

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
Sufficiency and Statistical Decision Functions. R. R. BAHADUR	423
On a Stochastic Approximation Method. K. L. CHUNG	463
Some Theorems on Quadratic Forms Applied in the Study of Analysis of Variance Problems. II. Effects of Inequality of Variance and of Correlation Between Errors in the Two-Way Classification. G. E. P. BOX ...	484
A Distribution-Free Test for Regression Parameters. H. E. DANIELS	499
On the Asymptotic Efficiency of Certain Nonparametric Two-Sample Tests. A. M. MOOD	514
On Certain Confidence Contours for Distribution Functions. STEN MALMQUIST	523
Confidence Bands for Polynomial Curves. PAUL G. HOEL	534
Random Functions Satisfying Certain Linear Relations. S. G. GHURYE ...	543
Truncated Life Tests in the Exponential Case. BENJAMIN EPSTEIN	555
Distribution of a Studentized Order Statistic. K. C. S. PILLAI AND K. V. RAMACHANDRAN	565
On the Distribution of the Likelihood Ratio. HERMAN CHERNOFF	573
The Use of the Maximum Likelihood Estimates in χ^2 Tests for Goodness of Fit. HERMAN CHERNOFF AND E. L. LEHMANN	579
An Extension of Massey's Distribution of the Maximum Deviation Between Two-Sample Cumulative Step Functions. CHIA KUEI TSAO	587
On Distribution-Free Statistics. Z. W. BIRNBAUM AND H. RUBIN	593
A Note on Partially Balanced Designs. MARVIN ZELEN	599
Notes:	
Correlation Between a Discrete and a Continuous Variable. Point Biserial Correlation. ROBERT F. TATE	603
A Computing Formula for the Power of the Analysis of Variance Test. W. L. NICHOLSON	607
Power Under Normality of Several Nonparametric Tests. W. J. DIXON	610
A Remark on the Joint Distribution of Cumulative Sums. HERBERT ROBBINS	614
Abstracts of Papers.....	616
News and Notices.....	620
Report of the Pasadena Meeting.....	628
Publications Received.....	630

Vol. 25, No. 3 — September, 1954

THE ANNALS OF MATHEMATICAL STATISTICS

EDITOR

E. L. LEHMANN

ASSOCIATE EDITORS

DAVID BLACKWELL
J. L. HODGES, JR.

WASSILY HOEFFDING
WILLIAM G. MADOW

ALEXANDER M. MOOD
J. WOLFOWITZ

WITH THE COOPERATION OF

Z. W. BIRNBAUM
R. C. BOSE
HERMAN CHERNOFF
KAI LAI CHUNG
J. F. DALY
D. A. DARLING
J. L. DOOB

T. E. HARRIS
PAUL G. HOEL
J. KIEFER
WILLIAM H. KRUSKAL
SOLOMON KULLBACK
H. B. MANN
G. E. NOETHER

EDWARD PAULSON
M. PEISAKOFF
H. E. ROBBINS
S. N. ROY
L. J. SAVAGE
HERBERT SOLOMON
CHARLES M. STEIN

LIONEL WEISS

MAX A. WOODBURY

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

INSTITUTE OF MATHEMATICAL STATISTICS

**General
Office:**

Department of Mathematics, Michigan State College, East
Lansing, Michigan

K. J. Arnold, Secretary-Treasurer

This address should be used for all communications concerning membership, subscriptions, changes of address, back numbers, etc., but *not* for editorial correspondence. Changes in mailing address which are to become effective for a given issue should be reported to the Secretary on or before the 15th of the month preceding the month of that issue.

**Editorial
Office:**

Statistical Laboratory, University of California, Berkeley 4,
California

E. L. Lehmann, Editor

Manuscripts should be submitted to this address; each manuscript should be typewritten, double-spaced with wide margins, and the original copy should be submitted (preferably with one additional copy). Dittoed and mimeographed papers are acceptable if they are completely legible and printed on paper that will take corrections. Footnotes should be reduced to a minimum and whenever possible replaced by a bibliography at the end of the paper; formulae in footnotes should be avoided. 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 requested to keep in mind typographical difficulties of complicated mathematical formulae. Authors will ordinarily receive only galley proofs. Fifty reprints without covers will be furnished free. Additional reprints and covers furnished at cost.

**Subscription
Price:**

\$12 per year in the U. S. and Canada; \$10 elsewhere. Single issues \$3.50. Back numbers are available at \$12 per volume or \$3.50 per issue.

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