

THE ANNALS
of
STATISTICS

AN OFFICIAL JOURNAL OF THE INSTITUTE OF MATHEMATICAL
STATISTICS

VOLUME 12

1984



CONTENTS OF VOLUME 12

Articles and Short Communications

ABRAMSON, IAN S. Adaptive density flattening—a metric distortion principle for combating bias in nearest neighbor methods	880–886
AMEMIYA, YASUO AND FULLER, WAYNE A. Estimation for the multivariate errors-in-variables model with estimated error covariance matrix	497–509
AMMANN, LARRY P. Bayesian nonparametric inference for quantal response data	636–645
ANDERSON, T. W. Estimating linear statistical relationships	1–45
BABU, G. JOGESH, GHOSH, MALAY, PARR, WILLIAM C. AND SINGH, KESAR. A note on bootstrapping the sample median	1130–1135
BAILEY, KENT R. Asymptotic equivalence between the Cox estimator and the general ML estimators of regression and survival parameters in the Cox model	730–736
BASAWA, I. V. AND BROCKWELL, P. J. Asymptotic conditional inference for regular nonergodic models with an application to autoregressive processes	161–171
BELL, WILLIAM. Signal extraction for nonstationary time series	646–664
BERAN, RUDOLF. Jackknife approximations to bootstrap estimates	101–118
BERGER, ROGER L. AND PROSCHAN, FRANK. Monotonicity in selection problems: a unified approach	387–391
BICKEL, P. J. Parametric robustness: small biases can be worthwhile	864–879
BICKEL, PETER J. AND FREEDMAN, D. A. Asymptotic normality and the bootstrap in stratified sampling	470–482
BICKEL, P. J. Robust regression based on infinitesimal neighborhoods	1349–1368
BJØRNSTAD, JAN F. A general theory of asymptotic consistency for subset selection with applications	1058–1070
BLUM, JULIUS R. AND WALTER, GILBERT G. A simple solution to a nonparametric maximum likelihood estimation problem	372–379
BRANT, ROLLIN. Approximate likelihood and probability calculations based on transforms	989–1005
BROCKETT, PATRICK L. The likelihood ratio detector for non-Gaussian infinitely divisible, and linear stochastic processes	737–744
BROCKWELL, P. J. AND BASAWA, I. V. Asymptotic conditional inference for regular nonergodic models with an application to autoregressive processes	161–171
BROWN, K. G. On analysis of variance in the mixed model	1488–1499
BROWN, LAWRENCE D. The research of Jack Kiefer outside the area of experimental design	406–415
BROWN, LAWRENCE D. AND SACKROWITZ, HAROLD. An alternative to Student's <i>t</i> -test for problems with indifference zones ..	451–469

BUNKE, OLAF AND DROGE, BERND. Bootstrap and cross-validation estimates of the prediction error for linear regression models	1400-1424
CHALONER, KATHRYN. Optimal Bayesian experimental design for linear models	283-300
COHEN, ARTHUR AND SACKROWITZ, HAROLD B. Bayes double sample estimation procedures	1035-1049
COHEN, ARTHUR AND SACKROWITZ, HAROLD B. Results on double sample estimation for the binomial distribution	1109-1116
COLLINGS, BRUCE JAY. Generating the intrablock and interblock subgroups for confounding in general factorial experiments..	1500-1509
CROWLEY, JOHN AND VOELKEL, JOSEPH G. Nonparametric inference for a class of semi-Markov processes with censored observations.....	142-160
DAVIS, LINDA. Comments on a paper by T. Amemiya on estimation in a dichotomous logit regression model	778-782
DAVIS, RICHARD AND RESNICK, SIDNEY. Tail estimates motivated by extreme value theory	1467-1487
DEELY, J. J. AND MARA, M. K. Empirical Bayes with a changing prior	1071-1078
DEVROYE, LUC AND PENROD, CLARK S. Distribution-free lower bounds in density estimation	1250-1262
DEVROYE, LUC AND PENROD, CLARK S. The consistency of automatic kernel density estimates	1231-1249
DIACONIS, PERSI AND FREEDMAN, DAVID. Asymptotics of graphical projection pursuit	793-815
DROGE, BERND AND BUNKE, OLAF. Bootstrap and cross-validation estimates of the prediction error for linear regression models	1400-1424
FALK, M. AND KOHNE, W. A robustification of the sign test under mixing conditions	716-729
FALK, MICHAEL. Relative deficiency of kernel type estimators of quantiles	261-268
FILL, JAMES ALLEN AND JOHNSTONE, IAIN. On projection pursuit measures of multivariate location and dispersion	127-141
FREEDMAN, D. A. AND BICKEL, PETER J. Asymptotic normality and the bootstrap in stratified sampling	470-482
FREEDMAN, DAVID AND DIACONIS, PERSI. Asymptotics of graphical projection pursuit	793-815
FREEDMAN, D. On bootstrapping two-stage least-squares estimates in stationary linear models	827-842
FULLER, WAYNE A. AND AMEMIYA, YASUO. Estimation for the multivariate errors-in-variables model with estimated error covariance matrix	497-509
GASSER, THEO, MÖCKS, JOACHIM, AND TUAN, PHAM DINH. Testing for homogeneity of noisy signals evoked by repeated stimuli	193-209

