FALK, RICHARD S. & OSBORN, JOHN E.	Remarks on mixed finite element methods for problems with rough coefficients	62	1
FARIDANI, ADEL	A generalized sampling theorem for locally compact abelian groups	63	307
FÖRSTER, KLAUS-JÜRGEN	On a theorem of C. Posse concerning Gaussian quadrature of Chebyshev type	62	719
FREY, GERHARD & RÜCK, HANS-GEORG	A remark concerning m -divisibility and the discrete logarithm in the divisor class group of curves	62	865
GE, GUOQIANG	Recognizing units in number fields	63	377
GEORG, KURT & TAUSCH, JOHANNES	Some error estimates for the numerical approximation of surface integrals	62	755
GÖTTFFERT, RAINER	An acceleration of the Niederreiter factorization algorithm in characteristic 2	62	831
GRINFELD, MICHAEL	<i>See:</i> TOURIGNY, YVES & GRINFELD, MICHAEL	62	155
GRONDIN, F.	<i>See:</i> LAVOIE, J. L., GRONDIN, F., RATHIE, A. K. & ARORA, K.	62	267
GROSSE, ERIC & HOBBY, JOHN D.	Improved rounding for spline coefficients and knots	63	175
GUNZBURGER, MAX D.	<i>See:</i> BOCHEV, PAVEL B. & GUNZBURGER, MAX D.	63	479
HA-DUONG, T. & JOLY, P.	On the stability analysis of boundary conditions for the wave equation by energy methods. Part I: The homogeneous case	62	539
HAGSTROM, THOMAS, HARIHARAN, S. I. & MACCAMY, R. C.	On the accurate long-time solution of the wave equation in exterior domains: Asymptotic expansions and corrected boundary conditions	63	507
HAMINA, MARTTI & SARANEN, JUKKA	On the spline collocation method for the single-layer heat operator equation	62	41
HARIHARAN, S. I.	<i>See:</i> HAGSTROM, THOMAS, HARIHARAN, S. I. & MACCAMY, R. C.	63	507
HAYES, DAVID	<i>See:</i> DUMMIT, D. S. & HAYES, DAVID	62	875
HE, MATTHEW	<i>See:</i> BARTOLOMEO, J. & HE, MATTHEW	62	277
HISS, GERHARD	The 3-modular characters of the Rudvalis sporadic simple group and its covering group	62	851
HOBBY, JOHN D.	<i>See:</i> GROSSE, ERIC & HOBBY, JOHN D.	63	175

AUTHOR INDEX

<i>Author</i>	<i>Title</i>	<i>Vol.</i>	<i>Page</i>
HOU, THOMAS Y. & LE FLOCH, PHILIPPE G.	Why nonconservative schemes converge to wrong solutions: error analysis	62	497
ICKSTADT, KATJA	<i>See:</i> EICHENAUER-HERRMANN, JÜRGEN & ICKSTADT, KATJA	62	787
JIANG, GUANGSHAN & SHU, CHI-WANG	On a cell entropy inequality for discontinuous Galerkin methods	62	531
JOE, BARRY	<i>See:</i> LIU, ANWEI & JOE, BARRY	63	141
JOLY, P.	<i>See:</i> HA-DUONG, T. & JOLY, P.	62	539
JÚDICE, JOAQUIM J.	<i>See:</i> PORTUGAL, LUÍS F., JÚDICE, JOAQUIM J. & VICENTE, LUÍS N.	63	625
KANEKO, HIDEAKI & XU, YUESHENG	Gauss-type quadratures for weakly singular integrals and their application to Fredholm integral equations of the second kind	62	739
KHOBALATTE, BRAHIM & PERTHAME, BENOIT	Maximum principle on the entropy and second-order kinetic schemes	62	119
KING, J. THOMAS	<i>See:</i> BRAMBLE, JAMES H. & KING, J. THOMAS	63	1
LAI, MING-JUN	On the computation of Battle-Lemarié's wavelets	63	689
LARCHER, GERHARD, SCHMID, WOLFGANG CH. & WOLF, REINHARD	Representation of functions as Walsh series to different bases and an application to the numerical integration of high-dimensional Walsh series	63	701
LARCHER, GERHARD & TRAUNFELLNER, CLAUDIA	On the numerical integration of Walsh series by number-theoretic methods	63	277
LARSSON, S.	<i>See:</i> CROUZEIX, M., LARSSON, S. & THOMÉE, V.	63	121
LAVOIE, J. L., GRONDIN, F., RATHIE, A. K. & ARORA, K.	Generalizations of Dixon's theorem on the sum of a ${}_3F_2$	62	267
LEBAUD, M. P.	Error estimate in an isoparametric finite element eigenvalue problem	63	19
L'ECUYER, PIERRE	<i>See:</i> COUTURE, RAYMOND & L'ECUYER, PIERRE	62	799
LE FLOCH, PHILIPPE G.	<i>See:</i> HOU, THOMAS Y. & LE FLOCH, PHILIPPE G.	62	497
LEFLOCH, PHILIPPE	<i>See:</i> COCKBURN, BERNARDO, COQUEL, FRÉDÉRIC & LEFLOCH, PHILIPPE	63	77
LEIMKUHLER, B. & REICH, S.	Symplectic integration of constrained Hamiltonian systems	63	589
LEMPKEN, W. & STASZEWSKI, R.	The structure of the projective indecomposable modules of $\hat{3}M_{22}$ in characteristic 2	62	841
LENSTRA, A. K. & MANASSE, M. S.	Factoring with two large primes	63	785
LEROUX, A. Y.	<i>See:</i> BOUKADIDA, T. & LEROUX, A. Y.	63	541
LEWANOWICZ, STANISLAW	A simple approach to the summation of certain slowly convergent series	63	741
LEYK, ZBIGNIEW	<i>See:</i> BRAMBLE, JAMES H., LEYK, ZBIGNIEW & PASCIAK, JOSEPH E.	63	461
LI, REN-CANG	On perturbations of matrix pencils with real spectra	62	231
LI, SHOUFU	<i>B</i> -convergence properties of multistep Runge-Kutta methods	62	565
LI, XIN	<i>See:</i> CHUI, C. K., LI, XIN & MHASKAR, H. N.	63	607
LIU, ANWEI & JOE, BARRY	On the shape of tetrahedra from bisection	63	141

AUTHOR INDEX

<i>Author</i>	<i>Title</i>	<i>Vol.</i>	<i>Page</i>
LIU, JINN-LIANG	A finite difference method for symmetric positive differential equations	62	105
LORENTZEN, LISA	Divergence of continued fractions related to hypergeometric series	62	671
LYNESS, J. N.	Quadrature over curved surfaces by extrapolation	63	727
MACCAMY, R. C.	<i>See:</i> HAGSTROM, THOMAS, HARIHARAN, S. I. & MACCAMY, R. C.	63	507
MANASSE, M. S.	<i>See:</i> LENSTRA, A. K. & MANASSE, M. S.	63	785
MARTINET, JACQUES	<i>See:</i> COHEN, HENRI & MARTINET, JACQUES . . .	63	329
MASTROIANNI, GIUSEPPE & MONEGATO, GIOVANNI	Polynomial approximations of functions with endpoint singularities and product integration formulas	62	725
MAZZIA, FRANCESCA	<i>See:</i> AMODIO, PIERLUIGI & MAZZIA, FRANCESCA	62	601
McCORMICK, KENT & WELLS, RAYMOND O., JR.	Wavelet calculus and finite difference operators .	63	155
McKAY, JOHN	<i>See:</i> CASPERSON, DAVID & McKAY, JOHN	63	749
McKEE, JAMES	Computing division polynomials	63	767
McLEAN, W.	Numerical evaluation of some trigonometric series	63	271
METSÄNKYLÄ, T.	<i>See:</i> ERNVALL, R. & METSÄNKYLÄ, T.	62	391
MHASKAR, H. N.	<i>See:</i> CHUI, C. K., LI, XIN & MHASKAR, H. N. . .	63	607
MOLLIN, R. A. & WILLIAMS, H. C.	Quadratic residue covers for certain real quadratic fields	62	885
MONEGATO, GIOVANNI	<i>See:</i> MASTROIANNI, GIUSEPPE & MONEGATO, GIOVANNI	62	725
MONEGATO, GIOVANNI	The numerical evaluation of a 2-D Cauchy principal value integral arising in boundary integral equation methods	62	765
MOREE, P., TE RIELE, H.J.J. & URBANOWICZ, J.	Divisibility properties of integers x, k satisfying $1^k + \dots + (x-1)^k = x^k$	63	799
MORGAN, ILENE H. & MULLEN, GARY L.	Primitive normal polynomials over finite fields .	63	759
MULLEN, GARY L.	<i>See:</i> MORGAN, ILENE H. & MULLEN, GARY L. .	63	759
NARCOWICH, FRANCIS J. & WARD, JOSEPH D.	Generalized Hermite interpolation via matrix-valued conditionally positive definite functions	63	661
NEUMAN, EDWARD	A new formula for box splines on three-directional meshes	62	227
NIEDERREITER, HARALD	Factoring polynomials over finite fields using differential equations and normal bases	62	819
OSBORN, JOHN E.	<i>See:</i> FALK, RICHARD S. & OSBORN, JOHN E. . . .	62	1
PALENCIA, C.	On the stability of variable stepsize rational approximations of holomorphic semigroups . .	62	93
PASCIAK, JOSEPH E.	<i>See:</i> BRAMBLE, JAMES H., LEYK, ZBIGNIEW & PASCIAK, JOSEPH E.	63	461
PERTHAME, BENOIT	<i>See:</i> KHOBALATTE, BRAHIM & PERTHAME, BENOIT	62	119
PLONKA, GERLIND & TASCHE, MANFRED	Cardinal Hermite spline interpolation with shifted nodes	63	645

