Complex Analysis In Banach Spaces Holomorphic Functions And Domains Of Holomorphy In Finite And Infinite Dimensions

Banach Space Theory An Introduction to Banach Space Theory Handbook of the Geometry of Banach Spaces Geometry and Nonlinear Analysis in Banach Spaces **Analysis in Banach Spaces Three-space Problems in Banach Space Theory** *Biorthogonal Systems in Banach Spaces* **Banach Spaces of Vector-Valued Functions** Topics in Banach Space Theory **Probability in Banach Spaces Handbook of the Geometry of Banach Spaces** Geometric Properties of Banach Spaces and Nonlinear Iterations *Bases in Banach Spaces* Convexity and Optimization in Banach Spaces **Banach Spaces for Analysts** Sequences and Series in Banach Spaces **Martingales in Banach Spaces** Functional Analysis **Banach Spaces of Analytic Functions Minimal Projections in Banach Spaces History of Banach Spaces and Linear Operators Gaussian Measures in Banach Spaces M-Ideals in Banach Spaces and Banach Algebras Banach Spaces and Descriptive Set Theory: Selected Topics** *The Isometric Theory of Classical Banach Spaces* **History of Banach Spaces and Linear Operators Smooth Analysis in Banach Spaces** *Ordinary Differential Equations in Banach Spaces* Introduction to Tensor Products of Banach Spaces *Understanding Banach Spaces Isometries on Banach Spaces* **Probability in Banach Spaces V Analysis in Banach Spaces Series in Banach Spaces U-Statistics in Banach Spaces** *Introduction to Tensor Products of Banach Spaces* **Probability in Banach Spaces, 9** *An Introduction to Banach Space Theory Complex Analysis in Banach Spaces A Short Course on Banach Space Theory*

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Functional Analysis May 16 2021 A powerful introduction to one of the most active areas oftheoretical and applied mathematics This distinctive introduction to one of the most far-reaching andbeautiful areas of mathematics focuses on Banach spaces as themilieu in which most of the fundamental concepts are presented.While occasionally using the more general topological vector spaceand locally convex space setting, it emphasizes the development ofthe reader's mathematical maturity and the ability to bothunderstand and "do" mathematics. In so doing, Functional Analysisprovides a strong springboard for further exploration on the widerange of topics the book presents, including: * Weak topologies and applications * Operators on Banach spaces * Bases in Banach spaces * Sequences, series, and geometry in Banach spaces Stressing the general techniques underlying the proofs, FunctionalAnalysis also features many exercises for immediate clarificationof points under discussion. This thoughtful, well-organizedsynthesis of the work of those mathematicians who created thediscipline of functional analysis as we know it today also providesa rich source of research topics and reference material.

Topics in Banach Space Theory Feb 22 2022 This text provides the reader with the necessary technical tools and background to reach the frontiers of research without the introduction of too many extraneous concepts. Detailed and accessible proofs are included, as are a variety of exercises and problems. The two new chapters in this second edition are devoted to two topics of much current interest amongst functional analysts: Greedy approximation with respect to bases in Banach spaces and nonlinear geometry of Banach spaces. This new material is intended to present these two directions of research for their intrinsic importance within Banach space theory, and to motivate graduate students interested in learning more about them. This textbook assumes only a basic knowledge of functional analysis, giving the reader a self-contained overview of the ideas and techniques in the development of modern Banach space theory. Special emphasis is placed on the study of the classical Lebesgue spaces Lp (and their sequence space analogues) and spaces of continuous functions. The authors also stress the use of bases and basic sequences techniques as a tool for understanding the isomorphic structure of Banach spaces. From the reviews of the First Edition: "The authors of the book...succeeded admirably in creating a very helpful text, which contains essential topics with optimal proofs, while being reader friendly... It is also written in a lively manner, and its involved mathematical proofs are elucidated and illustrated by motivations, explanations and occasional historical comments... I

strongly recommend to every graduate student who wants to get acquainted with this exciting part of functional analysis the instructive and pleasant reading of this book..."—Gilles Godefroy, Mathematical Reviews

