Contents

Part I Introduction to Wavelet Transforms	
Reading and Understanding Continuous Wavelet Transforms By A. Grossmann, R. Kronland-Martinet, and J. Morlet (With 23 Figu	res) 2
Orthonormal Wavelets By Y. Meyer	21
Orthonormal Bases of Wavelets with Finite Support – Connection with Discrete Filters	ı
By I. Daubechies (With 9 Figures)	38
Part II Some Topics in Signal Analysis	
Some Aspects of Non-Stationary Signal Processing with Emphasis on Time-Frequency and Time-Scale Methods By P. Flandrin	68
Detection of Abrupt Changes in Signal Processing By M. Basseville (With 1 Figure)	
The Computer, Music, and Sound Models By JC. Risset (With 2 Figures)	102
Part III Wavelets and Signal Processing	
Wavelets and Seismic Interpretation By J.L. Larsonneur and J. Morlet (With 3 Figures)	126
Wavelet Transformations in Signal Detection By F.B. Tuteur (With 4 Figures)	132
Use of Wavelet Transforms in the Study of Propagation of Transient Acoustic Signals Across a Plane Interface Between Two Homogeneous Media	i
By G. Saracco, A. Grossmann, and Ph. Tchamitchian (With 7 Figures)	139

VII

Acoustics Part I: Wigner-Ville Analysis of Echoes Scattered by a Spherical Shell By J.P. Sessarego, J. Sageloli, P. Flandrin, and M. Zakharia (With 4 Figures)	147
Coherence and Projectors in Acoustics By J.G. Slama	154
Wavelets and Granular Analysis of Speech By J.S. Liénard and C. d'Alessandro (With 4 Figures)	158
Time-Frequency Representations of Broad-Band Signals By J. Bertrand and P. Bertrand (With 2 Figures)	164
Operator Groups and Ambiguity Functions in Signal Processing By A. Berthon	172
Part IV Mathematics and Mathematical Physics	
Wavelet Transform Analysis of Invariant Measures of Some Dynamical Systems By A. Arneodo, G. Grasseau, and M. Holschneider (With 15 Figures)	182
Holomorphic Integral Representations for the Solutions of the Helmholtz Equation By J. Bros	197
Wavelets and Path Integrals By T. Paul	204
Mean Value Theorems and Concentration Operators in Bargmann and Bergman Space By K. Seip	200
Besov-Sobolev Algebras of Symbols By G. Bohnké	209
Poincaré Coherent States and Relativistic Phase Space Analysis By JP. Antoine	221
A Relativistic Wigner Function Affiliated with the Weyl-Poincaré Group By J. Bertrand and P. Bertrand	232
Wavelet Transforms Associated to the n-Dimensional Euclidean Group with Dilations: Signal in More Than One Dimension By R. Murenzi	239
Construction of Wavelets on Open Sets By S. Jaffard (With 8 Figures)	247
Wavelets on Chord-Arc Curves By P. Auscher	253

Multiresolution Analysis in Non-Homogeneous Media By R.R. Coifman	259
About Wavelets and Elliptic Operators By Ph. Tchamitchian	263
Towards a Method for Solving Partial Differential Equations Using Wavelet Bases By V. Perrier (With 7 Figures)	269
Part V Implementations	
A Real-Time Algorithm for Signal Analysis with the Help of the Wavelet Transform By M. Holschneider, R. Kronland-Martinet, J. Morlet, and Ph. Tchamitchian	286
An Implementation of the "algorithme à trous" to Compute the Wavelet Transform By P. Dutilleux (With 7 Figures)	298
An Algorithm for Fast Imaging of Wavelet Transforms By P. Hanusse	305
Multiresolution Approach to Wavelets in Computer Vision By S.G. Mallat (With 10 Figures)	313
Subject Index	329
Index of Contributors	331