

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

VOLUME 37

1966

## CONTENTS OF VOLUME 37

### ARTICLES AND NOTES

AGRAWAL, HIRA LAL. Some generalizations of distinct representatives with applications to statistical designs.....	525-528
AGRAWAL, HIRA LAL. Comparisons of the bounds of the number of common treatments between blocks of certain partially balanced incomplete block designs.....	739-740
AGGARWAL, OM P. Bayes and minimax procedures for estimating the arithmetic mean of a population with two-stage sampling.....	1186-1195
ALBERT, ARTHUR. Fixed size confidence ellipsoids for linear regression parameters.....	1602-1630
ALI, MIR M. AND SALEH, A. K. MD. ESHANES. Asymptotic optimum quantiles for the estimation of the parameters of the negative exponential distribution.....	143-151
ALLEN, J. L. AND BEEKMAN, J. A. A statistical test involving a random number of random variables.....	1305-1311
AUSTIN, D. G. A sample function property of martingales.....	1396-1397
BAHADUR, R. R. A note on quantiles in large samples.....	577-580
BANERJEE, K. S. Singularity in Hotelling's weighing designs and a generalized inverse.....	1021-1032
BANERJEE, K. S. On non-randomized fractional weighing designs....	1836-1841
BANERJEE, K. S. AND FEDERER, W. T. On estimation and construction in fractional replication.....	1033-1039
BARLOW, RICHARD E. AND PROSCHAN, FRANK. Inequalities for linear combinations of order statistics from restricted families.....	1574-1592
BARLOW, RICHARD E. AND PROSCHAN, FRANK. Tolerance and confidence limits for classes of distributions based on failure rate....	1593-1601
BAUM, LEONARD E. AND PETRIE, TED. Statistical inference for probabilistic functions of finite state Markov chains.....	1554-1563
BEEKMAN, J. A. AND ALLEN, J. A. A statistical test involving a random number of random variables.....	1305-1311
BELL, C. B. AND DOKSUM, K. A. "Optimal" one-sample distribution-free tests and their two-sample extensions.....	120-132
BELL, C. B., MOSER, J. M., AND THOMPSON, RORY. Goodness criteria for two-sample distribution free tests.....	133-142
BERK, ROBERT H. Limiting behavior of posterior distributions when the model is correct.....	51-58
BHASKAR RAO, M. Weighing designs when $n$ is odd.....	1371-1381
BHATTACHARYA, P. K. Estimating the mean of a multivariate normal population with general quadratic loss function.....	1819-1824
BIRNBAUM, Z. W., ESARY, J. D. AND MARSHALL, A. W. A stochastic characterization of wear-out for components and systems.....	816-825

BLUMENTHAL, SAUL. Contributions to sample spacings theory, I; limit distributions of sums of ratios of spacings.....	904-924
BLUMENTHAL, SAUL. Contributions to sample spacings theory, II; tests of the parametric goodness of fit and two-sample problems.....	925-939
BOES, D. C. On the estimation of mixing distributions.....	177-188
BOSWELL, M. T. Estimating and testing trend in a stochastic process of Poisson type.....	1564-1573
BROWN, LAWRENCE DAVID. On the admissibility of invariant estimators of one or more location parameters.....	1087-1136
BROWN, MORTON B. AND MICKEY, M. RAY. Bounds on the distributions functions of the Behrens-Fisher statistic.....	639-642
BUEHLER, R. J. AND HORA, R. B. Fiducial theory and invariant estimation.....	643-656
BURKHOLDER, D. L. Martingale transforms.....	1494-1504
CACOULOS, T. On a class of admissible partitions.....	189-195
CARLSSON, SIV AND GRENANDER, ULF. Some properties of statistical reliability functions.....	826-836
CHATTERJEE, SHOUTIR KISHORE. A bivariate sign test for location... ..	1771-1782
CHOW, Y. S. On the moments of some one-sided stopping rules.....	382-387
CHOW, Y. S. Some convergence theorems for independent random variables.....	1482-1493
CHOW, Y. S. AND TEICHER, H. On second moments of stopping rules.....	388-392
COHEN, ARTHUR. All admissible linear estimates of the mean vector.....	458-463
CONSTANTINE, A. G. The distribution of Hotelling's generalised $T_0^2$ .....	215-225
CONSUL, P. C. On the exact distributions of the likelihood ratio criteria for testing linear hypotheses about regression coefficients.....	1319-1330
COVER, THOMAS M. The probability that a random game is unfair.....	1796-1799
CRAWFORD, GORDON B. Characterization of geometric and exponential distributions.....	1790-1795
DAVID, H. A. A note on "a $k$ -sample model in order statistics" by W. J. Conover.....	287-288
DAVID, H. T. AND LAWING, WILLIAM D. Likelihood ratio computations of operating computations.....	1704-1716
DAYHOFF, EUGENE. Generalized polykays, an extension of simple polykays and bipolykays.....	226-241
DEMPSTER, A. P. New methods for reasoning towards posterior distributions based on sample data.....	355-374
DENNY, J. L. Convergence properties of convergence with probability one.....	1800-1802
DERMAN, CYRUS. Denumerable state Markovian decision processes—average cost criterion.....	1545-1553
DERMAN, CYRUS AND STRAUCH, RALPH E. A note on memoryless rules for controlling sequential control processes.....	276-278
DOKSUM, KJELL. Asymptotically minimax distribution-free procedures.....	619-628

