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Harmonic Analysis of Operators on Hilbert Space - Béla Sz Nagy - 2010-08-26
The existence of unitary dilations makes it possible to study arbitrary contractions on a Hilbert space using the tools of harmonic analysis. The first edition of this book was an account of the progress done in this direction in 1950-70. Since then, this work has influenced many other areas of mathematics, most notably interpolation theory and control theory. This second edition, in addition to revising and amending the original text, focuses on further developments of the theory, including the study of two operator classes: operators whose powers do not converge strongly to zero, and operators whose functional calculus (as introduced in Chapter III) is not injective. For both of these classes, a wealth of material on structure, classification and invariant subspaces is included in Chapters IX and X. Several chapters conclude with a sketch of other developments related with (and developing) the material of the first edition.

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Classification of commuting non-selfadjoint operators is one of the most challenging problems in operator theory. Harmonic Analysis and Operator Theory - Mischa Cotlar - 1995

This book is a collection of papers reflecting the conference held in Caracas, Venezuela, in January 1994 in celebration of Professor Mischa Cotlar's eighty-sixth birthday. Presenting an excellent account of recent advances in harmonic analysis and operator theory and their applications, many of the contributors are world leaders in their fields. The collection covers a broad spectrum of topics, including: wavelet analysis, Haenkel operators, multimeasure theory, the boundary behavior of the Bergman kernel, interpolation theory, and Cotlar's Lemma on almost orthogonality in the context of Hilbert spaces and monotone bases. The range of topics in this volume promotes cross-pollination among the various fields covered. Such variety makes “Harmonic Analysis and Operator Theory” an inspiration for graduate students interested in this area of study.

Reproducing Kernel Spaces and Applications - Daniel Alpay - 2012-12-06

The notions of positive functions and of reproducing kernel Hilbert spaces play an important role in various fields of mathematics, such as stochastic processes, linear systems theory, operator theory, and the theory of analytic functions. Also they are relevant for many applications, for example to statistical learning theory and pattern recognition. The present volume contains a selection of papers which deal with different aspects of reproducing kernel Hilbert spaces. Topics considered include one complex variable theory, differential operators, the theory of self-similar systems, several complex variables, and the non-commutative case. The book is of interest to a wide audience of pure and applied mathematicians, electrical engineers and theoretical physicists.

Linear Systems and Operators in Hilbert Space - Paul A. Fuhrmann - 2014-01-15

Three-part approach, with notes and references for each section, covers linear algebra and finite dimensional systems, operators in Hilbert space, and linear systems in Hilbert space. 1981 edition.

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Commuting Nonselfadjoint Operators in Hilbert Space - Moshe S. Livsic - 2006-11-15

Classification of commuting non-selfadjoint operators is one of the most challenging problems in operator theory even in the finite-dimensional case. The spectral analysis of dissipative operators has led to a series of deep results in the framework of unitary dilations and characteristic operator functions. It has turned out that the theory has to be based on analytic functions on algebraic manifolds and not on functions of several independent variables as was previously believed. This follows from the generalized Cayley-Hamilton Theorem, due to M.S.Livsic: “Two commuting operators with finite dimensional imaginary parts are connected in the generic case, by a certain algebraic equation whose degree does not exceed the dimension of the sum of the ranges of imaginary parts.” Such investigations have been carried out in two directions. One of them, presented by L.L.Waksman, is related to semigroups of projections of multiplication operators on Riemann surfaces. Another direction, which is presented here by M.S.Livsic is based on operator colligations and collective motions of systems. Every given wave equation can be obtained as an external manifestation of collective motions. The algebraic equation mentioned above is the corresponding dispersion law of the input-output waves.

Unitary Dilation of Hilbert Space Operators and Related Topics - Bela Szokefalvi-Nagy - 1974

Operator Theory, Functional Analysis and Applications - M. Amelio Bastos - 2021-05-02

This book presents 30 articles on the topic areas discussed at the 30th “International Workshop on Operator Theory and its Applications”, held in Lisbon in July 2019. The contributions include both expository essays and original research papers reflecting recent advances in the traditional IWOTA areas and emerging adjacent fields, as well as the applications of Operator Theory and Functional Analysis. The topics range from C*-algebras and Banach *-algebras, Sturm-Liouville theory, integrable systems, dilation theory, frame theory, Toeplitz, Hankel, and singular integral operators, to questions from lattice, group and matrix theories, complex analysis, harmonic analysis, and function spaces. Given its scope, the book is chiefly intended for researchers and graduate students in the areas of Operator Theory, Functional Analysis, their applications and adjacent fields.

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Operators, Functions, and Systems - An Easy Reading - Nikolai K. Nikolski - 2010-10-06

Together with the companion volume by the same author, Operators, Functions, and Systems: An Easy Reading. Volume 1: Hardy, Hankel, and Toeplitz, Mathematical Surveys and Monographs, Vol. 92, AMS, 2002, this unique work combines four major topics of modern analysis and its applications: A. Hardy classes of holomorphic functions, B. Spectral theory of Hankel and Toeplitz operators, C. Function models for linear operators and free interpolations, and D. Infinite-dimensional system theory and signal processing. This is a universal topic and, indeed, is the most influential operator theory technique in the post-spectral-theorem era. In this book, its capacity is tested by solving generalized Carleson-type interpolation problems. Infinite-dimensional system theory and signal processing: This is the touchstone of the three previously developed techniques. The presence of this applied topic in a pure mathematics environment reflects important changes in the mathematical landscape of the last 20 years, in that the role of the main consumer and customer of harmonic, complex, and operator analysis has more and more moved from differential equations, scattering theory, and probability to control theory and signal processing. This and the companion volume are geared toward a wide audience of readers, from graduate students to professional mathematicians. They develop an elementary approach to the subject while retaining an expert level that can be applied in advanced analysis and selected applications.

