References

J.G. Adrover and V. J. Yohai (2002). Projection estimates of multivariate location. *Ann. Statist.* 20, 1760–1781.

Analytical Methods Committee (1989). Robust statistics — how not to reject outliers. *The Analyst* 114, 1693–1702.

D.F. Andrews, P.J. Bickel, F.R. Hampel, P.J. Huber, W.H. Rogers, and J.W. Tukey (1972). *Robust Estimates of Location. Survey and Advances.* Princeton University Press, Princeton, NJ.

J. Antoch and J.Á. Víšek (eds.) (1992). *Computational Aspects of Model Choice.* Physica-Verlag, Heidelberg.

J. Antoch, H. Ekblom and J.Á. Víšek (1998). *Robust Estimation in Linear Model.* XploRe Macros: http://www.quantlet.de/codes/rob/ROB.html.

R.R. Bahadur (1967). Rates of convergence of estimators and test statistics. *Ann. Math. Statist.* 38, 303–324.

A.D. Barbour and P. Hall (1984). On the rate of Poisson convergence. *Math. Proc. Cambridge Philos. Soc.* 95, 473–480.

V.D. Barnett (1966). Evaluation of the maximum likelihood estimator where the likelihood equation has multiple roots. *Biometrika* 53, 152–166.

V.D. Barnett and T. Lewis (1994). *Outliers in Statistical Data,* 3rd ed. John Wiley & Sons, Chichester, U.K.

G.W. Bassett (1991). Equivariant, monotonic, 50% breakdown estimators. *Amer. Statist.* 45, 135–137.

D.A. Belsley, E. Kuh and R.E. Welsch (1980). *Regression Diagnostics: Identifying Influential Data and Sources of Collinearity.* John Wiley & Sons, New York.

A. Bhattacharyya, (1943). On a measure of divergence between two statistical populations defined by their probability distribution. *Bull. Calcutta Math. Soc.* 35, 99–109.

P.J. Bickel (1975). One-step Huber estimates in the linear model. *Ann. Statist.* 1, 597–616.

P.J. Bickel and E.L. Lehmann (1979). Descriptive statistics for nonparametric model. IV. Spread. *Contributions to Statistics: Jaroslav Hájek Memorial Volume* (J. Jurečková, ed.), pp. 33–40. Academia, Prague and Reidel, Dordrecht.

P.J. Bickel, C.A.J. Klaassen, Y. Ritov and J.A. Wellner (1993). *Efficient and Adaptive Estimation for Semiparametric Models.* John Hopkins University Press, Baltimore.

P. Billingsley (1998). *Convergence of Probability Measures,* 2nd ed. John Wiley & Sons, New York.

G. Blom (1956). On linear estimates with nearly minimum variance. *Arkiv für Mathematik* 3, 365–369.

P. Bloomfield and W.L. Steiger (1983). *Least Absolute Deviations. Theory, Applications and Algorithms.* Birkhäuser, Boston.

R.J. Boskovich (1757). De literaria expeditione per pontificiam ditionem et synopsis amplioris operis... *Bononiensi Scientiarum et Artum Instituto atque Academia Commentarii* 4, 353–396.

G.E.P. Box (1953). Non-normality and tests of variance. *Biometrika* 40, 318–335.

G.E.P. Box and S.L. Anderson (1955). Permutation theory in the derivation of robust criteria and the study of departures from assumption. *J. Royal Statist. Soc. B* 17, 1–34.

B.M. Brown (1983). Statistical uses of the spatial median *J. Royal Statist. Soc. B* 45, 25–30.

B.M. Brown (1988). Spatial median. *Encyclopedia of Statistical Sciences*, Vol. 8 (S. Kotz, N.L. Johnson and C.B. Read, eds.), pp. 574–575. John Wiley & Sons, New York.

K.A. Brownlee (1960). *Statistical Theory and Methodology in Science and Engineering.* John Wiley & Sons, New York, 491–500.

H. Bunke and O. Bunke (eds.) (1986). *Statistical Inference in Linear Models.* John Wiley & Sons, Chichester, U.K.

R.J. Carroll and D. Ruppert (1988). *Transformations and Weighting in Regression.* Chapman & Hall, London.