AUTHOR INDEX

<i>Author</i>	<i>Title</i>	<i>Vol.</i>	<i>Page</i>
POHST, M.	<i>See:</i> BUCHMANN, J., POHST, M. & v. SCHMETTOW, J. GRAF	62	387
POHST, M.	<i>See:</i> SCHWARZ, A., POHST, M. & DIAZ Y DIAZ, F.	63	361
PORTUGAL, LUÍS F., JÚDICE, JOAQUIM J. & VICENTE, LUÍS N.	A comparison of block pivoting and interior-point algorithms for linear least squares problems with nonnegative variables	63	625
RABIER, PATRICK J. & RHEINBOLDT, WERNER C.	On the computation of impasse points of quasi-linear differential-algebraic equations	62	133
RAHMAN, QAZI IBADUR & SCHMEISSER, GERHARD	A quadrature formula for entire functions of exponential type	63	215
RATHIE, A. K.	<i>See:</i> LAVOIE, J. L., GRONDIN, F., RATHIE, A. K. & ARORA, K.	62	267
REICH, S.	<i>See:</i> LEIMKUHNER, B. & REICH, S.	63	589
REITICH, FERNANDO	<i>See:</i> BRUNO, OSCAR P. & REITICH, FERNANDO	63	195
RHEINBOLDT, WERNER C.	<i>See:</i> RABIER, PATRICK J. & RHEINBOLDT, WERNER C.	62	133
RÜCK, HANS-GEORG	<i>See:</i> FREY, GERHARD & RÜCK, HANS-GEORG	62	865
SARANEN, JUKKA	<i>See:</i> HAMINA, MARTTI & SARANEN, JUKKA	62	41
SCHLAFLY, AARON & WAGON, STAN	Carmichael's conjecture on the Euler function is valid below $10^{10,000,000}$	63	415
SCHMEISSER, GERHARD	<i>See:</i> RAHMAN, QAZI IBADUR & SCHMEISSER, GERHARD	63	215
SCHMID, WOLFGANG CH.	<i>See:</i> LARCHER, GERHARD, SCHMID, WOLFGANG CH. & WOLF, REINHARD	63	701
SCHWARZ, A., POHST, M. & DIAZ Y DIAZ, F.	A table of quintic number fields	63	361
SEBERRY, JENNIFER	<i>See:</i> EDMONDSON, GENET M., SEBERRY, JENNIFER & ANDERSON, MALCOLM R.	62	351
SHENK, N. AL	Uniform error estimates for certain narrow Lagrange finite elements	63	105
SHU, CHI-WANG	<i>See:</i> JIANG, GUANGSHAN & SHU, CHI-WANG	62	531
SOUILAH, M.	<i>See:</i> BENDALI, A. & SOUILAH, M.	62	65
SOUVIGNIER, BERND	Irreducible finite integral matrix groups of degree 8 and 10	63	335
SPIRA, ROBERT	Some zeros of the Titchmarsh counterexample	63	747
STASZEWSKI, R.	<i>See:</i> LEMPKEN, W. & STASZEWSKI, R.	62	841
STEVENHAGEN, PETER	Class number parity for the p th cyclotomic field	63	773
TALAY, DENIS	<i>See:</i> BERNARD, PIERRE, TALAY, DENIS & TUBARO, LUCIANO	63	555
TASCHE, MANFRED	<i>See:</i> PLONKA, GERLIND & TASCHE, MANFRED	63	645
TAUSCH, JOHANNES	<i>See:</i> GEORG, KURT & TAUSCH, JOHANNES	62	755
TE RIELE, H.J.J.	<i>See:</i> MOREE, P., TE RIELE, H.J.J. & URBANOWICZ, J.	63	799
TEZUKA, SHU	The k -dimensional distribution of combined GFSR sequences	62	809
THOMÉE, V.	<i>See:</i> CROUZEIX, M., LARSSON, S. & THOMÉE, V.	63	121
THOMÉE, VIDAR & WAHLBIN, LARS B.	Long-time numerical solution of a parabolic equation with memory	62	477

AUTHOR INDEX

<i>Author</i>	<i>Title</i>	<i>Vol.</i>	<i>Page</i>
TOURIGNY, YVES & GRINFELD, MICHAEL	Deciphering singularities by discrete methods . . .	62	155
TRAUNFELLNER, CLAUDIA	<i>See:</i> LARCHER, GERHARD & TRAUNFELLNER, CLAUDIA	63	277
TRIANDAF, IOANA	<i>See:</i> COCKBURN, BERNARDO & TRIANDAF, IOANA	63	51
TUBARO, LUCIANO	<i>See:</i> BERNARD, PIERRE, TALAY, DENIS & TUBARO, LUCIANO	63	555
URBANOWICZ, J.	<i>See:</i> MOREE, P., TE RIELE, H.J.J. & URBANO- WICZ, J.	63	799
V. SCHMETTOW, J. GRAF	<i>See:</i> BUCHMANN, J., POHST, M. & V. SCHMETTOW, J. GRAF	62	387
VAN TUYL, ANDREW H.	Acceleration of convergence of a family of loga- rithmically convergent sequences	63	229
VERFÜRTH, R.	A posteriori error estimates for nonlinear prob- lems. Finite element discretizations of elliptic equations	62	445
VERLINDEN, P. & COOLS, R.	Proof of a conjectured asymptotic expansion for the approximation of surface integrals	63	717
VICENTE, LUÍS N.	<i>See:</i> PORTUGAL, LUÍS F., JÚDICE, JOAQUIM J. & VICENTE, LUÍS N.	63	625
WAGON, STAN	<i>See:</i> SCHLAFLY, AARON & WAGON, STAN	63	415
WAHLBIN, LARS B.	<i>See:</i> THOMÉE, VIDAR & WAHLBIN, LARS B.	62	477
WARD, JOSEPH D.	<i>See:</i> NARCOWICH, FRANCIS J. & WARD, JOSEPH D.	63	661
WELLS, RAYMOND O., JR.	<i>See:</i> MCCORMICK, KENT & WELLS, RAYMOND O., JR.	63	155
WHITLEY, E.	<i>See:</i> CREMONA, J. E. & WHITLEY, E.	62	407
WILLIAMS, H. C.	<i>See:</i> MOLLIN, R. A. & WILLIAMS, H. C.	62	885
WOLF, REINHARD	<i>See:</i> LARCHER, GERHARD, SCHMID, WOLF- GANG CH. & WOLF, REINHARD	63	701
WOŹNICKI, ZBIGNIEW I.	The Sigma-SOR algorithm and the optimal strat- egy for the utilization of the SOR iterative method	62	619
XU, YUAN	Recurrence formulas for multivariate orthogonal polynomials	62	687
XU, YUAN	A characterization of positive quadrature form- ulae	62	703
XU, YUESHENG	<i>See:</i> KANEKO, HIDEAKI & XU, YUESHENG	62	739
YAMAMURA, KEN	The determination of the imaginary abelian num- ber fields with class number one	62	899
YE, QIANG	A breakdown-free variation of the nonsymmetric Lanczos algorithms	62	179
YIN, GUANGYAN	Sinc-collocation method with orthogonalization for singular Poisson-like problems	62	21
ZHANG, ZHENXIANG	Finding finite B_2 -sequences with larger $m - a_m^{1/2}$	63	403
ŽIVKOVIĆ, MIODRAG	A table of primitive binary polynomials	62	385
ZIVKOVIĆ, MIODRAG	Table of primitive binary polynomials, II	63	301

INDEX OF REVIEWS BY AUTHOR OF WORK REVIEWED

<i>Author</i>	<i>Review Number</i>	<i>Classification</i>	<i>Vol.</i>	<i>Page</i>
ADAMS, E. & KULISCH, U., EDITORS	27	68-02, 68-04, 65G10, 65D10, 65Y10, 65Y15, 68M15, 68Q10	63	819
ALIABADI, M. H. & ROOKE, D. P.	33	73-02, 65-02, 73V10, 73V20, 73M25, 65N30	63	825
ALLGOWER, EUGENE L. & GEORG, KURT, EDITORS	17	65-06, 65Kxx, 65H10	62	943
AMES, WILLIAM F.	7	65-01, 65Mxx, 65Nxx	62	437
ATKINSON, KENDALL	4	65-01	62	434
BANK, RANDOLPH E., EDITOR	8	35-06, 35J60, 65-06, 65K10, 65L05, 65N06	62	438
BREZINSKI, CLAUDE	2	01-00, 11A55, 30B70, 40A15, 41A21, 65B10	62	432
BULIRSCH, R.	18	<i>See:</i> STOER, J. & BULIRSCH, R.	63	421
CHAN, TONY F.	14	<i>See:</i> KEYES, DAVID E., CHAN, TONY F., MEURANT, GÉRARD, SCROGGS, JEFFREY S. & VOIGT, ROBERT G., EDITORS	62	941
CHENEY, E. W., CHUI, C. K. & SCHUMAKER, L. L., EDITORS	6	41-06, 65Dxx	62	436
CHUI, C. K.	6	<i>See:</i> CHENEY, E. W., CHUI, C. K. & SCHUMAKER, L. L., EDITORS	62	436
CORLISS, GEORGE F.	5	<i>See:</i> GRIEWANK, ANDREAS & CORLISS, GEORGE F., EDITORS	62	434
DIERCKX, PAUL	22	41A15, 65-04, 65D10, 65D17	63	427
EVANS, JAMES R. & MINIEKA, EDWARD	24	90B05, 90C35	63	431
FIOROT, J.-C. & JEANNIN, P.	32	65-02, 65D17, 68U05	63	824
FLANNERY, BRIAN P.	3a,b	<i>See:</i> PRESS, WILLIAM H., TEUKOLSKY, SAUL A., VETTERLING, WILLIAM T. & FLANNERY, BRIAN P.	62	433
FUNARO, DANIELE	16	42C10, 65N30, 65N35	62	942
GEORG, KURT	17	<i>See:</i> ALLGOWER, EUGENE L. & GEORG, KURT, EDITORS	62	943
GOLDMAN, RONALD N. & LYCHE, TOM, EDITORS	29	65-02, 65D07, 65D17	63	821
GRANLUND, TORBJÖRN	11	<i>See:</i> RATHBUN, RANDALL L. & GRANLUND, TORBJÖRN	62	441
GRANLUND, TORBJÖRN	12	<i>See:</i> RATHBUN, RANDALL L. & GRANLUND, TORBJÖRN	62	442
GRIEWANK, ANDREAS & CORLISS, GEORGE F., EDITORS	5	68-06, 68Q40, 68U99	62	434
GROETSCH, CHARLES W.	28	00A69, 34A55, 45B05, 65R30	63	820
HACKBUSCH, W. & TROTTEBERG, U., EDITORS	13	65-06, 65N55	62	941
HANSEN, ELDON	23	49M30, 65K10	63	428

