

# The Institute of Mathematical Statistics

***proudly announces***

***the publication of***

## **Directions in Time Series**

This book is a published report of the Special Topics Meeting on Time Series Analysis, sponsored by the Institute of Mathematical Statistics, May 1-3, 1978 at Iowa State University, Ames, Iowa. The purpose was to survey the state of the art on the theory and application of time series. The timeliness of the subject matter of the conference is illustrated first by its choice for a special topics meeting and further by the large and enthusiastic group that attended the meeting. It is anticipated that the publication of these proceedings containing, as it does, papers surveying the principal areas of time series analysis today, will excite the interest of the many practitioners and researchers in time series who were unable to attend the meetings themselves.

The keynote address was delivered by J.W. Tukey, "Can we predict where time series analysis should go next?". Some of the papers presented were: Time Series Models, Computer Packages and Graphics, Econometric Models, Special Topics, Control Theory and Engineering, Robust Methods for Time Series, Continuous Processes and Periodic Models.

List Price ..... \$20.00

(Members) ..... \$15.00

**Order Pre-paid from:**

**The Institute of Mathematical Statistics  
3401 Investment Boulevard, Suite 6  
Hayward, California 94545 (USA)**

For those of you who need to know what's happening in statistics . . .

**The Institute of Mathematical Statistics**

**and**

**The American Statistical Association**

announce publication of

# CURRENT INDEX TO STATISTICS: APPLICATIONS, METHODS AND THEORY

*An annual computerized index to the statistical literature*

*Coverage*—Over 7,000 articles in “core” and “related” journals are indexed. Author index and index by key words. Example of subject index (complete reference to journal, volume, pages, etc., is given):

~~~~~ *Important word*

Asymptotic Properties of Non-linear Least Squares Estimators • R. I. Jennrich  
Interval Estimation of Non-linear Parametric Functions • Halpern, Mantel  
Interval Estimation of Non-linear Parametric Functions, II • M. Halpern  
On a Problem in Non-linear Prediction Theory • J. B. Robertson  
Convergence in Non-linear Regression • T. Tornheim  
Non-linear Regression with Minimal Assumptions • H. M. Wagner  
Non-linear  
Discrimination Among Mechanistic Models • G.E.P. Box  
New Analysis of Variance Model for Nonadditive Data • J. Mandel  
Simplified Experimental Design • M. J. Box

*Key word* →

*Who should subscribe*—All individuals who spend any significant fraction of their time doing statistics. Anyone who spends more than *one hour per year* looking for an article on a particular topic in statistics or redeveloping some technique that already exists in the literature will find it cost effective to have a personal copy of this index.

*Editor*—Brian L. Joiner, University of Wisconsin. *Assistant Editor*—Jessie M. Gwynne

*Management Committee*—Donald A. Gardiner, Chairman; Heebok Park, Seymour Geisser, David Hoaglin, David L. Wallace

*Subscription Rates*—Vols. 1,2,3 (per vol.)  
Nonmember \$ 18.00; Member \$ 9.00  
Vol. 4, 5 (per vol.).  
Nonmember \$ 22.00; Member \$ 11.00

*Send orders and remittance to*—

**The Institute of Mathematical Statistics  
Business Office  
3401 Investment Blvd. Suite 6  
Hayward, California 94545**

## Articles

Minimum chi-square, not maximum likelihood! . . . . . JOSEPH BERKSON

Discussion on Professor Berkson's paper by Bradley Efron, J. K. Ghosh, L. Le Cam, Johann Pfanzagl and C. Radhakrishna Rao with reply to discussants by Joseph Berkson

The  $n^{-2}$ -order mean squared errors of the maximum likelihood and the minimum logit chi-square estimator . . . . . TAKESHI AMEMIYA

Second order efficiency of the MLE with respect to any bounded bowl-shaped loss function

J. K. GHOSH, B. K. SINHA AND H. S. WIEAND

Markov fields and log-linear interaction models for contingency tables

J. N. DARROCH, S. L. LAURITZEN AND T. P. SPEED

A necessary condition for admissibility . . . . . LAWRENCE D. BROWN