D. Cellier and D. Fourdrinier (1995). Shrinkage estimators under spherical symmetry for the general linear model. *J. Multiv. Anal.* 52, 338–351.

D. Cellier, D. Fourdrinier and C. Robert (1989). Robust shrinkage estimators of the location parameter for elliptically symmetric distributions. *J. Multiv. Anal.* 29, 39–52.

B. Chakraborty, P. Chaudhuri and H. Oja (1998). Operating transformation retransformation on spatial median and angle test. *Statistica Sinica* 8, 767–784.

S. Chaterjee and A.S. Hadi (1988). *Sensitivity Analysis in Linear Regression.* John Wiley & Sons, New York.

P. Chaudhuri (1996). On a geometric notion of quantiles for multivariate data. *J. Amer. Statist. Assoc.* 91, 862–872.

Y.S. Chow and K.F. Yu (1981). The performance of a sequential procedure for the estimation of the mean. *Ann. Statist.* 9, 184–188.

A. Cohen Brandwein and E. Strawderman (1991). Generalizations of James-Stein estimators under spherical symmetry. *Ann. Statist.* 19, 1639–1650.

J.R. Collins (1982). Robust *M*-estimators of location vectors. *J. Multivar. Analysis* 12, 480–492.

J.R. Collins (1986). Maximum asymptotic variances of trimmed means under asymmetric contaminations. *Ann. Statist.* 14, 348–354.

J.R. Collins (1991). Maximum asymptotic biases and variances of symmetrized interquantile ranges under asymmetric contamination. *Statistics* 22, 379–402.

J.R. Collins (1999). Robust *M*-estimators of scale: Minimax bias versus maximal variance. *Canad. J. Statist.* 27, 81–96.

J.R. Collins (2000). Robustness comparisons of some classes of location parameter estimators. *Ann. Inst. Statist. Math.* 52, 351–366.

J.R. Collins (2003). Bias-robust *L*-estimators of a scale parameter. *Statistics* 37, 287–303.

J.R. Collins and B.Wu (1998). Comparisons of asymptotic biases and variances of M-estimators of scale under asymmetric contamination. *Commun. Statist. Theory Meth.* 27, 1791–1810.

R.D. Cook and S. Weisberg (1982). *Residuals and Influence in Regression.* Chapman & Hall, London.

I. Csiszár (1967). Information-type measures of difference of probability distributions and indirect observations. *Studia Sci. Math. Hungar.* 2, 299–318.

M. Csörgő, and P. Révész (1978). Strong approximation of the quantile process. *Ann. Statist.* 6, 882–894.

M. Csörgő, and P. Révész (1981). *Strong Approximations in Probability and Statistics.* Akadémiai Kiadó, Budapest.

P.L. Davies (1987). Asymptotic behavior of S-estimates of multivariate location parameters and dispersion matrices. *Ann. Statist.* 15, 1269–1292.

P.L. Davies (1990). The asymptotics of S-estimators in the linear regression model. *Ann. Statist.* 18, 1651–1675.

P.L. Davies (1992). The asymptotics of Rousseeuw's minimum volume ellipsoid estimator. *Ann. Statist.* 20, 1828–1843.

P.L. Davies and U. Gather (2004). Robust Statistics. *Handbook of Computational Statistics* (J.E. Gentle, W. Härdle, Y. Mori, eds.), pp. 655–695. Springer-Verlag, Berlin.

A.P. Dempster (1969). *Elements of Continuous Multivariate Analysis.* Addison-Wesley, New York.

S.J. Devlin, R. Gnanadesikan and J.R. Kettenring (1976). Some multivariate applications of elliptical distributions. *Essays in Probability and Statistics* (S. Ikeda, ed.), pp. 365–395. Shinko Tsusho, Tokyo.

T. de Wet and J.H. Venter (1973). Asymptotic distributions of quadratic forms with application to test of fit. *Ann. Statist.* 31, 276–295.

R.L. Dobrushin (1970). Describing a system of random variables by conditional distributions. *Theor. Prob. Appl.* 15, 458–486.

Y. Dodge (1996). The guinea pig of multiple regression. *Robust Statistics, Data Analysis, and Computer Intensive Methods,* (H. Rieder, ed.), Lecture Notes in Statistics 109, pp. 91–118. Springer-Verlag, New York.