Sequences and Series in Banach Spaces Jul 18 2021 This volume presents answers to some natural questions of a general analytic character that arise in the theory of Banach spaces. I believe that altogether too many of the results presented herein are unknown to the active abstract analysts, and this is not as it should be. Banach space theory has much to offer the prac titioners of analysis; unfortunately, some of the general principles that motivate the theory and make accessible many of its stunning achievements are couched in the technical jargon of the area, thereby making it unapproachable to one unwilling to spend considerable time and effort in deciphering the jargon. With this in mind, I have concentrated on presenting what I believe are basic phenomena in Banach spaces that any analyst can appreciate, enjoy, and perhaps even use. The topics covered have at least one serious omission: the beautiful and powerful theory of type and cotype. To be quite frank, I could not say what I wanted to say about this subject without increasing the length of the text by at least 75 percent. Even then, the words would not have done as much good as the advice to seek out the rich Seminaire Maurey-Schwartz lecture notes, wherein the theory's development can be traced from its conception. Again, the treasured volumes of Lindenstrauss and Tzafriri also present much of the theory of type and cotype and are must reading for those really interested in Banach space theory.

Biorthogonal Systems in Banach Spaces Apr 26 2022 This book introduces the reader to some of the basic concepts, results and applications of biorthogonal systems in infinite dimensional geometry of Banach spaces, and in topology and nonlinear analysis in Banach spaces. It achieves this in a manner accessible to graduate students and researchers who have a foundation in Banach space theory. The authors have included numerous exercises, as well as open problems that point to possible directions of research.

Probability in Banach Spaces, 9 Sep 27 2019 The papers contained in this volume are an indication of the topics th discussed and the interests of the participants of The 9 International Conference on Probability in Banach Spaces, held at Sandjberg, Denmark, August 16-21, 1993. A glance at the table of contents indicates the broad range of topics covered at this conference. What defines research in this field is not so much the topics considered but the generality of the ques tions that are asked. The goal is to examine the behavior of large classes of stochastic

processes and to describe it in terms of a few simple prop erties that the processes share. The reward of research like this is that occasionally one can gain deep insight, even about familiar processes, by stripping away details, that in hindsight turn out to be extraneous. A good understanding about the disciplines involved in this field can be obtained from the recent book, Probability in Banach Spaces, Springer-Verlag, by M. Ledoux and M. Thlagrand. On page 5, of this book, there is a list of previous conferences in probability in Banach spaces, including the other eight international conferences. One can see that research in this field over the last twenty years has contributed significantly to knowledge in probability and has had important applications in many other branches of mathematics, most notably in statistics and functional analysis.

An Introduction to Banach Space Theory Aug 26 2019 This book is an introduction to the general theory of Banach spaces, designed to prepare the reader with a background in functional analysis that will enable him or her to tackle more advanced literature in the subject. The book is replete with examples, historical notes, and citations, as well as nearly five hundred exercises.

Martingales in Banach Spaces Jun 16 2021 This book focuses on applications of martingales to the geometry of Banach spaces, and is accessible to graduate students.

Introduction to Tensor Products of Banach Spaces Jun 04 2020 This is the first ever truly introductory text to the theory of tensor products of Banach spaces. Coverage includes a full treatment of the Grothendieck theory of tensor norms, approximation property and the Radon-Nikodym Property, Bochner and Pettis integrals. Each chapter contains worked examples and a set of exercises, and two appendices offer material on summability in Banach spaces and properties of spaces of measures.

