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Nonlinear Functional Analysis in Banach Spaces and Banach Algebras Categories of Operator Modules (Morita Equivalence and Projective Modules) Conformal Symmetry Breaking Differential Operators on Differential Forms Categorical Structure of Closure Operators Operator's, Organizational, Direct Support, and General Support Maintenance Manual ... Operator Theory Operator Methods in Quantum Mechanics Moments of Linear Positive Operators and Approximation An Introduction to the Mathematical Theory of Inverse Problems Approximate Solutions of Operator Equations Dynamics of Linear Operators Operator Algebras Generated by Commuting Projections: A Vector Measure Approach Mathematical Physics Perturbation Theory for Linear Operators Operator and Organizational Maintenance Manual Including Repair Parts and Special Tool Lists On Linear Positive Operators in Approximation Theory Spear Operators Between Banach Spaces An Introduction to Dirac Operators on Manifolds Linear Partial Differential Operators Elliptic Genera and Vertex Operator Super-Algebras The Adjoint of a Semigroup of Linear Operators Recent Advances in Operator Theory and Its Applications Dirac Operators in Analysis Linear Sobolev Type Equations and Degenerate Semigroups of Operators Mathematical Analysis, Approximation Theory and Their Applications Operator's, Organizational, Direct Support, and General Support Maintenance Manual (including Repair Parts and Special Tools List) for Test Set, Antenna, AN/VPM-1, W/e (4931-179-5571). Operator's Manual Approximation by Max-Product Type Operators Interpolation Theory, Systems Theory and Related Topics Vector Lattices and Intergal Operators Operator's and Organizational Maintenance Manual Functional Differential Operators and Equations Linear Processes in Function Spaces Operator's, organizational, and direct support maintenance Operator's, Organizational, and Direct Support Maintenance Manual Modern Heuristic Search Methods Infinite Products of Operators and Their Applications Spectral Theory of Functions and Operators. II Operator's and Organizational Maintenance Manual Including Repair Parts and Special Tools Lists Operator's, Organizational, Direct Support, General Support, and Depot Maintenance Manual Including Repair Parts and Special Tools Lists

Designed for graduate students, researchers, and engineers in mathematics, optimization, and economics, this self-contained volume presents theory, methods, and applications in mathematical analysis and approximation theory. Specific topics include: approximation of functions by linear positive operators with applications to computer aided geometric design, numerical analysis, optimization theory, and solutions of differential equations. Recent and significant developments in approximation theory, special functions and q-calculus along with their applications to mathematics, engineering, and social sciences are discussed and analyzed. Each chapter enriches the understanding of current research problems and theories in pure and applied research. Clifford analysis has blossomed into an increasingly relevant and fashionable area of research in mathematical analysis-it fits conveniently at the crossroads of many fundamental areas of research, including classical harmonic analysis, operator theory, and boundary behavior. This book presents a state-of-the-art account of the most recent developments in the field of Clifford analysis with contributions by many of the field's leading researchers. This monograph is devoted to the study of spear operators, that is, bounded linear operators G between Banach spaces X and Y satisfying that for every other bounded linear operator T:X ? Y there exists a modulus-one scalar ? such that ? G+?T? = 1 + ?T?. This concept extends the properties of the identity operator in those Banach spaces having numerical index one. Many examples among classical spaces are provided, being one of them the Fourier transform on L1. The relationships with the Radon-Nikodým property, with Asplund spaces and with the duality, and some isometric and isomorphic consequences are provided. Finally, Lipschitz operators satisfying the Lipschitz version of the equation above are studied. The book could be of interest to young researchers and specialists in functional analysis, in particular to those interested in Banach spaces and their geometry. It is essentially self-contained and only basic knowledge of functional analysis is needed. This monograph provides a systematic treatment of the abstract theory of adjoint semigroups. After presenting the basic elementary results, the following topics are treated in detail: The sigma (X, X)-topology, -reflexivity, the Favard class, Hille-Yosida operators, interpolation and extrapolation, weak -continuous semigroups, the codimension of X in X , adjoint semigroups and the Radon-Nikodym property, tensor products of semigroups and duality, positive semigroups and multiplication semigroups. The major part of the material is reasonably self-contained and is accessible to anyone with basic knowledge of semi- group theory and Banach space theory. Most of the results are proved in detail. The book is addressed primarily to researchers working in semigroup theory, but in view of the "Banach space theory" flavour of many of the results, it will also be of interest to Banach space geometers and operator theorists. We study conformal symmetry breaking di?erential operators which map dif-ferential forms on Rn to di?erential forms on a codimension one subspace Rn?1. These operators are equivariant with respect to the conformal Lie algebra of the subspace Rn?1. They correspond to homomorphisms of generalized Verma mod-ules for so(n, 1) into generalized Verma modules for so(n+1, 1) both being induced from fundamental form representations of a parabolic subalgebra. We apply the F -method to derive explicit formulas for such homomorphisms. In particular, we ?nd explicit formulas for the generators of the intertwining operators of the re-lated branching problems restricting generalized Verma modules for so(n +1, 1) to so(n, 1). As consequences, we derive closed formulas for all conformal symmetry breaking di?erential operators in terms of the ?rst-order operators d, ?, d¯ and ?