Introduction To Hilbert Spaces With Applications

Introduction to Hilbert Space and the Theory of Spectral Multiplicity
Introduction to Partial Differential Equations and Hilbert Space Methods
An Introduction to the Theory of Reproducing Kernel Hilbert Spaces
Introduction to Operator Space Theory
Introduction to Spectral Theory in Hilbert Space
Second Edition
Reproducing Kernel Hilbert Spaces in Probability and Statistics
Linear Spaces, Topological Spaces, Metric Spaces, Normed Spaces, and Topological Groups
Introduction to Hilbert Space
An Introduction to Hilbert Space
Linear Spaces, Topological Spaces, Metric Spaces, Normed Spaces, and Topological Groups
Spectral Theory of Operators on Hilbert Spaces
Applied Analysis by the Hilbert Space Method
An Introduction to Functional Analysis
An Introduction to Operators on the Hardy-Hilbert Space
Linear Operators in Hilbert Spaces
Functional Analysis
An Introduction
An Introduction with Applications to the Wave, Heat, and Schrödinger Equations
Iterative Methods for Fixed Point Problems in Hilbert Spaces
Elements of Hilbert Spaces and Operator Theory
A Hilbert Space Problem Book
Functional Analysis
Hilbert Spaces, Wavelets, Generalised Functions and Modern Quantum Mechanics
A Primer on Reproducing Kernel Hilbert Spaces
An Introduction to Linear Transformations in Hilbert Space. (AM-4), Volume 4
A Primer on Hilbert Space Theory
The Hilbert Book Model
Introduction to Functional Analysis and its Applications
An Introduction to the Theory of Reproducing Kernel Hilbert Spaces
Introduction to the Theory of Hilbert Spaces
A Primer on Hilbert Space Theory
Hilbert Space Methods in Signal Processing
Introduction to Hilbert Spaces with Applications
Operators on Hilbert Space
Introduction to Hilbert Space and the Theory of Spectral Multiplicity
Introduction to Hilbert Spaces with Applications
Theory of Linear Operators in Hilbert Space
Introduction To Hilbert Spaces With Applications, 3E

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Introduction to Hilbert Space and the Theory of Spectral Multiplicity Elsevier Building on the success of the two previous editions, Introduction to Hilbert Spaces with Applications, Third Edition, offers an overview of the basic ideas and results of Hilbert space theory and functional analysis. It acquaints students with the Lebesgue integral, and includes an enhanced presentation of results and proofs. Students and researchers will benefit from the wealth of revised examples in new, diverse applications as they apply to optimization, variational and control problems, and problems in approximation theory, nonlinear instability, and bifurcation. The text also includes a popular chapter on wavelets that has been completely updated. Students and researchers agree that this is the definitive text on Hilbert Space theory. Updated chapter on wavelets Improved presentation on results and proof Revised examples and updated applications Completely updated list of references

Introduction to Partial Differential Equations and Hilbert Space Methods Springer Science & Business Media The book presents an introduction to the geometry of Hilbert spaces and operator theory, targeting graduate and senior undergraduate students of mathematics. Major topics discussed in the book are inner product spaces, linear operators, spectral theory and special classes of operators, and Banach spaces. On vector spaces, the structure of inner product is imposed. After discussing geometry of Hilbert spaces, its applications to diverse branches of mathematics have been studied. Along the way are introduced orthogonal polynomials and their use in Fourier series and approximations. Spectrum of an operator is the key to the understanding of the operator. Properties of the spectrum of different classes of operators, such as normal operators, self-adjoint operators, unitaries, isometries and compact operators have been discussed. A large number of examples of operators, along with their spectrum and its splitting into point spectrum, continuous spectrum, residual spectrum, approximate point spectrum and compression spectrum, have been worked out. Spectral theorems for self-adjoint operators, and normal operators, follow the spectral theorem for compact normal operators. The book also discusses invariant subspaces with special attention to the Volterra operator and unbounded operators. In order to make

the text as accessible as possible, motivation for the topics is introduced and a greater amount of explanation than is usually found in standard texts on the subject is provided. The abstract theory in the book is supplemented with concrete examples. It is expected that these features will help the reader get a good grasp of the topics discussed. Hints and solutions to all the problems are collected at the end of the book. Additional features are introduced in the book when it becomes imperative. This spirit is kept alive throughout the book.