Y. Dodge and J. Jurečková (2000). *Adaptive Regression.* Springer-Verlag, New York.

D.L. Donoho (1982). *Breakdown properties of multivariate location estimators.* Ph.D. Thesis, Department of Statistics, Harvard University, Harvard, MA.

D.L. Donoho and M. Gasko (1992). Breakdown properties of location estimates based on half space depth and projection outlyingness. *Ann. Statist.* 20, 1803–1827.

D.L. Donoho and P.J. Huber (1983). The notion of breakdown point. *A Festschrift for Erich Lehmann* (P.J. Bickel, K.A. Doksum and J.L. Hodges, eds.), pp. 157–184. Wadsworth, CA.

N.R. Draper and H. Smith (1988). *Applied Regression Analysis,* 3rd ed. John Wiley & Sons, New York.

S.P. Ellis (1998). Instability of least squares, least absolute deviation and least median of squares linear regression. *Statist. Science* 13, 337–350.

M. Fabian, P. Habala, P. Hájek, V.M. Santalucía, J. Pelant and V. Zízler (2001). *Functional Analysis and Infinite-Dimensional Geometry.* Springer, New York.

M. Falk (1986). On the estimation of the quantile density function. *Statist. Probab. Lett.* 4, 69–73.

L.T. Fernholz (1983). *von Mises Calculus for Statistical Functionals*. Lecture Notes in Statistics 19, Springer-Verlag, New York.

C.A. Field and E.M. Ronchetti (1990). *Small Sample Asymptotics*. IMS Lecture Notes 13, IMS, Hayward, CA.

R.A.Fisher (1922). On the mathematical foundations of theoretical statistics. *Phil. Trans. Roy. Soc. London* A 222, 309–368.

D. Fourdrinier, E. Marchand and E. Strawderman (2004). On the inevitability of a paradox in shrinkage estimation for scale mixture of normals. *J. Statist. Plann. Infer.* 121, 37–51.

D. Fourdrinier and E. Strawderman (1996). A paradox concerning shrinkage estimators: Should a known scale parameter be replaced by an estimated value in the shrinkage factor? *J. Multiv. Anal.* 59, 109–140.

J.C. Fu (1975). The rate of convergence of consistent point estimators. *Ann. Statist.* 3, 234–240.

J.C. Fu (1980). Large deviations, Bahadur efficiency, and the rate of convergence of linear functions of order statistics. *Bull. Inst. Math. Acad. Sinica* 8, 15–37.

M. Ghosh and N. Mukhopadhyay (1979). Sequential point estimation of the mean when the distribution is unspecified. *Comm. Statist.* A 8, 637–652.

A.L. Gibbs and F.E. Su (2002). On choosing and bounding probability metrics. *Intern. Statist. Rev.* 70, 419–435.

C. Gutenbrunner (1986). Zur Asymptotik von Regression Quantil Prozessen und daraus abgeleiten Statistiken. Ph.D. Thesis, Universität Freiburg, Germany.

C. Gutenbrunner and J. Jurečková (1992). Regression rank scores and regression quantiles. *Ann. Statist.* 20, 305–330.

C. Gutenbrunner, J. Jurečková, R. Koenker and S. Portnoy (1993). Tests of linear hypotheses based on regression rank scores. *J. Nonpar. Statist.* 2, 307–331.

J. Hájek (1969). *A Course in Nonparametric Statistics*. Holden-Day, San Francisco.

P.J. Hall (1981). Large sample properties of Jaeckel's adaptive trimmed mean. *Ann. Inst. Statist. Math.* 33A, 449–462.

F.R. Hampel (1968). *Contribution to the Theory of Robust Estimators*. Ph.D. Thesis. University of California, Berkeley, CA.

F.R. Hampel (1971). A general qualitative definition of robustness. *Ann. Math. Statist.* 42, 1887–1896.

F.R. Hampel (1973). Some small sample asymptotics. *Proceedings of the Prague Symposium on Asymptotic Statistics*, Vol. 2 (J. Hájek, ed.), pp. 109–126. Charles University, Prague.

F.R. Hampel (1974). The influence curve and its role in robust estimation. *J. Amer. Statist. Assoc.* 69, 383–393.