Gaussian Measures in Banach Spaces Jan 12 2021

Complex Analysis in Banach Spaces Jul 26 2019 The development of complex analysis is based on issues related to holomorphic continuation and holomorphic approximation. This volume presents a unified view of these topics in finite and infinite dimensions. A high-level tutorial in pure and applied mathematics, its prerequisites include a familiarity with the basic properties of holomorphic functions, the principles of Banach and Hilbert spaces, and the theory of Lebesgue integration. The four-part treatment begins with an overview of the basic properties of holomorphic mappings and holomorphic domains in Banach spaces. The second section explores differentiable mappings, differentiable forms, and polynomially convex compact sets, in which the results are applied to the study of Banach and Fréchet algebras. Subsequent sections examine plurisubharmonic functions and pseudoconvex domains in Banach spaces, along with Riemann domains and envelopes of holomorphy. In addition to its value as a text for advanced graduate students of mathematics, this volume also functions as a reference for researchers and professionals.

Handbook of the Geometry of Banach Spaces Aug 31 2022 The Handbook presents an overview of most aspects of modern Banach space theory and its applications. The up-to-date surveys, authored by leading research workers in the area, are written to be accessible to a wide audience. In addition to presenting the state of the art of Banach space theory, the surveys discuss the relation of the subject with such areas as harmonic analysis, complex analysis, classical convexity, probability theory, operator theory, combinatorics, logic, geometric measure theory, and partial differential equations. The Handbook begins with a chapter on basic concepts in Banach space theory which contains all the background needed for reading any other chapter in the Handbook. Each of the twenty one articles in this volume after the basic concepts chapter is devoted to one specific direction of Banach space theory or its applications. Each article contains a motivated introduction as well as an exposition of the main results, methods, and open problems in its specific direction. Most have an extensive bibliography. Many articles contain new proofs of known results as well as expositions of proofs which are hard to locate in the literature or are only outlined in the original research papers. As well as being valuable to experienced researchers in Banach space theory, the Handbook should be an outstanding source for inspiration and information to graduate students and beginning researchers. The Handbook will be useful for mathematicians who want to get an idea of the various developments in Banach space theory.

Isometries on Banach Spaces Apr 02 2020 Fundamental to the study of any mathematical structure is an understanding of its symmetries. In the class of Banach spaces, this leads naturally to a study of isometries-the linear transformations that preserve distances. In his foundational treatise, Banach showed that every linear isometry on the space of continuous functions on a compact metric space must transform a continuous function x into a continuous function y satisfying y(t) = h(t)x(p(t)), where p is a homeomorphism and |h| is identically one. Isometries on Banach Spaces: Function Spaces is the first of two planned volumes that survey investigations of Banach-space isometries. This volume emphasizes the characterization of isometries and focuses on establishing the type of explicit, canonical form given above in a variety of settings. After an introductory discussion of isometries in general, four chapters are devoted to describing the isometries on classical function spaces. The final chapter explores isometries on Banach algebras. This treatment provides a clear account of historically important results, exposes the principal methods of attack, and includes some results that are more recent and some that are lesser known. Unique in its focus, this book will prove useful for experts as well as beginners in the field and for those who simply want to acquaint themselves with this area of Banach space theory.

Bases in Banach Spaces Oct 21 2021

Ordinary Differential Equations in Banach Spaces Jul 06 2020

History of Banach Spaces and Linear Operators Sep 07 2020 Written by a distinguished specialist in functional analysis, this book presents a comprehensive treatment of the history of Banach spaces and (abstract bounded) linear operators. Banach space theory is presented as a part of a broad mathematics context, using tools from such areas as set theory, topology, algebra, combinatorics, probability theory, logic, etc. Equal emphasis is given to both spaces and operators. The book may serve as a reference for researchers and as an introduction for graduate students who want to learn Banach space theory with some historical flavor.

History of Banach Spaces and Linear Operators Feb 10 2021 Written by a distinguished specialist in functional analysis, this book presents a comprehensive treatment of the history of Banach spaces and (abstract bounded) linear operators. Banach space theory is presented as a part of a broad mathematics context, using tools from such areas as set theory, topology, algebra, combinatorics, probability theory, logic, etc. Equal emphasis is given to both spaces and operators. The book may serve as a reference for researchers and as an introduction for graduate students who want to learn Banach space theory with some historical flavor.