GASSER, THEO, MÜLLER, HANS-GEORG, KÖHLER, WALTER, MOLINARI, LUCIANO AND PRADER, ANDREA. Nonparametric regression analysis of growth curves	210-229
GATSONIS, CONSTANTINE A. Deriving posterior distributions for a location parameter: a decision theoretic approach	958-970
GENEST, CHRISTIAN. A characterization theorem for externally Bayesian groups	1100-1105
GHOSH, MALAY, BABU, G. JOGESH, PARR, WILLIAM C. AND SINGH, KESAR. A note on bootstrapping the sample median	1130-1135
GOLDSTEIN, MICHAEL. Turning probabilities into expectations..	1551-1557
GREBLICKI, WŁODZIMIERZ, KRZYŻAK, ADAM, AND PAWLAK, MIROSŁAW. Distribution-free pointwise consistency of kernel regression estimate	1570-1575
GUPTA, SHANTI S. AND MIESCKE, KLAUS J. Sequential selection procedures—a decision theoretic approach	336-350
HABERMAN, SHELBY J. Adjustment by minimum discriminant information	971-988
HALL, PETER AND WELSH, A. H. Best attainable rates of convergence for estimates of parameters of regular variation	1079-1084
HALL, PETER. Integrated square error properties of kernel estimators of regression functions	241-260
HALLIN, MARC. Spectral factorization of nonstationary moving average processes	172-192
HÄRDLE, WOLFGANG. A law of the iterated logarithm for nonparametric regression function estimators	624-635
HÄRDLE, W. AND LUCKHAUS, S. Uniform consistency of a class of regression function estimators	612-623
HAYTER, ANTHONY J. A proof of the conjecture that the Tukey-Kramer multiple comparison procedure is conservative	61-75
HOOPER, PETER M. A conditional property of invariant confidence and prediction regions	745-750
HSU, JASON C. Constrained simultaneous confidence intervals for multiple comparisons with the best	1136-1144
HUBER, PETER J. Finite sample breakdown of M - and P -estimators	119-126
HWANG, JIUNN TZON AND LI, KER-CHAU. The data-smoothing aspect of Stein estimates	887-897
IRLE, ALBRECHT. Extended optimality of sequential probability ratio tests	380-386
JAMES, I. R. AND SMITH, P. J. Consistency results for linear regression with censored data	590-600
JANSSEN, PAUL, SERFLING, ROBERT, AND VERAVERBEKE, NOËL. Asymptotic normality for a general class of statistical functions and applications to measures of spread	1369-1379
JOHNSTONE, IAIN. Admissibility, difference equations and recurrence in estimating a Poisson mean	1173-1198
JOHNSTONE, IAIN AND FILL, JAMES ALLEN. On projection pursuit	