F.R. Hampel (1975). Beyond location parameters: Robust concepts and methods (with discussion). *Bull. Internat. Statist. Inst.* 46, 375–391.

F.R. Hampel, P.J. Rousseeuw, E.M. Ronchetti, and W. Stahel (1986). *Robust Statistics – The Approach Based on Influence Functions*. John Wiley & Sons, New York.

F. Harrell and C. Davis (1982). A new distribution-free quantile estimator. *Biometrika* 69, 636–640.

T.P. Hettmansperger (1985). *Statistical Inference Based on Ranks*. John Wiley & Sons, New York.

P. Harremoës and P.S. Ruzankin (2004). Rate of convergence to Poisson law in terms of information divergence. *Trans. IEEE Inform. Theory* 50, 2145–2149.

D.M. Hawkins and D. Olive (1999). Applications and algorithms for least trimmed sum of absolute deviations, regression. *Comp. Statist. Data Anal.* 32, 119–134.

X. He, J. Jurečková, R. Koenker and S. Portnoy (1990). Tail behavior of regression estimators and their breakdown point. *Econometrica* 58, 1195-1214.

X. He and D.G. Simpson (1993). Lower bounds for contamination bias: Globally minimax versus locally linear estimation. *Ann. Statist.* 21, 314–337.

T.P. Hettmansperger and R.H. Randles (2002). A practical affine equivariant multivariate median. *Biometrika* 89, 851–860.

T.P. Hettmansperger and S. Sheather (1992). A cautionary note on the method of least median squares. *Amer. Statist.* 46, 79–83.

J.L. Hodges and E.L. Lehmann (1963). Estimation of location based on rank tests. *Ann. Math. Statist.* 34, 598–611.

W. Hoeffding (1963). Probability inequalities for sums of bounded random variables. *J. Amer. Statist. Assoc.* 58, 13–29.

O. Hössjer (1994). Rank-based estimates in the linear model with high breakdown point. *J. Amer. Statist. Assoc.* 89, 149–158.

C. Huber-Carol, N. Balakrishnan, M.S. Nikulin, M. Mesbah (eds.) (2002). *Goodness-of-Fit Tests and Model Validity.* Birkhäuser, Boston.

P.J. Huber (1964). Robust estimation of a location parameter. *Ann. Math. Statist.* 36, 73–101.

P.J. Huber (1968). Robust confidence limits. *Z. Wahrsch. Verw. Geb.* 10, 269–278.

P.J. Huber (1969). *Théorie de l'inférence de statistique robuste.* Presses de l'Université de Montréal, Montréal.

P.J. Huber (1981). *Robust Statistics.* John Wiley & Sons, New York.

R. Ihaka, R. Gentleman (1996). R: A language for data analysis and graphics. *J. Computational Graphical Statistics* 5, 299–314.

L.A. Jaeckel (1969). *Robust Estimates of Location.* Ph.D. Thesis, University of California, Berkeley, CA.

L.A. Jaeckel (1971). Robust estimation of location: Symmetry and asymmetric contamination. *Ann. Math. Statist.* 42, 1020–1034.

L.A. Jaeckel (1972). Estimating regression coefficients by minimizing the dispersion of residuals. *Ann. Statist.* 43, 1449–1458.

W. James and C. Stein (1961). Estimation with quadratic loss. *Proceedings of the Fourth Berkeley Symposium on Mathematics Statistics and Probability*, Vol. 1, pp. 361–380. University of California Press, Berkeley, CA.

P. Janssen, J. Jurečková and N. Veraverbeke (1985). Rate of convergence of one- and two-step M-estimators with applications to maximum likelihood and Pitman estimators. *Ann. Statist.* 13, 1222–1229.

J. Jung (1955). On linear estimates defined by a continuous weight function. *Arkiv für Mathematik* 3, 199–209.

J. Jung (1962). Approximation to the best linear estimates. *Contribution to Order Statistics* (A.E. Sarhan and B.G. Greenberg, eds.), pp. 28–33. John Wiley & Sons, New York.

J. Jurečková (1977). Asymptotic relations of M-estimates and R-estimates in linear regression model. *Ann. Statist.* 5, 464–472.

