

American Mathematical Society

JOURNALS OF DISTINCTION

☐ MATHEMATICAL REVIEWS

Since 1940, *Mathematical Reviews* has been the recognized reviewing and abstracting journal covering published mathematical research literature. Over 40,000 reviews or abstracts, by 12,000 international reviewers, are published each year. The reviews in each issue are arranged according to the 1980 Mathematics Subject Classification (1985 Revision). Subscriptions include annual author and subject indexes. Published monthly.

1990 subscription rate:

Either paper or microfiche subscriptions:

List \$3791; Inst member \$3033; Indiv member \$455*; MR Reviewer \$303*

Postage surcharge: India \$153; other foreign \$60

Combination paper and microfiche subscriptions:

List \$5042; Inst member \$4034

\$200 late charge applies

Optional delivery: First class \$70; airmail \$190

*Add \$10 for subscriptions in the US; \$60 for subscriptions outside the US.

☐ CURRENT MATHEMATICAL PUBLICATIONS

This current awareness journal, which is published every three weeks, is a subject index of recent and forthcoming mathematical publications which have been classified by the editors of *Mathematical Reviews*. (The classification scheme used is the 1980 Mathematics Subject Classification (1985 Revision), published in the most recent annual index of *Mathematical Reviews*.) Each issue contains an author and key index; author and key indexes covering a half year are included in issues 9 and 17. Each issue contains a list of the serials represented in that issue and a separate listing of serial additions and changes, as well as a section containing the tables of contents of certain journals. Starting in 1990, issue years will be used in place of volume numbers.

1990 subscription rate:

List \$297; Inst member \$238; Indiv \$178; MR Reviewer \$119

Postage surcharge: India \$38; other foreign \$25

Optional delivery: First class \$30; airmail \$60

10% late charge applies.

Subscriptions are sold only on a calendar year basis; split year and multiple year subscriptions are not accepted. Subscription orders received from nonmember institutions and organizations after January 1 of the subscription year will be sold at list price plus a 10% late charge (rounded); the maximum late charge for any subscription is \$200.

Microfiche Subscriptions: Microfiche editions of subscriptions are mailed (first class or airmail) before the issue is sent by the printer. All fiche are negative, 105mm by 148mm, have a 24 to 1 reduction ratio, and contain 98 frames per fiche.

PREPAYMENT REQUIRED. Send orders to: American Mathematical Society, P. O. Box 1571, Annex Station, Providence, Rhode Island 02901-1571 USA, or call 800-556-7774 in the continental US to use VISA or MasterCard.

ANNOUNCING...

MathSciSM on CD-ROM

Now you can access *Mathematical Reviews (MR)* and *Current Mathematical Publications (CMP)* on CD-ROM (Compact Disc-Read Only Memory). The CD, called MathSci Disc, combines the searching features of online MathSci with the browsing ease of printed MR. For a fixed annual fee, MathSci Disc can be used at leisure without access charges or telephone connections.

Semi-Annual Issue

MathSci Disc is produced by SilverPlatter[®] and is issued semi-annually. The first MathSci Disc became available in January 1989 and contains all the reviews and abstracts from MR 1985 through 1988 and over 68,000 entries from CMP. The July disc has all the information on the January disc plus the January-June updates. Access to current information between successive CD issues is available online from MathSci, which is updated monthly on DIALOG, BRS, and ESA.

Easy-to-Operate

MathSci Disc is available for the IBM PC and will be available for the Macintosh. SilverPlatter's user-friendly CD software with help screens and menus makes MathSci Disc easy to use. Words and phrases in the text of the reviews and abstracts are searchable with an adjacency operator. Records can be downloaded from the CD to the hard disk for editing or for processing with T_X software into typeset form with mathematics.

Fixed Cost

The MathSci Disc annual lease fee includes the January and the July issues of MathSci Disc, the SilverPlatter search software for the IBM or the Macintosh, the SilverPlatter search manual with a MathSci Disc chapter, and a toll-free help line.

The 1990 MathSci Disc is available at a low annual lease fee, equal to that of the printed MR:

Nonmembers: List price - \$3,791*
additional leases - \$2,275*

AMS members & MR subscribers:
AMS Members: \$3,033*
MR subscribers: \$2,275*
AMS members with an MR or first MathSci Disc
subscription: \$1,820*

Individuals at institutions subscribing to MathSci Disc can order a copy for personal use at a 90% discount: \$379*. (*Plus shipping & handling for addresses outside the U.S. and Canada.)

For more information on MathSci Disc or to receive a copy of the lease agreement, please contact Taissa Kusma, Database Services Manager, American Mathematical Society, P. O. Box 6248, Providence, RI 02940 or call (800) 556-7774 in the continental U.S. or (401) 272-9500. Internet: TTK@MATH.AMS.COM; Telex: 797192; FAX: 401-331-3842.

SM - MathSci is a service mark of the American Mathematical Society
® - SilverPlatter is a registered trademark of SilverPlatter International N.V.