measures of multivariate location and dispersion	127-141
KEDEM, BENJAMIN. On the sinusoidal limit of stationary time series.....	665-674
KEENER, ROBERT W. Second order efficiency in the sequential design of experiments.....	510-532
KELLY, GABRIELLE. The influence function in the errors in variables problem	87-100
KIEFER, JACK AND WYNN, HENRY P. Optimum and minimax exact treatment designs for one-dimensional autoregressive error processes	431-450
KLAASSEN, CHRIS A. J. Location estimators and spread.....	311-321
KLONIAS, V. K. On a class of nonparametric density and regression estimators	1263-1284
KÖHLER, WALTER, MOLINARI, LUCIANO, PRADER, ANDREA, GASSE, THEO AND MÜLLER, HANS-GEORG. Nonparametric regression analysis of growth curves	210-229
KOHNE, W. AND FALK, M. A robustification of the sign test under mixing conditions	716-729
KOUROUKLIS, STAVROS. A large deviation result for the likelihood ratio statistic in exponential families.....	1510-1521
KOUROUKLIS, STAVROS. Bahadur optimality of sequential experiments for exponential families	1522-1527
KRAFFT, O. AND SCHAEFER, M. On Karlin's conjecture for random replacement sampling plans	1528-1535
KRASKER, WILLIAM S. A note on selecting parametric models in Bayesian inference	751-757
KRZYŻAK, ADAM, GREBLICKI, WŁODZIMIERZ, AND PAWLAK, MIROSŁAW. Distribution-free pointwise consistency of Kernel regression estimate.....	1570-1575
KULP, R. W. AND NAGARSENKER, B. N. An asymptotic expansion of the nonnull distribution of Wilks criterion for testing the multivariate linear hypothesis	1576-1583
KUNERT, JOACHIM. Optimality of balanced uniform repeated measurements designs	1006-1017
KÜNSCH, H. Infinitesimal robustness for autoregressive processes	843-863
KUNTE, S. AND RATTIHALLI, R. N. Rectangular regions of maximum probability content	1106-1108
LAMBERT, DIANE AND TIERNEY, LUKE. Asymptotic efficiency of estimators of functionals of mixed distributions	1380-1387
LAMBERT, DIANE AND TIERNEY, LUKE. Asymptotic properties of maximum likelihood estimates in the mixed Poisson model ..	1388-1399
LEURGANS, SUE. Asymptotic behavior of two-sample rank tests in the presence of random censoring	572-589
LI, KER-CHAU. Consistency for cross-validated nearest neighbor	

estimates in nonparametric regression	230-240
LI, KER-CHAU. Regression models with infinitely many parameters: Consistency of bounded linear functionals	601-611
LI, KER-CHAU. Robust regression designs when the design space consists of finitely many points	269-282
LI, KER-CHAU AND HWANG, JIUNN TZON. The data-smoothing aspect of Stein estimates	887-897
LO, ALBERT Y. Consistency in the location model: the undominated case	1584-1587
LO, ALBERT Y. On a class of Bayesian nonparametric estimates: I. Density estimates	351-357
LOH, WEI-YIN. Bounds on AREs for restricted classes of distributions defined via tail-orderings	685-701
LOH, WEI-YIN. Estimating an endpoint of a distribution with resampling methods	1543-1550
LUCKHAUS, S. AND HÄRDLE, W. Uniform consistency of a class of regression function estimators	612-623
LUSTBADER, EDWARD D., VENZON, DAVID J. AND MOOLGAVKAR, SURESH H. A geometric approach to nonlinear regression diagnostics with application to matched case-control studies .	816-826
MALLIK, ASHIM AND YAO, YI-CHING. Bounds for the Bayes risk for testing sequentially the sign of the drift parameter of a Wiener process	1117-1123
MANDELBAUM, AVI. All admissible linear estimators of the mean of a Gaussian distribution on a Hilbert space.....	1448-1466
MANDELBAUM, AVI AND TAQQU, MURAD S. Invariance principle for symmetric statistics	483-496
MARA, M. K. AND DEELY, J. J. Empirical Bayes with a changing prior	1071-1078
MARTINSEK, ADAM T. Sequential determination of estimator as well as sample size	533-550
MATHEW, THOMAS. On nonnegative quadratic unbiased estimability of variance components	1566-1569
MCKEAGUE, IAN W. On the stability of Bayes estimators for Gaussian processes	1310-1323
MEEDEN, GLEN AND VARDEMAN, STEPHEN. Admissible estimators for the total of a stratified population that employ prior information	675-684
MIESCKE, KLAUS J. AND GUPTA, SHANTI S. Sequential selection procedures—a decision theoretic approach	336-350
MINTZ, MAX AND ZEYTINOGLU, MEHMET. Optimal fixed size confidence procedures for a restricted parameter space	945-957
MITRA, S. K. AND PATHAK, P. K. The nature of simple random sampling.....	1536-1542
MÖCKS, JOACHIM, PHAM, DINH TUAN, AND GASSER, THEO.	