Improving on inadmissible estimators in continuous exponential families with applications to simultaneous estimation of gamma scale parameters . . . . . JAMES BERGER

Examples of Berger's phenomenon in the estimation of independent normal means . . . . . L. BROWN

Empirical Bayes estimation of the multivariate normal covariance matrix . . . . . L. R. HAFF

Conditional independence for statistical operations . . . . . A. PHILIP DAWID

A note on differentials and the CLT and LIL for statistical functions with application to  $M$ -estimates

DENNIS D. BOOS AND R. J. SERFLING

Chi-square tests for fit for type II censored data

DANIEL P. MIHALKO AND DAVID S. MOORE

Algorithms in order restricted statistical inference and the Cauchy mean value property . . . . . TIM ROBERTSON AND F. T. WRIGHT

Optimal designs for second order processes with general linear means . . . . . CARL SPRUILL

On approximating parametric Bayes models by nonparametric Bayes models . . . . . S. R. DALAL AND GAINFORD J. HALL, JR.

## Short Communications

A note on convergence rates for the product limit estimator

E. G. PHADIA AND J. VAN RYZIN

A new bound for the Euclidean norm of the difference between the least squares and the best linear unbiased estimators

J. K. BAKSALARY AND R. KALA

Expected sample size savings from curtailed procedures for the  $t$ -test and Hotelling's  $T^2$

NIRA HERRMANN AND TED H. SZATROWSKI

Maximum likelihood estimates for a bivariate normal distribution with missing data

RAM C. DAHIYA AND RAMESH M. KORWAR

## Notes

Addendum to "Large sample theory for a Bayesian nonparametric survival curve estimator based on censored data"

V. SUSARLA AND JOHN VAN RYZIN

Correction to "Predictive likelihood" . . . . . DAVID V. HINKLEY

# CATALOG OF PUBLICATIONS OF THE INSTITUTE OF MATHEMATICAL STATISTICS

## ANNALS INDEX

*The Annals of Mathematical Statistics, Index to Volumes 1-31, 1930-60.* Edited by J. Arthur Greenwood, Ingram Olkin and I. Richard Savage, 1962. Nonmember Subscriber Cost—\$15.00, Member Cost—\$7.00.

*Current Index to Statistics: Applications, Methods and Theory*, edited by Brian L. Joiner. Volumes 1-3, 1975-77. Nonmember Subscriber Cost—\$18.00, Member Cost—\$9.00. (Volumes 4-5, 1978-79.) Nonmember Subscriber Cost—\$22.00, Member Cost—\$11.00.

Order directly from Heebok Park, Treasurer, IMS Business Office, 3401 Investment Blvd., Suite 6, Hayward, California 94545.

## STATISTICAL RESEARCH MONOGRAPHS

This series is sponsored jointly by the Institute of Mathematical Statistics and the University of Chicago. Discount to members of IMS is 20 percent.

*The passage problem for a stationary Markov chain* by J. H. B. Kemperman, 1961, 127 pp. Out of print.

*Statistical inference for Markov processes* by Patrick Billingsley, 1961, 75 pp. List price—\$5.50 (Midway Reprint paperback only).

*Sequential identification and ranking procedures* by Robert E. Bechhofer, Jack Kiefer and Milton Sobel, 1968, xvii+420 pp. List price—\$20.00.

*The analysis of frequency data* by Shelby J. Haberman, 1974, 432 pp. List price—\$15.00 (Available only as Midway Reprint Paperback)

Order directly from the University of Chicago Press, 11030 S. Langley Ave., Chicago, Illinois 60637.

## SELECTED TABLES IN MATHEMATICAL STATISTICS

This series of volumes is prepared by the Committee of Mathematical Tables of the Institute of Mathematical Statistics and is published by the American Mathematical Society for the IMS. Discount to members of IMS is 25 percent.

*Selected tables in mathematical statistics, Vol. I*, edited by H. L. Harter and D. B. Owen, 1970, vi+405 pp. \$13.20

*Selected tables in mathematical statistics, Vol. II*, edited by H. L. Harter and D. B. Owen, 1974, viii+338 pp. \$16.40

*Selected tables in mathematical statistics, Vol. III*, edited by H. L. Harter and D. B. Owen with J. M. Davenport, viii+424 pp. \$21.60

*Selected tables in mathematical statistics, Vol. IV*, edited by D. B. Owen and R. E. Odeh with J. M. Davenport, x+309 pp. \$18.00

*Selected tables in mathematical statistics, Vol. V*, edited by D. B. Owen and R. E. Odeh with J. M. Davenport, viii+263 pp. \$16.80

Send prepaid orders directly to the American Mathematical Society, P.O. Box 1571, Providence, Rhode Island 02901, Attention: Sales Department.

---