



# THE ANNALS OF MATHEMATICAL STATISTICS

**Subscription Rates.** Current issues are \$12 per volume (four issues of one calendar year) in the U. S. and Canada, \$10 per volume elsewhere. Single issues are \$3.50. Back numbers are \$12 per volume, \$3.50 per issue, \$200 for the first 25 volumes, \$10 per additional volume purchased at the same time as Volume I through XXV.

Rates to members of the Institute of Mathematical Statistics are lower (see inside back cover).

Communications concerning subscriptions, back numbers, payment of dues, etc., should be addressed to A. H. Bowker, Treasurer, Department of Statistics, Stanford University, Stanford, Calif.

Communications concerning membership, changes of address, etc., should be addressed to George E. Nicholson, Jr., Secretary, Department of Statistics, University of North Carolina, Chapel Hill, N. C. Changes of address which are to become effective for a given issue of the *Annals* should be reported to the Secretary on or before the 10th of the month preceding the month of issue.

**Editorial Office.** Department of Statistics, Eckhart Hall, University of Chicago, Chicago 37, Illinois. William Kruskal, Editor.

**Preparation of manuscripts.** Manuscripts should be submitted to the editorial office. Each manuscript should be typewritten, double spaced, with wide margins at sides, top, and bottom, and the original should be submitted with one additional copy, on paper that will take corrections. Dittoed or mimeographed papers are acceptable only if completely legible. Footnotes should be reduced to a minimum, and where possible replaced by remarks in the text, or a bibliography at the end of the paper; formulae in footnotes should be avoided. References should follow current *Annals* style, and should be numbered alphabetically according to authors' names.

Figures, charts, and diagrams should be professionally drawn on plain white paper or tracing cloth in black India ink twice the size they are to be printed.

Authors are asked to keep in mind the typographical difficulties of complicated mathematical formulae. The difference between capital and lower-case letters should be clearly shown; care should be taken to avoid confusion between such pairs as zero and the letter O, the numeral 1 and the letter l, numeral 1 used as superscript and prime ('), alpha and a, kappa and k, mu and u, nu and v, eta and n, etc. Subscripts or superscripts should be clearly below or above the line. Bars above groups of letters (e.g.,  $\overline{\log x}$ ) and underlined letters (e.g.,  $\underline{x}$ ) are difficult to print and should be avoided. Symbols are automatically italicized by the printer and should not be underlined on manuscripts. Boldface letters may be indicated by underlining with a wavy line on the manuscript; boldface subscripts and superscripts are not available. Complicated exponentials should be represented with the symbol exp. In writing square roots the fractional exponent is preferable to the radical sign. Fractions *in the body of the text* (as opposed to displayed expressions) and fractions occurring in the numerators or denominators of fractions are preferably written with the solidus; thus  $(a + b)/(c + d)$  rather than  $\frac{a + b}{c + d}$ .

Authors will ordinarily receive only galley proofs. Fifty reprints without covers will be furnished free. Additional reprints and covers will be furnished at cost.

---

Mail to the *Annals of Mathematical Statistics* should be addressed to either the Editor or the Treasurer, as described above. It should *not* be addressed to Waverly Press.

---

COMPOSED AND PRINTED AT THE  
WAVERLY PRESS, INC., BALTIMORE, MARYLAND, U. S. A.

Second-class postage paid at Baltimore, Maryland

## EDITORIAL STAFF

EDITOR

WILLIAM KRUSKAL

ASSOCIATE EDITORS

ALLAN BIRNBAUM  
Z. W. BIRNBAUM  
DOUGLAS G. CHAPMAN

DONALD A. DARLING  
WASSILY HOEFFDING  
J. L. HODGES, JR.