Testing for homogeneity of noisy signals evoked by repeated stimuli	193-209
MOLINARI, LUCIANO, PRADER, ANDREA, GASSER, THEO, MÜLLER, HANS-GEORG, AND KÖHLER, WALTER. Nonparametric regression analysis of growth curves	210-229
MOOLGAVKAR, SURESH H., LUSTBADER, EDWARD D. AND VENZON, DAVID J. A geometric approach to nonlinear regression diagnostics with application to matched case-control studies	816-826
MOORE, MARC. On the estimation of a convex set	1090-1099
MÜLLER, HANS-GEORG, KÖHLER, WALTER, MOLINARI, LUCIANO, PRADER, ANDREA AND GASSER, THEO. Nonparametric regression analysis of growth curves	210-229
MÜLLER, HANS-GEORG. Smooth optimum kernel estimators of densities, regression curves and modes	766-774
NAGARSENKER, B. N. AND KULP, R. W. An asymptotic expansion of the nonnull distribution of Wilks criterion for testing the multivariate linear hypothesis	1576-1583
NAIMAN, DANIEL Q. Average width optimality of simultaneous confidence bounds	1199-1214
NAIMAN, DANIEL Q. Optimal simultaneous confidence bounds ..	702-715
NISHII, RYUEI. Asymptotic properties of criteria for selection of variables in multiple regression	758-765
PARR, WILLIAM C., GHOSH, MALAY, BABU, G. JOGES, AND SINGH, KESAR. A note on bootstrapping the sample median	1130-1135
PATHAK, P. K. AND MITRA, S. K. The nature of simple random sampling	1536-1542
PAWLAK, MIROSŁAW, KRZYŻAK, ADAM AND GREBLICKI, WŁODZIMIERZ. Distribution-free pointwise consistency of kernel regression estimate	1570-1575
PENROD, CLARK S., AND DEVROYE, LUC. Distribution-free lower bounds in density estimation	1250-1262
PENROD, CLARK S., AND DEVROYE, LUC. The consistency of automatic kernel density estimates	1231-1249
PORTNOY, STEPHEN. Asymptotic behavior of M -estimators of p regression parameters when p^2/n is large I. consistency	1298-1309
PRADER, ANDREA, GASSER, THEO, MÜLLER, HANS-GEORG, KÖHLER, WALTER, AND MOLINARI, LUCIANO. Nonparametric regression analysis of growth curves	210-229
PROSCHAN, FRANK AND BERGER, ROGER L. Monotonicity in selection problems: a unified approach	387-391
PUKELSHEIM, FRIEDRICH. A note on nonparametric trend conformity	775-777
RAO, J. N. K. AND SCOTT, A. J. On chi-squared tests for multiway contingency tables with cell proportions estimated from survey data	46-60

