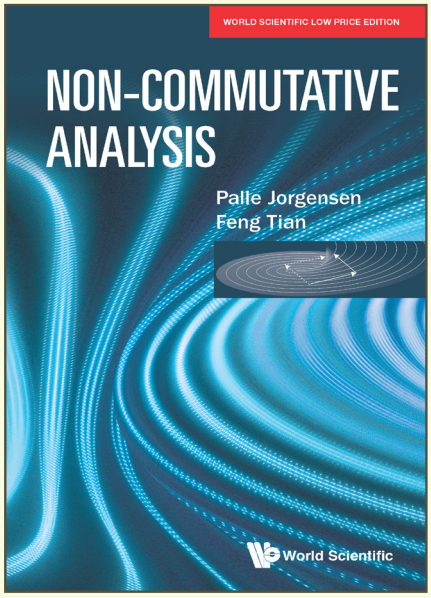
Non-Commutative Analysis



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ISBN	9798886130492
Extent	564pp
Binding	Paperback
Year	2024
Price	Rs. 1695

ABOUT THE BOOK

"This is a book to be read and worked with. For a beginning graduate student, this can be a valuable experience which at some points in fact leads up to recent research. For such a reader there is also historical information included and many comments aiming at an overview. It is inspiring and original how old material is combined and mixed with new material. There is always something unexpected included in each chapter, which one is thankful to see explained in this context and not only in research papers which are more difficult to access."

— Mathematical Reviews Clippings

The book features new directions in analysis, with an emphasis on Hilbert space, mathematical physics, and stochastic processes. We interpret "non-commutative analysis" broadly to include representations of non-Abelian groups, and non-Abelian algebras; emphasis on Lie groups and operator algebras (C* algebras and von Neumann algebras.)

A second theme is commutative and non-commutative harmonic analysis, spectral theory, operator theory and their applications. The list of topics includes shift invariant spaces, group action in differential geometry, and frame theory (over-complete bases) and their applications to engineering (signal processing and multiplexing), projective multi-resolutions, and free probability algebras.

The book serves as an accessible introduction, offering a timeless presentation, attractive and accessible to students, both in mathematics and in neighboring fields.

READERSHIP

Undergraduates, graduate students and researchers in operator theory, functional analysis, mathematical physics, complex analysis, stochastic analysis, quantum mechanics.

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