1. Record Nr. UNINA9910144723303321

Titolo	Statistics of extremes [[electronic resource]] : theory and applications / / Jan Beirlant ... [et al.], with contributions from Daniel De Waal, Chris Ferro
Pubbl/distr/stampa	Hoboken, NJ, : Wiley, 2004
ISBN	1-280-54155-5 9786610541553 0-470-01238-2 0-470-01237-4
Descrizione fisica	1 online resource (514 p.)
Collana	Wiley series in probability and statistics
Altri autori (Persone)	BeirlantJan
Disciplina	519.5
Soggetti	Mathematical statistics Maxima and minima
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references (p. 461-478) and indexes.
Nota di contenuto	Statistics of Extremes; Contents; Preface; 1 WHY EXTREME VALUE THEORY?; 1.1 A Simple Extreme Value Problem; 1.2 Graphical Tools for Data Analysis; 1.2.1 Quantile-quantile plots; 1.2.2 Excess plots; 1.3 Domains of Applications; 1.3.1 Hydrology; 1.3.2 Environmental research and meteorology; 1.3.3 Insurance applications; 1.3.4 Finance applications; 1.3.5 Geology and seismic analysis; 1.3.6 Metallurgy; 1.3.7 Miscellaneous applications; 1.4 Conclusion; 2 THE PROBABILISTIC SIDE OF EXTREME VALUE THEORY; 2.1 The Possible Limits; 2.2 An Example; 2.3 The Frechet-Pareto Case: g > 0 2.3.1 The domain of attraction condition2.3.2 Condition on the underlying distribution; 2.3.3 The historical approach; 2.3.4 Examples; 2.3.5 Fitting data from a Pareto-type distribution; 2.4 The (Extremal) Weibull Case: g < 0; 2.4.1 The domain of attraction condition; 2.4.2 Condition on the underlying distribution; 2.4.3 The historical approach; 2.4.4 Examples; 2.5 The Gumbel Case: g = 0; 2.5.1 The domain of attraction condition; 2.5.2 Condition on the underlying distribution; 2.5.3 The historical approach and examples; 2.6 Alternative Conditions for (C(g))

2.7 Further on the Historical Approach2.8 Summary; 2.9 Background Information; 2.9.1 Inverse of a distribution; 2.9.2 Functions of regular variation; 2.9.3 Relation between F and U; 2.9.4 Proofs for section 2.6; 3 AWAY FROM THE MAXIMUM; 3.1 Introduction; 3.2 Order Statistics Close to the Maximum; 3.3 Second-order Theory; 3.3.1 Remainder in terms of U; 3.3.2 Examples; 3.3.3 Remainder in terms of F; 3.4 Mathematical Derivations; 3.4.1 Proof of (3.6); 3.4.2 Proof of (3.8); 3.4.3 Solution of (3.15); 3.4.4 Solution of (3.18); 4 TAIL ESTIMATION UNDER PARETO-TYPE MODELS; 4.1 A Naive Approach
4.2 The Hill Estimator4.2.1 Construction; 4.2.2 Properties; 4.3 Other Regression Estimators; 4.4 A Representation for Log-spacings and Asymptotic Results; 4.5 Reducing the Bias; 4.5.1 The quantile view; 4.5.2 The probability view; 4.6 Extreme Quantiles and Small Exceedance Probabilities; 4.6.1 First-order estimation of quantiles and return periods; 4.6.2 Second-order refinements; 4.7 Adaptive Selection of the Tail Sample Fraction; 5 TAIL ESTIMATION FOR ALL DOMAINS OF ATTRACTION; 5.1 The Method of Block Maxima; 5.1.1 The basic model; 5.1.2 Parameter estimation
5.1.3 Estimation of extreme quantiles5.1.4 Inference: confidence intervals; 5.2 Quantile View-Methods Based on (C(g)); 5.2.1 Pickands estimator; 5.2.2 The moment estimator; 5.2.3 Estimators based on the generalized quantile plot; 5.3 Tail Probability View-Peaks-Over-Threshold Method; 5.3.1 The basic model; 5.3.2 Parameter estimation; 5.4 Estimators Based on an Exponential Regression Model; 5.5 Extreme Tail Probability, Large Quantile and Endpoint Estimation Using Threshold Methods; 5.5.1 The quantile view; 5.5.2 The probability view; 5.5.3 Inference: confidence intervals
5.6 Asymptotic Results Under (C(g))-(C*(g))

Sommario/riassunto

Research in the statistical analysis of extreme values has flourished over the past decade: new probability models, inference and data analysis techniques have been introduced; and new application areas have been explored. Statistics of Extremes comprehensively covers a wide range of models and application areas, including risk and insurance: a major area of interest and relevance to extreme value theory. Case studies are introduced providing a good balance of theory and application of each model discussed, incorporating many illustrated examples and plots of data. The last part of the