

## Isometries On Banach Spaces Function Spaces Monographs And Surveys In Pure And Applied Mathematics

Some of the most recent and significant results on homomorphisms and derivations in Banach algebras, quasi-Banach algebras,  $C^*$ -algebras,  $C^*$ -ternary algebras, non-Archimedean Banach algebras and multi-normed algebras are presented in this book. A brief introduction for functional equations and their stability is provided with historical remarks. Since the homomorphisms and derivations in Banach algebras are additive and  $\mathbb{R}$ -linear or  $\mathbb{C}$ -linear, the stability problems for additive functional equations and additive mappings are studied in detail. The latest results are discussed and examined in stability theory for new functional equations and functional inequalities in Banach algebras and  $C^*$ -algebras, non-Archimedean Banach algebras, non-Archimedean  $C^*$ -algebras, multi-Banach algebras and multi- $C^*$ -algebras. Graduate students with an understanding of operator theory, functional analysis, functional equations and analytic inequalities will find this book useful for furthering their understanding and discovering the latest results in mathematical analysis. Moreover, research mathematicians, physicists and engineers will benefit from the variety of old and new results, as well as theories and methods presented in this book.

The contributions in this volume have been written by eminent scientists from the international mathematical community and present significant advances in several theories, methods and problems of Mathematical Analysis, Discrete Mathematics, Geometry and their Applications. The chapters focus on both old and recent developments in Functional Analysis, Harmonic Analysis, Complex Analysis, Operator Theory, Combinatorics, Functional Equations, Differential Equations as well as a variety of Applications. The book also contains some review works, which could prove particularly useful for a broader audience of readers in Mathematical Sciences, and especially to graduate students looking for the latest information.

John von Neumann and Marshall Stone were two giants of Twentieth Century mathematics. In honor of the 100th anniversary of their births, a mathematical celebration was organized featuring developments in fields where both men were major influences. This volume contains articles from the AMS Special Session, Operator Algebras, Quantization and Noncommutative Geometry: A Centennial Celebration in Honor of John von Neumann and Marshall H. Stone. Papers range from expository and historical surveys to original research articles. All articles were carefully refereed and cover a broad range of mathematical topics reflecting the fundamental ideas of von Neumann and Stone. Most contributions are expanded versions of the talks and were written exclusively for this volume. Included, among others, are articles by George W. Mackey, Nigel Higson, and Marc Rieffel. Also featured is a reprint of P.R. Halmos' "The Legend of John von Neumann". The book is suitable for graduate students and researchers interested in operator algebras and applications, including noncommutative geometry.

This volume contains the proceedings of the International Workshop on Banach Space Theory, held at the Universidad de Los Andes in Merida, Venezuela in January 1992. These refereed papers contain the newest results in Banach space theory, real or

complex function spaces, and nonlinear functional analysis. There are several excellent survey papers, including ones on homogeneous Banach spaces and applications of probability inequalities, in addition to an important research paper on the distortion problem. This volume is notable for the breadth of the mathematics presented.

This book presents current research on Ulam stability for functional equations and inequalities. Contributions from renowned scientists emphasize fundamental and new results, methods and techniques. Detailed examples are given to theories to further understanding at the graduate level for students in mathematics, physics, and engineering. Key topics covered in this book include: Quasi means Approximate isometries Functional equations in hypergroups Stability of functional equations Fischer-Muszély equation Haar meager sets and Haar null sets Dynamical systems Functional equations in probability theory Stochastic convex ordering Dhombres functional equation Nonstandard analysis and Ulam stability This book is dedicated in memory of Stanisław Marcin Ulam, who posed the fundamental problem concerning approximate homomorphisms of groups in 1940; which has provided the stimulus for studies in the stability of functional equations and inequalities.

The interest of these authors lies in explicit, canonical-form characterizations of isometries on Banach spaces, and in this monograph, they explore the topic in the context of classical function spaces. Designed for both experts and beginners in the field, their treatment presents a history of the subject, the important results, and a look at some of the wide variety of methods used in addressing the characterization problem in various types of spaces. The authors faithfully report the results of other researchers' original papers and offer some enlightening clarifications. Each chapter is self-contained and includes notes and remarks that touch upon related results and other approaches not addressed in the main text. Focuses on isometries on function spaces Presents the material according to the different classes of Banach spaces Offers self-contained chapters that allow readers to go immediately to any particular point of interest Includes an extensive bibliography

This volume contains the proceedings of the Seventh Conference on Function Spaces, which was held from May 20-24, 2014 at Southern Illinois University at Edwardsville. The papers cover a broad range of topics, including spaces and algebras of analytic functions of one and of many variables (and operators on such spaces), spaces of integrable functions, spaces of Banach-valued functions, isometries of function spaces, geometry of Banach spaces, and other related subjects.