¯ and certain hypergeometric polynomials. A dominant role in these studies is played by two in?nite sequences of symmetry breaking di?erential operators which depend on a complex parameter ?. Their values at special values of ? appear as factors in two systems of factorization identities which involve the Branson-Gover opera- tors of the Euclidean metrics on Rn and Rn?1 and the operators d, ?, d¯ and ?¯ as factors, respectively. Moreover, they naturally recover the gauge companion and Q-curvature operators of the Euclidean metric on the subspace Rn?1, respectively. Including contributions from leading experts in the field, this book covers applications and developments of heuristic search methods for solving complex optimization problems. The book covers various local search strategies including genetic algorithms, simulated annealing, tabu search and hybrids thereof. These methods have proved extraordinarily successful by solving some of the most difficult, real-world problems. At the interface between Artificial Intelligence and Operational Research, research in this exciting area is progressing apace spurred on by the needs of industry and commerce. The introductory chapter provides a clear overview of the basic techniques and useful pointers to further reading and to current research. The second section of the book covers some of the most recent and exciting developments of the basic techniques, with suggestions not only for extending and improving these but also for hybridizing and incorporating automatic adaption. The third section contains a number of case studies, surveys and comparative studies which span a wide range of application areas ranging from the classic Steiner tree problem to more practical problems arising in telecommunications and data analysis. The coverage of the latest research and the illustrative case studies will ensure that the book is invaluable for researchers and professionals with an interest in heuristic search methods. The main subject of this book is the estimation and forecasting of continuous time processes. It leads to a development of the theory of linear processes in function spaces. Mathematical tools are presented, as well as autoregressive processes in Hilbert and Banach spaces and general linear processes and statistical prediction. Implementation and numerical applications are also covered. The book assumes knowledge of classical probability theory and statistics. This volume is based on the proceedings of the Toeplitz Lectures 1999 and of the Workshop in Operator Theory held in March 1999 at Tel-Aviv University and at the Weizmann Institute of Science. The workshop was held on the occasion of the 60th birthday of Harry Dym, and the Toeplitz lecturers were Harry Dym and Jim Rovnyak. The papers in the volume reflect Harry's influence on the field of operator theory and its applications through his insights, his writings, and his personality. The volume begins with an autobiographical sketch, followed by the list ofpublications ofHarry Dym and the paper ofIsrael Gohberg: On Joint Work with Harry Dym. The following paper by Jim Rovnyak: Methods of Krdn Space Operator The ory, is based on his Toeplitz lectures. It gives a survey ofold and recents methods of KreIn space operator theory along with examples from function theory, espe cially substitution operators on indefinite Dirichlet spaces and their relation to coefficient problems for univalent functions, an idea pioneered by 1. de Branges and underlying his proof of the Bieberbach conjecture (see [9]). The remaining papers (arranged in the alphabetical order) can be divided into the following categories. Schur analysis and interpolation In Notes on Interpolation in the Generalized Schur Class. I, D. Alpay, T. Con stantinescu, A. Dijksma, and J. Rovnyak use realization theory for operator colli gations in Pontryagin spaces to study interpolation and factorization problems in generalized Schur classes. Our motivation for gathering the material for this book over aperiod of seven years has been to unify and simplify ideas wh ich appeared in a sizable number of re search articles during the past two decades. More specifically, it has been our aim to provide the categorical foundations for extensive work that was published on the epimorphism- and cowellporedness problem, predominantly for categories of topological spaces. In doing so we found the categorical not ion of closure operators interesting enough to be studied for its own sake, as it unifies and describes other significant mathematical notions and since it leads to a never-ending stream of ex amples and applications in all areas of mathematics. These are somewhat arbitrarily restricted to topology, algebra and (a small part of) discrete mathematics in this book, although other areas, such as functional analysis, would provide an equally rich and interesting supply of examples. We also had to restrict the themes in our