Back Cover

Aspects of Harmonic Analysis on Locally Compact Abelian Groups

The Fourier transform is a "tool" used in engineering and computer vision to model periodic phenomena. Starting with the basics of measure theory and integration, this book delves into the harmonic analysis of locally compact abelian groups. It provides an in-depth tour of the beautiful theory of the Fourier transform based on the results of Gelfand, Pontrjagin, and Andre Weil in a manner accessible to an undergraduate student who has taken linear algebra and introductory real analysis.
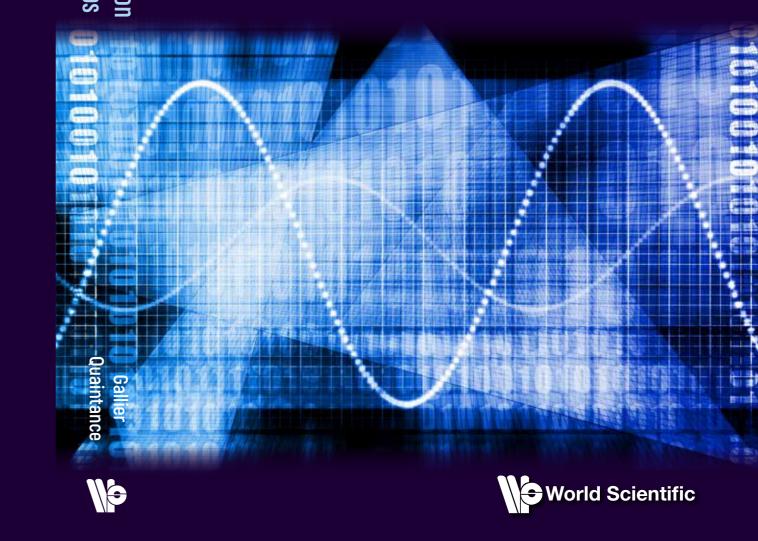
Highlights of this book include the Bochner integral, the Haar measure, Radon functionals, the theory of Fourier analysis on the circle, and the theory of the discrete Fourier transform. After studying this book, the reader will have the preparation necessary for understanding the Peter–Weyl theorems for complete, separable Hilbert algebras, a key theoretical concept used in the construction of Gelfand pairs and equivariant convolutional neural networks.

Spine

Front Cover

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World Scientific