J. Jurečková (1980). Asymptotic representation of M-estimators of location. *Math. Operationsforsch. und Statistik, Ser. Statistics* 11, 61–73.

J. Jurečková (1981). Tail-behavior of location estimators. *Ann. Statist.* 9, 578–585.

J. Jurečková and A.H. Welsh (1990). Asymptotic relations between *L*- and *M*-estimators in the linear model. *Ann. Inst. Statist. Math.* 42, 671–698.

J. Jurečková and L.B. Klebanov (1997). Inadmissibility of robust estimators with respect to L_1-norm. *IMS Lecture Notes - Monograph Series*, Vol. 31, (Y. Dodge, ed.), pp. 71–78. Institute of Mathematical Statistics, Hayward, CA.

J. Jurečková and L.B. Klebanov (1998). Trimmed, Bayesian and admissible estimators. *Statist. Probab. Lett.* 42, 47–51.

J. Jurečková and M. Malý (1995). The asymptotics for studentized *k*-step *M*-estimators of location. *Sequen. Anal.* 14, 229–245.

J. Jurečková and P.K. Sen (1982). M-estimators and L-estimators of location: Uniform integrability and asymptotic risk-efficient sequential versions. *Sequential Anal.* 1, 27–56.

J. Jurečková and P.K. Sen (1990). Effect of the initial estimator on the asymptotic behavior of one-step *M*-estimator. *Ann. Inst. Statist. Math.* 42, 345–357.

J. Jurečková and P.K. Sen (1994). Regression rank scores scale statistics and studentization in the linear model. *Proceedings of 5th Prague Conference on Asymptotic Statistics* (M. Hušková and P. Mandl, eds.), pp. 111–121. Physica-Verlag, Vienna.

J. Jurečková and P.K. Sen (1996). *Robust Statistical Procedures: Asymptotics and Interrelations.* John Wiley & Sons, New York.

J. Jurečková and S. Portnoy (1987). Asymptotics for one-step *M*-estimators in regression with application to combining efficiency and high breakdown point. *Commun. Statist. Theory Methods A* 16, 2187–2199.

J. Jurečková and X. Milhaud (1993). Shrinkage of maximum likelihood estimators of multivariate location. *Proceedings of 5th Prague Symposium on Asymptotic Statistics* (P. Mandl and M. Hušková , eds.), pp. 303–318. Physica-Verlag, Vienna.

J. Jurečková, J. Picek and P.K. Sen (2003). Goodness-of-fit test with nuisance regression and scale. *Metrika* 58, 235–258.

J. Jurečková, R. Koenker and S. Portnoy (2001). Tail behavior of the least squares estimator. *Statist. Probab. Lett.* 55, 377–384.

A.M. Kagan, J.V. Linnik and C.R. Rao (1973). *Characterization Problems in Mathematical Statistics.* John Wiley & Sons, New York.

J.T. Kent and D.E. Tyler (1991). Redescending *M*-estimates of multivariate location and scatter. *Ann. Statist.* 19, 2102–2119.

J.T. Kent, D.E. Tyler and Y. Vardi (1994). A curious likelihood identity for the multivariate t-distribution. *Comm. Statistics – Simulation Computation* 23, 441–453.

J. Kim and D. Pollard (1990). Cube-root asymptotics. *Ann. Statist.* 18, 191–219.

R. Koenker (2005). *Quantile Regression.* Cambridge University Press, Cambridge, U.K.

R. Koenker and G. Bassett (1978). Regression quantiles. *Econometrica* 46, 33–50.

R. Koenker and G. Bassett (1982). Robust tests of heteroscedasticity based on regression quantiles. *Econometrica* 50, 43–61.

I. Kontoyannis, P. Harremoës and O. Johnson (2005). Entropy and the law of small numbers. *IEEE Trans. Inform. Theory* 51, 466–472.

H.L. Koul (2002). *Weighted Empirical Processes in Dynamic Nonlinear Models*, 2nd ed., Lecture Notes in Statistics 166, Springer, New York.

W. Krasker and R. Welsch (1982). Efficient bounded-influence regression estimation. *J. Amer. Statist. Assoc.* 77, 595–604.

J.P. Lecoutre and P. Tassi (1987). *Statistique non parametrique et robustesse*. Economica, Paris.