theoretical exposition. In spite of the fact that closure operators generalize the uni versal closure operations of abelian category theory and of topos- and sheaf theory, we chose to mention these aspects only en passant, in favour of the presentation of new results more closely related to our original intentions. We also needed to refrain from studying topological concepts, such as compactness, in the setting of an arbitrary closure-equipped category, although this topic appears prominently in the published literature involving closure operators. The chapters on Clifford algebra and differential geometry can be used as an introduction to the topics, and are suitable for senior undergraduates and graduates. The other chapters are also accessible at this level.; This self-contained book requires very little previous knowledge of the domains covered, although the reader will benefit from knowledge of complex analysis, which gives the basic example of a Dirac operator.; The more advanced reader will appreciate the fresh approach to the theory, as well as the new results on boundary value theory.; Concise, but self-contained text at the introductory grad level. Systematic exposition.; Clusters well with other Birkhäuser titles in mathematical physics.; Appendix. General Manifolds * List of Symbols * Bibliography * Index This proceedings volume collects select contributions presented at the International Conference in Operator Theory held at Hammamet, Tunisia, on April 30 May 3, 2018. Edited and refereed by well-known experts in the field, this wide-ranging collection of survey and research articles presents the state of the art in the field of operator theory, covering topics such as operator and spectral theory, fixed point theory, functional analysis etc. The first book to assemble the wide body of theory which has rapidly developed on the dynamics of linear operators. Written for researchers in operator theory, but also accessible to anyone with a reasonable background in functional analysis at the graduate level. Uncover the Useful Interactions of Fixed Point Theory with Topological Structures Nonlinear Functional Analysis in Banach Spaces and Banach Algebras: Fixed Point Theory under Weak Topology for Nonlinear Operators and Block Operator Matrices with Applications is the first book to tackle the topological fixed point theory for block operator matrices with nonlinear entries in Banach spaces and Banach algebras. The book provides researchers and graduate students with a unified survey of the fundamental principles of fixed point theory in Banach spaces and algebras. The authors present several extensions of Schauder’s and Krasnosel’skii’s fixed point theorems to the class of weakly compact operators acting on Banach spaces and algebras, particularly on spaces satisfying the Dunford–Pettis property. They also address under which conditions a 2×2 block operator matrix with single- and multi-valued nonlinear entries will have a fixed point. In addition, the book describes applications of fixed point theory to a wide range of diverse equations, including transport equations arising in the kinetic theory of gas, stationary nonlinear biological models, two-dimensional boundary-value problems arising in growing cell populations, and functional systems of integral equations. The book focuses on fixed point results under the weak topology since these problems involve the loss of compactness of mappings and/or the missing geometric and topological structure of their underlying domain. This book presents a systematic investigation of the theory of those commutative, unital subalgebras (of bounded linear operators acting in a Banach space) which are closed for some given topology and are generated by a uniformly bounded Boolean algebra of projections. One of the main aims is to employ the methods of vector measures and integration as a unifying theme throughout. This yields proofs of several classical results which are quite different to the classical ones. This book is directed to both those wishing to learn this topic for the first time and to current experts in the field. This book deals with linear functional differential equations and operator theory methods for their investigation. The main topics are: the equivalence of the input-output stability of the equation Lx = &mathsf; and the invertibility of the operator L in the class of casual operators; the equivalence of input-output and exponential stability; the equivalence of the dichotomy of solutions for the homogeneous equation Lx = 0 and the invertibility of the operator L; the properties of Green's function; the independence of the stability of an equation from the norm on the space of solutions; shift invariant functional differential equations in Banach space; the possibility of the reduction of an equation of neutral type to an equation of retarded type; special full subalgebras of integral and difference operators, and operators with unbounded memory; and the analogue of Fredholm's alternative for operators with almost periodic coefficients where one-sided invertibility implies two-sided invertibility. Audience: This monograph will be of interest to students and researchers working in functional differential equations and operator theory and is recommended for graduate level courses. Following Keller [119] we call two problems inverse to each other if the for mulation of each of them requires full or partial knowledge of the other. By this definition, it is obviously arbitrary which of the two problems we call the direct and which we call the inverse problem. But usually, one of