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Forthcoming June 2002!

Wavelets through a Looking Glass

The World of the Spectrum

O. Bratteli, *University of Oslo, Oslo, Norway*
P. Jorgensen, *University of Iowa, Iowa City, IA*

This book combining wavelets and the world of the spectrum focuses on recent developments in wavelet theory, emphasizing fundamental and relatively timeless techniques that have a geometric and spectral-theoretic flavor. The exposition is clearly motivated and unfolds systematically, aided by numerous graphics.

Key features of the book:

- The important role of the spectrum of a transfer operator is studied
- Excellent graphics show how wavelets depend on the spectra of the transfer operators
- Key topics of wavelet theory are examined: connected components in the variety of wavelets, the geometry of winding numbers, the Galerkin projection method, classical functions of Weierstrass and Hurwitz and their role in describing the eigenvalue-spectrum of the transfer operator, isospectral families of wavelets, spectral radius formulas for the transfer operator, Perron–Frobenius theory, and quadrature mirror filters
- New previously unpublished results appear on the homotopy of multiresolutions, on approximation theory, and on the spectrum and structure of the fixed points of the associated transfer and subdivision operators
- Concise background material for each chapter, open problems, exercises, bibliography, and comprehensive index make this work a fine pedagogical and reference resource.

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