E.L. Lehmann (1983). *Theory of Point Estimators*. John Wiley & Sons, New York.

E.L. Lehmann (1999). *Elements of Large Sample Theory*. Springer, New York.

F. Liese and I. Vajda (1987). *Convex Statistical Distances*. Teubner, Leipzig, Germany.

R.Y. Liu, J.M. Parelius amd K. Singh (1999). Multivariate analysis by data depth: Descriptive statistics, graphics and inference (with discussion). *Ann. Statist.* 27, 783–858.

H.P. Lopuhaä (1989). On the relation between S-estimators and M-estimators of multivariate location and covariance. *Ann. Statist.* 17, 1662–1683.

H.P. Lopuhaä and P.J. Rousseeuw (1991). Breakdown properties of affine equivariant estimators of multivariate location and covariance matrices. *Ann. Statist.* 19, 229–248.

C.L. Mallows (1972). A note on asymptotic joint normality. *Ann. Math. Statist.* 43, 508–515.

C. Mallows (1973). Influence functions. *National Bureau of Economic Research, Conference on Robust Regression*, Cambridge, MA.

C. Mallows (1975). On some topics in robustness. Technical memorandum, Bell Telephone Laboratories, Murray Hill, NJ.

A. Marazzi (1992). *Algorithms, Routines and S-Functions for Robust Statistics*. Chapman and Hall, New York.

J.I. Marden (1998). Bivariate QQ plots and spider web plots. *Statistica Sinica* 8, 813–826.

R.A. Maronna (1976). Robust M-estimates of multivariate location and scatter. *Ann. Statist.* 4, 51–67.

R.A. Maronna and V.J. Yohai (1981). Asymptotic behavior of general M-estimates for regression and scale with random carriers. *Z. Wahrscheinlichkeitstheorie und verw. Gebiete* 58, 7–20.

R.A. Maronna and V.J. Yohai (1995). The behavior of the Stahel-Donoho robust multivariate estimator. *J. Amer. Statistc. Assoc.* 90, 330–341.

R.A. Maronna, W.A. Stahel and V.J. Yohai (1992). Bias-robust estimates of multivariate scatter based on projections. *J. Multiv. Anal.* 21, 965–990.

R.D. Martin and R.H. Zamar (1993). Efficiency-constrained bias-robust estimation of location. *Ann. Statist.* 21, 991–1017.

J.T. Mayer (1750). Abhandlung über die Umwälzung des Monds um seine Axe. *Kosmographische Nachrichten und Sammlungen* 1, 52–183.

J. Möttönen and H. Oja (1995). Multivariate spatial sign and rank methods. *J. Nonpar. Statist.* 5, 201–213.

H. Oja (1983). Descriptive statistics for multivariate distributions. *Statist. Probab. Lett.* 1, 327–332.

H. Oja and R.H. Randles (2004). Multivariate nonparametric tests. *Statist. Sci* 4, 598–605.

E. Parzen (1975). Nonparametric statistical data modelling. *J. Amer. Statistical Assoc.* 74, 105–131.

E.S. Pearson (1931). The analysis of variance in cases of nonnormal variation. *Biometrika* 23, 114–133.

M.S. Pinsker (1960). *Information and Information Stability of Random Variables and Processes* (in Russian). Izv. Akad. Nauk, Moscow.

S. Portnoy (1991). Asymptotic behavior of the number of regression quantile break-points. *J. Sci. Statist. Comput.* 12, 867–883.

S.T. Rachev (1991). *Probability Metrics and the Stability of Stochastic Models.* John Wiley & Sons, Chichester, U.K.

R Development Core Team (2004). *R: A language and environment for statistical computing.* R Foundation for Statistical Computing, Vienna, http://www.R-project.org.

J.A. Reeds (1985). Asymptotic number of roots of Cauchy location likelihood equations. *Ann. Statist.* 13, 775–784.

R.D. Reiss (1989). *Approximate Distributions of Order Statistics.* Springer, New York.

H. Rieder (1994). *Robust Asymptotic Statistics.* Springer, New York.

P.J. Rousseeuw (1984). Least median of squares regression. *J. Amer. Statist. Assoc.* 79, 871–880.