Banach Spaces and Descriptive Set Theory: Selected Topics Nov 09 2020 This volume deals with problems in the structure theory of separable infinite-dimensional Banach spaces, with a central focus on universality problems. This topic goes back to the beginnings of the field and appears in Banach's classical monograph. The novelty of the approach lies in the fact that the answers to a number of basic questions are based on techniques from Descriptive Set Theory. Although the book is oriented on proofs of several structural theorems, in the main text readers will also find a detailed exposition of numerous "intermediate" results which are interesting in their own right and have proven to be useful in other areas of Functional Analysis. Moreover, several well-known results in the geometry of Banach spaces are presented from a modern perspective.

Analysis in Banach Spaces Jan 30 2020 The present volume develops the theory of integration in Banach spaces, martingales and UMD spaces, and culminates in a treatment of the Hilbert transform, Littlewood-Paley theory and the vector-valued Mihlin multiplier theorem. Over the past fifteen years, motivated by regularity problems in evolution equations, there has been tremendous progress in the analysis of Banach space-valued functions and processes. The contents of this extensive and powerful toolbox have been mostly scattered around in research papers and lecture notes. Collecting this diverse body of material into a unified and accessible presentation fills a gap in the existing literature. The principal audience that we have in mind consists of researchers who need and use Analysis in Banach Spaces as a tool for studying problems in partial differential equations, harmonic analysis, and stochastic analysis. Self-contained and offering complete proofs, this work is accessible to graduate students and researchers with a background in functional analysis or related areas.

Understanding Banach Spaces May 04 2020 This book focuses on the study of several properties of Banach spaces applied to diverse problems in functional and numerical analysis. Many problems in science, engineering and other disciplines can be expressed in the form of equations, inequalities or systems of equations using mathematical modelling. In particular, a large number of these problems can be solved using these spaces. A great multitude of examples showing the theoretical application developed appears throughout the work. Researchers and practitioners will find this book very useful as a source

book, utilize its methods and also use it as a classroom text for a senior undergraduate or graduate course. It is certainly an excellent must read book.

Introduction to Tensor Products of Banach Spaces Oct 28 2019 This is the first ever truly introductory text to the theory of tensor products of Banach spaces. Coverage includes a full treatment of the Grothendieck theory of tensor norms, approximation property and the Radon-Nikodym Property, Bochner and Pettis integrals. Each chapter contains worked examples and a set of exercises, and two appendices offer material on summability in Banach spaces and properties of spaces of measures.

M-Ideals in Banach Spaces and Banach Algebras Dec 11 2020 This book provides a comprehensive exposition of M-ideal theory, a branch ofgeometric functional analysis which deals with certain subspaces of Banach spaces arising naturally in many contexts. Starting from the basic definitions the authors discuss a number of examples of M-ideals (e.g. the closed two-sided ideals of C*-algebras) and develop their general theory. Besides, applications to problems from a variety of areas including approximation theory, harmonic analysis, C*-algebra theory and Banach space geometry are presented. The book is mainly intended as a reference volume for researchers working in one of these fields, but it also addresses students at the graduate or postgraduate level. Each of its six chapters is accompanied by a Notes-and-Remarks section which explores further ramifications of the subject and gives detailed references to the literature. An extensive bibliography is included.

Geometry and Nonlinear Analysis in Banach Spaces Jul 30 2022

Analysis in Banach Spaces Jun 28 2022 This second volume of Analysis in Banach Spaces, Probabilistic Methods and Operator Theory, is the successor to Volume I, Martingales and Littlewood-Paley Theory. It presents a thorough study of the fundamental randomisation techniques and the operator-theoretic aspects of the theory. The first two chapters address the relevant classical background from the theory of Banach spaces, including notions like type, cotype, K-convexity and contraction principles. In turn, the next two chapters provide a detailed treatment of the theory of R-boundedness and Banach space valued square functions developed over the last 20 years. In the last chapter, this content is applied to develop the holomorphic functional calculus of sectorial and bi-sectorial operators in Banach spaces. Given its breadth of coverage, this book will be an invaluable reference to graduate students and researchers interested in functional analysis, harmonic analysis, spectral theory, stochastic analysis, and the operator-theoretic approach to deterministic and stochastic evolution equations.