INDEX OF REVIEWS BY AUTHOR OF WORK REVIEWED

<i>Author</i>	<i>Review Number</i>	<i>Classification</i>	<i>Vol.</i>	<i>Page</i>
HATCHER, PHILIP J. & QUINN, MICHAEL J., EDITORS	20a	68N15, 68N20, 65Y05	63	424
HEILIÖ, MATTI, EDITOR	9	60-06, 65-06, 68-06, 70-06, 80-06, 82-06, 90-06, 92-06, 93-06, 94- 06	62	439
JEANNIN, P.	32	<i>See: FIOROT, J.-C. & JEANNIN, P.</i>	63	824
KEYES, DAVID E.	34	<i>See: SINCOVEC, RICHARD F., KEYES, DAVID E., LEUZE, MICHAEL R., PETZOLD, LINDA R. & REED, DANIEL A., EDITORS</i>	63	826
KEYES, DAVID E., CHAN, TONY F., MEURANT, GÉRARD, SCROGGS, JEFFREY S. & VOIGT, ROBERT G., EDITORS	14	65-06, 65N22, 65N30	62	941
KOYAMA, KENJI	15	11D25, 11Y50	62	941
KULISCH, U.	27	<i>See: ADAMS, E. & KULISCH, U., EDI- TORS</i>	63	819
LEE, THOMAS, EDITOR	35	68-06, 68Q40	63	827
LEUZE, MICHAEL R.	34	<i>See: SINCOVEC, RICHARD F., KEYES, DAVID E., LEUZE, MICHAEL R., PETZOLD, LINDA R. & REED, DANIEL A., EDITORS</i>	63	826
LORENTZEN, LISA & WADELAND, HAAGON	1	30B70, 40A15, 65D15	62	431
LYCHE, TOM	29	<i>See: GOLDMAN, RONALD N. & LYCHE, TOM, EDITORS</i>	63	821
MCCARTHY, D., EDITOR	36	01A75, 11-03	63	827
MEHROTRA, PIYUSH, SALTZ, JOEL & VOIGT, ROBERT, EDITORS	20b	65-06, 65Y05, 68N99	63	424
MEURANT, GÉRARD	14	<i>See: KEYES, DAVID E., CHAN, TONY F., MEURANT, GÉRARD, SCROGGS, JEFFREY S. & VOIGT, ROBERT G., EDITORS</i>	62	941
MEYER, YVES	30	42-02, 42C99, 94A12	63	822
MINIEKA, EDWARD	24	<i>See: EVANS, JAMES R. & MINIEKA, EDWARD</i>	63	431
NEITTAANMÄKI, P., EDITOR	21	65-06, 65P05, 35R35	63	426
PETZOLD, LINDA R.	34	<i>See: SINCOVEC, RICHARD F., KEYES, DAVID E., LEUZE, MICHAEL R., PETZOLD, LINDA R. & REED, DANIEL A., EDITORS</i>	63	826
PRESS, WILLIAM H., TEUKOLSKY, SAUL A., VETTERLING, WILLIAM T. & FLANNERY, BRIAN P.	3a,b	65-00, 65-04	62	433
QUINN, MICHAEL J.	20a	<i>See: HATCHER, PHILIP J. & QUINN, MICHAEL J.</i>	63	424
RATHBUN, RANDALL L.	10	11D09	62	440
RATHBUN, RANDALL L. & GRANLUND, TORBJÖRN	11	11D09	62	441
RATHBUN, RANDALL L. & GRANLUND, TORBJÖRN	12	11D09	62	442

INDEX OF REVIEWS BY SUBJECT OF WORK REVIEWED

<i>Author</i>	<i>Review Number</i>	<i>Classification</i>	<i>Vol.</i>	<i>Page</i>
REED, DANIEL A.	34	See: SINCOVEC, RICHARD F., KEYES, DAVID E., LEUZE, MICHAEL R., PETZOLD, LINDA R. & REED, DANIEL A., EDITORS	63	826
RISLER, J. J.	31	41-01, 41A15, 41A63, 68U07	63	823
ROOKE, D. P.	33	See: ALIABADI, M. H. & ROOKE, D. P.	63	825
SALTZ, JOEL	20b	See: MEHROTRA, PIYUSH, SALTZ, JOEL & VOIGT, ROBERT, EDITORS	63	424
SCHUMAKER, L. L.	6	See: CHENEY, E. W., CHUI, C. K. & SCHUMAKER, L. L., EDITORS	62	436
SCROGGS, JEFFREY S.	14	See: KEYES, DAVID E., CHAN, TONY F., MEURANT, GÉRARD, SCROGGS, JEFFREY S. & VOIGT, ROBERT G., EDITORS	62	941
SIMON, HORST D., EDITOR	20c	65-06, 65P05, 76-06	63	424
SINCOVEC, RICHARD F., KEYES, DAVID E., LEUZE, MICHAEL R., PETZOLD, LINDA R. & REED, DANIEL A., EDITORS	34	65-06, 65Y05	63	826
STENGER, FRANK	26	41-02, 65-02, 65Dxx, 65Lxx, 65Mxx, 65Rxx, 41A80	63	817
STOER, J. & BULIRSCH, R.	18	65-01	63	421
TEUKOLSKY, SAUL A.	3a,b	See: PRESS, WILLIAM H., TEUKOLSKY, SAUL A., VETTERLING, WILLIAM T. & FLANNERY, BRIAN P.	62	433
TROTTENBERG, U.	13	See: HACKBUSCH, W. & TROTTEN- BERG, U., EDITORS	62	941
VETTERLING, WILLIAM T.	3a,b	See: PRESS, WILLIAM H., TEUKOLSKY, SAUL A., VETTERLING, WILLIAM T. & FLANNERY, BRIAN P.	62	433
VOIGT, ROBERT G.	14	See: KEYES, DAVID E., CHAN, TONY F., MEURANT, GÉRARD, SCROGGS, JEFFREY S. & VOIGT, ROBERT G., EDITORS	62	941
VOIGT, ROBERT	20b	See: MEHROTRA, PIYUSH, SALTZ, JOEL & VOIGT, ROBERT, EDITORS	63	424
WAADELAND, HAAKON	1	See: LORENTZEN, LISA & WAADELAND, HAAKON	62	431
WALKER, JAMES S.	25	42-01, 42A38, 65T10	63	432
WERSCHULZ, A. G.	19	65N30, 65R20, 68Q25	63	422

INDEX OF REVIEWS BY SUBJECT OF WORK REVIEWED

<i>Author</i>	<i>Review Number</i>	<i>Title</i>	<i>Vol.</i>	<i>Page</i>
00Axx General and miscellaneous specific topics				
00A69 General applied mathematics				
GROETSCH, CHARLES W.	28	Inverse Problems in the Mathematical Sciences	63	820

INDEX OF REVIEWS BY SUBJECT OF WORK REVIEWED

<i>Author</i>	<i>Review Number</i>	<i>Title</i>	<i>Vol.</i>	<i>Page</i>
01-XX History and biography				
01-00 <i>General reference works</i>				
BREZINSKI, CLAUDE	2	History of Continued Fractions and Padé Approximants	62	432
01Axx History of mathematics and mathematicians				
01A75 <i>Collected or selected works; reprintings or translations of classics</i>				
MCCARTHY, D., EDITOR	36	Selected Papers of D. H. Lehmer	63	827
11-XX Number theory				
11-03 <i>Historical</i>				
MCCARTHY, D., EDITOR	36	Selected Papers of D. H. Lehmer	63	827
11A55 <i>Continued fractions</i>				
BREZINSKI, CLAUDE	2	History of Continued Fractions and Padé Approximants	62	432
11D09 <i>Quadratic and bilinear equations</i>				
RATHBUN, RANDALL L.	10	Table of Equal Area Pythagorean Triangles, from coprimitive sets of integer generator pairs	62	440
RATHBUN, RANDALL L. & GRANLUND, TORBJÖRN	11	The Integer Cuboid Table, with Body, Edge, and Face Type of Solutions	62	441
RATHBUN, RANDALL L. & GRANLUND, TORBJÖRN	12	The Classical Rational Cuboid Table of Maurice Kraitchik	62	442
11D25 <i>Cubic and quartic equations</i>				
KOYAMA, KENJI	15	Tables of solutions of the Diophantine equation $x^3 + y^3 + z^3 = n$	62	941
11Y50 <i>Computer solution of Diophantine equations</i>				
KOYAMA, KENJI	15	Tables of solutions of the Diophantine equation $x^3 + y^3 + z^3 = n$	62	941
30-XX Functions of a complex variable				
30B70 <i>Continued fractions</i>				
BREZINSKI, CLAUDE	2	History of Continued Fractions and Padé Approximants	62	432
LORENTZEN, LISA & WADELAND, HAAKON	1	Continued Fractions with Applications	62	431
34-XX Ordinary differential equations				
34A55 <i>Inverse problems</i>				
GROETSCH, CHARLES W.	28	Inverse Problems in the Mathematical Sciences	63	820
35-XX Partial differential equations				
35-06 <i>Proceedings, conferences, collections, etc.</i>				
BANK, RANDOLPH E., EDITOR	8	Computational Aspects of VLSI Design with an Emphasis on Semiconductor Device Simulation	62	438
35J60 <i>Nonlinear PDE of elliptic type</i>				
BANK, RANDOLPH E., EDITOR	8	Computational Aspects of VLSI Design with an Emphasis on Semiconductor Device Simulation	62	438
35R35 <i>Free boundary problems for PDE</i>				
NEITTAANMÄKI, P., EDITOR	21	Numerical Methods for Free Boundary Problems	63	426

INDEX OF REVIEWS BY SUBJECT OF WORK REVIEWED

<i>Author</i>	<i>Review Number</i>	<i>Title</i>	<i>Vol.</i>	<i>Page</i>
40-XX Sequences, series, summability				
40A15 <i>Convergence and divergence of continued fractions</i>				
BREZINSKI, CLAUDE	2	History of Continued Fractions and Padé Approximants	62	432
LORENTZEN, LISA & WADELAND, HAAKON	1	Continued Fractions with Applications	62	431
41-XX Approximations and expansions				
41-01 <i>Instructional exposition</i>				
RISLER, J. J.	31	Mathematical Methods for CAD	63	823
41-02 <i>Research exposition</i>				
STENGER, FRANK	26	Numerical Methods Based on Sinc and Analytic Functions	63	817
41-06 <i>Proceedings, conferences, collections, etc.</i>				
CHENEY, E. W., CHUI, C. K. & SCHUMAKER, L. L., EDITORS	6	Approximation Theory VII	62	436
41A15 <i>Spline approximation</i>				
DIERCKX, PAUL	22	Curve and Surface Fitting with Splines	63	427
RISLER, J. J.	31	Mathematical Methods for CAD	63	823
41A21 <i>Padé approximation</i>				
BREZINSKI, CLAUDE	2	History of Continued Fractions and Padé Approximants	62	432
41A63 <i>Multidimensional problems</i>				
RISLER, J. J.	31	Mathematical Methods for CAD	63	823
41A80 <i>Remainders in approximation formulas</i>				
STENGER, FRANK	26	Numerical Methods Based on Sinc and Analytic Functions	63	817
WALKER, JAMES S.	25	Fast Fourier Transforms	63	432
42-XX Fourier analysis				
42-01 <i>Instructional exposition</i>				
WALKER, JAMES S.	25	Fast Fourier Transforms	63	432
42-02 <i>Research exposition</i>				
MEYER, YVES	30	Wavelets: Algorithms & Applications	63	822
42A38 <i>Fourier and Fourier-Stieltjes transforms and other transforms of Fourier type</i>				
WALKER, JAMES S.	25	Fast Fourier Transforms	63	432
42C10 <i>Fourier series in special orthogonal functions</i>				
FUNARO, DANIELE	16	Polynomial Approximation of Differential Equations	62	942
42C99 <i>None of the above, but in this section</i>				
MEYER, YVES	30	Wavelets: Algorithms & Applications	63	822
45-XX Integral equations				
45B05 <i>Fredholm integral equations</i>				
GROETSCH, CHARLES W.	28	Inverse Problems in the Mathematical Sciences	63	820
49-XX Calculus of variations and optimal control; optimization				
49M30 <i>Other methods, not based on necessary conditions</i>				
HANSEN, ELDON	23	Global Optimization Using Interval Analysis	63	428