DOKSUM, K. A. AND BELL, C. B. "Optimal" one-sample distribution-free tests and their two-sample extensions . . . . .	120-132
DUBINS, LESTER E. A note on upcrossings of semimartingales . . . . .	728
DUBINS, LESTER E. AND FREEDMAN, DAVID A. Invariant probabilities for certain Markov processes . . . . .	837-848
DUBINS, LESTER E. AND FREEDMAN, DAVID A. On the expected value of a stopped martingale . . . . .	1505-1509
DYM, HARRY. A note on limit theorems for the entropy of Markov chains . . . . .	522-524
DYM, HARRY AND LUKS, EUGENE M. On the mean duration of a ball and cell game; a first passage problem . . . . .	517-521
EHRENFELD, SYLVAIN. On a minimal essentially complete class of experiments . . . . .	435-440
EICKER, F. A multivariate central limit theorem for random linear vector forms . . . . .	1825-1828
ERICSON, RAGNAR. On moments of cumulative sums . . . . .	1803-1805
ESARY, J. D., MARSHALL, A. W. AND BIRNBAUM, Z. W. A stochastic characterization of wear-out for components and systems . . . . .	816-825
FARRELL, R. H. Bounded length confidence intervals for the $p$ -point of a distribution function, II . . . . .	581-585
FARRELL, R. H. Bounded length confidence intervals for the $p$ -point of a distribution function, III . . . . .	586-592
FARRELL, R. H. Limit theorems for stopped random walks—II . . . . .	860-865
FARRELL, R. H. Limit theorems for stopped random walks—III . . . . .	1510-1527
FEDERER, W. T. AND BANERJEE, K. S. On estimation and construction in fractional replication . . . . .	1033-1039
FELDMAN, DORIAN AND TUCKER, HOWARD G. Estimation of non-unique quantiles . . . . .	451-457
FINE, TERRENCE. On the Hodges and Lehmann shift estimator in the two sample problem . . . . .	1814-1818
FREEMAN, G. H. Some non-orthogonal partitions of $4 \times 4$ , $5 \times 5$ , and $6 \times 6$ latin squares . . . . .	666-681
FREEDMAN, DAVID A. Equivalence and singularity for Friedman urns . . . . .	268-270
FREEDMAN, DAVID A. A note on mutual singularity of priors . . . . .	375-381
FREEDMAN, DAVID A. On two equivalence relations between measures . . . . .	686-689
FREEDMAN, DAVID A. AND DUBINS, LESTER E. Invariant probabilities for certain Markov processes . . . . .	837-848
FREEDMAN, DAVID A. AND DUBINS, LESTER E. On the expected value of a stopped martingale . . . . .	1505-1509
GANSER, C. C. Infinitely differentiable positive definite functions . . . . .	504-508
GEHARDT, FRIEDRICH. On the effect of stragglers on the risk of some mean estimators in small samples . . . . .	441-450

GHOSH, J. K. AND SINGH, RAJINDER. Unbiased estimation of location and scale parameters. . . . .	1671-1675
GHOSH, SAKTI P. Polychotomy sampling. . . . .	657-665
GLESER, LEON J. A note on the sphericity test. . . . .	464-467
GNANADESIKAN, R., LAUH, ELIZABETH, AND WILK, M. B. Scale parameter estimation from the order statistics of unequal gamma components. . . . .	152-176
GOLDMAN, AARON A. AND ZEIGLER, R. K. Comparisons of some two stage sampling methods. . . . .	891-897
GOVINDARAJULU, ZAKKULA. Characterization of normal and generalized truncated normal distributions using order statistics. . . . .	1011-1015
GOVINDARAJULU, ZAKKULA AND HAYNAM, GEORGE E. Exact power of Mann-Whitney test for exponential and rectangular alternatives. . . . .	945-953
GREENBERG, VIDA L. Robust estimation in incomplete block designs. . . . .	1331-1337
GRENANDER, ULF AND CARLSSON, SIV. Some properties of statistical reliability functions. . . . .	826-837
HAGGSTROM, GUS W. Optimal stopping and experimental design. . . . .	7-29
HARPER, LAWRENCE H. A family of combinatorial identities. . . . .	509-512
HARTIGAN, J. A. Probabilistic completion of a knockout tournament. . . . .	495-503
HAYNAM, GEORGE E. AND GOVINDARAJULU, ZAKKULA. Exact power of Mann-Whitney test for exponential and rectangular alternatives. . . . .	945-953
HERZBERG, AGNES M. Cylindrically rotatable designs. . . . .	242-247
HEYDE, C. C. Some renewal theorems with application to a first passage problem. . . . .	699-710
HOEL, PAUL G. A simple solution for optimal Chebyshev regression extrapolation. . . . .	720-725
HOLLANDER, MYLES. An asymptotically distribution-free multiple comparison procedure-treatment vs. control. . . . .	735-738
HORA, R. B. AND BUEHLER, R. J. Fiducial theory and invariant estimation. . . . .	643-656
HOUSTON, TOM R. Sequential counterbalancing in Latin squares. . . . .	741-743
IFRAM, ADNAN F. On the sample size and simplification of a class of sequential probability ratio tests. . . . .	425-434
JAIN, N. C. A note on invariant measures. . . . .	729-732
JOGDEO, KUMAR. On randomized rank score procedure of Bell and Doksum. . . . .	1697-1703
JOHANSEN, S. AND KARUSH, J. On the semimartingale convergence theorem. . . . .	690-694
JOHN, PETER W. M. On identity relationships for $2^{n-r}$ designs having words of equal length. . . . .	1842-1843
JOSHI, V. M. Admissibility of confidence intervals. . . . .	629-638