This book gathers together selected contributions presented at the 3rd Moroccan Andalusian Meeting on Algebras and their Applications, held in Chefchaouen, Morocco, April 12-14, 2018, and which reflects the mathematical collaboration between south European and north African countries, mainly France, Spain, Morocco, Tunisia and Senegal. The book is divided in three parts and features contributions from the following fields: algebraic and analytic methods in associative and non-associative structures; homological and categorical methods in algebra; and history of mathematics. Covering topics such as rings and algebras, representation theory, number theory, operator algebras, category theory, group theory and information theory, it opens up new avenues of study for graduate students and young researchers. The findings presented also appeal to anyone interested in the fields of algebra and mathematical analysis.

This volume contains the proceedings of the Workshop on Problems and Recent Methods in Operator Theory, held at the University of Memphis, Memphis, TN, from October 15–16, 2015 and the AMS Special Session on Advances in Operator Theory and Applications, in Memory of James Jamison, held at the University of Memphis, Memphis, TN, from October 17–18, 2015. Operator theory is at the root of several branches of mathematics and offers a broad range of challenging and interesting research problems. It also provides powerful tools for the development of other areas of science including quantum theory, physics and mechanics. Isometries have applications in solid-state physics. Hermitian operators play an integral role in quantum mechanics very much due to their “nice” spectral properties. These powerful connections demonstrate the impact of operator theory in various branches of science. The articles in this volume address recent problems and research advances in operator theory. Highlighted topics include spectral, structural and geometric properties of special types of operators on Banach spaces, with emphasis on isometries, weighted composition operators, multi-circular projections on function spaces, as well as vector valued function spaces and spaces of analytic functions. This volume gives a succinct overview of state-of-the-art techniques from operator theory as well as applications to classical problems and long-standing open questions.

This volume is focused on Banach spaces of functions analytic in the open unit disc, such as the classical Hardy and Bergman spaces, and weighted versions of these spaces. Other spaces under consideration here include the Bloch space, the families of Cauchy transforms and fractional Cauchy transforms, BMO, VMO, and the Fock space. Some of the work deals with questions about functions in several complex variables. Multiplication operators, composition operators and weighted composition operators form a central topic of the volume. This topic has been an extensive area of research for the past twenty years. This volume includes results characterizing bounded, compact and isometric composition operators in various settings. Graduate students who are interested in analysis will find an overview of current work in the field. Specialists will find interesting questions and new methods, as well as familiar ideas (such as composition operators) seen in new settings or in more general form. Mathematicians with an interest in modern analysis will gain insight into the interplay between function theory and operator theory which is central to this work.

This book is based on the conference on Function Spaces held at Southern Illinois University at Edwardsville, in April, 1990. It is designed to cover a wide range of topics, including spaces of analytic functions, isometries of function spaces, geometry of Banach spaces, and Banach algebras.

This volume presents papers from the Fourth Conference on Function Spaces. The conference brought together mathematicians interested in various problems within the general area of function spaces, allowing for discussion and exchange of ideas on those problems and related questions. The lectures covered a broad range of topics, including spaces and algebras of analytic functions of one and of many variables (and operators on such spaces),  $L^p$ -spaces, spaces of Banach-valued functions, isometries of function spaces, geometry of Banach spaces, and related subjects. Included are 26 articles written by leading experts. Known results, open problems, and new discoveries are featured. Most papers are written for nonexperts, so the book can serve as a

good introduction to the material presented.

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.

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.

Nobel prize winner Ilya Prigogine writes in his preface: "Irreversibility is a challenge to mathematics...[which] leads to generalized functions and to an extension of spectral analysis beyond the conventional Hilbert space theory." Meeting this challenge required new mathematical formulations—obstacles met and largely overcome thanks primarily to the contributors to this volume." This compilation of works grew out of material presented at the "Hyperfunctions, Operator Theory and Dynamical Systems" symposium at the International Solvay Institutes for Physics and Chemistry in 1997. The result is a coherently organized collective work that moves from general, widely applicable mathematical methods to ever more specialized physical applications. Presented in two sections, part one describes Generalized Functions and Operator Theory, part two addresses Operator Theory and Dynamical Systems. The interplay between mathematics and physics is now more necessary than ever—and more difficult than ever, given the increasing complexity of theories and methods.

With contributions by numerous experts

The study of composition operators lies at the interface of analytic function theory and operator theory. Composition Operators on Spaces of Analytic Functions synthesizes the achievements of the past 25 years and brings into focus the broad outlines of the developing theory. It provides a comprehensive introduction to the linear operators of composition with a fixed function acting on a space of analytic functions. This new book both highlights the unifying ideas behind the major theorems and contrasts the differences between results for related spaces. Nine chapters introduce the main analytic techniques needed, Carleson measure and other integral estimates, linear fractional models, and kernel function techniques, and demonstrate their application to problems of boundedness, compactness, spectra, normality, and so on, of composition operators. Intended as a graduate-level

textbook, the prerequisites are minimal. Numerous exercises illustrate and extend the theory. For students and non-students alike, the exercises are an integral part of the book. By including the theory for both one and several variables, historical notes, and a comprehensive bibliography, the book leaves the reader well grounded for future research on composition operators and related areas in operator or function theory.