A New Translation Journal in Mathematics



SUGAKU EXPOSITIONS

Sugaku Expositions is a new translation journal now available from the American Mathematical Society. The journal is published biannually, and began in 1988. Volume 3 is the 1990 volume. Each issue of *Sugaku Expositions* contains several expository articles, translated from the Japanese journal *Sūgaku*, which provide highly informative accounts of a variety of current areas of research.

As with all AMS publications, *Sugaku Expositions* is printed on acid-free paper to ensure long life for your mathematical collection.

ISSN 0898-9583

1990 Subscription Prices

List price \$70, Institutional member \$56, **Individual member \$42**

To order, please specify 90SUGA/MC (Vol. 3)

1989 Subscription Prices

List price \$60, Institutional member \$48, **Individual member \$36**

To order, please specify 89SUGA/MC (Vol. 2)

1988 Back Volume Prices

List price \$60, Institutional member \$48, **Individual member \$36**

To order, please specify 88SUGA/MC (Vol. 1)

Add for postage: for destinations outside U.S. and India \$8, to India \$13; air delivery to North America \$12, elsewhere \$17.

Prepayment required. Mail to: American Mathematical Society, P. O. Box 1571, Annex Station, Providence, RI 02901-1571 or call 800-556-7774 to use VISA or MasterCard.

Sample Copies: To request a sample copy, use order code SUGAEXAM/MC. Mail to AMS, ATTN: Customer Services, P. O. Box 6248, Providence, RI 02940-6248

Note: Subscriptions to AMS journals are sold only on a calendar year basis (January-December). Split year and multiple year subscription orders will not be accepted.

(Continued from back cover)

Reviews and Descriptions of Tables and Books	761
Allen III, Herrera and Pinder 20 , Pironneau 21 , Smith and Griffiths 22 , Spekreijse 23 , Leguillon and Sanchez-Palencia 24 , Sewell 25 , Fletcher 26 , Papalambros and Wilde 27 , Bini, Capovani and Menchi 28 , Blake and Zisserman 29 , Edwards 30 , Hadjidimos, Editor 31 , McKenna and Teman, Editors 32 , Glowinski, Golub, Meurant and Périaux 33 , Alfaro, Dehesa, Marcellan, Rubio de Francia and Vinuesa, Editors 34 , Rodrigue, Editor 35	
Indexes to Volumes 52 and 53	777

No microfiche supplement in this issue

MATHEMATICS OF COMPUTATION

TABLE OF CONTENTS

October 1989

Ricardo H. Nochetto , A Stable Extrapolation Method for Multidimensional Degenerate Parabolic Problems	455
Milan Miklavčič , Approximations for Weakly Nonlinear Evolution Equations	471
P. Degond and S. Mas-Gallic , The Weighted Particle Method for Convection-Diffusion Equations. Part 1: The Case of an Isotropic Viscosity	485
P. Degond and S. Mas-Gallic , The Weighted Particle Method for Convection-Diffusion Equations. Part 2: The Anisotropic Case	509
Anders Szepessy , Convergence of a Shock-Capturing Streamline Diffusion Finite Element Method for a Scalar Conservation Law in Two Space Dimensions	527
P. Dutt , Stability and Convergence of Spectral Methods for Hyperbolic Initial-Boundary Value Problems	547
Glenn R. Luecke , Numerical Approximation of Minimum Norm Solutions of $Kf = g$ for Special K	563
Hermann Brunner , Collocation Methods for Nonlinear Volterra Integro-Differential Equations with Infinite Delay	571
D. D. Ang, John Lund, and Frank Stenger , Complex Variable and Regularization Methods of Inversion of the Laplace Transform	589
Ch. Großmann and H.-G. Roos , Uniform Enclosure of High Order for Boundary Value Problems by Monotone Discretization	609
Gene H. Golub and Mark D. Kent , Estimates of Eigenvalues for Iterative Methods	619
J. N. Lyness and I. H. Sloan , Some Properties of Rank-2 Lattice Rules	627
Claude Brezinski , Procedures for Estimating the Error in Padé Approximation	639
David H. Bailey and Helaman R. P. Ferguson , Numerical Results on Relations Between Fundamental Constants Using a New Algorithm	649
B. A. Troesch , The Validity of Shapiro's Cyclic Inequality	657
Jean-Pierre Massias, Jean-Louis Nicolas, and Guy Robin , Effective Bounds for the Maximal Order of an Element in the Symmetric Group	665
Johannes Buchmann and H. C. Williams , On the Computation of the Class Number of an Algebraic Number Field	679
I. Gaál and N. Schulte , Computing All Power Integral Bases of Cubic Fields	689
Erich Kaltofen and Heinrich Rolletschek , Computing Greatest Common Divisors and Factorizations in Quadratic Number Fields	697
Su Hee Kim and Carl Pomerance , The Probability that a Random Probable Prime is Composite	721
Jonathan W. Tanner and Samuel S. Wagstaff, Jr. , New Bound for the First Case of Fermat's Last Theorem	743
Günter Löh , Long Chains of Nearly Doubled Primes	751

(Continued on inside back cover)