JOSHI, V. M. Admissibility and Bayes estimation in sampling finite populations IV . . . . .	1658-1670
KADANE, JOSEPH B. Some equivalence classes in paired comparisons. . . . .	488-494
KANDER, Z. AND ZACKS, S. Test procedures for possible changes in parameters of statistical distributions occurring at unknown time points . . . . .	1196-1210
KAPADIA, C. H. On the block structure of singular group divisible designs . . . . .	1398-1400
KARLIN, SAMUEL AND STUDDEN, WILLIAM J. Optimal experimental designs . . . . .	783-815
KARUSH, J. AND JOHANSEN, S. On the semimartingale convergence theorem . . . . .	690-694
KEELSON, JULIAN. A limit theorem for passage times in ergodic regenerative processes . . . . .	866-870
KESTEN, H. AND STIGUM, B. P. A limit theorem for multidimensional Galton-Watson processes . . . . .	1211-1223
KESTEN, H. AND STIGUM, B. P. Additional limit theorems for indecomposable multidimensional Galton-Watson processes . . . . .	1463-1481
KHAIRAT, M. A. AND KULLBACK, S. A note on minimum discrimination information . . . . .	279-280
KHATRI, C. G. On certain distribution problems based on positive definite quadratic functions in normal vectors . . . . .	468-479
KHATRI, C. G. AND PILLAI, K. C. S. On the moments of the trace of a matrix and approximations to its non-central distribution . . . . .	1312-1318
KINNEY, J. R. AND PITCHER, T. S. Dimensional properties of a random distribution function on the square . . . . .	849-854
KONIJN, H. S. Statistical reproduction of orderings and translation subfamilies . . . . .	196-202
KOOPMANS, L. H. Convergence rates for the law of large numbers for linear combinations of Markov processes . . . . .	711-719
KRISHNAIAH, P. R. AND RIZVI, M. HASOEB. A note on recurrence relations between expected values of functions of order statistics . . . . .	733-734
KUDŌ, HIROKICHI. On the property ( $W$ ) of the class of statistical decision functions . . . . .	1631-1642
KULLBACK, S. AND KHAIRAT, M. A. A note on minimum discrimination information . . . . .	279-280
KUSHNER, HAROLD J. A note on the maximum sample excursions of stochastic approximation processes . . . . .	513-516
LAUH, ELIZABETH, WILK, M. B. AND GNANADESIKAN, R. Scale parameter estimation from the order statistics of unequal gamma components . . . . .	152-176

LAWING, WILLIAM D. AND DAVID, H. T. Likelihood ratio computations of operating computations . . . . .	1704-1716
LEADBETTER, M. R. On crossings of levels and curves by a wide class of stochastic processes . . . . .	260-267
LEHMANN, E. L. On a theorem of Bahadur and Goodman . . . . .	1-6
LEHMANN, E. L. Some concepts of dependence . . . . .	1137-1153
LEVINE, A. A problem in minimax variance polynomial extrapolation . . . . .	898-903
LOYNES, R. M. On idempotent matrices . . . . .	295-296
LUKS, EUGENE AND DYM, HARRY. On the mean duration of a ball and cell game; a first passage problem . . . . .	517-521
MAITRA, ASHOK. A note on undiscounted dynamic programming . . . . .	1042-1044
MARSHALL, A. W., BIRNBAUM, Z. W. AND ESARY, J. D. A stochastic characterization of wear-out for components and systems . . . . .	816-825
MARTIN, FRANK B. AND ZYSKIND, GEORGE. On combinability of information from uncorrelated linear models by simple weighting . . . . .	1338-1347
MENON, M. V. Another characteristic property of the Cauchy distribution . . . . .	289-294
MICKEY, M. RAY AND BROWN, MORTON B. BOUNDS on the distribution functions of the Behrens-Fisher statistic . . . . .	639-642
MOLENAAR, W. AND VAN ZWET, W. R. On mixtures of distributions . . . . .	281-283
MORSE, NORMAN AND SACKSTEDER, RICHARD. Statistical isomorphism . . . . .	203-214
MORTON, RICHARD AND RAGAHVACHARI, M. On a theorem of Karlin regarding admissibility of linear estimates in exponential populations . . . . .	1809-1813
MOSER, J. M., THOMPSON, RORY AND BELL, C. B. Goodness criteria for two-sample distribution-free tests . . . . .	133-142
MUDHOLKAR, GOVIND S. On confidence bounds associated with multivariate analysis of variance and non-independence between two sets of variates . . . . .	1736-1746
MULLIN, R. C. AND STANTON, R. G. Inductive methods for balanced incomplete block designs . . . . .	1348-1354
NAIR, C. RAMANKUTTY. On partially linked block designs . . . . .	1401-1406
NELSON, WAYNE. Minimax solution of statistical decision problems by iteration . . . . .	1643-1657
NEWTON, D. AND PARRY, W. On a factor automorphism of a normal dynamical system . . . . .	1528-1533
NORMAN, M. FRANK. Limiting distributions for some random walks arising in learning models . . . . .	393-405
NÜESCH, PETER E. On the problem of testing location in multivariate populations for restricted alternatives . . . . .	113-119
OLIVEIRA, J. TIAGO DE. Quasi-linearly invariant prediction . . . . .	1684-1687
PARRY, W. AND NEWTON, D. On a factor automorphism of a normal dynamical system . . . . .	1528-1533
PETRIE, TED AND BAUM, LEONARD E. Statistical inference for probabilistic functions of finite state Markov chains . . . . .	1554-1563