N. L. JOHNSON  
OSCAR KEMPTHORNE  
E. L. LEHMANN

WITH THE COOPERATION OF

J. R. BLUM  
R. C. BOSE  
D. L. BURKHOLDER  
W. S. CONNOR  
D. R. COX

J. F. DALY  
CYRUS DERMAN  
J. L. DOOB  
MEYER DWASS  
D. A. S. FRASER

SAMUEL KARLIN  
HARRY KESTEN  
C. H. KRAFT  
SOLOMON KULLBACK  
EUGENE LUKACS

G. E. NOETHER  
HOWARD RAIFFA  
H. E. ROBBINS  
WALTER L. SMITH  
LIONEL WEISS

PAST EDITORS OF THE ANNALS

H. C. CARVER, 1930-1938

T. W. ANDERSON, 1950-1952

S. S. WILKS, 1938-1949

E. L. LEHMANN, 1953-1955

T. E. HARRIS, 1955-1958

Published quarterly by the Institute of Mathematical Statistics in March,  
June, September and December.

## IMS INSTITUTIONAL MEMBERS

ABERDEEN PROVING GROUNDS (BALLISTIC RESEARCH LABORATORIES), Aberdeen, Maryland  
AMERICAN VISCOSE CORPORATION, Marcus Hook, Pennsylvania

BELL TELEPHONE LABORATORIES, INC., TECHNICAL LIBRARY, 463 West Street, New York 14,  
New York

BOEING AIRPLANE COMPANY, Box 3707, Seattle, Washington

CALIFORNIA RESEARCH CORPORATION, P. O. Box 1627, Richmond, California

CORNELL UNIVERSITY, MATHEMATICS DEPARTMENT, Ithaca, New York

GENERAL ANALYSIS CORPORATION, 11753 Wilshire Blvd., Los Angeles 25, California

INDIANA UNIVERSITY, THE LIBRARY, Bloomington, Indiana

INTERNATIONAL BUSINESS MACHINES CORPORATION, APPLIED SCIENCE LIBRARY, White  
Plains, New York

IOWA STATE UNIVERSITY, STATISTICAL LABORATORY, Ames, Iowa

LOCKHEED AIRCRAFT CORPORATION, ENGINEERING LIBRARY, Burbank, California

MICHIGAN STATE UNIVERSITY, DEPARTMENT OF STATISTICS, East Lansing, Michigan

NATIONAL SECURITY AGENCY, Fort George G. Meade, Maryland

PRINCETON UNIVERSITY, DEPARTMENT OF MATHEMATICS, SECTION OF MATHEMATICAL  
STATISTICS, Princeton, New Jersey

PURDUE UNIVERSITY LIBRARIES, Lafayette, Indiana

RADIO CORPORATION OF AMERICA, R.C.A. LABORATORIES, Princeton, New Jersey

SANDIA CORPORATION, Sandia Base, Albuquerque, New Mexico

SPACE TECHNOLOGY LABORATORIES, P. O. Box 95001, Los Angeles 45, California

STANFORD UNIVERSITY, GIRSHICK MEMORIAL LIBRARY, Stanford, California

STATE UNIVERSITY OF IOWA, Iowa City, Iowa

THE CATHOLIC UNIVERSITY OF AMERICA, ENG. AND MATH. LIBRARY, Washington, D. C.

THE RAMO-WOOLRIDGE CORPORATION, Los Angeles, California

UNION CARBIDE CORPORATION, 30 East 42nd Street, New York 17, New York

UNITED STATES STEEL CORPORATION LIBRARY, Monroeville, Penna.

UNIVERSITY OF CALIFORNIA, STATISTICAL LABORATORY, Berkeley, California

UNIVERSITY OF ILLINOIS, SERIALS DEPARTMENT, Urbana, Illinois

UNIVERSITY OF NORTH CAROLINA, DEPARTMENT OF STATISTICS, Chapel Hill, North Carolina

UNIVERSITY OF PUERTO RICO, SCHOOL OF TROPICAL MEDICINE, San Juan, Puerto Rico

UNIVERSITY OF WASHINGTON, LABORATORY OF STATISTICAL RESEARCH, Seattle, Washington