An Introduction to the Theory of Reproducing Kernel Hilbert Spaces Cambridge University Press

From Euclidian to Hilbert Spaces analyzes the transition from finite dimensional Euclidian spaces to infinite-dimensional Hilbert spaces, a notion that can sometimes be difficult for non-specialists to grasp. The focus is on the parallels and differences between the properties of the finite and infinite dimensions, noting the fundamental importance of coherence between the algebraic and topological structure, which makes Hilbert spaces the infinite-dimensional objects most closely related to Euclidian spaces. The common thread of this book is the Fourier transform, which is examined starting from the discrete Fourier transform (DFT), along with its applications in signal and image processing, passing through the Fourier series and finishing with the use of the Fourier transform to solve differential equations. The geometric structure of Hilbert spaces and the most significant properties of bounded linear operators in these spaces are also covered extensively. The theorems are presented with detailed proofs as well as meticulously explained exercises and solutions, with the aim of illustrating the variety of applications of the theoretical results.

Introduction to Operator Space Theory World Scientific Publishing Company

Concise introductory treatment consists of three chapters: The Geometry of Hilbert Space, The Algebra of Operators, and The Analysis of Spectral Measures. A background in measure theory is the sole prerequisite. 1957 edition.

Introduction to Spectral Theory in Hilbert Space Elsevier

The notion of a Hilbert space is a central idea in functional analysis and this text demonstrates its applications in numerous branches of pure and applied mathematics.

Second Edition Springer Science & Business Media

The book covers theoretical questions including the latest extension of the formalism, and computational issues and focuses on some of the more fruitful and promising applications, including statistical signal processing, nonparametric curve estimation, random measures, limit theorems, learning theory and some applications at the fringe between Statistics and Approximation Theory. It is geared to graduate students in Statistics, Mathematics or Engineering, or to scientists with an equivalent level.

Reproducing Kernel Hilbert Spaces in Probability and Statistics Princeton University Press

This book offers an elementary and engaging introduction to operator theory on the Hardy-Hilbert space. It provides a firm foundation for the study of all spaces of analytic functions and of the operators on them. Blending techniques from "soft" and "hard" analysis, the book contains clear and beautiful proofs. There are numerous exercises at the end of each chapter, along with a brief guide for further study which includes references to applications to topics in engineering.

Linear Spaces, Topological Spaces, Metric Spaces, Normed Spaces, and Topological Groups Springer

Numerous worked examples and exercises highlight this unified treatment. Simple explanations of difficult subjects make it accessible to undergraduates as well as an ideal self-study guide. 1990 edition.

Introduction to Hilbert Space John Wiley & Sons

An Introduction to Hilbert SpaceCambridge University Press

An Introduction to Hilbert Space Courier Corporation

An accessible introduction to Hilbert spaces, combining the theory with applications of Hilbert methods in signal processing.

Linear Spaces, Topological Spaces, Metric Spaces, Normed Spaces, and Topological Groups Springer

This book first rigorously develops the theory of reproducing kernel Hilbert spaces. The authors then discuss the Pick problem of finding the function of smallest H^∞ norm that has specified values at a finite number of points in the disk. Their viewpoint is to consider H^∞ as the multiplier algebra of the Hardy space and to use Hilbert space techniques to solve the problem. This approach generalizes to a wide collection of spaces. The authors then consider the interpolation problem in the space of bounded analytic functions on the bidisk and give a complete description of the solution. They then consider very general interpolation problems. The book includes developments of all the theory that is needed, including operator model theory, the Arveson extension theorem, and the hereditary functional calculus.

Spectral Theory of Operators on Hilbert Spaces Courier Corporation

The goal of this textbook is to provide an introduction to the methods and language of functional analysis, including Hilbert spaces, Fredholm theory for compact operators, and spectral theory of self-adjoint operators. It also presents the basic theorems and methods of abstract functional analysis and a few applications of these methods to Banach algebras and the theory of unbounded self-adjoint operators. The text corresponds to material for two semester courses (Part I and Part II, respectively), and it is as self-contained as possible. The only prerequisites for the first part are minimal amounts of linear algebra and calculus. However, for the second course (Part II), it is useful to have some knowledge of topology and measure theory. Each chapter is followed by numerous exercises, whose solutions are given at the end of the book.

Applied Analysis by the Hilbert Space Method Springer

Hilbert space theory is an invaluable mathematical tool in numerous signal processing and systems theory applications. Hilbert spaces satisfying certain additional properties are known as Reproducing Kernel Hilbert Spaces (RKHSs). This primer gives a gentle and novel introduction to RKHS theory. It also presents several classical applications. It concludes by focusing on recent developments in the machine learning literature concerning embeddings of random variables. Parenthetical remarks are used to provide greater technical detail, which some readers may welcome, but they may be ignored without compromising the cohesion of the primer. Proofs are there for those wishing to gain experience at working with RKHSs; simple proofs are preferred to short, clever, but otherwise uninformative proofs. Italicised comments appearing in proofs provide intuition or orientation or both. A Primer on Reproducing Kernel Hilbert Spaces empowers readers to recognize when and how RKHS theory can profit them in their own work.