P.J. Rousseeuw (1985). Multivariate estimation with high breakdown point. *Mathematical Statistics and Applications*, Vol. B (W. Grossmann et al., eds.), pp. 283–297. Reidel, Dordrecht.

P.J. Rousseeuw and A.M. Leroy (1987). *Robust Regression and Outlier Detection.* John Wiley & Sons, New York.

P.J. Rousseeuw and B.C. van Zomeren (1990). Unmasking multivariate outliers and leverage points. *J. Amer. Statist. Assoc.* 85, 633–639.

P.J. Rousseeuw and K. van Driessen (1999). A fast algorithm for the minimum covariance determinant estimator. *Technometrics* 41, 212–223.

P.J. Rousseeuw and V.J. Yohai (1984). Robust regression by means of S-estimators. *Robust and Nonlinear Time Series Analysis* (J. Franke, W. Härdle and R.D. Martin, eds.), pp. 256–272. Springer, New York.

P. Royston (1982a). An extension of Shapiro and Wilk W test for normality to large samples. *Appl. Statistics* 31, 115–124.

P. Royston (1982b). Algorithm AS 181: The W test for normality. *Appl. Statistics* 31, 176–180.

P. Royston (1995). A remark on algorithm AS 181: The W test for normality. *Appl. Statistics* 44, 547–551.

D. Ruppert and R. J. Carroll (1980). Trimmed least squares estimation in the linear model. *J. Amer. Statist. Assoc.* 75, 828–838.

P.K. Sen (1964). On some properties of the rank-weighted means. *J. Indian Soc. Agricul. Statist.* 16, 51–61.

P.K. Sen (1978). An invariance principle for linear combinations of order statistics. *Zeit. Wahrscheinlich. Verw. Geb.* 42, 327–340.

P.K. Sen (1980). On nonparametric sequential point estimation of location based on general rank order statistics. *Sankhyā* A 42, 201–218.

P.K. Sen (1981). *Sequential Nonparametrics: Invariance Principles and Statistical Inference.* John Wiley & Sons, New York.

P.K. Sen (1986). On the asymptotic distributional risk of shrinkage and preliminary test versions of maximum likelihood estimators. *Sankhyā* A 48, 354–371.

P.K. Sen (1994). Isomorphism of quadratic norm and OC ordering of estimators admitting first-order representation. *Sankhyā* A 56, 465–475.

P.K. Sen (2002). Shapiro-Wilk type goodness-of-fit tests for normality: Asymptotics revisited. *Goodness-of-Fit Tests and Model Validity* (C. Huber-Carol et al., eds.), pp. 73–88. Birkhäuser, Boston.

P.K. Sen, J. Jurečková and J. Picek (2003). Goodness-of-fit test of Shapiro-Wilk type with nuisance regression and scale. *Austrian J. of Statist.* 32, No. 1 & 2, 163–177.

R.J. Serfling (1980). *Approximation Theorems of Mathematical Statistics.* John Wiley & Sons, New York.

R.J. Serfling (2004). Nonparametric multivariate descriptive measures based on spatial quantiles. *J. Statist. Planning Infer.* 123, 259–278.

S.S. Shapiro and M.B. Wilk (1965). An analysis of variance for normality (complete samples). *Biometrika* 52, 591–611.

G.R. Shorack (2000). *Probability for Statisticians.* Springer, New York.

G.R. Shorack and J.A. Wellner (1986). *Empirical Processes with Applications to Statistics.* John Wiley & Sons, New York.

A.F. Siegel (1982). Robust regression using repeated medians. *Biometrika* 69, 242–244.

G.L. Sievers (1978). Estimation of location: A large deviation comparison. *Ann. Statist.* 6, 610–618.

D.G. Simpson, D. Ruppert and R.J. Carroll (1992). On one-step GM-estimates and stability of inference in linear regression. *J. Amer. Statist. Assoc.* 87, 439–450.

C.G. Small (1990). A survey of multidimensional medians. *Intern. Statist. Rev.* 58, 263–277.

W.A. Stahel (1981). Breakdown of covariance estimators. Research Report 31, Fachgruppe für Statistik, ETH Zürich.

R.J. Staudte and S.J. Sheather (1990). *Robust Estimation and Testing.* John Wiley & Sons, New York.

