THE ANNALS of. MATHEMATICAL STATISTICS

FOUNDED AND EDITED BY H. C. CARVER, 1930-1938 EDITED BY S. S. WILKS, 1938-1949

THE OFFICIAL JOURNAL OF THE INSTITUTE OF MATHEMATICAL STATISTICS

Contents

· · · · · · · · · · · · · · · · · · ·	PAGE
Preference-based definitions of subjective probabilityPeter C. Fishburn Optimal sequential procedures when more than one stop is required	1605
Gus W. Haggstrom	
Some problems in the theory of optimal stopping rules DAVID OLIVER SIEGMUND	1627
Some one-sided stopping rules	
Note on Dynkin's (α, ξ) -process of standard Markov process Hiroshi Kunita	
Some remarks on continuous additive functionals	
Preservation of weak convergence under mappingsFLEMMING TOPSOE	
A remark on sequential discrimination	1666
On partial a priori information in statistical inference	
J. R. Blum and Judah Rosenblatt	1671
Linear least squares regression	1679
The distribution of a quadratic form of normal random variables	
Bruno Baldessari	1700
Local asymptotic power and efficiency of tests of Kolmogorov-Smirnov type	
Jiří Andři	1705
A k-sample extension of the one-sided two-sample Smirnov tests statistic	
W. J. Conover	1726
Asymptotically optimal statistics in some models with increasing failure rate average	
Kjell Doksum	1731
Testing against ordered alternatives in model I analysis of variance; normal theory	
and nonparametric	1740
Asymptotic efficiency of multivariate normal score testG. K. Bhattacharyya	
Sign and Wilcoxon tests for linearityRichard A. Olshen	
Efficient estimation of a shift parameter from grouped dataP. K. BHATTACHARYA	
Nonparametric procedures for selecting a subset containing the population with the	1110
largest α -quantile	1700
Nonparametric procedures for selecting the t populations with the largest α -quantile	1100
MILTON SOBEL	1004
An inequality for expected values of sample quantiles	1917
R. K. TSUTAKAWA	1822
Continued on back of	over

Vol. 38, No. 6—December 1967

THE ANNALS OF MATHEMATICAL STATISTICS

Subscription Rates. Current issues are \$30 per volume (six issues of one calendar year) in the U. S. and Canada, \$22.50 per volume elsewhere. Single issues are \$5.25. Back numbers for all issues up to and including 1956 (Vol. XXVII) are \$15 per volume, \$4.00 per issue; issues from 1957 through 1964 are \$20.00 per volume, \$5.25 per issue; from 1965 onward, \$30 per volume, \$5.25 per issue. Complete sets (Volumes I-XXVII) are \$250. If additional volumes are ordered at the same time the set is ordered, the price is \$15 for each additional volume. An index to Volumes I-XXXI is available for \$10.

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

Communications concerning subscriptions, back numbers, payment of dues, membership, changes of address, etc., should be addressed to Professor George J. Resnikoff, Treasurer, Department of Statistics, California State College, Hayward, California 94542.

Papers to be submitted for publication should be sent to the Editor, Z. W. Birnbaum, Department of Mathematics, University of Washington, Seattle, Washington 98105. Abstracts and corrected galley proofs should be sent to the Managing Editor, P. L. Meyer, Department of Mathematics, Washington State University, Pullman, Washington 99163.

Preparation of manuscripts. 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 bibliography at the end of the paper; formulae in footnotes should be avoided. References should follow the style of 33 313-314.

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 I, 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., $\log x$) and underlined letters (e.g., 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 are preferably written with the

solidus; thus (a+b)/(c+d) rather than $\frac{a+b}{c+d}$, and ab/cd rather than $\frac{ab}{cd}$.

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, Managing 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 21202 U.S.A.

Second-class postage paid at Baltimore, Maryland 21202

EDITORIAL STAFF

EDITOR

Z. W. BIRNBAUM

ASSOCIATE EDITORS

R. R. BAHADUR A. P. DEMPSTER SYLVAIN EHRENFELD THOMAS S. FERGUSON RONALD K. GETOOR FRANKLIN A. GRAYBILL JAMES F. HANNAN DAVID L. HANSON SAMUEL KARLIN E. L. LEHMANN EUGENE LUKACS INGRAM OLKIN FRANK PROSCHAN RONALD PYKE JEROME SACKS HENRY TEICHER

MANAGING EDITOR

P. L. MEYER

PAST EDITORS OF THE ANNALS

H. C. CARVER, 1930-1938 S. S. WILKS, 1938-1949 T. E. HARRIS, 1955-1958

S. S. WILKS, 1938-1949 WILLIAM KRUSKAL, 1958-1961 T. W. Anderson, 1950-1952 J. L. Hodges Jr., 1961-1964

E. L. LEHMANN, 1953-1955

D. L. Burkholder, 1964-1967

Published bimonthly by the Institute of Mathematical Statistics in February, April, June, August, October and December.

