

1. Record Nr.	UNINA9910458229903321
Autore	Mallat S. G (Stephane G.)
Titolo	A wavelet tour of signal processing [[electronic resource] /] / Stephane Mallat
Pubbl/distr/stampa	San Diego, : Academic Press, 1999
ISBN	1-281-07081-5 9786611070816 0-08-052083-9
Edizione	[2nd ed.]
Descrizione fisica	1 online resource (663 p.)
Disciplina	621.382/2
Soggetti	Signal processing - Mathematics Wavelets (Mathematics) Electronic books.
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. 612-628) and index.
Nota di contenuto	Front Cover; A Wavelet Tour of Signal Processing; Copyright Page; Contents; Preface; Preface to the Second Edition; Notation; CHAPTER I. INTRODUCTION TO A TRANSIENT WORLD; 1.1 Fourier Kingdom; 1.2 Time-Frequency Wedding; 1.3 Bases of Time-Frequency Atoms; 1.4 Bases for What?; 1.5 Travel Guide; CHAPTER II. FOURIER KINGDOM; 2.1 Linear Time-Invariant Filtering; 2.2 Fourier Integrals; 2.3 Properties; 2.4 Two-Dimensional Fourier Transform; 2.5 Problems; CHAPTER III. DISCRETE REVOLUTION; 3.1 Sampling Analog Signals; 3.2 Discrete Time-Invariant Filters; 3.3 Finite Signals 3.4 Discrete Image Processing 3.5 Problems; CHAPTER IV. TIME MEETS FREQUENCY; 4.1 Time-Frequency Atoms; 4.2 Windowed Fourier Transform; 4.3 Wavelet Transforms; 4.4 Instantaneous Frequency; 4.5 Quadratic Time-Frequency Energy; 4.6 Problems; CHAPTER V. FRAMES; 5.1 Frame Theory; 5.2 Windowed Fourier Frames; 5.3 Wavelet Frames; 5.4 Translation Invariance; 5.5 Dyadic Wavelet Transform; 5.6 Problems; CHAPTER VI. WAVELET ZOOM; 6.1 Lipschitz Regularity; 6.2 Wavelet Transform Modulus Maxima; 6.3 Multiscale Edge Detection; 6.4 Multifractals; 6.5 Problems; CHAPTER VII. WAVELET BASES 7.1 Orthogonal Wavelet Bases 7.2 Classes of Wavelet Bases; 7.3

Wavelets and Filter Banks; 7.4 Biorthogonal Wavelet Bases; 7.5 Wavelet Bases on an Interval; 7.6 Multiscale Interpolations; 7.7 Separable Wavelet Bases; 7.8 Problems; CHAPTER VIII. WAVELET PACKET AND LOCAL COSINE BASES; 8.1 Wavelet Packets; 8.2 Image Wavelet Packets; 8.3 Block Transforms; 8.4 Lapped Orthogonal Transforms; 8.5 Local Cosine Trees; 8.6 Problems; CHAPTER IX. AN APPROXIMATION TOUR; 9.1 Linear Approximations; 9.2 Non-Linear Approximations; 9.3 Image Approximations with Wavelets; 9.4 Adaptive Basis Selection 9.5 Approximations with Pursuits 9.6 Problems; CHAPTER X. ESTIMATIONS ARE APPROXIMATIONS; 10.1 Bayes Versus Minimax; 10.2 Diagonal Estimation in a Basis; 10.3 Minimax Optimality; 10.4 Restoration; 10.5 Coherent Estimation; 10.6 Spectrum Estimation; 10.7 Problems; CHAPTER XI. TRANSFORM CODING; 11.1 Signal Compression; 11.2 Distortion Rate of Quantization; 11.3 High Bit Rate Compression; 11.4 Image Compression; 11.5 Video Signals; 11.6 Problems; APPENDIX A. MATHEMATICAL COMPLEMENTS; A.1 Functions and Integration; A.2 Banach and Hilbert Spaces; A.3 Bases of Hilbert Spaces; A.4 Linear Operators A.5 Separable Spaces and Bases A.6 Random Vectors and Covariance Operators; A.7 Diracs; APPENDIX B. SOFTWARE TOOLBOXES; B.1 Wavelab; B.2 Lastwave; B.3 Freeware Wavelet Toolboxes; Bibliography; Index

---

#### Sommario/riassunto

This book is intended to serve as an invaluable reference for anyone concerned with the application of wavelets to signal processing. It has evolved from material used to teach ""wavelet signal processing"" courses in electrical engineering departments at Massachusetts Institute of Technology and Tel Aviv University, as well as applied mathematics departments at the Courant Institute of New York University and Ecole Polytechnique in Paris. Key Features\* Provides a broad perspective on the principles and applications of transient signal processing with wavelets\* Emphasizes int

---