C. Stein (1956). Inadmissibility of the usual estimator for the mean of multivariate distribution. *Proceedings of Third Berkeley Symposium on Mathematics Statistics and Probability,* Vol, 1, pp. 197–206. University of California Press, Berkeley, CA.

C. Stein (1981). Estimation of the mean of a multivariate normal distribution. *Ann. Statist.* 9, 1135–1151.

S.M. Stigler (1986). *The History of Statistics. The Measurement of Uncertainty before 1900.* Belknap Press of Harvard University Press, London.

M. Tableman (1994a). The influence functions for the least trimmed squares and the least trimmed absolute deviations estimators. *Statist. Probab. Lett.* 19, 329–337.

M. Tableman (1994b). The asymptotics for the least trimmed absolute deviations (LTAD) estimator. *Statist. Probab. Lett.* 19, 387–398.

J.W. Tukey (1960). A survey of sampling from contaminated distribution. *Contributions to Probability and Statistics* (I. Olkin, ed.), Stanford University Press, Stanford, CA.

J.W. Tukey (1977). *Exploratory Data Analysis.* Addison-Wesley, Reading, MA.

J.W. Tukey and D.H. McLaughlin (1963). Less vulnerable confidence and significance procedures for location based on a single sample: trimming/winsorization I. *Sankhyā* A 25, 331–352.

D.E. Tyler (1994). Finite sample breakdown points of projection based on multivariate location and scatter statistics. *Ann. Statist.* 22, 1024–1044.

I. Vajda (1988). *Theory of Statistical Inference and Information.* Reidel, Dordrecht.

A.W. van der Vaart and J.A. Wellner (1996). *Weak Convergence and Empirical Processes (With Applications to Statistics.)* Springer, New York.

C. van Eeden (1972). Analogue, for signed rank statistics, of Jurečková's asymptotic linearity theorem for signed rank statistics. *Ann. Math. Statist.* 43, 791–802.

Y. Vardi and C.H. Zhang (2000). The multivariate L_1-median and associated data depth. *Proceedings of National Academy of Sciences USA* 97, 1423–1426.

W.N. Venables and B.D. Ripley (2002). *Modern Applied Statistics with S.* 4 th ed., Springer, New York.

J.Á. Víšek (1995). On high breakdown point estimation. *Comp. Statist.* 11, 137–146.

J.Á. Víšek (2000). On the diversity of estimates. *Comp. Statist. Data Anal.* 34, 67–89.

J.Á. Víšek (2002a). The least weighted squares I. The asymptotic linearity of normal equations. *Bull. Czech Econometric Society* 9/15, 31–58.

J.Á. Víšek (2002b). The least weighted squares II. Consistency and asymptotic normality. *Bull. Czech Econometric Society* 9/16, 1–28.

B. von Bahr (1965). On the convergence of moments in the central limit theorem. *Ann. Math. Statist.* 36, 808–818.

R. von Mises (1947). On the asymptotic distribution of differentiable statistical functions. *Ann. Math. Statist.* 35, 73–101.

A.H. Welsh (1986). Bahadur representation for robust scale estimators based on regression residuals. *Ann. Statist.* 14, 1246–1251.

A.H. Welsh and E. Ronchetti (2002). A journey in single steps: robust one-step M-estimation in linear regression. *J. Statist. Planning Infer.* 103, 287–310.

D.P. Wiens and Z. Zheng (1986). Robust M-estimators of multivariate location and scatter in the presence of asymmetry. *Canad. J. Statist.* 14, 161–176.

H. Witting and U. Müller-Funk (1995). *Mathematische Statistik II. Asymptotische Statistik: Parametrische Modelle und nichtparametrische Funktionale.* Teubner, Stuttgart, Germany.

V.J. Yohai (1987). High breakdown point and high efficiency robust estimates for regression. *Ann. Statist.* 15, 642–656.

V.M. Zolotarev (1983). Probability metrics. *Theor. Probab. Appl.* 28, 278–302.

Y. Zuo (2003). Projection depth functions and associated medians. *Ann. Statist.* 31, 1460–1490.

Y. Zuo (2004). Robust and efficient multivariate medians. Preprint, Michigan State University, East Lansing, MI.