Operators, Functions, and Systems - An Easy Reading - Nikolai K. Nikolski - 2010-10-06
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Introduction to Hilbert Space and the Theory of Spectral Multiplicity - Paul R. Halmos - 2017-11-15
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.

Hankel Operators and Their Applications - Vladimir Peller - 2003-01-14
The purpose of this book is to describe the theory of Hankel operators, one of the most important classes of
operators on spaces of analytic function. Hankel operators can be defined as operators having infinite Hankel
matrices (i.e., matrices with entries depending only on the sum of the co-ordinates) with respect to some
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Operators, Functions, and Systems: Model operators and systems - Nikolai Kapitonovich Nikolski - 2002
Overall, this work combines together - in two volumes - four formally distinct topics of modern analysis and their
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Function Spaces - Krysztof Jarov - 2020-08-26
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Because the methods and results of finite-dimensional linear algebra seldom extend to or have analogs in infinite-
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Unitary \([\rho]\)-dilations and the Holbrook Radius for Bounded Operators on Hilbert Space - 1982

Functional analysis and an acquaintance with the theory of Hardy spaces in the unit disk. In addition, knowledge of the trace class of operators is necessary in the chapter on weak contractions.

Operator Theory and Arithmetic in \(H(\infty)\) - Hari Bercovici - 1988

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Twentieth Century Harmonic Analysis - J.S. Byrnes - 2012-12-06

Almost a century ago, harmonic analysis entered a (still continuing) Golden Age, with the emergence of many great masters throughout Europe. They created a wealth of profound analytic methods, to be successfully exploited and further developed by succeeding generations. This flourishing of harmonic analysis is today as lively as ever, as the papers presented here demonstrate. In addition to its own ongoing internal development and its basic role in other areas of mathematics, physics and chemistry, financial analysis, medicine, and biological signal processing, harmonic analysis has made fundamental contributions to essentially all twentieth century technology-based human endeavours, including telephone, radio, television, radar, sonar, satellite communications, medical imaging, the Internet, and multimedia. This ubiquitous nature of the subject is amply illustrated. The book not only promotes the infusion of new mathematical tools into applied harmonic analysis, but also to fuel the development of applied mathematics by providing opportunities for young engineers, mathematicians and other scientists to learn more about problem areas in today's technology that might benefit from new mathematical insights.

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Linear und Complex Analysis Problem Book - V. P. Havin - 2006-11-14

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Probability Theory on Vector Spaces - A. Weron - 2006-11-15

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Quantum Probability and Applications to the Quantum Theory of Irreversible Processes - L. Accardi - 2006-11-14

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Canadian Journal of Mathematics - 1995-06

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Handbook of Linear Algebra - Leslie Hogben - 2013-11-26

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algebra, including epidemiology and quantum error correction. New chapter on using the free and open source software system Sage for linear algebra. Additional sections in the chapters on sign pattern matrices and applications to geometry. Conjectures and open problems in most chapters on advanced topics. Highly praised as a valuable resource for anyone who uses linear algebra, the first edition covered virtually all aspects of linear algebra and its applications. This edition continues to encompass the fundamentals of linear algebra, combinatorial and numerical linear algebra, and applications of linear algebra to various disciplines while also covering up-to-date software packages for linear algebra computations.

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J Contractive Matrix Functions, Reproducing Kernel Hilbert Spaces and Interpolation - Harry Dym - 2012-08-21
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Quantum Independent Increment Processes II - Ole E. Barndorff-Nielsen - 2005-12-23
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Operator Theory and Complex Analysis - T. Ando - 2012-12-06
Encyclopaedia of Mathematics - M. Hazewinkel - 2013-12-01
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Encyclopaedia of Mathematics - Michiel Hazewinkel - 2013-12-01
This ENCYCLOPEDIA OF MATHEMATICS aims to be a reference work for all parts of mathematics. It is a translation with updates and editorial comments of the Soviet Mathematical En cyclopaedia published by ’Soviet Encyclopaedia Publishing House’ in five volumes in 1977 - 1985. The annotated translation consists of ten volumes including a special index volume. There are three kinds of articles in this ENCYCLOPAEDIA. First of all there are survey-type articles dealing with the various main directions in mathematics (where a rather fine subdivision has been used). The main requirement for these articles has been that they should give a reasonably complete up-to-date account of the current state of affairs in these areas and that they should be maximally accessible. On the whole, these articles should be understandable to mathe matics students in their first specialization years, to graduates from other mathematical areas and, depending on the specific subject, to specialists in other domains of science, engineers and teachers of mathematics. These articles treat their material at a fairly general level and aim to give an idea of the kind of problems, techniques and concepts involved in the area in question. They also contain background and motivation rather than precise statements of precise theorems with detailed definitions and technical details on how to carry out proofs and constructions. The second kind of article, of medium length, contains more detailed concrete problems, results and techniques.

Encyclopaedia of Mathematics - Michiel Hazewinkel - 2013-12-01
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Reality and Measurement in Algebraic Quantum Theory - Masanao Ozawa - 2018-11-02
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