the problems has been studied earlier and, perhaps, in more detail. This one is usually called the direct problem, whereas the other is the inverse problem. However, there is often another, more important difference between these two problems. Hadamard (see [91]) introduced the concept of a well-posed problem, originating from the philosophy that the mathematical model of a physical problem has to have the properties of uniqueness, existence, and stability of the solution. If one of the properties fails to hold, he called the problem ill-posed. It turns out that many interesting and important inverse in science lead to ill-posed problems, while the corresponding di problems rect problems are well-posed. Often, existence and uniqueness can be forced by enlarging or reducing the solution space (the space of "models"). For restoring stability, however, one has to change the topology of the spaces, which is in many cases impossible because of the presence of measurement errors. At first glance, it seems to be impossible to compute the solution of a problem numerically if the solution of the problem does not depend continuously on the data, i. e. , for the case of ill-posed problems. This monograph presents a broad treatment of developments in an area of constructive approximation involving the so-called "max-product" type operators. The exposition highlights the max-product operators as those which allow one to obtain, in many cases, more valuable estimates than those obtained by classical approaches. The text considers a wide variety of operators which are studied for a number of interesting problems such as quantitative estimates, convergence, saturation results, localization, to name several. Additionally, the book discusses the perfect analogies between the probabilistic approaches of the classical Bernstein type operators and of the classical convolution operators (non-periodic and periodic cases), and the possibilistic approaches of the max-product variants of these operators. These approaches allow for two natural interpretations of the max-product Bernstein type operators and convolution type operators: firstly, as possibilistic expectations of some fuzzy variables, and secondly, as bases for the Feller type scheme in terms of the possibilistic integral. These approaches also offer new proofs for the uniform convergence based on a Chebyshev type inequality in the theory of possibility. Researchers in the fields of approximation of functions, signal theory, approximation of fuzzy numbers, image processing, and numerical analysis will find this book most beneficial. This book is also a good reference for graduates and postgraduates taking courses in approximation theory. This book contains a selection of carefully refereed research papers, most of which were presented at the fourteenth International Workshop on Operator Theory and its Applications (IWOTA), held at Cagliari, Italy, from June 24-27, 2003. The papers, many of which have been written by leading experts in the field, concern a wide variety of topics in modern operator theory and applications, with emphasis on differential operators and numerical methods. The book will be of interest to a wide audience of pure and applied mathematicians and engineers. This book offers an elementary and self-contained introduction to many fundamental issues concerning approximate solutions of operator equations formulated in an abstract Banach space setting, including important topics such as solvability, computational schemes, convergence, stability and error estimates. The operator equations under investigation include various linear and nonlinear types of ordinary and partial differential equations, integral equations, and abstract evolution equations, which are frequently involved in applied mathematics and engineering applications.Each chapter contains well-selected examples and exercises, for the purposes of demonstrating the fundamental theories and methods developed in the text and familiarizing the reader with functional analysis techniques useful for numerical solutions of various operator equations. This volume contains the proceedings of the workshop on Infinite Products of Operators and Their Applications, held from May 21-24, 2012, at the Technion-Israel Institute of Technology, Haifa, Israel. The papers cover many different topics regarding infinite products of operators and their applications: projection methods for solving feasibility and best approximation problems, arbitrarily slow convergence of sequences of linear operators, monotone operators, proximal point algorithms for finding zeros of maximal monotone operators in the presence of computational errors, the Pascoletti-Serafini problem, remetrization for infinite families of mappings, Poisson's equation for mean ergodic operators, vector-valued metrics in fixed point theory, contractivity of infinite products and mean convergence theorems for generalized nonspreading mappings. This book is co-published with Bar-Ilan University (Ramat-Gan, Israel). Abstract. We employ recent advances in the theory of operator spaces, also known as quantized functional analysis, to provide a context in which one can compare categories of modules over operator algebras that are not necessarily self-adjoint. We focus our attention on the category of Hilbert modules over an operator algebra and on the category of operator modules over an operator algebra. The module operations are assumed to be completely bounded - usually, completely contractive. We develop the notion of a Morita context between two operator algebras A and B. This is a