

# THE ANNALS of STATISTICS

ISSN (0090-5364)

AN OFFICIAL JOURNAL OF  
THE INSTITUTE OF MATHEMATICAL STATISTICS

## Memorial Article

Julius R. Blum 1922-1982 ..... M. ROSENBLATT AND F. J. SAMANIEGO 1

## The 1983 Rietz Memorial Lecture

The analysis of cross-classified data having ordered and/or unordered categories:  
Association models, correlation models, and asymmetry models  
for contingency tables with or without missing entries ..... LEO A. GOODMAN 10

## Articles

- The dip test of unimodality ..... J. A. HARTIGAN AND P. M. HARTIGAN 70  
Asymptotic properties of  $\bar{w}$ , an estimator of the ED50 suggested for use in  
up-and-down experiments in bio-assay ..... CHRISTOPHER D. KERSHAW 85  
Bootstrap tests and confidence regions for functions of a covariance matrix  
RUDOLF BERAN AND MUNI S. SRIVASTAVA 95  
Edgeworth corrected pivotal statistics and the bootstrap  
LAVY ABRAMOVITCH AND KESAR SINGH 116  
Asymptotic properties of censored linear rank tests ..... JACK CUZICK 133  
A combinatoric approach to the Kaplan-Meier estimator ..... DAVID MAURO 142  
A heavy censoring limit theorem for the product limit estimator ..... JON A. WELLNER 150<sup>7</sup>  
Estimating a distribution function with truncated data ..... MICHAEL WOODROOFE 163  
Empirical distributions in selection bias models ..... Y. VARDI 178  
Discussion on Vardi's paper ..... C. L. MALLOWS 204  
Optimal detection of a change in distribution ..... MOSHE POLLAK 206  
Sequential nonparametric fixed-width confidence intervals for  $U$ -statistics  
RAYMOND N. SPROULE 228  
A Newton-Raphson version of the multivariate Robbins-Monro procedure  
DAVID RUPPERT 236  
Adaptive estimators for simultaneous estimation of Poisson means ..... H. M. HUDSON 246  
The admissibility of the empirical distribution function  
MICHAEL P. COHEN AND LYNN KUO 262  
On some shrinkage estimators of multivariate location  
PRANAB KUMAR SEN AND A. K. MD. EHSANES SALEH 272  
All admissible linear estimators of a multivariate Poisson mean  
L. D. BROWN AND R. H. FARRELL 282  
Universal domination and stochastic domination: Estimation  
simultaneously under a broad class of loss functions ..... JIUNN TZON HWANG 295  
Optimal goodness-of-fit tests for location/scale families of distributions  
based on the sum of squares of  $L$ -statistics  
VINCENT N. LARICCIA AND DAVID M. MASON 315  
Adaptive estimates of parameters of regular variation  
PETER HALL AND A. H. WELSH 331  
Consistency and asymptotic normality of the maximum likelihood estimator  
in generalized linear models ..... LUDWIG FAHRMEIR AND HEINZ KAUFMANN 342  
Asymptotic properties of minimization estimators for time series  
parameters ..... DANIEL MACRAE KEENAN 369  
Optimal designs for trigonometric and polynomial regression using  
canonical moments ..... TAI-SHING LAU AND W. J. STUDDEN 383  
Proper action in steps, with application to density ratios of maximal  
invariants ..... ROBERT A. WIJSMAN 395  
On the asymptotic behaviour of empirical Bayes tests for the continuous  
one-parameter exponential family ..... THEO STIJNEN 403

## Short Communications

- Inconsistency of the maximum likelihood estimator of a distribution having  
increasing failure rate average  
R. A. BOYLES, A. W. MARSHALL AND F. PROSCHAN 413  
Further contributions to the "two-armed bandit" problem ..... ROBERT KEENER 418  
A converse to Scheffé's theorem ..... DENNIS D. BOOS 423  
Asymptotic normality of the kernel quantile estimator ..... MICHAEL FALK 428

Vol. 13, No. 1—March 1985

50th Anniversary Year