<<谱理论简明教程>>

图书基本信息

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前言

This book presents the basic tools of modern analysis within the context of what might be called the fundamental problem of operator theory： to calculate spectra of specific operators on infinite-dimensional spaces， especially operators on Hilbert spaces. The tools are diverse， and they provide the basis for more refined methods that allow one to approach problems that go well beyond the computation of spectra; the mathematical foundations of quantum physics， noncommutative K-theory， and the classification of simple C*-algebras being three areas of current research activity that require mastery of the material presented here. The notion of spectrum of an operator is based on the more abstract notion of the spectrum of an element of a complex Banach algebra. After working out these fundamentals we turn to more concrete problems of computing spectra of operators of various types. For normal operators， this amounts to a treatment of the spectral theorem. Integral operators require the development of the Riesz theory of compact operators and the ideal L2 of Hilbert Schmidt operators. Toeplitz operators require several important tools; in order to calculate the spectra of Toeplitz operators with continuous symbol one needs to know the theory of Fredholm operators and index， the structure of the Toeplitz C*-algebra and its connection with the topology of curves， and the index theorem for continuous symbols. I have given these lectures several times in a fifteen-week course at Berkeley （Mathematics 206），which is normally taken by first- or second-year graduate students with a foundation in measure theory and elementary functional analysis. It is a pleasure to teach that course because many deep and important ideas emerge in natural ways. My lectures have evolved sig-nificantly over the years， but have always focused on the notion of spectrum and the role of Banach algebras as the appropriate modern foundation for such considerations. For a serious student of modern analysis， this material is the essential beginning.

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内容概要

本书以作者提供的具备测度论和基础泛函分析的一二年级研究生十五周课程为基础，为了计算无限维空间中特殊算子谱，特别是Hilbert空间中的算子，书中在算子理论基本问题的内容框架内讲述了现代分析的基本工具。
工具众多，提供了解决超越谱计算之外问题的更加具体方法的基础，这些问题如量子物理数学基础，非交换K理论，简单C*代数的分类。
目次：谱理论和Banach代数；Hilbert空间上的算子；渐进：紧扰动和Fredholm理论；方法和应用。

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书籍目录

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