system $(A,B,{}_{A}X_{B},{}_{B} Y_{A},(\cdot,\cdot),[\cdot,\cdot])$ consisting of the algebras, two bimodules ${}_{A}X_{B}$ and $_{B}Y_{A}$ and pairings $(\cdot,\cdot)$ and $[\cdot,\cdot]$ that induce (complete) isomorphisms between the (balanced) Haagerup tensor products, $X \otimes_{hB} {} Y$ and $Y \otimes_{hA} {} X$, and the algebras, A and B, respectively. Thus, formally, a Morita context is the same as that which appears in pure ring theory. The subtleties of the theory lie in the interplay between the pure algebra and the operator space geometry. Our analysis leads to viable notions of projective operator modules and dual operator modules. We show that two C*-algebras are Morita equivalent in our sense if and only if they are $C^{\ast}$-algebraically strong Morita equivalent, and moreover the equivalence bimodules are the same. The distinctive features of the non-self-adjoint theory are illuminated through a number of examples drawn from complex analysis

and the theory of incidence algebras over topological partial orders. Finally, an appendix provides links to the literature that developed since this Memoir was accepted for publication. This monograph deals with two aspects of the theory of elliptic genus: its topological aspect involving elliptic functions, and its representation theoretic aspect involving vertex operator super-algebras. For the second aspect, elliptic genera are shown to have the structure of modules over certain vertex operator super-algebras. The vertex operators corresponding to parallel tensor fields on closed Riemannian Spin Kähler manifolds such as Riemannian tensors and Kähler forms are shown to give rise to Virasoro algebras and affine Lie algebras. This monograph is chiefly intended for topologists and it includes accounts on topics outside of topology such as vertex operator algebras. Focusing on the mathematics, and providing only a minimum of explicatory comment, this volume contains six chapters covering auxiliary material, relatively p-radial operators, relatively p-sectorial operators, relatively ?-bounded operators, Cauchy problems for inhomogenous Sobolev-type equations, bounded solutions to Sobolev-type equations, and optimal control. Since 1984, a series of regional conferences on mathematical physics has been organized by physicists from Iran, Pakistan and Turkey to promote the research in mathematical and theoretical physics in the region. This volume, which derives from the XI Regional Conference on Mathematical Physics, comprises 8 review and 44 research articles on the most significant topics in mathematical and theoretical physics such as astrophysics and cosmology, conformal field theory, high energy physics, general relativity and plasma physics. The review articles are comprehensive and self-contained and report on the most important developments in the corresponding subjects. Each review article provides a complete list of references, which is especially useful for graduate students who are just starting their research activities; even ambitious undergraduates in physics can use these review papers as useful background material to go further into the subject and explore the research literature. They are contributed by prominent senior scientists: M Moniez (Laboratoire de l'Accelerateur Lineare, France) and V Sahni (Inter-University Centre for Astronomy and Astrophysics (IUCAA), India) in Astrophysics and Cosmology, W Nahm (Dublin Institute for Advanced Studies (DIAS), Ireland) in Conformal Field Theory, J Lukierski (University of Wroclaw, Poland) in Mathematical Physics, Riazuddin and Fayyazuddin (Quaid-i-Azam University, Pakistan) in High Energy Physics, N Dadhich (Inter-University Centre for Astronomy and Astrophysics (IUCAA), India) and A Qadir (National University of Science and Technology, Pakistan) in General Relativity, and N Tsintsadze (Tbilisi State University, Georgia) in Plasma Physics. Contents:Astrophysics and Cosmology:Does Transparent Hidden Matter Generate Optical Scintillation? (M Moniez)Galactic MACHO Budget: Problems and Possible Solution with the Abundant Brown Dwarfs (S Rahvar)The Mysterious Nature of Dark Energy (V Sahni)Condensed Matter and Statistical Physics:Two-Band Ginzburg-Landau Theory and Its Application to Recently Discovered Superconductors (I N Askerzade)Charge and Magnetization Plateaux in Strongly Correlated Systems (A Langari)Exactly Solvable Problems for Two-Dimensional Excitons (D G W Parfitt & M E Portnoi)High Energy Physics — Phenomenology:SUL(4) x U(1) Model for Electroweak Unification (Fayyazuddin)Some Remarks on Neutrino Mass Matrix (Riazuddin)General Relativity and Quantum Gravity:Probing Universality of Gravity (N Dadhich)Observing Black Holes (P De Paolis et al.)Constraint Algebra in Causal Loop Quantum Gravity (F Shojai & A Shojai)Mathematical Physics:Quantum Deformations of Relativistic Symmetries: Some Recent Developments (J Lukierski)Thermodynamics Bethe Ansatz (TBA) (W Nahm)Hidden Property of Extended Jordanian Twists for Lie Superalgebras (V N Tolstoy)Noncommutative Field Theory and String Theory:Exact Wilsonian Effective Superpotential for Noncommutative N = 1 Supersymmetric U(1) (F Ardalan & N Sadooghi)Aspects of Noncommutative Gauge Theories and Their Commutative Equivalents (R Banerjee)Plasma Physics:Relativistic Thermodynamics of the Strong Magnetized Dense Electron Plasma (N L Tsintsadze)and other papers Readership: Researchers in mathematical physics, theoretical physics, high energy physics, astrophysics, astronomy, cosmology and condensed matter physics. Keywords:Mathematical Physics;String Theory;Plasma Physics;CosmologyKey