PILLAI, K. C. S. AND KHATRI, C. G. On the moments of the trace of a matrix and approximations to its non-central distribution . . . .	1312-1318
PITCHER, T. S. AND KINNEY, J. R. Dimensional properties of a random distribution function on the square . . . . .	849-854
PORT, S. C. A system of denumerably many transient Markov chains	406-411
PRESS, SHELDON JAMES. Linear combinations of non-central chi-square variates . . . . .	480-487
PROSCHAN, FRANK AND BARLOW, RICHARD E. Inequalities for linear combinations of order statistics from restricted families . . . . .	1574-1592
PROSCHAN, FRANK AND BARLOW, RICHARD E. Tolerance and confidence limits for classes of distributions based on failure rate . . .	1593-1601
PYKE, RONALD AND SCHAUFLELE, RONALD. The existence and uniqueness of stationary measures for Markov renewal processes . . . .	1439-1462
QUADE, DANA. On analysis of variance for the $K$ -sample problem . . .	1747-1758
RAGHAVACHARI, M. AND MORTON, RICHARD. On a theorem of Karlin regarding admissibility of linear estimates in exponential populations . . . . .	1809-1813
RAGHAVARAO, DAMARAJU. Duals of partially balanced incomplete block designs and some nonexistence theorems . . . . .	1048-1052
RAMACHANDRAMURTY, P. V. On some nonparametric estimates for the shift in the Behrens-Fisher situation . . . . .	593-610
RAMACHANDRAMURTY, P. V. On the Pitman efficiency of one-sided Kolmogorov and Smirnov tests for normal alternatives . . . . .	940-944
RICH, R. N. A statistical basis for approximation and optimization . .	59-65
RIZVI, M. HASOEB AND KRISHNAIAH, P. R. A note on recurrence relations between expected values of functions of order statistics.	733-734
ROBERTSON, TIM. A representation for conditional expectations given $\sigma$ -lattices . . . . .	1279-1283
RODEMICH, EUGENE R. Spectral estimates using nonlinear functions.	1237-1256
RODINE, ROBERT H. Perfect probability measures and regular conditional probabilities . . . . .	1273-1278
ROSENBLATT-ROTH, MILLU. Some limit theorems for non-homogeneous Markov chains . . . . .	1224-1236
ROSENKRANTZ, WALTER A. A local limit theorem for a certain class of random walks . . . . .	855-859
SACKS, JEROME AND YLVISAKER, DONALD. Designs for regression problems with correlated errors . . . . .	66-89
SACKSTEDER, RICHARD AND MORSE, NORMAN. Statistical isomorphism . . . . .	203-214
SALEH, A. K. MD. ESHANES. Estimation of the parameters of the exponential distribution based on optimum order statistics in censored samples . . . . .	1717-1735
SALEH, A. K. MD. ESHANES AND ALI, MIR M. Asymptotic optimum quantiles for the estimation of the parameters of the negative exponential distribution . . . . .	143-151



SAMUELS, S. M. On a Chebyshev-type inequality for sums of independent random variables. . . . .	248-259
SAVAGE, I. RICHARD AND SETHURAMAN, J. Stopping time of a rank-order sequential probability ratio test based on Lehmann alternatives. . . . .	1154-1160
SAVAGE, I. R., SOBEL, MILTON AND WOODWORTH, GEORGE. Fine structure of the ordering of probabilities of rank orders in the two sample cases. . . . .	98-112
SCHAAFSMA, W. AND SMID, L. J. Most stringent somewhere most powerful tests against alternatives restricted by a number of linear inequalities. . . . .	1161-1172
SCHAUFLELE, RONALD AND PYKE, RONALD. The existence and uniqueness of stationary measures for Markov renewal processes. . . .	1439-1462
SEIDEN, ESTHER. A note on construction of partially balanced incomplete block designs with parameters $v = 28$ , $n_1 = 12$ , $n_2 = 15$ and $p_{11}^2 = 4$ . . . . .	1783-1789
SEIDEN, ESTHER AND ZEMACK, RITA. On orthogonal arrays. . . . .	1355-1370
SEN, PRANAB KUMAR. On a distribution-free method of estimating asymptotic efficiency of a class of non-parametric tests. . . . .	1759-1770
SESHADRI, V. A characteristic property of the multivariate normal distribution. . . . .	1829-1831
SESHADRI, V. Comparison of combined estimators in balanced incomplete blocks. . . . .	1832-1835
SETHURAMAN, J. AND SAVAGE, I. RICHARD. Stopping time of a rank-order sequential probability ratio test based on lehmann alternatives. . . . .	1154-1160
SHAH, B. K. On the bivariate moments of order statistics from a logistic distribution. . . . .	1002-1010
SHAH, S. M. On the block structures of certain partially balanced incomplete block designs. . . . .	1016-1020
SHEPP, L. A. Radon-Nikodym derivatives of Gaussian measures. . . .	321-354
SHORACK, ROGER A. Recursive generation of the distribution of the Mann-Whitney $U$ -statistics under Lehmann alternatives. . . . .	284-286
SINGH, RAJINDER AND GHOSH, J. K. Unbiased estimation of location and scale parameters. . . . .	1671-1675
SMID, L. J. AND SCHAAFSMA, W. Most stringent somewhere most powerful tests against alternatives restricted by a number of linear inequalities. . . . .	1161-1172
SOBEL, MILTON, WOODWORTH, GEORGE AND SAVAGE, I. R. Fine structure of the ordering of probabilities of rank orders in the two sample case. . . . .	98-112
STANTON, R. G. AND MULLIN, R. C. Inductive methods for balanced incomplete block designs. . . . .	1348-1354
STARR, NORMAN. The performance of a sequential procedure for the fixed-width interval estimation of the mean. . . . .	36-50