Geometric Properties of Banach Spaces and Nonlinear Iterations Nov 21 2021 The contents of this monograph fall within the general area of nonlinear functional analysis and applications. We focus on an important topic within this area: geometric properties of Banach spaces and nonlinear iterations, a topic of intensive research e?orts, especially within the past 30 years, or so. In this theory, some geometric properties of Banach spaces play a crucial role. In the ?rst part of the monograph, we expose these geometric properties most of which are well known. As is well known, among all in?nite dim- sional Banach spaces, Hilbert spaces have the nicest geometric properties. The availability of the inner product, the fact that the proximity map or nearest point map of a real Hilbert space H onto a closed convex subset K of H is Lipschitzian with constant 1, and the following two identities $2\ 2\ 2\ ||x+y|| = ||x|| + 2\ x,y + ||y||$, (?) $2\ 2\ 2\ 2\ ||?x+(1??)y|| = ?||x|| + (1??)||y|| ??(1??)||x?y||$, (??) which hold for all x,y? H, are some of the geometric properties that char-terize inner product spaces and also make certain problems posed in Hilbert spaces more manageable than those in general Banach spaces. However, as has been rightly observed by M. Hazewinkel, "... many, and probably most, mathematical objects and models do not naturally live in Hilbert spaces".

Consequently,toextendsomeoftheHilbertspacetechniquestomoregeneral Banach spaces, analogues of the identities (?) and (??) have to be developed.

Banach Spaces for Analysts Aug 19 2021 This book is intended to be used with graduate courses in Banach space theory.

Probability in Banach Spaces Jan 24 2022 Based on recent developments, such as new isoperimetric inequalities and random process techniques, this book presents a thorough treatment of the main aspects of Probability in Banach spaces, and of some of their links to Geometry of Banach spaces.

A Short Course on Banach Space Theory Jun 24 2019 Publisher Description

Probability in Banach Spaces V Mar 02 2020

Smooth Analysis in Banach Spaces Aug 07 2020 This bookis aboutthe subject of higher smoothness in separable real Banach spaces.It brings together several angles of view on polynomials, both in finite and infinite setting.Also a rather thorough and systematic view of the more recent results, and the authors work is given. The book revolves around two main broad questions: What is the best smoothness of a given Banach space, and its structural consequences? How large is a supply of smooth functions in the sense of approximating continuous functions in the uniform topology, i.e. how does the Stone-Weierstrass theorem generalize into infinite dimension where measure and compactness are not available? The subject of infinite dimensional real higher smoothness is treatedherefor the first time in full detail, therefore this book may also serve as a reference book.

Convexity and Optimization in Banach Spaces Sep 19 2021 An updated and revised edition of the 1986 title Convexity and Optimization in Banach Spaces, this book provides a self-contained presentation of basic results of the theory of convex sets and functions in infinite-dimensional spaces. The main emphasis is on applications to convex optimization and convex optimal control problems in Banach spaces. A distinctive feature is a strong emphasis on the connection between theory and application. This edition has been updated to include new results pertaining to advanced concepts of subdifferential for convex functions and new duality results in convex programming. The last chapter, concerned with convex control problems, has been rewritten and completed with new research concerning boundary control systems, the dynamic programming equations in optimal control theory and periodic optimal control problems. Finally, the structure of the book has been modified to highlight the most recent progression in the field including fundamental results on the theory of infinite-dimensional convex analysis and includes helpful bibliographical notes at the end of each chapter.