Features:Includes eight high quality review articles on various subjects in physics, such as astrophysics and cosmology, conformal field theory, mathematical physics, high energy physics, general relativity and plasma physics, contributed by prominent physicistsUseful for advanced graduate students and active researchers in physics The aim of this book is to give a systematic study of questions con cerning existence, uniqueness and regularity of solutions of linear partial differential equations and boundary problems. Let us note explicitly that this program does not contain such topics as eigenfunction expan sions, although we do give the main facts concerning differential operators which are required for their study. The restriction to linear equations also means that the trouble of achieving minimal assumptions concerning the smoothness of the coefficients of the differential equations studied would not be worth while; we usually assume that they are infinitely differenti able. Functional analysis and distribution theory form the framework for the theory developed here. However, only classical results of functional analysis are used. The terminology employed is that of BOURBAKI. To make the exposition self-contained we present in Chapter I the elements of distribution theory that are required. With the possible exception of section 1.8, this introductory chapter should be bypassed by a reader who is already familiar with distribution theory. The theory of vector lattices, stemming from the mid-thirties, is now at the stage where its main achievements are being summarized. The sweeping changes of the last two decades have changed its image completely. The range of its application was expanded and enriched so as to embrace diverse branches of the theory of functions, geometry of Banach spaces, operator theory, convex analysis, etc. Furthermore, the theory of vector lattices was impregnated with principally new tools and techniques from other sections of mathematics. These circumstances gave rise to a series of mono graphs treating separate aspects of the theory and oriented to specialists. At the same time, the necessity of a book intended for a wider readership, reflecting the modern diretions of research became clear. The present book is meant to be an attempt at implementing this task. Although oriented to readers making their first acquaintance with vector-lattice theory, it is composed so that the main topics dealt with in the book reach the current level of research in the field, which is of interest and import for specialists. The monograph was conceived so as to be divisible into two parts that can be read independently of one another. The first part is mainly Chapter 1, devoted to the so-called Boolean-valued analysis of vector lattices. The term designates the applica tion of the theory of Boolean-valued models by D. Scott, R. Solovay and P. Operator Methods in Quantum Mechanics demonstrates the power of operator theory as a tool in the study of quantum mechanics. More specifically, it shows how to use algebraic, representation-independent methods to solve one- and three-dimensional problems, including certain relativistic problems. It explains the applications of commutation relations, shift operators, and the virial, hypervirial, and Hellman-Feyman theorems to the calculation of eigenvalues, matrix elements, and wave functions. Organized into 16 chapters, this book begins by presenting a few simple postulates describing quantum theory and looking at a single particle moving along a straight line. Then, it introduces mathematical techniques that answer questions about the particle. It also discusses the use of spectral theorem in answering various questions concerning observables, along with negative eigenvalues and methods of determining parts of the spectrum or estimating lower bounds. Moreover, it explains the time-independent or stationary-state scattering theory and states, long-range potentials, and completeness and strong completeness. Oscillating potentials, eigenfunction expansions, restricted particles, hard-core potentials, the invariance principle, and the use of trace class operators to treat scattering theory are also described in this book. This volume is a valuable resource for physicists, as well as students of intermediate quantum mechanics and postgraduate students who want to be acquainted with the algebraic method of solving quantum mechanical problems. From the reviews: "[...] An excellent textbook in the theory of linear operators in Banach and Hilbert spaces. It is a thoroughly worthwhile reference work both for graduate students in functional analysis as well as for researchers in perturbation, spectral, and scattering theory. [...] I can recommend it for any mathematician or physicist interested in this field." Zentralblatt MATH This book is a valuable resource for Graduate students and researchers interested in current techniques and methods within the theory of moments in linear positive operators and approximation theory. Moments are essential to the convergence of a sequence of linear positive operators. Several methods are examined to determine moments including direct calculations, recurrence relations, and the application of hypergeometric series. A collection of operators in the theory of approximation are investigated through their moments and a variety of results are surveyed with fundamental theories and recent developments. Detailed examples are included to assist readers understand vital theories and potential applications.

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