An Introduction to Functional Analysis Lulu.com

The description for this book, An Introduction to Linear Transformations in Hilbert Space. (AM-4), Volume 4, will be forthcoming.

An Introduction to Operators on the Hardy-Hilbert Space Cambridge University Press

This book is an introduction to the theory of Hilbert space, a fundamental tool for non-relativistic quantum mechanics. Linear, topological, metric, and normed spaces are all addressed in detail, in a rigorous but reader-friendly fashion. The rationale for an introduction to the theory of Hilbert space, rather than a detailed study of Hilbert space theory itself, resides in the very high mathematical difficulty of even the simplest physical case. Within an ordinary graduate course in physics there is insufficient time to cover the theory of Hilbert spaces and operators, as well as distribution theory, with sufficient mathematical rigor. Compromises must be found between full rigor and practical use of the instruments. The book is based on the author's lessons on functional analysis for graduate students in physics. It will equip the reader to approach Hilbert space and, subsequently, rigged Hilbert space, with a more practical attitude. With respect to the original lectures, the mathematical flavor in all subjects has been enriched. Moreover, a brief introduction to topological groups has been added in addition to exercises and solved problems throughout the text. With these improvements, the book can be used in upper undergraduate and lower graduate courses, both in Physics and in Mathematics.

Linear Operators in Hilbert Spaces An Introduction to Hilbert Space

From the Preface: "This book was written for the active reader. The first part consists of problems, frequently preceded by definitions and motivation, and sometimes followed by corollaries and historical remarks... The second part, a very short one, consists of hints... The third part, the longest, consists of solutions: proofs, answers, or contructions, depending on the nature of the problem.... This is not an introduction to Hilbert space theory. Some knowledge of that subject is a prerequisite: at the very least, a study of the elements of Hilbert space theory should proceed concurrently with the reading of this book."

Functional Analysis Springer Science & Business Media

A unique introduction to reproducing kernel Hilbert spaces, covering the fundamental underlying theory as well as a range of applications.

An Introduction Springer Science & Business Media

This book offers an essential introduction to the theory of Hilbert space, a fundamental tool for non-relativistic quantum mechanics. Linear, topological, metric, and normed spaces are all addressed in detail, in a rigorous but reader-friendly fashion. The rationale for providing an introduction to the theory of Hilbert space, rather than a detailed study of Hilbert space theory itself, lies in the strenuous mathematics demands that even the simplest physical cases entail. Graduate courses in physics rarely offer enough time to cover the theory of Hilbert space and operators, as well as distribution theory, with sufficient mathematical rigor. Accordingly, compromises must be found between full rigor and the practical use of the instruments. Based on one of the authors’s lectures on functional analysis for graduate students in physics, the book will equip readers to approach Hilbert space and, subsequently, rigged Hilbert space, with a more practical attitude. It also includes a brief introduction to topological groups, and to other mathematical structures akin to Hilbert space. Exercises and solved problems accompany the main text, offering readers opportunities to deepen their understanding. The topics and their presentation have been chosen with the goal of quickly, yet rigorously and effectively, preparing readers for the intricacies of Hilbert space. Consequently, some topics, e.g., the Lebesgue integral, are treated in a somewhat unorthodox manner. The book is ideally suited for use in upper undergraduate and lower graduate courses, both in Physics and in Mathematics.

An Introduction with Applications to the Wave, Heat, and Schrödinger Equations Cambridge University Press

This classic textbook by two mathematicians from the USSR's prestigious Kharkov Mathematics Institute introduces linear operators in Hilbert space, and presents in detail the geometry of Hilbert space and the spectral theory of unitary and self-adjoint operators. It is directed to students at graduate and advanced undergraduate levels, but because of the exceptional clarity of its theoretical presentation and the inclusion of results obtained by Soviet mathematicians, it should prove invaluable for every mathematician and physicist. 1961, 1963 edition.

Iterative Methods for Fixed Point Problems in Hilbert Spaces Courier Corporation

Continuing on the success of the previous edition, Introduction to Hilbert Spaces with Applications, Second Edition , offers an overview of the basic ideas and results of Hilbert space theory and functional analysis. It acquaints students with the Lebesque integral, and includes an enhanced presentation of results and proofs. Students and researchers benefit from the wealth of revised examples in new, diverse applications as they apply to optimization, variational and control problems, and problems in approximation theory, nonlinear instability, and bifurcation. The text also includes a new, well-researched chapter on wavelets. Students and researchers agree that this is the definitive text on Hilbert Space theory.