STARR, NORMAN. On the asymptotic efficiency of a sequential procedure for estimating the mean.....	1173-1185
STIGUM, BERNT P. A theorem on the Galton-Watson process.....	695-698
STIGUM, B. P. AND KESTEN, H. A limit theorem for multidimensional Galton-Watson processes.....	1211-1223
STIGUM, B. P. AND KESTEN, H. Additional limit theorems for indecomposable multidimensional Galton-Watson processes.....	1463-1481
STONE, CHARLES J. On absolutely continuous components and renewal theory.....	271-275
STONE, CHARLES. The growth of a recurrent random walk.....	1040-1041
STRAUCH, RALPH E. AND DERMAN, CYRUS. A note on memoryless rules for controlling sequential control processes.....	276-278
STRAUCH, RALPH E. Negative dynamic programming.....	871-890
STUDDEN, WILLIAM J. AND KARLIN, SAMUEL. Optimal experimental designs.....	783-815
SUBRAHANYA, M. T. A note on a biased estimator in sampling with probability proportional to size with replacement.....	1045-1047
SUGIYAMA, T. On the distribution of the largest latent root and the corresponding latent vector for principal component analysis..	995-1001
TAINTNER, M. Sequential hypothesis tests for $r$ -dependent marginally stationary processes.....	90-97
TAMURA, RYOJI. Multivariate nonparametric several-sample tests	611-618
TEICHER, H. AND CHOW, Y. S. On second moments of stopping rules..	388-392
THOMPSON, RORY, BELL, C. B. AND MOSER, J. M. Goodness criteria for two-sample distribution tests.....	133-142
TUCKER, HOWARD G. AND FELDMAN, DORIAN. Estimation of non-unique quantiles.....	451-457
VAN NESS, JOHN W. Asymptotic normality of bispectral estimates..	1257-1272
VAN RYZIN, J. R. The compound decision problem with $m \times n$ finite loss matrix.....	412-424
VAN RYZIN, J. R. The sequential compound decision problem with $m \times n$ finite loss matrix.....	954-975
VAN RYZIN, J. R. Repetitive play in finite statistical games with unknown distributions.....	976-994
VAN ZWET, W. R. AND MOLENAAR, W. On mixtures of distributions.	281-283
VARBERG, DALE E. Convergence of quadratic forms in independent random variables.....	567-576
VEINOTT, ARTHUR, F., JR., On finding optimal policies in discrete dynamic programming with no discounting.....	1284-1294
VENTER, J. H. On Dvoretzky stochastic approximation theorems..	1534-1544
VERE-JONES, D. Note on a theorem of Kingman and a theorem of Chung.....	1844-1846
VILLEGAS, C. On the asymptotic efficiency of least squares estimators.	1676-1683
WEINER, HOWARD J. Monotone convergence of moments in age dependent branching processes.....	1806-1808

WILK, M. B., GNANADESIKAN, R. AND LAUH, ELIZABETH. Scale parameter estimation from the order statistics of unequal gamma components.....	152-176
WOLFOWITZ, J. Remark on the optimum character of the sequential probability ratio test.....	726-727
WOODROOFE, MICHAEL. Statistical properties of the number of positive sums.....	1295-1304
WOODWORTH, GEORGE, SAVAGE, I. R. AND SOBEL, MILTON. Fine structure of the ordering of probabilities of rank orders in the two-sample case.....	98-112
YAHAV, JOSEPH A. On optimal stopping.....	30-35
YLVISAKER, N. DONALD. On a theorem of Cramér and Leadbetter..	682-685
YLVISAKER, N. DONALD AND SACKS, JEROME. Designs for regression problems with correlated errors.....	66-89
ZACKS, S. Randomized fractional weighing designs.....	1382-1395
ZACKS, S. Sequential estimation of the mean of a log-normal distribution having a prescribed proportional closeness.....	1688-1696
ZACKS, S. AND KANDER, Z. Test procedures for possible changes in parameters of statistical distributions occurring at unknown time points.....	1196-1210
ZEHNA, PETER W. Invariance of maximum likelihood estimators....	744
ZEIGLER, R. K. AND GOLDMAN, AARON S. Comparisons of some two stage sampling methods.....	891-897
ZEMACH, RITA AND SEIDEN, ESTHER. On orthogonal arrays.....	1355-1370
ZYSKIND, GEORGE AND MARTIN, FRANK B. On combinability of information from uncorrelated linear models by simple weightin	1338-1347

## BOOK REVIEWS

CHERNOFF, HERMAN. Review of "Introduction to Probability and Statistics from a Bayesian Viewpoint" by Dennis Lindley.....	1056-1059
DERMAN, CYRUS. Review of "Generalized Markovian Decision Processes" by G. deLeve.....	1854-1855
GETOOR, RONALD K. Review of "Markov Processes" by E. B. Dynkin.....	1408-1409
HANNAN, E. J. Review of "The Statistical Analysis of Series of Events" by D. R. Cox and P. A. W. Lewis.....	1852-1853
HANSON, D. L. Review of "Probability Thory" by Klaus Krickeberg	755-756
KNIGHT, FRANK. Review of "Probability and Potentials" by Paul A. Meyer.....	1856-1857
LE VEQUE, W. J. Review of "Probabilistic Methods in the Theory of Numbers" by J. Kubilius.....	1063-1065
LINDLEY, D. V. Review of "Mathematic Theory of Probability and Statistics" by Richard von Mises (edited by Hilda Geirenger)	747-754
MIDDLETON, DAVID. Review of "Estimation Theory" by Ralph Deutsch.....	1412-1413