INDEX OF REVIEWS BY SUBJECT OF WORK REVIEWED

<i>Author</i>	<i>Review Number</i>	<i>Title</i>	<i>Vol.</i>	<i>Page</i>
60-XX Probability theory and stochastic processes				
60-06 <i>Proceedings, conferences, collections, etc.</i>				
HEILIÖ, MATTI, EDITOR	9	Fifth European Conference on Mathematics in Industry	62	439
65-XX Numerical analysis				
65-00 <i>General reference works</i>				
PRESS, WILLIAM H., TEUKOLSKY, SAUL A., VETTERLING, WILLIAM T. & FLANNERY, BRIAN P.	3a	Numerical Recipes in Fortran: The Art of Scientific Computing	62	433
PRESS, WILLIAM H., TEUKOLSKY, SAUL A., VETTERLING, WILLIAM T. & FLANNERY, BRIAN P.	3b	Numerical Recipes in C: The Art of Scientific Computing	62	433
65-01 <i>Instructional exposition</i>				
AMES, WILLIAM F.	7	Numerical Methods for Partial Differential Equations	62	437
ATKINSON, KENDALL	4	Elementary Numerical Analysis	62	434
STOER, J. & BULIRSCH, R.	18	Introduction to Numerical Analysis	63	421
65-02 <i>Research exposition</i>				
ALIABADI, M. H. & ROOKE, D. P.	33	Numerical Fracture Mechanics	63	825
FIOROT, J.-C. & JEANNIN, P.	32	Rational Curves and Surfaces: Applications to CAD	63	824
GOLDMAN, RONALD N. & LYCHE, TOM, EDITORS	29	Knot Insertion and Deletion Algorithms for B-Spline Curves and Surfaces	63	821
STENGER, FRANK	26	Numerical Methods Based on Sinc and Analytic Functions	63	817
65-04 <i>Explicit machine computation and programs</i>				
DIERCKX, PAUL	22	Curve and Surface Fitting with Splines	63	427
PRESS, WILLIAM H., TEUKOLSKY, SAUL A., VETTERLING, WILLIAM T. & FLANNERY, BRIAN P.	3a	Numerical Recipes in Fortran: The Art of Scientific Computing	62	433
PRESS, WILLIAM H., TEUKOLSKY, SAUL A., VETTERLING, WILLIAM T. & FLANNERY, BRIAN P.	3b	Numerical Recipes in C: The Art of Scientific Computing	62	433
65-06 <i>Proceedings, conferences, collections, etc.</i>				
ALLGOWER, EUGENE L. & GEORG, KURT, EDITORS	17	Computational Solutions of Nonlinear Systems of Equations	62	943
BANK, RANDOLPH E., EDITORS	8	Computational Aspects of VLSI Design with an Emphasis on Semiconductor Device Simulation	62	438
HACKBUSCH, W. & TROTTEBERG, U., EDITORS	13	Multigrid Methods III	62	941
HEILIÖ, MATTI, EDITOR	9	Fifth European Conference on Mathematics in Industry	62	439

INDEX OF REVIEWS BY SUBJECT OF WORK REVIEWED

<i>Author</i>	<i>Review Number</i>	<i>Title</i>	<i>Vol.</i>	<i>Page</i>
KEYES, DAVID E., CHAN, TONY F., MEURANT, GÉRARD, SCROGGS, JEFFREY S. & VOIGT, ROBERT G., EDITORS	14	Domain Decomposition Methods for Partial Differential Equations	62	941
MEHROTRA, PIYUSH, SALTZ, JOEL & VOIGT, ROBERT, EDITORS	20b	Unstructured Scientific Computation on Scalable Multiprocessors	63	424
NEITTAANMÄKI, P., EDITOR	21	Numerical Methods for Free Boundary Problems	63	426
SIMON, HORST D., EDITOR	20c	Parallel Computational Fluid Dyna- mics: Implementations and Re- sults	63	424
SINCOVEC, RICHARD F., KEYES, DAVID E., LEUZE, MICHAEL R., PETZOLD, LINDA R. & REED, DANIEL A., EDITORS	34	Proceedings of the Sixth SIAM Con- ference on Parallel Processing for Scientific Computing	63	826
<i>65B10 Summation of series</i>				
BREZINSKI, CLAUDE	2	History of Continued Fractions and Padé Approximants	62	432
PRESS, WILLIAM H., TEUKOLSKY, SAUL A., VETTERLING, WILLIAM T. & FLANNERY, BRIAN P.	3a	Numerical Recipes in Fortran: The Art of Scientific Computing	62	433
PRESS, WILLIAM H., TEUKOLSKY, SAUL A., VETTERLING, WILLIAM T. & FLANNERY, BRIAN P.	3b	Numerical Recipes in C: The Art of Scientific Computing	62	433
<i>65Dxx Numerical approximation</i>				
CHENEY, E. W., CHUI, C. K. & SCHUMAKER, L. L., EDITORS	6	Approximation Theory VII	62	436
STENGER, FRANK	26	Numerical Methods Based on Sinc and Analytic Functions	63	817
<i>65D07 Splines</i>				
GOLDMAN, RONALD N. & LYCHE, TOM, EDITORS	29	Knot Insertion and Deletion Algo- rithms for B-Spline Curves and Surfaces	63	821
<i>65D10 Smoothing, curve fitting</i>				
ADAMS, E. & KULISCH, U., EDITORS	27	Scientific Computing with Automatic Result Verification	63	819
DIERCKX, PAUL	22	Curve and Surface Fitting with Splines	63	427
<i>65D15 Algorithms for functional approximation</i>				
LORENTZEN, LISA & WAADELAND, HAAKON	1	Continued Fractions with Applica- tions	62	431
<i>65D17 Computer aided design</i>				
DIERCKX, PAUL	22	Curve and Surface Fitting with Splines	63	427
FIOROT, J.-C. & JEANNIN, P.	32	Rational Curves and Surfaces: Appli- cations to CAD	63	824
GOLDMAN, RONALD N. & LYCHE, TOM, EDITORS	29	Knot Insertion and Deletion Algo- rithms for B-Spline Curves and Surfaces	63	821
<i>65G10 Interval and finite arithmetic</i>				
ADAMS, E. & KULISCH, U., EDITORS	27	Scientific Computing with Automatic Result Verification	63	819

INDEX OF REVIEWS BY SUBJECT OF WORK REVIEWED

<i>Author</i>	<i>Review Number</i>	<i>Title</i>	<i>Vol.</i>	<i>Page</i>
<i>65H10 Systems of equations</i>				
ALLGOWER, EUGENE L. & GEORG, KURT, EDITORS	17	Computational Solutions of Nonlinear Systems of Equations	62	943
<i>65Kxx Mathematical programming, optimization and variational techniques</i>				
ALLGOWER, EUGENE L. & GEORG, KURT, EDITORS	17	Computational Solutions of Nonlinear Systems of Equations	62	943
<i>65K10 Optimization and variational techniques</i>				
BANK, RANDOLPH E., EDITORS	8	Computational Aspects of VLSI Design with an Emphasis on Semiconduc- tor Device Simulation	62	438
HANSEN, ELDON	23	Global Optimization Using Interval Analysis	63	428
<i>65Lxx Ordinary differential equations</i>				
STENGER, FRANK	26	Numerical Methods Based on Sinc and Analytic Functions	63	817
<i>65L05 Initial value problems</i>				
BANK, RANDOLPH E., EDITOR	8	Computational Aspects of VLSI Design with an Emphasis on Semiconduc- tor Device Simulation	62	438
<i>65Mxx Partial differential equations, initial value and time-dependent initial-boundary value problems</i>				
AMES, WILLIAM F.	7	Numerical Methods for Partial Differ- ential Equations	62	437
STENGER, FRANK	26	Numerical Methods Based on Sinc and Analytic Functions	63	817
WALKER, JAMES S.	25	Fast Fourier Transforms	63	432
<i>65Nxx Partial differential equations, boundary value problems</i>				
AMES, WILLIAM F.	7	Numerical Methods for Partial Differ- ential Equations	62	437
<i>65N06 Finite difference methods</i>				
BANK, RANDOLPH E., EDITOR	8	Computational Aspects of VLSI Design with an Emphasis on Semiconduc- tor Device Simulation	62	438
<i>65N22 Solution of discretized equations</i>				
KEYES, DAVID E., CHAN, TONY F., MEURANT, GÉRARD, SCROGGS, JEFFREY S. & VOIGT, ROBERT G., EDITORS	14	Domain Decomposition Methods for Partial Differential Equations	62	941
<i>65N30 Finite elements, Rayleigh-Ritz and Galerkin methods, finite methods</i>				
ALIABADI, M. H. & ROOKE, D. P.	33	Numerical Fracture Mechanics	63	825
FUNARO, DANIELE	16	Polynomial Approximation of Differ- ential Equations	62	942
KEYES, DAVID E., CHAN, TONY F., MEURANT, GÉRARD, SCROGGS, JEFFREY S. & VOIGT, ROBERT G., EDITORS	14	Domain Decomposition Methods for Partial Differential Equations	62	941
WERSCHULZ, A. G.	19	The Computational Complexity of Differential and Integral Equations: An Information-Based Approach	63	422

