

1. Record Nr.	UNINA9911020109103321
Autore	Vidakovic Brani <1955->
Titolo	Statistical modeling by wavelets // Brani Vidakovic
Pubbl/distr/stampa	New York, : Wiley, 1999
ISBN	9786612307751 9781282307759 1282307754 9780470317020 0470317027 9780470317860 0470317868
Descrizione fisica	1 online resource (410 p.)
Collana	Wiley series in probability and mathematical statistics. Applied probability and statistics section
Disciplina	515.2433 519.5
Soggetti	Mathematical statistics Wavelets (Mathematics)
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	"A Wiley-Interscience publication."
Nota di bibliografia	Includes bibliographical references (p. 345-370) and indexes.
Nota di contenuto	Statistical Modeling by Wavelets; Contents; Preface; Acknowledgments; 1. Introduction; 1.1. Wavelet Evolution; 1.2. Wavelet Revolution; 1.3. Wavelets and Statistics; 1.4. An Appetizer: California Earthquakes; 2. Prerequisites; 2.1. General; 2.2. Hilben Spaces; 2.2.1. Projection Theorem; 2.2.2. Orthonormal Sets; 2.2.3. Reproducing Kernel Hilberf Spaces; 2.3. Fourier Transformation; 2.3.1. Basic Properties; 2.3.2. Poisson Summation Formula and Sampling Theorem; 2.3.3. Fourier Series; 2.3.4. Discrete Fourier Transform; 2.4. Heisenberg's Uncertainty Principle; 2.5. Some Important Function Spaces 2.6. Fundamentals of Signal Processing 2.7. Exercises; 3. Wavelets; 3.1. Continuous Wavelet Transformation; 3.1.1. Basic Properties; 3.1.2. Wavelets for Continuous Transformations; 3.2. Discretization of the Continuous Wavelet Transform; 3.3. Multiresolution Analysis; 3.3.1. Derivation of a Wavelet Function; 3.4. Some Important Wavelet Bases; 3.4.1. Haar's Wavelets; 3.4.2. Shannon's Wavelets; 3.4.3. Meyer's

Wavelets; 3.4.4. Franklin's Wavelets; 3.4.5. Daubechies' Compactly Supported Wavelets; 3.5. Some Extensions; 3.5.1. Regularity of Wavelets 3.5.2. The Least Asymmetric Daubechies' Wavelets: Symlets 3.5.3. Approximations and Characterizations of Functional Spaces; 3.5.4. Daubechies-Lagarias Algorithm; 3.5.5. Moment Conditions; 3.5.6. Interpolating (Cardinal) Wavelets; 3.5.7. Pollen-Type Parameterization of Wavelets; 3.6. Exercises; 4. Discrete Wavelet Transformations; 4.1. Introduction; 4.2. The Cascade Algorithm; 4.3. The Operator Notation of DWT; 4.3.1. Discrete Wavelet Transformations as Linear Transformations; 4.4. Exercises; 5. Some Generalizations; 5.1. Coiflets; 5.1.1. Construction of Coiflets; 5.2. Biorthogonal Wavelets 5.2.1. Construction of Biorthogonal Wavelets; 5.2.2. B-Spline Wavelets; 5.3. Wavelet Packets; 5.3.1. Basic Properties of Wavelet Packets; 5.3.2. Wavelet Packet Tables; 5.4. Best Basis Selection; 5.4.1. Some Cost Measures and the Best Basis Algorithm; 5.5. Decimated and Stationary Wavelet Transformations; 5.5.1. Decimated Wavelet Transformation; 5.5.2. Stationary (Non-Decimated) Wavelet Transformation; 5.6. Periodic Wavelet Transformations; 5.7. Multivariate Wavelet Transformations; 5.8. Discussion; 5.9. Exercises; 6. Wavelet Shrinkage; 6.1. Shrinkage Method 6.2. Linear Wavelet Regression Estimators 6.2.1. Wavelet Kernels; 6.2.2. Local Constant Fit Estimators; 6.3. The Simplest Non-Linear Wavelet Shrinkage: Thresholding; 6.3.1. Variable Selection and Thresholding; 6.3.2. Oracle Risk for Thresholding Rules; 6.3.3. Why the Wavelet Shrinkage Works; 6.3.4. Almost Sure Convergence of Wavelet Shrinkage Estimators; 6.4. General Minimax Paradigm; 6.4.1. Translation of Minimaxity Results to the Wavelet Domain; 6.5. Thresholding Policies and Thresholding Rules; 6.5.1. Exact Risk Analysis of Thresholding Rules; 6.5.2. Large Sample Properties; 6.5.3. Some Other Shrinkage Rules

---

Sommario/riassunto

A comprehensive, step-by-step introduction to wavelets in statistics. What are wavelets? What makes them increasingly indispensable in statistical nonparametrics? Why are they suitable for "time-scale" applications? How are they used to solve such problems as denoising, regression, or density estimation? Where can one find up-to-date information on these newly "discovered" mathematical objects? These are some of the questions Brani Vidakovic answers in Statistical Modeling by Wavelets. Providing a much-needed introduction to the latest tools afforded statisticians by wavelet theory,

---