RATTIHALLI, R. N. AND KUNTE, S. Rectangular regions of maximum probability content	1106-1108
RESNICK, SIDNEY AND DAVIS, RICHARD. Tail estimates motivated by extreme value theory	1467-1487
RICE, JOHN. Bandwidth choice for nonparametric regression ..	1215-1230
RIVEST, LOUIS-PAUL. On the information matrix for symmetric distributions on the hypersphere	1085-1089
RIVEST, LOUIS-PAUL. Symmetric distributions for dependent unit vectors	1050-1057
ROBERTSON, JAMES B. AND UPPULURI, V. R. R. A generalized Kaplan-Meier estimator	366-371
RUBIN, DONALD B. Bayesianly justifiable and relevant frequency calculations for the applied statistician	1151-1172
SACKROWITZ, HAROLD AND BROWN, LAWRENCE D. An alternative to Student's <i>t</i> -test for problems with indifference zones ..	451-469
SACKROWITZ, HAROLD B. AND COHEN, ARTHUR. Bayes double sample estimation procedures	1035-1049
SACKROWITZ, HAROLD B. AND COHEN, ARTHUR. Results on double sample estimation for the binomial distribution	1109-1116
SACKS, JEROME. Jack Carl Kiefer 1924-1981	403-405
SACKS, JEROME AND YLVISAKER, DONALD. Some model robust designs in regression	1324-1348
SARKAR, S. K. AND SINHA, B. K. Invariant confidence sequences for some parameters in a multivariate linear regression model	301-310
SCHAEFER, M. AND KRAFFT, O. On Karlin's conjecture for random replacement sampling plans	1528-1535
SCOTT, A. J. AND RAO, J. N. K. On chi-squared tests for multiway contingency tables with cell proportions estimated from survey data	46-60
SERFLING, ROBERT J. Generalized <i>L</i> -, <i>M</i> - and <i>R</i> -statistics	76-86
SERFLING, ROBERT, VERAVERBEKE, NOËL, AND JANSSEN, PAUL. Asymptotic normality for a general class of statistical functions and applications to measures of spread	1369-1379
SHINOZAKI, NOBUO. Simultaneous estimation of location parameters under quadratic loss	322-335
SHIRAHATA, SHINGO AND WAKIMOTO, KAZUMASA. Asymptotic normality of class of nonlinear rank tests for independence ..	1124-1129
SILVERMAN, B. W. Spline smoothing: The equivalent variable kernel method	898-916
SINGH, KESAR, PARR, WILLIAM C., GHOSH, MALAY AND BABU, G. JOGESH. A note on bootstrapping the sample median	1130-1135
SINHA, BIMAL KUMAR. Detection of multivariate outliers in elliptically symmetric distributions	1558-1565
SINHA, B. K. AND SARKAR, S. K. Invariant confidence sequences for some parameters in a multivariate linear regression model	301-310

- SLUD, ERIC V. Sequential linear rank tests for two-sample censored survival data 551-571
- SMITH, P. J. AND JAMES, I. R. Consistency results for linear regression with censored data 590-600
- SMITH, RICHARD L. Properties of biased coin designs in sequential clinical trials 1018-1034
- SRINIVASAN, C. A sharp necessary and sufficient condition for inadmissibility of estimators in a control problem 927-944
- STĘPNIAK, CZESŁAW, WANG, SONG-GUI, AND WU, C. F. JEFF. Comparison of linear experiments with known covariances ... 358-365
- STONE, CHARLES J. An asymptotically optimal window selection rule for kernel density estimates 1285-1297
- STUTE, WINFRIED. Asymptotic normality of nearest neighbor regression function estimates 917-926
- TAQQU, MURAD S. AND MANDELBAUM, AVI. Invariance principle for symmetric statistics 483-496
- TUAN, PHAM DINH, GASSER, THEO, AND MÖCKS, JOACHIM. Testing for homogeneity of noise signals evoked by repeated stimuli 193-209
- TIERNEY, LUKE AND LAMBERT, DIANE. Asymptotic efficiency of estimators of functionals of mixed distributions 1380-1387
- TIERNEY, LUKE AND LAMBERT, DIANE. Asymptotic properties of maximum likelihood estimates in the mixed Poisson model .. 1388-1399
- TSAY, RUEY S. Order selection in nonstationary autoregressive models 1425-1433
- UPPULURI, V. R. R. AND ROBERTSON, JAMES B. A generalized Kaplan-Meier estimator 366-371
- VARDEMAN, STEPHEN AND MEEDEN, GLEN. Admissible estimators for the total of a stratified population that employ prior information 675-684
- VENZON, DAVID J., MOOLGAVKAR, SURESH H., AND LUSTBADER, EDWARD D. A geometric approach to nonlinear regression diagnostics with application to matched case-control studies . 816-826
- VERAVERBEKE, NOËL, JANSSEN, PAUL, AND SERFLING, ROBERT. Asymptotic normality for a general class of statistical functions and applications to measures of spread 1369-1379
- VOELKEL, JOSEPH G. AND CROWLEY, JOHN. Nonparametric inference for a class of semi-Markov processes with censored observations..... 142-160
- WAKIMOTO, KAZUMASA AND SHIRAHATA, SHINGO. Asymptotic normality of a class of nonlinear rank tests for independence . 1124-1129
- WALTER, GILBERT G. AND BLUM, JULIUS R. A simple solution to a nonparametric maximum likelihood estimation problem ... 372-379
- WANG, SONG-GUI, WU, C. F. JEFF, AND STĘPNIAK, CZESŁAW. Comparison of linear experiments with known covariances ... 358-365