INDEX OF REVIEWS BY SUBJECT OF WORK REVIEWED

<i>Author</i>	<i>Review Number</i>	<i>Title</i>	<i>Vol.</i>	<i>Page</i>
<i>65N35 Spectral, collocation and related methods</i>				
FUNARO, DANIELE	16	Polynomial Approximation of Differential Equations	62	942
<i>65N55 Multigrid methods; domain decomposition</i>				
HACKBUSCH, W. & TROTTEBERG, U., EDITORS	13	Multigrid Methods III	62	941
<i>65P05 Partial differential equations, miscellaneous problems</i>				
NEITTAANMÄKI, P., EDITOR	21	Numerical Methods for Free Boundary Problems	63	426
SIMON, HORST D., EDITOR	20c	Parallel Computational Fluid Dynamics: Implementations and Results	63	424
<i>65Rxx Integral equations, integral transforms</i>				
STENGER, FRANK	26	Numerical Methods Based on Sinc and Analytic Functions	63	817
<i>65R20 Integral equations</i>				
WERSCHULZ, A. G.	19	The Computational Complexity of Differential and Integral Equations: An Information-Based Approach	63	422
<i>65R30 Improperly posed problems</i>				
GROETSCH, CHARLES W.	28	Inverse Problems in the Mathematical Sciences	63	820
<i>65T10 Trigonometric approximation and interpolation</i>				
WALKER, JAMES S.	25	Fast Fourier Transforms	63	432
<i>65Y05 Parallel computation</i>				
HATCHER, PHILIP J. & QUINN, MICHAEL J.	20a	Data-Parallel Programming on MIMD Computers	63	424
MEHROTRA, PIYUSH, SALTZ, JOEL & VOIGT, ROBERT, EDITORS	20b	Unstructured Scientific Computation on Scalable Multiprocessors	63	424
SINCOVEC, RICHARD F., KEYES, DAVID E., LEUZE, MICHAEL R., PETZOLD, LINDA R. & REED, DANIEL A., EDITORS	34	Proceedings of the Sixth SIAM Conference on Parallel Processing for Scientific Computing	63	826
<i>65Y10 Algorithms for specific classes of architectures</i>				
ADAMS, E. & KULISCH, U., EDITORS	27	Scientific Computing with Automatic Result Verification	63	819
<i>65Y15 Packaged methods</i>				
ADAMS, E. & KULISCH, U., EDITORS	27	Scientific Computing with Automatic Result Verification	63	819
68-XX Computer science				
<i>68-02 Research exposition</i>				
ADAMS, E. & KULISCH, U., EDITORS	27	Scientific Computing with Automatic Result Verification	63	819
<i>68-04 Explicit machine computation and programs</i>				
ADAMS, E. & KULISCH, U., EDITORS	27	Scientific Computing with Automatic Result Verification	63	819
<i>68-06 Proceedings, conferences, collections, etc.</i>				
GRIEWANK, ANDREAS & CORLISS, GEORGE F., EDITORS	5	Automatic Differentiation of Algorithms: Theory, Implementation, and Application	62	434

INDEX OF REVIEWS BY SUBJECT OF WORK REVIEWED

<i>Author</i>	<i>Review Number</i>	<i>Title</i>	<i>Vol.</i>	<i>Page</i>
HEILIÖ, MATTI, EDITOR	9	Fifth European Conference on Mathematics in Industry	62	439
LEE, THOMAS, EDITOR	35	Mathematical Computation with Maple V: Ideas and Applications	63	827
<i>68M15 Reliability and testing</i>				
ADAMS, E. & KULISCH, U., EDITORS	27	Scientific Computing with Automatic Result Verification	63	819
<i>68N15 Programming languages</i>				
HATCHER, PHILIP J. & QUINN, MICHAEL J.	20a	Data-Parallel Programming on MIMD Computers	63	424
<i>68N20 Compilers and generators</i>				
HATCHER, PHILIP J. & QUINN, MICHAEL J.	20a	Data-Parallel Programming on MIMD Computers	63	424
<i>68N99 None of the above, but in this section</i>				
MEHROTRA, PIYUSH, SALTZ, JOEL & VOIGT, ROBERT, EDITORS	20b	Unstructured Scientific Computation on Scalable Multiprocessors	63	424
<i>68Q10 Modes of computation</i>				
ADAMS, E. & KULISCH, U., EDITORS	27	Scientific Computing with Automatic Result Verification	63	819
<i>68Q25 Analysis of algorithms and problem complexity</i>				
WERSCHULZ, A. G.	19	The Computational Complexity of Differential and Integral Equations: An Information-Based Approach	63	422
<i>68Q40 Symbolic computation, algebraic computation</i>				
GRIEWANK, ANDREAS & CORLISS, GEORGE F., EDITORS	5	Automatic Differentiation of Algorithms: Theory, Implementation, and Application	62	434
LEE, THOMAS	35	Mathematical Computation with Maple V: Ideas and Applications	63	827
<i>68U05 Computer graphics; computational geometry</i>				
FIOROT, J.-C. & JEANNIN, P.	32	Rational Curves and Surfaces: Applications to CAD	63	824
<i>68U07 Computer-aided design</i>				
RISLER, J. J.	31	Mathematical Methods for CAD	63	823
<i>68U99 None of the above, but in this section</i>				
GRIEWANK, ANDREAS & CORLISS, GEORGE F., EDITORS	5	Automatic Differentiation of Algorithms: Theory, Implementation, and Application	62	434
70-XX Mechanics of particles and systems				
<i>70-06 Proceedings, conferences, collections, etc.</i>				
HEILIÖ, MATTI, EDITOR	9	Fifth European Conference on Mathematics in Industry	62	439
73-XX Mechanics of solids				
<i>73-02 Research exposition</i>				
ALIABADI, M. H. & ROOKE, D. P.	33	Numerical Fracture Mechanics	63	825
<i>73M25 Fracture mechanics</i>				
ALIABADI, M. H. & ROOKE, D. P.	33	Numerical Fracture Mechanics	63	825
<i>73V10 Boundary element methods</i>				
ALIABADI, M. H. & ROOKE, D. P.	33	Numerical Fracture Mechanics	63	825

INDEX OF ERRATA

<i>Author</i>	<i>Review Number</i>	<i>Title</i>	<i>Vol.</i>	<i>Page</i>
<i>73V20 Other numerical methods</i>				
ALIABADI, M. H. & ROOKE, D. P.	33	Numerical Fracture Mechanics	63	825
76-XX Fluid mechanics				
<i>76-06 Proceedings, conferences, collections, etc.</i>				
SIMON, HORST D., EDITOR	20c	Parallel Computational Fluid Dynamics: Implementations and Results	63	424
80-XX Classical thermodynamics, heat transfer				
<i>80-06 Proceedings, conferences, collections, etc.</i>				
HEILIÖ, MATTI, EDITOR	9	Fifth European Conference on Mathematics in Industry	62	439
82-XX Statistical mechanics, structure of matter				
<i>82-06 Proceedings, conferences, collections, etc.</i>				
HEILIÖ, MATTI, EDITOR	9	Fifth European Conference on Mathematics in Industry	62	439
90-XX Economics, operations research, programming, games				
<i>90-06 Proceedings, conferences, collections, etc.</i>				
HEILIÖ, MATTI, EDITOR	9	Fifth European Conference on Mathematics in Industry	62	439
<i>90B05 Inventory, storage, reservoirs</i>				
EVANS, JAMES R. & MINIEKA, EDWARD	24	Optimization Algorithms for Networks and Graphs	63	431
<i>90C35 Programming involving graphs or networks</i>				
EVANS, JAMES R. & MINIEKA, EDWARD	24	Optimization Algorithms for Networks and Graphs	63	431
92-XX Biology and other natural sciences, behavioral sciences				
<i>92-06 Proceedings, conferences, collections, etc.</i>				
HEILIÖ, MATTI, EDITOR	9	Fifth European Conference on Mathematics in Industry	62	439
93-XX Systems theory; control				
<i>93-06 Proceedings, conferences, collections, etc.</i>				
HEILIÖ, MATTI, EDITOR	9	Fifth European Conference on Mathematics in Industry	62	439
94-XX Information and communication, circuits				
<i>94-06 Proceedings, conferences, collections, etc.</i>				
HEILIÖ, MATTI, EDITOR	9	Fifth European Conference on Mathematics in Industry	62	439
<i>94A12 Signal theory</i>				
MEYER, YVES	30	Wavelets: Algorithms & Applications	63	822

INDEX OF ERRATA

<i>No.</i>	<i>Author</i>	<i>Title</i>	<i>Vol.</i>	<i>Page</i>
615	FUNG, G. W. & WILLIAMS, H. C.	On the computation of a table of complex cubic fields with discriminant $D > -10^6$	63	433
616	SPIRA, ROBERT	Zeros of approximate functional approximations	63	829

INDEX OF SUPPLEMENTS

INDEX OF CORRIGENDA

<i>Author</i>	<i>Title</i>	<i>Vol.</i>	<i>Page</i>
BABUŠKA, I. & OSBORN, J. E.	Finite element-Galerkin approximation of the eigenvalues and eigenvectors of selfadjoint problems	63	831

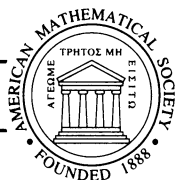
INDEX OF SUPPLEMENTS

<i>Author</i>	<i>Title</i>	<i>Vol.</i>	<i>Issue</i>
BERNARD, PIERRE, TALAY, DENIS & TUBARO, LUCIANO	Supplement to "Rate of convergence of a stochastic particle method for the Kolmogorov equation with variable coefficients"	63	Oct.
BRENNER, SUSANNE C.	Supplement to "A nonconforming mixed multigrid method for the pure traction problem in planar linear elasticity"	63	Oct.
HAGSTROM, THOMAS, HARIHARAN, S. I. & MACCAMY, R. C.	Supplement to "On the accurate long-time solution of the wave equation in exterior domains: Asymptotic expansions and corrected boundary conditions"	63	Oct.
MORGAN, ILENE H. & MULLEN, GARY L.	Supplement to "Primitive normal polynomials over finite fields"	63	Oct.

INDEX OF MICROFICHE SUPPLEMENTS

<i>Author</i>	<i>Title</i>	<i>Vol.</i>	<i>Issue</i>
DUIJVESTIJN, A. J. W.	Simple perfect squared squares and 2×1 squared rectangles of order 25	62	Jan.
DUMMIT, D. S. & HAYES, DAVID	Rank-one Drinfeld modules on elliptic curves	62	April
SOUVIGNIER, BERND	Irreducible finite integral matrix groups of degree 8 and 10	63	July
ŽIVKOVIĆ, MIODRAG	A table of primitive binary polynomials	62	Jan.