MORAN, P. A. P. Review of "Queues and Inventories" by N. U. Prabhu.....	529-530
MULLER, MERVIN E. Review of "Monte Carlo Methods" by J. M. Hammersley and D. C. Hadscomb; and "Methods of Statistical Testing/Monte Carlo Method" by Yu. A. Shreider.....	532-538
NEY, Peter. Review of "Proceedings of Symposium In Congestion Theory" by W. Smith and W. Wilkinson.....	1410-1411
OWEN, D. B. Review of "Mathematical Statistical Tables" by L. N. Bolshev and V. N. Smirnov.....	757-758
PRABHU, N. U. Review of "The Theory of Stochastic Processes" by D. R. Cox and H. D. Miller.....	1848-1851
ROSENBLATT, H. Review of "Stochastic Processes in Mathematical Physics and Engineering" by Richard Bellman.....	298-300
RUBEN, HAROLD. Review of "Multidimensional Gaussina Distributions" by Kenneth Miller.....	301-307
SPITZER, F. Review of "Diffusion Processes and their Sample Paths" by K. Ito and H. P. McKean, Jr.....	1060-1062
STRIEBEL, CHARLOTTE. Review of "The Elements of Stochastic Processes with Applications to the Natural Sciences" by Norman T. J. Bailey.....	531-532
WATSON, G. S. Review of "Inference and Disputed Authorship: The Federalist" by Frederick Mosteller and David L. Wallace	308-312

## MISCELLANEOUS

Book Reviews.....	298-312, 529-538, 747-758, 1056-1065, 1408-1413, 1848-1857
Correction Notes and Acknowledgment of Priortiy.....	297, 745, 1053, 1407, 1847
Abstracts of Papers.....	313-315, 539-555, 759-775, 1066-1078, 1414-1433, 1858-1866
News and Notices.....	316-317, 556-563, 776-777, 1079-1080, 1434-1435, 1867-1887
Doctoral Dissertations.....	559
Report of the President for 1966.....	1874
Report of the Treasurer for 1966.....	1874-1878
Report of the Program Secretary for 1966.....	1878
Report of the Editor for 1966.....	1879-1880
Report of the Managing Editor for 1966.....	1881
Report of the Lafayette Meeting, March 23-25, 1966.....	778-780
Report of the Brookhaven Meeting, April 27-29, 1966.....	1081-1084
Report of the the New Brunswick Meeting, August 30-September 2, 1966.....	1881-1887
Publications Received.....	318, 564, 781, 1085, 1436, 1887

### Index of Abstracts for 1966

- ABRAMSON, LEE, R., 1421  
AGGARWAL, OM, 759  
AITKIN, MURRAY A. AND NELSON, W. C., 1421  
ALAM, KHURSHED, 539  
ANDERSEN, ERLING BERNHARD, 1415  
ANDERSON, DONALD A., 1858  
ANDERSON, T. W. AND SAMUELS, S. M. 544  
BAÑOS, ALFREDO, 769  
BARANACHIK, A. J., 549  
BARLOW, RICHARD E., PROSCHAN, FRANK AND SCHEUER, ERNEST M., 1072  
BARR, DAVID R., 1417  
BASU, A. P., 539, 759, 770  
BELL, C. B. AND DOKSUM, K. A., 539  
BEUTLER, FREDERICK J. AND LENEMAN, OSCAR A. Z., 1072  
BHAT, U. N., 540  
BHATTACHARYA, P. K., 759  
BHATTACHARYA, G. K., 1863  
BICKEL, PETER J., 1864  
BICKEL, PETER J. AND YAHAV, JOSEPH, 550  
BILDIKAR, SHEELA AND PATIL, G. P., 760  
BLAKE, E. A. AND FOWLKES, E. B., 760  
BLOCH, D. A. AND WATSON, G. S., 760  
BOES, DUANE C., 1421  
BOYD, D. W., KOTZ, S. AND JOHNSON, N. L. 1427  
BRUNK, H. D., 1073  
BUEHLER, R. J. AND HORA, R. B., 541  
BUHLER, ROALD, 761  
BURKE, P. J., 314  
CACOULLOS, T., 761, 1422  
CARNEY, EDWARD J., 761  
CHAMBERS, JOHN M., 762  
CHATTERJEE, SAMPRIT, 762  
CHOI, KEEWHAN, 1422  
CHOPRA, DHARAM VIR, 1858  
CHOW, Y. S., 540  
CHOW, BRYANT AND DICK, WALTER J., 1423  
ÇINLAR, ERHAN, 1422  
CHRISTIANSEN, H. DALGAS, 1861  
COHEN, A. CLIFFORD, 1066  
COVER, THOMAS M., 1414  
COVER, THOMAS M. AND HART, PETER, 314  
DANIEL, CUTHBERT, 313  
DEELEY, JOHN J., 540, 1858  
DENNY, J. L., 772, 1423  
DHARMADHIKARI, S. W., 1423  
DICK, RONALD S., 762  
DICK, WALTER J. AND CHOW, BRYANT, 1423  
DICKEY, J. M., 763, 1423  
DOKSUM, K. A. AND BELL, C. B., 539  
DOKSUM, K., THOMPSON, R. AND GOVINDARAJULU, Z., 314  
DRAPER, NORMAN R. AND GUTTMAN, IRWIN, 772  
DRAPER, NORMAN R. AND MITCHELL, TOBY J., 772  
DUBEY, SATYA D., 1066, 1070  
EATON, MORRIS, 551  
EFRON, BRADLEY, 769  
EICKER, FRIEDHOLM, 1424  
EVANS, DAVID H., 1070  
FELDMAN, DORIAN AND FOX, MARTIN, 541  
FURUKAWA, NAGATA, 1073  
FOWLKES, E. B. AND BLAKE, E. A., 760  
FOX, MARTIN AND FELDMAN, DORIAN, 541  
GEBHARDT, FRIEDRICH, 1416  
GEISSER, SEYMOUR, 549  
GHOSH, S. P., 763  
GIRI, N., 551  
GLESER, LEON JAY, 1074  
GNANADESIKAN, M., 763, 1418