IMS INSTITUTIONAL MEMBERS

```
AEROSPACE CORPORATION, El Segundo, California
ARIZONA STATE UNIVERSITY, Tempe, Arizona
BALLISTIC RESEARCH LABS., Aberdeen, Proving Ground, Md.
BELL TELEPHONE LABORATORIES, INC., TECHNICAL LIBRARY, New York, N. Y.
BOEING AIRPLANE COMPANY, Seattle, Washington
CASE INSTITUTE OF TECHNOLOGY, STATISTICAL LABORATORY, Cleveland, Ohio
CATHOLIC UNIVERSITY OF AMERICA, STAT. LAB., MATH. DEPT., Washington, D. C.
CHEVRON RESEARCH Co., Richmond, California
COLUMBIA UNIVERSITY, DEPARTMENT OF MATHEMATICAL STATISTICS, New York, N. Y.
CORNELL UNIVERSITY, MATHEMATICS DEPARTMENT, Ithaca, New York
FLORIDA STATE UNIVERSITY, DEPARTMENT OF STATISTICS, Tallahassee, Florida
 FORD MOTOR COMPANY, Dearborn, Michigan
GENERAL MOTORS CORPORATION, RESEARCH LABORATORIES, Warren, Michigan
GEORGE WASHINGTON UNIVERSITY, DEPARTMENT OF STATISTICS, Washington, D. C.
 W. R. GRACE AND COMPANY, RESEARCH DIVISION, Clarksville, Maryland
GRADUATE RESEARCH CENTER OF THE SOUTHWEST, Dallas, Texas
HUGHES AIRCRAFT COMPANY RESEARCH LABS., Malibu, California
Indiana University, The Library, Bloomington, Indiana
International Business Machines Corporation, New York, New York
IOWA STATE UNIVERSITY, STATISTICAL LABORATORY, Ames, Iowa
JOHNS HOPKINS UNIVERSITY, DEPARTMENT OF BIOSTATISTICS, DEPARTMENT OF STATISTICS,
       Baltimore, Maryland
Kansas State University, Department of Statistics, Manhattan, Kansas
KNOLLS ATOMIC POWER LABORATORY, Schenectady, New York
LOCKHEED AIRCRAFT CORPORATION, ENGINEERING LIBRARY, Burbank, California
MICHIGAN STATE UNIVERSITY, DEPARTMENT OF STATISTICS, East Lansing, Michigan
MINNESOTA MINING AND MANUFACTURING COMPANY, APPLIED MATHEMATICS AND STATISTICS, St. Paul, Minnesota
Monsanto Chemical Company, St. Louis, Missouri
NATIONAL CASH REGISTER COMPANY, RESEARCH DEPARTMENT, Dayton, Ohio
NATIONAL SECURITY AGENCY, Fort George G. Meade, Maryland
NORTHWESTERN UNIVERSITY, DEPARTMENT OF MATHEMATICS, Evanston, Illinois
OHIO STATE UNIVERSITY, STATISTICS LABORATORY, DEPARTMENT OF MATHEMATICS, Co-
lumbus, Ohio
Oklahoma State University, Department of Mathematics, Stillwater, Oklahoma
OKLAHOMA STATE UNIVERSITY, DEPARTMENT OF MATHEMATICS, Stillwater, Oklahoma PENNSYLVANIA STATE UNIVERSITY, DEPARTMENT OF MATHEMATICS, University Park, Penna. PRINCETON UNIVERSITY, DEPT. OF MATH., SECT. OF MATH. STAT., Princeton, New Jersey PROCTER & GAMBLE COMPANY, TECHNICAL LIBRARY, Cincinnati, Ohio PURDUE UNIVERSITY LIBRARIES, Lafayette, Indiana ROCKEFELLER UNIVERSITY, New York, N. Y.
SANDIA CORPORATION, Sandia Base, Albuquerque, New Mexico STANFORD UNIVERSITY, GIRSHICK MEMORIAL LIBRARY, Stanford, California SYSTEM DEVELOPMENT CORPORATION, Santa Monica, California TEXAS A & M UNIVERSITY, INSTITUTE OF STATISTICS, College Station, Texas TRW SYSTEMS. INC.. Redondo Beach. California
TRW Systems, Inc., Redondo Beach, California
Union Oil Company of California, Union Research Center, Brea, California
United States Steel Corporation Library, Monroeville, Pennsylvania
 University of Arizona, Tuscon, Arizona
University of California, Department of Statistics, Davis, California University of California, Department of Mathematics, Riverside, California University of California, Statistical Laboratory, Berkeley, California
 University of Illinois, Serials Department, Urbana, Illinois
 University of Iowa, Iowa City, Iowa
University of Michigan, Department of Mathematics, Ann Arbor, Michigan University of Minnesota, Department of Statistics, Minneapolis, Minnesota
 University of Missouri, Department of Statistics, Columbia, Missouri
 University of Montreal, Department of Mathematics, Montreal
 University of New Mexico, Albuquerque, New Mexico
 University of North Carolina, Department of Statistics, Chapel Hill, North Carolina
 UNIVERSITY OF ROCHESTER, Rochester, New York
 University of Washington, Laboratory of Statistical Research, Seattle, Washington
 University of Wisconsin, Department of Statistics, Madison, Wisconsin Westinghouse Electric Corporation, Research Laboratories, Pittsburgh, Penna.
```