1. Record Nr. UNINA9910678281303321

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Titolo	Geometrical foundations of asymptotic inference [[electronic resource] /] / Robert E. Kass, Paul W. Vos
Pubbl/distr/stampa	New York, : Wiley, 1997
ISBN	1-283-27403-5 9786613274038 1-118-16598-5 1-118-16597-7
Descrizione fisica	1 online resource (378 p.)
Collana	Wiley series in probability and statistics. Probability and statistics
Altri autori (Persone)	VosPaul W. <1961->
Disciplina	519.54
Soggetti	Mathematical statistics - Asymptotic theory Geometry, Differential
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	"A Wiley Interscience publication."
Nota di bibliografia	Includes bibliographical references (p. 340-347) and indexes.
Nota di contenuto	Geometrical Foundations of Asymptotic Inference; Contents; Preface; 1 Overview and Preliminaries; 1.1 Overview; 1.1.1 Part I; 1.1.2 Part II; 1.1.3 Part III; 1.2 Notation; 1.2.1 Parameter Spaces; 1.2.2 Differentiation; 1.2.3 Tensor Notation; 1.2.4 Connection Notation; PART I ONE-PARAMETER CURVED EXPONENTIAL FAMILIES; 2 First-Order Asymptotics; 2.1 Introduction; 2.2 Exponential Families; 2.2.1 Basic Properties; 2.2.2 Asymptotics; 2.3 Curved Exponential Families: Definition and Examples; 2.3.1 Definition and Basic Properties; 2.3.2 Examples; 2.4 Estimators; 2.4.1 Estimating Equations 2.4.2 Auxiliary Spaces2.5 Fisher Information; 2.5.1 Information and Sufficiency; 2.5.2 The Information Inner Product; 2.5.3 Observed Information; 2.5.4 The Kullback-Leibler Divergence; 2.6 Consistency, Asymptotic Normality, and Efficiency; 2.6.1 Consistency and Asymptotic Normality; 2.6.2 Efficiency; 2.7 Bibliographical Remarks; 3 Second-Order Asymptotics; 3.1 Introduction; 3.2 Statistical Curvature; 3.2.1 Definition and Calculation; 3.2.2 Examples; 3.3 Information Loss and Local Sufficiency; 3.3.1 Information Loss; 3.3.2 Information Recovery; 3.3.3 Local Sufficiency 3.4 Other Applications of Statistical Curvature3.4.1 Second-Order

Efficiency; 3.4.2 Deficiency; 3.4.3 Large Deviations; 3.4.4 The Fisher Scoring Algorithm; 3.5 Edgeworth Expansions; 3.6 Posterior Expansions; 3.7 Extensions; 3.7.1 Efron's General Formula; 3.7.2 Small-Dispersion Asymptotics; 3.8 Bibliographical Remarks; PART II MULTIPARAMETER CURVED EXPONENTIAL FAMILIES; 4 Extensions of Results from the One-Parameter Case; 4.1 Introduction; 4.2 Multiparameter Curved Exponential Families; 4.3 Curvature; 4.3.1 Curvature and Information Loss; 4.3.2 Asymptotic Risk and Bias 4.3.3 Interpretation in Nonlinear Regression4.3.4 Statistical Curvature in General Families; 4.4 Information Loss and Sufficiency; 4.5 Multivariate Edgeworth Series; 4.6 Posterior Expansions; 4.7 Bibliographical Remarks; 5 Exponential Family Regression and Diagnostics; 5.1 Introduction; 5.2 Normal Regression; 5.2.1 Normal Regression Model; 5.2.2 Maximum Likelihood Estimate; 5.2.3 Tangent Bundle; 5.3 Exponential Family Regression; 5.3.1 Preliminary Concepts; 5.3.2 A Vector Space Structure; 5.3.3 The Fisher Information Inner Product; 5.3.4 Estimation Algorithms; 5.4 Measures of Influence 5.4.1 Normal Linear Regression5.4.2 Exponential Family Regression; 5.5 Sensitivity Analysis of the Moment Structure; 5.5.1 Quasi-Likelihood Functions; 5.5.2 The Measures DL and LDLa; 5.5.3 Perturbations of the Moment Structure; 5.6 Bibliographical Remarks; 6 Curvature in Exponential Family Regression; 6.1 Introduction; 6.2 Background on Nonlinear Regression; 6.2.1 Asymptotic Normality; 6.2.2 Curvature Measures of Nonlinearity; 6.3 Curvature in Exponential Family Nonlinear Regression; 6.3.1 Generalizing the Standardized Second-Derivative Array; 6.3.2 Curvature Measures 6.4 Summaries of the Observed Third-Derivative Array

Sommario/riassunto

Differential geometry provides an aesthetically appealing and often revealing view of statistical inference. Beginning with an elementary treatment of one-parameter statistical models and ending with an overview of recent developments, this is the first book to provide an introduction to the subject that is largely accessible to readers not already familiar with differential geometry. It also gives a streamlined entry into the field to readers with richer mathematical backgrounds. Much space is devoted to curved exponential families, which are of interest not only because they may be studied g