- GNANADESIKAN, R. AND WILK, M. B., 1417  
GODAMBE, V. P., 552, 772, 1414  
GOVINDARAJULU, ZAKKULA, 315  
GOVINDARAJULU, Z., LE CAM, L. AND RAGHAVACHARI, M., 315  
GOVINDARAJULU, Z., DOKSUM, K. AND THOMPSON, R., 314  
GRAY, K. B., JR., 1074  
GURLAND, JOHN, 1418  
GUTTMAN, IRWIN, AND DRAPER, NORMAN R., 772  
GUTTMAN, IRWIN AND SMITH, DENNIS E., 1074  
HADER, R. J., KARSON, M. J. AND MANSON, A. R., 1067  
HALL, DAVID B., 1424  
HALL, W. J., 764, 1424  
HAN, CHIEN-PAI, 1424  
HANURAV, T. V., 1859  
HARKNESS, W. L. AND SHANTARAM, R., 1431  
HARRIS, CARL M., 771  
HARRIS, T. E., 1425  
HART, PETER AND COVER, THOMAS M., 314  
HARTER, H. LEON AND MOORE, ALBERT H., 541, 542, 1066, 1420  
HARVILLE, DAVID A., 1418  
HEYER, HERBERT K., 1419  
HINICH, MELVIN J., 710  
HOADLEY, A. BRUCE, 771  
HODGES, J. L., JR., AND LEHMANN, E. L., 1416  
HOGG, ROBERT V. AND ROBERTSON, TIM, 1430  
HOLLANDER, MYLES, 549  
HORA, R. B., 1067  
HORA, R. B. AND BUEHLER, R. J., 541  
HUBER, PETER J., 1425  
JOHNSON, N. L., BOYD, D. W. AND KOTZ, S., 1427  
JOHNSON, RICHARD A., 1426  
KABE, D. G., 773  
KALE, B. K., 1426  
KANTOR, MICHAEL, 771  
KARSON, M. J., MANSON, A. R. AND HADER, R. J., 1067  
KLOTZ, JEROME, 553, 773, 1863  
KOCK, GARY G. AND SEN, P. K., 1427  
KOOP, JOHN C., 764  
KOTZ, S., JOHNSON, N. L. AND BOYD, D. W., 1427  
KRISHNAIAH, P. R. AND PATHAK, P. K., 1428  
KRUTCHKOFF, RICHARD G., 1428  
KRUTCHKOFF, R. G. AND WARNER, J. L. J. L., 768  
LACHENBRUCH, PETER A., 774  
LARSON, HAROLD J., 549  
LE CAM, L., RAGHAVACHARI, M. AND GOVINDARAJULU, Z., 315  
LECHNER, JAMES A., 1428  
LEHMANN, E. L. AND HODGES, J. L., JR., 1516  
LENEMAN, OSCAR A. Z. AND BUETLER, FREDERICK, J., 1072  
LORDEN, GARY, 542  
LUM, MARY D., 1419  
MAHAMUNULU, M., 1429  
MAHAMUMULU, D. M. AND RODINE, R. H., 542  
MAIK, R. L. AND SRIVASTAVA, J. N., 546  
MALIK, HENRICK JOHN, 553, 765  
MALLOWS, C. L., 1067  
MANSON, M. J., HADER, R. J. AND KARSON, M. J., 1067  
MARDIA, K. V., 1075, 1076  
MARGOLIN, BARRY H., 1076  
MARGOLIN, BARRY H. AND WINOKUR, HERBERT S., JR., 765  
MATHAI, A. M. AND SAXENA, R. K., 1077, 1864  
MAYNARD, JAMES M., AND CHOW, B., 1859  
MEHRA, K. L. AND SARANGI, J., 770  
MILCH, PAUL R., 1073

