

# References

- [BB89] H. Bunke and O. Bunke. Nonlinear regression, functional relations and robust methods analysis and its applications. In O. Bunke, editor, *Statistical Methods of Model Building*, Volume 2. Wiley, New York, 1989.
- [BH94] A. Bouvier and S. Huet. nls2. non-linear regression by s-plus functions. *Computational Statistics and Data Analysis*, 18:187–190, 1994.
- [Bun90] O. Bunke. Estimating the accuracy of estimators under regression models. Technical Report, Humboldt University, Berlin, 1990.
- [BW88] D.M. Bates and D.G. Watts. *Nonlinear Regression Analysis and Its Applications*. Wiley, New York, 1988.
- [Car60] N.L. Carr. Kinetics of catalytic isomerization of n-pentane. *Industrial and Engineering Chemistry*, 52:391–396, 1960.
- [CR88] R.J. Carroll and D. Ruppert. *Transformation and Weighting in Regression*. Chapman and Hall, London, 1988.
- [CY92] C. Chabanet and M. Yvon. Prediction of peptide retention time in reversed-phase high-performance liquid chromatography. *Journal of Chromatography*, 599:211–225, 1992.
- [Fin78] D.J. Finney. *Statistical Method in Biological Assay*. Griffin, London, 1978.

- [FM88] R. Faivre and J. Masle. Modeling potential growth of tillers in winter wheat. *Acta Œcologica, Œcol. Gener.*, 9:179–196, 1988.
- [Gal87] A.R. Gallant. *Nonlinear Statistical Models*. Wiley, New York, 1987.
- [GHJ93] M.A. Gruet, S. Huet, and E. Jolivet. Practical use of bootstrap in regression. In W. Härdle and L. Simar, editors, *Computer Intensive Methods in Statistics*, pages 150–166. Physica-Verlag, Heidelberg, 1993.
- [GJ94] M.A. Gruet and E. Jolivet. Calibration with a nonlinear standard curve: how to do it? *Computational Statistics*, 9:249–276, 1994.
- [Gla80] C.A. Glasbey. Nonlinear regression with autoregressive time-series errors. *Biometrics*, 36:135–140, 1980.
- [HJM89] S. Huet, E. Jolivet, and A. Messéan. Some simulations results about confidence intervals and bootstrap methods in nonlinear regression. *Statistics*, 21:369–432, 1989.
- [HJM91] S. Huet, E. Jolivet, and A. Messéan. *La régression non-linéaire: méthodes et applications à la biologie*. INRA, Paris, 1991.
- [HLV87] S. Huet, J. Laporte, and J.F. Vautherot. Statistical methods for the comparison of antibody levels in serums assayed by enzyme linked immuno sorbent assay. *Biométrie-Praximétrie*, 28:61–80, 1987.
- [LGR94] F. Legal, P. Gasqui, and J.P. Renard. Differential osmotic behaviour of mammalian oocytes before and after maturation: a quantitative analysis using goat oocytes as a model. *Cryobiology*, 31:154–170, 1994.
- [LM82] J.D. Lebreton and C. Millier. *Modèles Dynamiques Déterministes en Biologie*. Masson, Paris, 1982.
- [Rat83] D.A. Ratkowsky. *Nonlinear Regression Modeling*. M. Dekker, New York, 1983.
- [Rat89] D.A. Ratkowsky. *Handbook of Nonlinear Regression Models*. M. Dekker, New York, 1989.
- [Ros90] G.J.S. Ross. *Nonlinear Estimation*. Springer-Verlag, New York, 1990.
- [RP88] A. Racine-Poon. A bayesian approach to nonlinear calibration problems. *Journal of the American Statistical Association*, 83:650–656, 1988.

- [SW89] G.A.F. Seber and C.J. Wild. *Nonlinear Regression*. Wiley, New-York, 1989.
- [TP90] F. Tardieu and S. Pellerin. Trajectory of the nodal roots of maize in fields with low mechanical constraints. *Plant and Soil*, 124:39–45, 1990.
- [VR94] W.N. Venables and B.D. Ripley. *Modern Applied Statistics with S-Plus*. Springer-Verlag, New York, 1994.
- [WD84] H. White and I. Domowitz. Nonlinear regression with non independent observations. *Econometrica*, 52:143–161, 1984.
- [Wu86] C.F.J. Wu. Jackknife, bootstrap and other resampling methods in regression analysis (with discussion). *The Annals of Statistics*, 14:1291–1380, 1986.