WELSH, A. H. AND HALL, PETER. Best attainable rates of convergence for estimates of parameters of regular variation	1079-1084
WU, C. F. JEFF, STEPNIAK, CZESŁAW, AND WANG, SONG-GUI. Comparison of linear experiments with known covariances	358-365
WYNN, HENRY P. Jack Kiefer's contributions to experimental design	416-423
WYNN, HENRY P. AND KIEFER, JACK. Optimum and minimax exact treatment designs for one-dimensional autoregressive error processes	431-450
YAO, YI-CHING AND MALLIK, ASHIM. Bounds for the Bayes risk for testing sequentially the sign of the drift parameter of a Wiener process	1117-1123
YAO, YI-CHING. Estimation of a noisy discrete-time step function: Bayes and empirical Bayes approaches	1434-1447
YLVISAKER, DONALD AND SACKS, JEROME. Some model robust designs in regression	1324-1348
ZEYTINOGLU, MEHMET AND MINTZ, MAX. Optimal fixed size confidence procedures for a restricted parameter space	945-957

Notes and Corrections

AMEMIYA, TAKESHI. Correction to "The N^2 -order mean squared errors of the maximum likelihood and the minimum logit chi-squared estimator"	783
GASSER, THEO, MÜLLER, HANS-GEORG, KÖHLER, WALTER, MOLINARI, LUCIANO AND PRADER, ANDREA. Correction to "Nonparametric regression analysis of growth curves"	1588
HOOPER, PETER. Correction to "Invariant confidence sets with smallest expected measure"	784
HOOPER, PETER. Correction to "Simultaneous interval estimation in the general multivariate analysis of variance model"	785
KÖHLER, WALTER, MOLINARI, LUCIANO, PRADER, ANDREA, GASSER, THEO AND MÜLLER, HANS-GEORG. Correction to "Nonparametric regression analysis of growth curves"	1588
MOLINARI, LUCIANO, PRADER, ANDREA, GASSER, THEO, MÜLLER, HANS-GEORG AND KÖHLER, WALTER. Correction to "Nonparametric regression analysis of growth curves"	1588
MÜLLER, HANS-GEORG, KÖHLER, WALTER, MOLINARI, LUCIANO, PRADER, ANDREA AND GASSER, THEO. Correction to "Nonparametric regression analysis of growth curves"	1588
PÖTSCHER, BENEDIKT M. Correction to: Order estimation in ARMA-models by Lagrangian multiplier tests	785
PRADER, ANDREA, GASSER, THEO, MÜLLER, HANS-GEORG, KÖHLER, WALTER, AND MOLINARI, LUCIANO. Correction to "Nonparametric regression analysis of growth curves"	1588

Book Reviews

- ATKINSON, ANTHONY C. Review of two books on regression diagnostics: *Regression Diagnostics: Identifying Influential Data and Source of Collinearity* by D. A. Belsley, E. Kuh and R. E. Welsch, and *Residuals and Influence in Regression* by R. D. Cook and S. Weisberg 392-401
- BICKEL, PETER J. Book review of *Contributions to a General Asymptotic Statistical Theory* by J. Pfanzagl 786-791
- PREGIBON, DARYL. Book review of *Generalized Linear Models* by P. McCullagh and J. A. Nelder 1587-1596
- WIJSMAN, ROBERT A. Book review of *Aspects of Multivariate Statistical Theory* by Robb J. Muirhead and *Multivariate Statistics. A Vector Space Approach* by Morris L. Eaton. 1145-1150