- MITCHELL, TOBY J. AND DRAPER, NORMAN R., 772
- MOORE, ALBERT H. AND HARTER, H. LEON, 541, 542, 1066, 1420
- MOHANTY, SRI GOPAL, 1862
- MUDHOLKAR, GOVIND S., 765
- MUDHOLKAR, GOVIND S. AND RAO, S. R. S., 1429
- MUSTAFI, CHANDAN K., 1864
- NAGEL, K., 543
- NAUS, JOSEPH I., 1429
- NELSON, W. C. AND AITKIN, MURRAY A., 1421
- NORRIS, NILAN, 1071
- NOVICK, MELVIN R., 1862
- PATHAK, K. B., 553, 554
- PATHAK, P. K. AND KRISHNAIAH, P. R., 1428
- PATEL, KANTILAL M., 766
- PATIL, G. P. AND BILDIKAR, SHEELA, 760
- PATIL, G. P. AND WANI, J. K., 543
- PATIL, S. A., 543
- PERNG, S. K., 1430
- PRAKASA RAO, B. L. S., 543, 544
- PROSCHAN, FRANK, SCHUER, ERNEST M., AND BARLOW, RICHARD E., 1072
- PURI, MADAN L. AND PURI, PREM S., 554, 1068, 1077
- PURI, MADAN L. AND SEN, PRANAB KUMAR, 545, 550, 766, 1430, 1863
- PURI, PREM S. AND PURI, MADAN L., 554, 1068, 1077
- RAGHAVACHARI, M., LE CAM, L. AND GOVINDARAJULU, Z., 315
- RAO, J. N. K. AND WEBSTER, J. T., 554
- RAO, S. R. S. AND MUDHOLKAR, GOVIND, S., 1429
- RASTOGI, SURESH C., 1068
- RIZVI, M. HASEEB AND SOBEL, MILTON, 315
- RIZVI, M. HASEEB, SOBEL, MILTON AND WOODWORTH, GEORGE, 774
- ROBERTSON, TIM AND HOGG, ROBERT V., 1430
- RODINE, R. H. AND MAHAMUNULU, D. M., 542
- RUBIN, HERMAN, 544, 143
- RUTHERFORD, J. R., 766, 1430
- SACKROWITZ, HAROLD, 555
- SAMUELS, S. M., 1416
- SAMUELS, S.
- SAMUELS, S. M. AND ANDERSON, T. W., 544
- SARANGI, J. AND MEHRA, K. L., 770
- SAXENA, K. M. LAL, 544, 545, 1860
- SAXENA, R. K. AND MATHAI, A. M., 1077, 1864
- SCHUEER, ERNEST M., BARLOW, AND PROSCHAN, FRANK, 1072
- SCLOVE, STANLEY L., 550
- SEN, PRANAB KUMAR, 545, 1068, 1069, 1863
- SEN, P. K. AND KOCH, GARY G., 1427
- SEN, PRANAB KUMAR AND PURI, MADAN L., 545, 550, 766, 1863
- SHAH, K. R., 546
- SHAMAN, PAUL, 1431
- SHANTARAM, R. AND HARKNESS, W. L., 1431
- SHAPIRO, S. S. AND WILK, M. B., 1416
- SIBUYA, M., 767
- SIDDIQUI, M. M., 1069
- SIEGMUND, DAVID O., 546
- SINGH, S. N., 775
- SMITH, DENNIS E. AND GUTTMAN, IRWIN, 1074
- SOBEL, MILTON, 546, 1865
- SOBEL, MILTON AND RIZVI, M. HASEEB, 315
- SOBEL, MILTON, WOODWORTH, GEORGE AND RIZVI, M. HASEEB, 774
- SPRINGER, MELVIN D. AND THOMPSON, WILLIAM E., 1420
- SRIVASTAVA, J. N., 1860, 1865
- SRIVASTAVA, J. N. AND MAIK, R. L., 546

- SRIVASTAVA, M. S., 313  
SRIVASTAVA, R. C., 555  
SRIVASTAVA, SURENDRA K., 315, 775  
STEPHENS, M. A., 767  
STOUT, W. F., 1432  
SUBRAHMANIUM, K., 1078  
SUBRAHMANAIAN, K., 1865  
SYLWESTER, DAVID L., 1432  
TAKEUCHI, K., 1860  
THOMPSON, RORY, 767  
THOMPSON, R., GOVINDARAJULU, Z.  
AND DOKSUM, K., 314  
THOMPSON, WILLIAM E. AND  
SPRINGER, MELVIN D., 1420  
TIAO, GEORGE C., 767  
TRACY, DERRICK S., 1421  
TSAO, RHETT F., 1069  
URY, HANS K., 1415, 1866  
VAN RYZIN, J., 546  
WAHBA, GRACE, 1432  
WANG, YING YAO, 768  
WANI, J. K., 768  
WANI, J. K. AND PATIL, G. P., 543  
WALLENIUS, K. T., 547  
WARNER, J. L. AND KRUTCHKOFF, R.  
G., 768  
WATSON, G. S. AND BLOCH, D. A., 760  
WEBSTER, J. T. AND RAO, J. N. K., 554  
WEHMANEN, OSCAR A., 1433  
WEINER, HOWARD J., 1071  
WEISS, L. AND WOLFOWITZ, J., 1866  
WHITE, JOHN S., 547  
WILK, M. B. AND GNANADESIKAN, R.,  
1417  
WILK, M. B. AND SHAPIRO, S. S., 1416  
WINOKUR, HERBERT S., JR., AND  
MARGOLIN, BARRY H., 765  
WOODWORTH, GEORGE C., 548  
WOODWORTH, GEORGE, RIZVI, M.  
HASEEB AND SOBEL, MILTON, 774  
YAHAV, JOSEPH AND BICKEL, PETER,  
550  
YHAP, E. F., 1071  
ZACKS, SHELEMYAHU, 548, 1069, 1433  
Z AHL, SAMUEL, 769  
ZYSKIND, GEORGE, 1861  
ZYSKIND, GEORGE AND MARTIN, FRANK  
B., 1862