JOURNALS PUBLISHED BY THE AMERICAN MATHEMATICAL SOCIETY

TRANSLATION JOURNALS

Soviet Mathematics–Doklady is a bimonthly translation journal containing the entire pure mathematics section of the DOKLADY AKADEMIĬ NAUK SSSR.

Mathematics of the USSR–Izvestija, a bimonthly journal is a cover-to-cover translation of IZVESTIJA AKADEMIĬ NAUK SSSR SERIJA MATEMATIČESKAJA.

Mathematics of the USSR–Sbornik is a monthly journal and is a cover-to-cover translation of MATEMATIČSKIĬ SBORNIK (NOVAJA SERIJA).

Theory of Probability and Mathematical Statistics is the cover-to-cover translation into English of the TEORIJA VEROJATNOSTEĬ I MATEMATIČESKAJA STATISTIKA.

Vestnik of the Leningrad University (Mathematics) is the complete translation into English of the mathematics section of the VESTNIK LENINGRADSKOGO UNIVERSITETA.

Transactions of the Moscow Mathematical Society is a translation into English of TRUDY MOSKOVSKOGO MATEMATIČESKOGO OBŠČESTVA.

Proceedings of the Steklov Institute of Mathematics is a translation of the PROCEEDINGS OF THE STEKLOV INSTITUTE OF MATHEMATICS IN THE ACADEMY OF SCIENCES OF THE USSR.

RESEARCH JOURNALS

Submission information for these journals is included in the May and September issues of this *Bulletin*.

Bulletin (New Series) of the American Mathematical Society. Contains Research-Expository Papers, Research Announcements and Reviews of Books on Advanced Mathematics.

Mathematics of Computation is a quarterly journal devoted to original papers in numerical analysis, the application of numerical methods and high-speed calculator devices, the computation of mathematical tables, the theory of high-speed calculating devices, and other aids to computation.

Memoirs of the American Mathematical Society is a bimonthly journal constituting a series of paperbound research tracts which are of the same general character as the papers published in the TRANSACTIONS.

Proceedings of the American Mathematical Society is a monthly journal devoted entirely to research in pure and applied mathematics, principally to the publication of original papers of moderate length. A department called Shorter Notes was established for the purpose of publishing very short papers of an unusually elegant and polished character for which there is normally no other outlet.

Transactions of the American Mathematical Society is a monthly journal devoted entirely to research in pure and applied mathematics and, in general, includes longer papers than those in the PROCEEDINGS.

OTHER JOURNALS

Current Mathematical Publications, issued biweekly, contains a subject-classified index of papers and books being published currently in mathematics.

Mathematical Reviews is a monthly journal devoted to abstracts and reviews of the current mathematical literature of the world. Each volume consists of six regular issues plus an index issue. Abstracts and reviews are grouped under subject headings.

BULLETIN (New Series) of the American Mathematical Society

EDITORIAL BOARD FOR RESEARCH-EXPOSITORY ARTICLES

Lipman Bers
Felix E. Browder, Chairman
Paul J. Cohen
Morton L. Curtis
Frederick W. Gehring
Donald S. Ornstein
James B. Serrin
Stephen Smale
John T. Tate

EDITORIAL BOARD FOR RESEARCH ANNOUNCEMENTS

Charles L. Fefferman
Melvin Hochster
Robert P. Langlands
Richard K. Lashof
Henry P. McKean, Jr.
Hugh L. Montgomery
David Mumford
Julia B. Robinson
Gian-Carlo Rota
I. M. Singer, Chairman
François Trèves

BOOK REVIEW EDITOR: Meyer Jerison

MANAGING EDITOR: I. M. Singer

MANUSCRIPT, PROOF AND COPYING INFORMATION

SUBMISSION OF MANUSCRIPT

Articles submitted for publication should be typewritten and double spaced. The *Manual for Authors*, available from the Society, should be consulted for symbols and style conventions. Authors should take the greatest possible care in preparing the original manuscript. Hand drawn symbols are satisfactory, if clearly done; directions to the printer should be included where necessary on a separate sheet.

For Research-Expository Articles and Research Announcements, the first footnote should include *subject classification numbers* representing the primary and secondary subjects of the article. The 1980 Mathematics Subject Classification can be found in the December index volumes of Mathematical Reviews.

COPYRIGHT TRANSFER AGREEMENT

The signing of a Copyright Transfer Agreement is a requirement of publication in the BULLETIN. A copy of the agreement is sent to the authors upon receipt of a manuscript in the Providence Office of the Society; in case of joint authors, copies are sent to the author who is designated to receive galley proof. Authors are urged to return the form immediately to prevent delays in processing and publishing of the manuscript. The 1978 edition of the *Manual for Authors* has a description of Society policy concerning copyright and a copy of the agreement.

PUBLICATION CHARGES

Research Announcements carry a page charge of $40.00 per page to help defray the cost of publication. This amount is charged to the institution or to a contract supporting the research reported in the published paper. The publication charge policy of the United States Federal Council for Science and Technology (FCST) is reported on page 112 of the February, 1975 issue of the NOTICES of the American Mathematical Society. In no case is the author personally responsible for paying the page charge, nor is acceptance of the author's paper for publication dependent upon payment of the page charge.

REPRINTS AND ADDRESS CHANGES

Any inquiries concerning a paper which has been accepted for publication, including information regarding reprints or changes of address for mailing proof, should be sent directly to the Editorial Department, American Mathematical Society, P.O. Box 6248, Providence, Rhode Island 02940.

GALLEY PROOF

When a paper with more than one author has been accepted for publication, only one set of galley proof will be sent. Joint authors should, therefore, indicate which of them should receive galley proof in the event that the manuscript is accepted for publication.

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 acknowledgement 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 Executive Director, American Mathematical Society, Box 6248, Providence, Rhode Island 02940.

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 copier pay the stated per copy fee through the Copyright Clearance Center, Inc. (For details write Copyright Clearance Center, Inc., 21 Congress Street, Salem, Massachusetts 01970.)

ABCDEFGHIJ–DB–8987654321

CONTENTS January 1981

RESEARCH – EXPOSITORY PAPERS

The fundamental theorem of algebra and complexity theory *by Steve Smale* 1

Strong reducibilities *by Piergiorgio Odifreddi* 37

BOOK REVIEWS

Hilbert's fourth problem *by A. V. Pogorelov*—Reviewed by *Herbert Busemann* 87

Transformation groups and representation theory *by Tammo tom Dieck*—Reviewed by *J. P. May* 90

Integral representations *by Irving Reiner and Klaus W. Roggenkamp*—Reviewed by *Alex Heller* 93

RESEARCH ANNOUNCEMENTS

Definable degrees and automorphisms of $\mathcal{D}$ *by Leo Harrington and Richard A. Shore* 97

Decidability and undecidability theorems for PAC-fields *by Gregory Cherlin, Lou van den Dries and Angus Macintyre* 101

The classification of extensions of C^*-algebras *by Jonathan Rosenberg and Claude Schochet* 105

The stability of the Bergman kernel and the geometry of the Bergman metric *by Robert E. Greene and Steven G. Krantz* 111

On the local monodromy of a variation of Hodge structure *by Eduardo Cattani and Aroldo Kaplan* 116

Smooth bounded strictly and weakly pseudoconvex domains cannot be biholomorphic *by Steven Bell* 119

For $n > 3$ there is only one finitely additive rotationally invariant measure on the n-sphere defined on all Lebesgue measurable subsets *by Dennis Sullivan* 121