# Index

- adjusted response curve 14
- asymptotic level 32, 68
- bootstrap 35
  - B*-sample 36, 37
  - calibration interval 135
  - confidence interval 37
  - estimation of the bias 37
  - estimation of the mean
    - square error 37
  - estimation of the median 37
  - estimation of the variance 37
  - prediction interval 134
- calibr-2 3, 131
- confidence interval 32
  - calibration interval 131, 135, 135, 136, 138
  - prediction interval 131, 134, 134
  - transformation of 33
  - using the likelihood ratio test 71
  - using the percentiles of a Gaussian variable 32, 70
  - Student variable 33
    - using bootstrap 37
- confidence region 43, 70, 71
  - confidence ellipsoids 43
  - likelihood contours 43
  - using the likelihood ratio test 71
  - using the Wald test 71
- covariance matrix 31
- coverage probability 32
- curve comparison 35
- empirical variance 5, 37
- error 12
  - correlations in 103
  - independency 90
- estimator
  - least squares 13, 67
  - maximum likelihood 66, 67
  - modified least squares 68
  - three-step alternate mean squares 67
  - weighted least squares 13
- experimental design 104

- fitted values 90
- heterogeneous variance 13, 38, 61, 137
- heteroscedastic model 61
- homogeneous variance 12
- independent variable 12
- level of a confidence interval 32
- likelihood 66
  - contours 43
  - log-likelihood 67, 137
  - ratio test 34, 35, 69, 108
- limiting distribution 31
- model misspecification 89
  - graphics 90
  - tests 108
- nested models 35, 108, 109
- numerical estimation process 111
- parameterization 47
- parameters  $\sigma^2$ ,  $\tau$ ,  $\theta$  12
- percentile 32, 37, 40
- prediction 131
- regression function 12, 90
- relative potency 6
- replications 12, 108
- residuals 91
- response 12
- sensitivity function 104
- standard error 31
- standardized residuals 91
- sum of squares 13
- test 33
  - asymptotic error of first kind 34
  - curve comparison 35
  - likelihood ratio 34, 35, 69, 108
  - misspecification 110, 110
  - Wald 34, 35, 68, 70
- variance function 12, 65, 90, 97
- weighted sum of square 13

# Springer Series in Statistics

---

(continued from p. ii)

- Pollard*: Convergence of Stochastic Processes.
- Pratt/Gibbons*: Concepts of Nonparametric Theory.
- Read/Cressie*: Goodness-of-Fit Statistics for Discrete Multivariate Data.
- Reinsel*: Elements of Multivariate Time Series Analysis.
- Reiss*: A Course on Point Processes.
- Reiss*: Approximate Distributions of Order Statistics: With Applications to Non-parametric Statistics.
- Rieder*: Robust Asymptotic Statistics.
- Rosenbaum*: Observational Studies.
- Ross*: Nonlinear Estimation.
- Sachs*: Applied Statistics: A Handbook of Techniques, 2nd edition.
- Särndal/Swensson/Wretman*: Model Assisted Survey Sampling.
- Schervish*: Theory of Statistics.
- Seneta*: Non-Negative Matrices and Markov Chains, 2nd edition.
- Shao/Tu*: The Jackknife and Bootstrap.
- Siegmund*: Sequential Analysis: Tests and Confidence Intervals.
- Simonoff*: Smoothing Methods in Statistics.
- Tanner*: Tools for Statistical Inference: Methods for the Exploration of Posterior Distributions and Likelihood Functions, 3rd edition.
- Tong*: The Multivariate Normal Distribution.
- van der Vaart/Wellner*: Weak Convergence and Empirical Processes: With Applications to Statistics.
- Vapnik*: Estimation of Dependences Based on Empirical Data.
- Weerahandi*: Exact Statistical Methods for Data Analysis.
- West/Harrison*: Bayesian Forecasting and Dynamic Models.
- Wolter*: Introduction to Variance Estimation.
- Yaglom*: Correlation Theory of Stationary and Related Random Functions I: Basic Results.
- Yaglom*: Correlation Theory of Stationary and Related Random Functions II: Supplementary Notes and References.