Palle E.T. Jorgensen

Analysis and Probability: Wavelets, Signals, Fractals

This book, combining analysis and tools from mathematical probability, focuses on a systematic and novel presentation of recent trends in pure and applied mathematics: wavelets, signals, fractals. The emphasis is on the unity of basis constructions and their expansions; and on their use in several areas, from wavelets to fractals; bases which are computationally efficient. The book brings together tools from engineering and from math, especially from signal and image processing, and from harmonic analysis and operator theory in math. The presentation, including exercises is aimed at graduate student, and at users from a diverse spectrum of applications.

- A hands-on approach for students, including tutorials and many exercises
- A generous amount of motivation for each new part of the book
- New pedagogical features which make the book useful in teaching
- Includes more than 50 figures with captions, illustrating the main ideas, plus engineering diagrams, graphic rendition of algorithms, and separate illustrations
- Separate sections in the book explain engineering terms to mathematicians, and operator theory to engineers
- Each chapter concludes with a helpful guide to the literature allowing students to follow up on the topics in the book

Palle E.T. Jorgensen is a Professor of Mathematics at the University of Iowa and has held teaching and research positions elsewhere, e.g., at Stanford University, at the University of Pennsylvania, and at Aarhus University in Denmark. While born in Denmark, he has spent most of his life in the US, and he became a US citizen in 1979. He has lectured frequently as an invited speaker and has held visiting positions around the world. This book is based in part on interdisciplinary courses Jorgensen taught in the last few years, and on his work with his current and former students. Throughout his career, Jorgensen has been supported in part by the US National Science Foundation. He has authored or co-authored more than 150 research papers and several books. His most recent book was written jointly with Ola Bratteli, was illustrated by Brian Treadway, and is entitled Wavelets through a Looking Glass (Birkhäuser, 2002).