VOLUME 63



1994

MATHEMATICS OF COMPUTATION

AMERICAN MATHEMATICAL SOCIETY

EDITED BY

James H. Bramble
Susanne C. Brenner
E. W. Cheney
James W. Demmel
Walter Gautschi, *Managing Editor*
Eugene Isaacson
James N. Lyness
Harald Niederreiter
Jorge J. Nocedal
Syvert P. Nørsett
Andrew M. Odlyzko
Frank W. J. Olver
John E. Osborn
Stanley Osher
Carl Pomerance
René Schoof
L. Ridgway Scott
Daniel Shanks
Chi-Wang Shu
Frank Stenger
Hans J. Stetter
G. W. Stewart
Nico M. Temme
Vidar Thomée
Lars B. Wahlbin
Hugh C. Williams
John W. Wrench, Jr.

PROVIDENCE, RHODE ISLAND USA

ISSN 0025-5718

Mathematics of Computation

This journal publishes research articles in computational mathematics. Areas covered include numerical analysis, the application of computational methods, algorithms for advanced computer architectures, computational number theory and algebra, and related fields. Table errata and reviews of books in areas related to computational mathematics are also included.

Subscription information. *Mathematics of Computation* is published quarterly. Subscription prices for Volumes 62 and 63 (1994) are \$262 list; \$210 institutional member; \$170 member of CBMS organizations; \$157 individual AMS member. A late charge of 10% of the subscription price will be imposed upon orders received from nonmember institutions and organizations after January 1 of the subscription year. Subscribers outside the United States and India must pay a postage surcharge of \$9; subscribers in India must pay a postage surcharge of \$18. Expedited delivery to destinations in North America \$13; elsewhere \$40.

Back number information. For back issues see the *AMS Catalog of Publications*.

Subscriptions and orders should be addressed to the American Mathematical Society, P. O. Box 5904, Boston, MA 02206-5904. *All orders must be accompanied by payment.* Other correspondence should be addressed to P. O. Box 6248, Providence, RI 02940-6248.

Unpublished Mathematical Tables. The editorial office of the journal maintains a repository of Unpublished Mathematical Tables (UMT). When a table is deposited in the UMT repository a brief summary of its contents is published in the section *Reviews and Descriptions of Tables and Books*. Upon request, the chairman of the editorial committee will supply copies of any table for a nominal cost per page. All tables and correspondence concerning the UMT should be sent to Walter Gautschi, Chairman, Editorial Committee, Mathematics of Computation, Department of Computer Sciences, Purdue University, West Lafayette, IN 47907.

Copying and reprinting. Individual readers of this publication, and nonprofit libraries acting for them, are permitted to make fair use of the material, such as to copy an article for use in teaching or research. Permission is granted to quote brief passages from this publication in reviews provided the customary acknowledgment of the source is given.

Republication, systematic copying, or multiple reproduction of any material in this publication (including abstracts) is permitted only under license from the American Mathematical Society. Requests for such permission should be addressed to the Manager of Editorial Services, American Mathematical Society, P. O. Box 6248, Providence, RI 02940-6248. Requests can also be made by e-mail to reprint-permission@math.ams.org.

The appearance of the code on the first page of an article in this journal indicates the copyright owner's consent for copying beyond that permitted by Sections 107 or 108 of the U.S. Copyright Law, provided that the fee of \$1.00 plus \$.25 per page for each copy be paid directly to the Copyright Clearance Center, Inc., 222 Rosewood Drive, Danvers, MA 01923. This consent does not extend to other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale.

Mathematics of Computation is published quarterly by the American Mathematical Society at 201 Charles Street, Providence, RI 02904-2213. Second-class postage is paid at Providence, Rhode Island. Postmaster: Send address changes to Mathematics of Computation, American Mathematical Society, P. O. Box 6248, Providence, RI 02940-6248.

© Copyright 1994 by the American Mathematical Society. All rights reserved.

Printed in the United States of America.

⊗ The paper used in this book is acid-free and falls within the guidelines established to ensure permanence and durability.

♻ Printed on recycled paper.

This publication was typeset using AMS-TEX ,
the American Mathematical Society's TEX macro system.

10 9 8 7 6 5 4 3 2 1 99 98 97 96 95 94

MATHEMATICS OF COMPUTATION

CONTENTS

Vol. 63, No. 207

July 1994

James H. Bramble and J. Thomas King , A robust finite element method for nonhomogeneous Dirichlet problems in domains with curved boundaries	1
M. P. Lebaud , Error estimate in an isoparametric finite element eigenvalue problem	19
Ching Lung Chang , An error estimate of the least squares finite element method for the Stokes problem in three dimensions	41
Bernardo Cockburn and Ioana Triandaf , Error estimates for a finite element method for the drift-diffusion semiconductor device equations: the zero diffusion case	51
Bernardo Cockburn, Frédéric Coquel, and Philippe LeFloch , An error estimate for finite volume methods for multidimensional conservation laws	77
N. Al Shenk , Uniform error estimates for certain narrow Lagrange finite elements	105
M. Crouzeix, S. Larsson, and V. Thomée , Resolvent estimates for elliptic finite element operators in one dimension	121
Anwei Liu and Barry Joe , On the shape of tetrahedra from bisection ...	141
Kent McCormick and Raymond O. Wells, Jr. , Wavelet calculus and finite difference operators	155
Eric Grosse and John D. Hobby , Improved rounding for spline coefficients and knots	175
Oscar P. Bruno and Fernando Reitich , Approximation of analytic functions: a method of enhanced convergence	195
Qazi Ibadur Rahman and Gerhard Schmeisser , A quadrature formula for entire functions of exponential type	215
Andrew H. Van Tuyl , Acceleration of convergence of a family of logarithmically convergent sequences	229
Pengyuan Chen , Approximate zeros of quadratically convergent algorithms	247
W. McLean , Numerical evaluation of some trigonometric series	271
Gerhard Larcher and Claudia Traunfellner , On the numerical integration of Walsh series by number-theoretic methods	277
Jürgen Eichenauer-Herrmann , On generalized inversive congruential pseudorandom numbers	293
Miodrag Zivković , Table of primitive binary polynomials, II	301
Adel Faridani , A generalized sampling theorem for locally compact abelian groups	307
Henri Cohen and Jacques Martinet , Heuristics on class groups: some good primes are not too good	329
Bernd Souvignier , Irreducible finite integral matrix groups of degree 8 and 10	335
Ulrich Baum and Michael Clausen , Computing irreducible representations of supersolvable groups	351

A. Schwarz, M. Pohst, and F. Diaz y Diaz , A table of quintic number fields	361
Guoqiang Ge , Recognizing units in number fields	377
Richard P. Brent , On the periods of generalized Fibonacci recurrences	389
Zhenxiang Zhang , Finding finite B_2 -sequences with larger $m - a_m^{1/2}$	403
Aaron Schlafly and Stan Wagon , Carmichael's conjecture on the Euler function is valid below $10^{10,000,000}$	415
Reviews and Descriptions of Tables and Books	421
Stoer and Bulirsch 18 , Werschulz 19 , Hatcher and Quinn 20a , Mehrotra, Saltz, and Voigt, Editors 20b , Simon, Editor 20c , Neittaanmäki, Editor 21 , Dierckx 22 , Hansen 23 , Evans and Minieka 24 , Walker 25	
Table Errata	433
Fung and Williams 615	
Microfiche Supplement	
Bernd Souvignier , Irreducible finite integral matrix groups of degree 8 and 10	

Vol. 63, No. 208

October 1994

Susanne C. Brenner , A nonconforming mixed multigrid method for the pure traction problem in planar linear elasticity	435
James H. Bramble, Zbigniew Leyk, and Joseph E. Pasciak , The analysis of multigrid algorithms for pseudodifferential operators of order minus one	461
Pavel B. Bochev and Max D. Gunzburger , Analysis of least squares finite element methods for the Stokes equations	479
Thomas Hagstrom, S. I. Hariharan, and R. C. MacCamy , On the accurate long-time solution of the wave equation in exterior domains: Asymptotic expansions and corrected boundary conditions	507
T. Boukadida and A. Y. LeRoux , A new version of the two-dimensional Lax-Friedrichs scheme	541
Pierre Bernard, Denis Talay, and Luciano Tubaro , Rate of convergence of a stochastic particle method for the Kolmogorov equation with variable coefficients	555
B. Leimkuhler and S. Reich , Symplectic integration of constrained Hamiltonian systems	589
C. K. Chui, Xin Li, and H. N. Mhaskar , Neural networks for localized approximation	607
Luís F. Portugal, Joaquim J. Júdice, and Luís N. Vicente , A comparison of block pivoting and interior-point algorithms for linear least squares problems with nonnegative variables	625
Gerlind Plonka and Manfred Tasche , Cardinal Hermite spline interpolation with shifted nodes	645
Francis J. Narcowich and Joseph D. Ward , Generalized Hermite interpolation via matrix-valued conditionally positive definite functions	661
Ming-Jun Lai , On the computation of Battle-Lemarié's wavelets	689

Gerhard Larcher, Wolfgang Ch. Schmid, and Reinhard Wolf , Representation of functions as Walsh series to different bases and an application to the numerical integration of high-dimensional Walsh series	701
P. Verlinden and R. Cools , Proof of a conjectured asymptotic expansion for the approximation of surface integrals	717
J. N. Lyness , Quadrature over curved surfaces by extrapolation	727
Stanisław Lewanowicz , A simple approach to the summation of certain slowly convergent series	741
Robert Spira , Some zeros of the Titchmarsh counterexample	747
David Caspersen and John McKay , Symmetric functions, m -sets, and Galois groups	749
Ilene H. Morgan and Gary L. Mullen , Primitive normal polynomials over finite fields	759
James McKee , Computing division polynomials	767
Peter Stevenhagen , Class number parity for the p th cyclotomic field	773
A. K. Lenstra and M. S. Manasse , Factoring with two large primes	785
P. Moree, H.J.J. te Riele, and J. Urbanowicz , Divisibility properties of integers x, k satisfying $1^k + \dots + (x - 1)^k = x^k$	799
Reviews and Descriptions of Tables and Books	817
Stenger 26 , Adams and Kulisch, Editors 27 , Groetsch 28 , Goldman and Lyche, Editors 29 , Meyer 30 , Risler 31 , Fiorot and Jeannin 32 , Aliabadi and Rooke 33 , Sincovec, Keyes, Leuze, Petzold, and Reed, Editors 34 , Lee, Editor 35 , McCarthy, Editor 36	
Table Errata	829
Spira 616	
Corrigendum	831
Babuška and Osborn	
Supplement to “A nonconforming mixed multigrid method for the pure traction problem in planar linear elasticity” by Susanne C. Brenner	S1
Supplement to “On the accurate long-time solution of the wave equation in exterior domains: Asymptotic expansions and corrected boundary conditions” by Thomas Hagstrom, S. I. Hariharan, and R. C. MacCamy	S7
Supplement to “Rate of convergence of a stochastic particle method for the Kolmogorov equation with variable coefficients” by Pierre Bernard, Denis Talay, and Luciano Tubaro	S11
Supplement to “Primitive normal polynomials over finite fields” by Ilene H. Morgan and Gary L. Mullen	S19

Editorial Information

As of August 4, 1994, the backlog for this journal was approximately 1 issue. This estimate is the result of dividing the number of manuscripts for this journal in the Providence office that have not yet gone to the printer on the above date by the average number of articles per issue over the previous twelve months, reduced by the number of issues published in six months (the time necessary for editing and composing a typical issue).