The Isometric Theory of Classical Banach Spaces Oct 09 2020 The purpose of this book is to present the main structure theorems in the isometric theory of classical Banach spaces. Elements of general topology, measure theory, and Banach spaces are assumed to be familiar to the reader. A classical Banach space is a Banach space X whose dual space is linearly isometric to Lp(j1, IR) (or Lp(j1, CC) in the complex case) for some measure j1 and some $1 \sim p \sim 00$. If 1

Banach Spaces of Vector-Valued Functions Mar 26 2022 "When do the Lebesgue-Bochner function spaces contain a copy or a complemented copy of any of the classical sequence spaces?" This problem and the analogous one for vector- valued continuous function spaces have attracted quite a lot of research activity in the last twenty-five years. The aim of this monograph is to give a detailed exposition of the answers to these questions, providing a unified and self-contained treatment. It presents a great number of results, methods and techniques, which are useful for any researcher in Banach spaces and, in general, in Functional Analysis. This book is written at a graduate student level, assuming the basics in Banach space theory.

Banach Space Theory Nov 02 2022 Banach spaces provide a framework for linear and nonlinear functional analysis, operator theory, abstract analysis, probability, optimization and other branches of mathematics. This book introduces the reader to linear functional analysis and to related parts of infinite-dimensional Banach space theory. Key Features: - Develops classical theory, including weak topologies, locally convex space, Schauder bases and compact operator theory - Covers Radon-Nikodým property, finite-dimensional spaces and local theory on tensor products - Contains sections on uniform homeomorphisms and non-linear theory, Rosenthal's L1 theorem, fixed points, and more - Includes information about further topics and directions of research and some open problems at the end of each chapter - Provides numerous exercises for practice The text is suitable for graduate courses or for independent study. Prerequisites include basic courses in calculus and linear. Researchers in functional analysis will also benefit for this book as it can serve as a reference book.

Banach Spaces of Analytic Functions Apr 14 2021 This rigorous investigation of Hardy spaces and the invariant subspace problem is suitable for advanced undergraduates and graduates, covering complex functions, harmonic analysis, and functional analysis. 1962 edition.

Series in Banach Spaces Dec 31 2019 Series of scalars, vectors, or functions are among the fundamental objects of mathematical analysis. When the arrangement of the terms is fixed, investigating a series amounts to investigating the sequence of its partial sums. In this case the theory of series is a part of the theory of sequences, which deals with their convergence, asymptotic behavior, etc. The specific character of the theory of series manifests itself when one considers rearrangements (permutations) of the terms of a series, which brings combinatorial

considerations into the problems studied. The phenomenon that a numerical series can change its sum when the order of its terms is changed is one of the most impressive facts encountered in a university analysis course. The present book is devoted precisely to this aspect of the theory of series whose terms are elements of Banach (as well as other topological linear) spaces. The exposition focuses on two complementary problems. The first is to char acterize those series in a given space that remain convergent (and have the same sum) for any rearrangement of their terms; such series are usually called uncon ditionally convergent. The second problem is, when a series converges only for certain rearrangements of its terms (in other words, converges conditionally), to describe its sum range, i.e., the set of sums of all its convergent rearrangements.

Three-space Problems in Banach Space Theory May 28 2022 This book on Banach space theory focuses on what have been called three-space problems. It contains a fairly complete description of ideas, methods, results and counterexamples. It can be considered self-contained, beyond a course in functional analysis and some familiarity with modern Banach space methods. It will be of interest to researchers for its methods and open problems, and to students for the exposition of techniques and examples.

An Introduction to Banach Space Theory Oct 01 2022 Preparing students for further study of both the classical works and current research, this is an accessible text for students who have had a course in real and complex analysis and understand the basic properties of L p spaces. It is sprinkled liberally with examples, historical notes, citations, and original sources, and over 450 exercises provide practice in the use of the results developed in the text through supplementary examples and counterexamples.

U-Statistics in Banach Spaces Nov 29 2019
Handbook of the Geometry of Banach Spaces Dec 23 2021
Handbook of the Geometry of Banach Spaces
Minimal Projections in Banach Spaces Mar 14 2021