A Copyright Transfer Agreement is required before a paper will be published in this journal. By submitting a paper to this journal, authors certify that the manuscript has not been submitted to nor is it under consideration for publication by another journal, conference proceedings, or similar publication.

Information for Authors and Editors

The first page must consist of a *descriptive title*, followed by an *abstract* that summarizes the article in language suitable for workers in the general field (algebra, analysis, etc.). The *descriptive title* should be short, but informative; useless or vague phrases such as “some remarks about” or “concerning” should be avoided. The *abstract* must be brief and reasonably self-contained. Included with the footnotes to the paper, there should be the 1991 *Mathematics Subject Classification* representing the primary and secondary subjects of the article. This may be followed by a list of *key words and phrases* describing the subject matter of the article and taken from it. A list of the numbers may be found in the annual index of *Mathematical Reviews*, published with the December issue starting in 1990, as well as from the electronic service e-MATH [telnet e-MATH.ams.com (or telnet 130.44.1.100)]. Login and password are e-math]. For journal abbreviations used in bibliographies, see the list of serials in the latest *Mathematical Reviews* annual index. When the manuscript is submitted, authors should supply the editor with electronic addresses if available. These will be printed after the postal address at the end of each article.

Electronically prepared manuscripts. The AMS encourages submission of electronically prepared manuscripts in $\mathcal{A}\mathcal{M}\mathcal{S}\text{-}\mathcal{T}\mathcal{E}\mathcal{X}$ or $\mathcal{A}\mathcal{M}\mathcal{S}\text{-}\mathcal{L}\mathcal{A}\mathcal{T}\mathcal{E}\mathcal{X}$ because properly prepared electronic manuscripts save the author proofreading time and move more quickly through the production process. To this end, the Society has prepared “preprint” style files, specifically the amspt style of $\mathcal{A}\mathcal{M}\mathcal{S}\text{-}\mathcal{T}\mathcal{E}\mathcal{X}$ and the amsart style of $\mathcal{A}\mathcal{M}\mathcal{S}\text{-}\mathcal{L}\mathcal{A}\mathcal{T}\mathcal{E}\mathcal{X}$, which will simplify the work of authors and of the production staff. Those authors who make use of these style files from the beginning of the writing process will further reduce their own effort. Electronically submitted manuscripts prepared in plain $\mathcal{T}\mathcal{E}\mathcal{X}$ or $\mathcal{L}\mathcal{A}\mathcal{T}\mathcal{E}\mathcal{X}$ do not mesh properly with the AMS production systems and cannot, therefore, realize the same kind of expedited processing. Users of plain $\mathcal{T}\mathcal{E}\mathcal{X}$ should have little difficulty learning $\mathcal{A}\mathcal{M}\mathcal{S}\text{-}\mathcal{T}\mathcal{E}\mathcal{X}$, and $\mathcal{L}\mathcal{A}\mathcal{T}\mathcal{E}\mathcal{X}$ users will find that $\mathcal{A}\mathcal{M}\mathcal{S}\text{-}\mathcal{L}\mathcal{A}\mathcal{T}\mathcal{E}\mathcal{X}$ is the same as $\mathcal{L}\mathcal{A}\mathcal{T}\mathcal{E}\mathcal{X}$ with additional commands to simplify the typesetting of mathematics.

Guidelines for Preparing Electronic Manuscripts provides additional assistance and is available for use with either $\mathcal{A}\mathcal{M}\mathcal{S}\text{-}\mathcal{T}\mathcal{E}\mathcal{X}$ or $\mathcal{A}\mathcal{M}\mathcal{S}\text{-}\mathcal{L}\mathcal{A}\mathcal{T}\mathcal{E}\mathcal{X}$. Authors with FTP access may obtain *Guidelines* from the Society’s Internet node e-MATH.ams.org (130.44.1.100). For those without FTP access *Guidelines* can be obtained free of charge from the e-mail address guide-elec@math.ams.org (Internet) or from the Customer Services Department, American

Mathematical Society, P.O. Box 6248, Providence, RI 02940-6248. When requesting *Guidelines*, please specify which version you want.

At the time of submission, authors should indicate if the paper has been prepared using \LaTeX or \LaTeX . The *Manual for Authors of Mathematical Papers* should be consulted for symbols and style conventions. The *Manual* may be obtained free of charge from the e-mail address `cust-serv@math.ams.org` or from the Customer Services Department, American Mathematical Society, P.O. Box 6248, Providence, RI 02940-6248. The Providence office should be supplied with a manuscript that corresponds to the electronic file being submitted.

Electronic manuscripts should be sent to the Providence office immediately after the paper has been accepted for publication. They can be sent via e-mail to `pub-submit@math.ams.org` (Internet) or on diskettes to the Publications Department, American Mathematical Society, P.O. Box 6248, Providence, RI 02940-6248. When submitting electronic manuscripts please be sure to include a message indicating in which publication the paper has been accepted. No corrections will be accepted electronically. Authors must mark their changes on their proof copies and return them to the Providence office. Authors and editors are encouraged to make the necessary submissions of electronically prepared manuscripts and proof copies in a timely fashion.

An author should submit the original and two copies of the manuscript and retain one copy. The author may suggest an appropriate editor for his paper. All contributions intended for publication and all books for review should be addressed to Walter Gautschi, Chairman, Editorial Committee, Mathematics of Computation, Department of Computer Sciences, Purdue University, West Lafayette, Indiana 47907. The date received, which is published with the final version of an accepted paper, is the date received in the office of the Chairman of the Editorial Committee, and it is the responsibility of the author to submit manuscripts directly to this office.

Any inquiries concerning a paper that has been accepted for publication should be sent directly to the Editorial Department, American Mathematical Society, P. O. Box 6248, Providence, RI 02940-6248.

Editorial Committee

WALTER GAUTSCHI, Chairman. Department of Computer Sciences, Purdue University, West Lafayette, IN 47907; *E-mail:* `wxg@cs.purdue.edu`

ANDREW M. ODLYZKO, AT&T Bell Laboratories, 600 Mountain Avenue, Murray Hill, NJ 07974; *E-mail:* `amo@research.att.com`

FRANK W. J. OLVER, Institute for Physical Science and Technology, University of Maryland, College Park, MD 20742; *E-mail:* `olver@bessel.umd.edu`

LARS B. WAHLBIN, Department of Mathematics, Cornell University, Ithaca, NY 14853; *E-mail:* `wahlbin@math.cornell.edu`

Technical Editor

ERIKA GAUTSCHI, Department of Computer Sciences, Purdue University, West Lafayette, IN 47907; *E-mail:* `exg@cs.purdue.edu`

Board of Associate Editors

JAMES H. BRAMBLE, Department of Mathematics, Cornell University, Ithaca, NY 14853; *E-mail:* `bramble@math.cornell.edu`

SUSANNE C. BRENNER, Department of Mathematics, University of South Carolina, Columbia, SC 29208; *E-mail*: brenner@math.scarolina.edu

E. W. CHENEY, Department of Mathematics, University of Texas at Austin, Austin, TX 78712-1082; *E-mail*: cheney@cs.utexas.edu

JAMES W. DEMMEL, Computer Science Division, University of California, Berkeley, CA 94720; *E-mail*: demmel@cs.berkeley.edu

EUGENE ISAACSON, Courant Institute of Mathematical Sciences, New York University, 251 Mercer Street, New York, NY 10012; *E-mail*: isaacson@acf7.nyu.edu

JAMES N. LYNESS, Argonne National Laboratory, 9700 South Cass Avenue, Argonne, IL 60439; *E-mail*: lyness@mcs.anl.gov

HARALD NIEDERREITER, Institute for Information Processing, Austrian Academy of Sciences, Sonnenfelsgasse 19, A-1010 Vienna, Austria; *E-mail*: nied@qiinfo.oeaw.ac.at

JORGE J. NOCEDAL, Department of Electrical Engineering and Computer Science, Northwestern University, Evanston, IL 60208-3118; *E-mail*: nocedal@eecs.nwu.edu

SYVERT P. NØRSETT, Division of Numerical Mathematics, The University of Trondheim and The Norwegian Institute of Technology, Alfred Getz vei 1, N-7034 Trondheim-NTH, Norway; *E-mail*: norsett@imf.unit.no

JOHN E. OSBORN, Department of Mathematics, University of Maryland, College Park, MD 20742; *E-mail*: jeo@julia.umd.edu

STANLEY OSHER, Department of Mathematics, University of California, Los Angeles, CA 90024; *E-mail*: sjo@math.ucla.edu

CARL POMERANCE, Department of Mathematics, The University of Georgia, Athens, GA 30602; *E-mail*: carl@math.uga.edu

RENÉ SCHOOF, Dipartimento di Matematica, Università degli Studi di Trento, I-38050 Povo (Trento), Italy; *E-mail*: schoof@itnvax.cineca.it

L. RIDGWAY SCOTT, Department of Mathematics, University of Houston, Houston, TX 77204-3476; *E-mail*: scott@casc.math.uh.edu

DANIEL SHANKS, Department of Mathematics, University of Maryland, College Park, MD 20742; *E-mail*: dns@gaby.umd.edu

CHI-WANG SHU, Applied Mathematics Division, Brown University, Providence, RI 02912-0001; *E-mail*: shu@cfm.brown.edu

FRANK STENGER, Department of Computer Science, University of Utah, Salt Lake City, UT 84112; *E-mail*: stenger@cs.utah.edu

HANS J. STETTER, Institut für Numerische Mathematik, Technische Universität Wien, Wiedner Hauptstrasse 6-10, A-1040, Wien, Austria; *E-mail*: stetter@uranus.tuwien.ac.at

G. W. STEWART, Department of Computer Science, University of Maryland, College Park, MD 20742; *E-mail*: stewart@thales.cs.umd.edu

NICO M. TEMME, Stichting Mathematisch Centrum, Centrum voor Wiskunde en Informatica, Kruislaan 413, 1098 SJ Amsterdam, The Netherlands; *E-mail*: nicot@cwi.nl

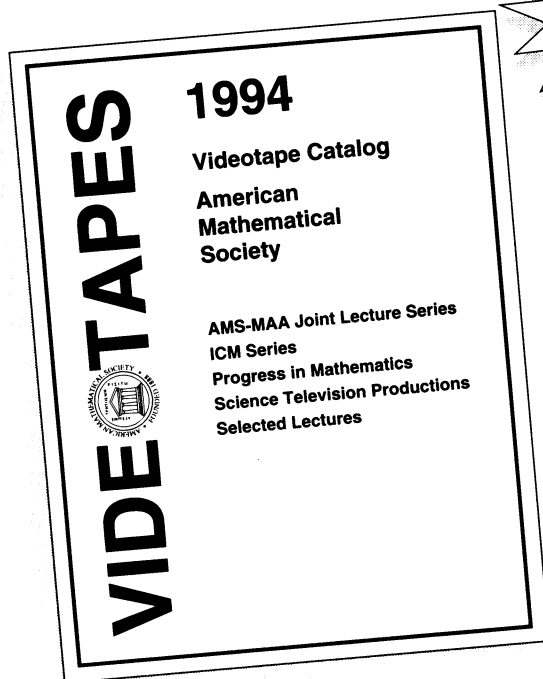
VIDAR THOMÉE, Mathematics Department, Chalmers University of Technology, S-412 96 Göteborg, Sweden; *E-mail*: thomee@math.chalmers.se

HUGH C. WILLIAMS, Department of Computer Science, University of Manitoba, Winnipeg, Manitoba, Canada R3T 2N2; *E-mail*: Hugh.Williams@csmail.cs.umanitoba.ca

JOHN W. WRENCH, JR., 102 Mt. Olivet Boulevard, Frederick, MD 21701

FREE Videotape Catalog!

New!



Great Teaching Tools!

This broad collection of videotaped lectures helps to preserve a portrait of today's distinguished mathematicians while capturing the interest and enthusiasm of the speakers as they present material in their fields of expertise. The lectures are expository and are useful in courses, seminars, and general assemblies for students as well as researchers in the mathematical sciences community.

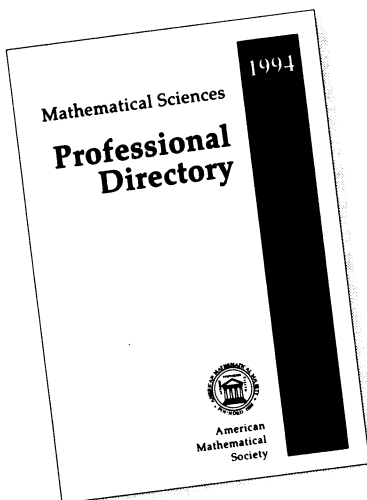


Order your FREE Catalog Today!

1-800-321-4AMS

American Mathematical Society, P.O. Box 6248, Providence, RI 02940-6248

1994



Mathematical Sciences Professional Directory

The *Mathematical Sciences Professional Directory* is a handy reference to a wide variety of organizations of interest to the mathematical community. Updated annually, the *Directory* lists:

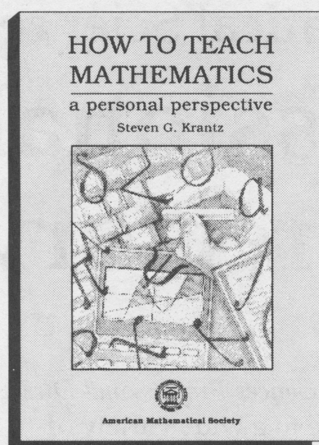
- officers, committee members and key staff of over 30 organizations including the AMS, MAA, SIAM, the American Statistical Association, the Institute of Mathematical Statistics, the Association for Computing Machinery, the National Council of Teachers of Mathematics, the National Academy of Sciences, and the American Association for the Advancement of Science
- addresses and telephone numbers of key staff
- mathematical sciences personnel of federal funding agencies
- departments of mathematical sciences in colleges and universities across the United States and Canada
- department chairs
- mathematical units of nonacademic organizations.

1991 *Mathematics Subject Classification*: 00
ISBN 0-8218-0183-X, 227 pages (softcover), March 1994
List price \$50, Institutional member \$40
To order, please specify PRODIR/94MC

All prices subject to change. Free shipment by surface: for air delivery, please add \$6.50 per title. *Prepayment required.* **Order from:** American Mathematical Society, P. O. Box 5904, Boston, MA 02206-5904, or call toll free 800-321-4AMS in the U.S. and Canada to charge with VISA or MasterCard. Canada residents, please include 7% GST.



An essential teaching tool!



HOW TO TEACH MATHEMATICS

a personal perspective

Steven G. Krantz
Washington University

Intended primarily for the graduate student or novice instructor, this book is also appropriate for those who have been teaching for many years because it highlights the finer points of excellent mathematics teaching. Professor Krantz addresses

- specific methods for successful *mathematics* teaching
- how to deal with students who beg for grades
- how to use applications effectively
- proper ways to choose a textbook
- how to deal with sensitive issues such as cheating, bribery, sexual harassment, and much more!

Lively and humorous, yet serious and sensible, this book is a practical guide to teaching mathematics. With an emphasis on the classroom, *How to Teach Mathematics* addresses specific objectives, situations, and problems in the teaching process. This book is an essential teaching tool.

About the author: Stephen G. Krantz is currently a Professor at Washington University in St. Louis, Missouri. Professor Krantz was awarded the UCLA Alumni Foundation Distinguished Teaching Award in 1979, has authored 80 scholarly papers and 7 books, was awarded the Chauvenet Prize for expository writing by the Mathematical Association of America, and is an internationally recognized scholar.

Call for information about bulk order discounts.

ISBN 0-8218-0197-X, 76 pages (softcover), July 1993
List price \$21, Individual member \$13, Institutional member \$17
To order, please specify HTM/MC



All prices subject to change. Free shipment by surface; for air delivery, please add \$6.50 per title. *Prepayment required.* **Order from:** American Mathematical Society, P.O. Box 5904, Boston, MA 02206-5904, or call toll free 800-321-4AMS in the U.S. and Canada to charge with VISA or MasterCard. Residents of Canada, please include 7% GST.

(Continued from back cover)

James McKee , Computing division polynomials	767
Peter Stevenhagen , Class number parity for the p th cyclotomic field	773
A. K. Lenstra and M. S. Manasse , Factoring with two large primes	785
P. Moree, H.J.J. te Riele, and J. Urbanowicz , Divisibility properties of integers x, k satisfying $1^k + \dots + (x-1)^k = x^k$	799
Reviews and Descriptions of Tables and Books	817
Stenger 26 , Adams and Kulisch, Editors 27 , Groetsch 28 , Goldman and Lyche, Editors 29 , Meyer 30 , Risler 31 , Fiorot and Jeannin 32 , Aliabadi and Rooke 33 , Sincovec, Keyes, Leuze, Petzold, and Reed, Editors 34 , Lee, Editor 35 , McCarthy, Editor 36	
Table Errata	829
Spira 616	
Corrigendum	831
Babuška and Osborn	
Supplement to “A nonconforming mixed multigrid method for the pure traction problem in planar linear elasticity” by Susanne C. Brenner	S1
Supplement to “On the accurate long-time solution of the wave equation in exterior domains: Asymptotic expansions and corrected boundary conditions” by Thomas Hagstrom, S. I. Hariharan, and R. C. MacCamy	S7
Supplement to “Rate of convergence of a stochastic particle method for the Kolmogorov equation with variable coefficients” by Pierre Bernard, Denis Talay, and Luciano Tubaro	S11
Supplement to “Primitive normal polynomials over finite fields” by Ilene H. Morgan and Gary L. Mullen	S19

No microfiche supplement in this issue

MATHEMATICS OF COMPUTATION
CONTENTS

Vol. 63, No. 208

October 1994

Susanne C. Brenner , A nonconforming mixed multigrid method for the pure traction problem in planar linear elasticity	435
James H. Bramble, Zbigniew Leyk, and Joseph E. Pasciak , The analysis of multigrid algorithms for pseudodifferential operators of order minus one	461
Pavel B. Bochev and Max D. Gunzburger , Analysis of least squares finite element methods for the Stokes equations	479
Thomas Hagstrom, S. I. Hariharan, and R. C. MacCamy , On the accurate long-time solution of the wave equation in exterior domains: Asymptotic expansions and corrected boundary conditions	507
T. Boukadida and A. Y. LeRoux , A new version of the two-dimensional Lax-Friedrichs scheme	541
Pierre Bernard, Denis Talay, and Luciano Tubaro , Rate of convergence of a stochastic particle method for the Kolmogorov equation with variable coefficients	555
B. Leimkuhler and S. Reich , Symplectic integration of constrained Hamiltonian systems	589
C. K. Chui, Xin Li, and H. N. Mhaskar , Neural networks for localized approximation	607
Luís F. Portugal, Joaquim J. Júdice, and Luís N. Vicente , A comparison of block pivoting and interior-point algorithms for linear least squares problems with nonnegative variables	625
Gerlind Plonka and Manfred Tasche , Cardinal Hermite spline interpolation with shifted nodes	645
Francis J. Narcowich and Joseph D. Ward , Generalized Hermite interpolation via matrix-valued conditionally positive definite functions ..	661
Ming-Jun Lai , On the computation of Battle-Lemarié's wavelets	689
Gerhard Larcher, Wolfgang Ch. Schmid, and Reinhard Wolf , Representation of functions as Walsh series to different bases and an application to the numerical integration of high-dimensional Walsh series	701
P. Verlinden and R. Cools , Proof of a conjectured asymptotic expansion for the approximation of surface integrals	717
J. N. Lyness , Quadrature over curved surfaces by extrapolation	727
Stanisław Lewanowicz , A simple approach to the summation of certain slowly convergent series	741
Robert Spira , Some zeros of the Titchmarsh counterexample	747
David Casperson and John McKay , Symmetric functions, m -sets, and Galois groups	749
Ilene H. Morgan and Gary L. Mullen , Primitive normal polynomials over finite fields	759

(Continued on inside back cover)



0025-5718(199410)63:208;1-U