A continuation of the authors' previous book, *Isometries on Banach Spaces: Vector-valued Function Spaces and Operator Spaces, Volume Two* covers much of the work that has been done on characterizing isometries on various Banach spaces. Picking up where the first volume left off, the book begins with a chapter on the Banach–Stone property. The authors consider the case where the isometry is from  $C_0(Q, X)$  to  $C_0(K, Y)$  so that the property involves pairs  $(X, Y)$  of spaces. The next chapter examines spaces  $X$  for which the isometries on  $LP(?, X)$  can be described as a generalization of the form given by Lamperti in the scalar case. The book then studies isometries on direct sums of Banach and Hilbert spaces, isometries on spaces of matrices with a variety of norms, and isometries on Schatten classes. It subsequently highlights spaces on which the group of isometries is maximal or minimal. The final chapter addresses more peripheral topics, such as adjoint abelian operators and spectral isometries. Essentially self-contained, this reference explores a fundamental aspect of Banach space theory. Suitable for both experts and newcomers to the field, it offers many references to provide solid coverage of the literature on isometries.

The first systematic account of the basic theory of normed algebras, without assuming associativity. Sure to become a central resource. This book establishes the foundations of the theory of bounded and unbounded weighted composition operators in  $L_2$ -spaces. It develops the theory in full generality, meaning that the corresponding composition operators are not assumed to be well defined. A variety of seminormality properties of unbounded weighted composition operators are characterized. The first-ever criteria for subnormality of unbounded weighted composition operators are provided and the subtle interplay between the classical moment problem, graph theory and the injectivity problem for weighted composition operators is revealed. The relationships between weighted composition operators and the corresponding multiplication and composition operators are investigated. The optimality of the obtained results is illustrated by a variety of examples, including those of discrete and continuous types. The book is primarily aimed at researchers in single or multivariable operator theory. Presenting the proceedings from the Second Conference on Function Spaces, this work details known results and fresh discoveries on a wide range of topics concerning function spaces. It covers advances in areas such as spaces and algebras of analytic functions,  $L_p$ -spaces, spaces of Banach-valued functions, isometries of function spaces, geometry of Banach spaces, and Banach algebras.

This is the third supplementary volume to Kluwer's highly acclaimed twelve-volume *Encyclopaedia of Mathematics*. This additional volume contains nearly 500 new entries written by experts and covers developments and topics not included in the previous volumes. These entries are arranged alphabetically throughout and a detailed index is included. This supplementary volume enhances the existing twelve volumes, and together, these thirteen volumes represent the most authoritative, comprehensive and up-to-date *Encyclopaedia of Mathematics* available.

This book presents a systematic and unified study of geometric nonlinear functional analysis. This is a very active research area and has connections to geometric measure theory, probability, classical analysis, combinatorics, and Banach space theory. Students and instructors

alike benefit from examples and complete proofs.

This book is based on lectures given at "Mekhmat", the Department of Mechanics and Mathematics at Moscow State University, one of the top mathematical departments worldwide, with a rich tradition of teaching functional analysis. Featuring an advanced course on real and functional analysis, the book presents not only core material traditionally included in university courses of different levels, but also a survey of the most important results of a more subtle nature, which cannot be considered basic but which are useful for applications. Further, it includes several hundred exercises of varying difficulty with tips and references. The book is intended for graduate and PhD students studying real and functional analysis as well as mathematicians and physicists whose research is related to functional analysis.

This proceedings volume presents 36 papers given by leading experts during the Third Conference on Function Spaces held at Southern Illinois University at Edwardsville. A wide range of topics in the subject area are covered. Most papers are written for nonexperts, so the book can serve as a good introduction to the topic for those interested in this area. The book presents the following broad range of topics, including spaces and algebras of analytic functions of one and of many variables,  $L^p$  spaces, spaces of Banach-valued functions, isometries of function spaces, geometry of Banach spaces and related subjects. Known results, open problems, and new discoveries are featured. At the time of publication, information about the book, the conference, and a list and pictures of contributors are available on the Web.

This book reflects the proceedings of the 1996 Rocky Mountain Mathematics Consortium conference on "Composition Operators on Spaces of Analytic Functions" held at the University of Wyoming. The readers will find here a collection of high-quality research and expository articles on composition operators in one and several variables. The book highlights open questions and new advances in the classical areas and promotes topics which are left largely untreated in the existing texts. In the past two decades, the study of composition operators has experienced tremendous growth. Many connections between the study of these operators on various function spaces and other branches of analysis have been established. Advances in establishing criteria for membership in different operator classes have led to progress in the study of the spectra, adjoints, and iterates of these operators. More recently, connections between these operators and the study of the invariant subspace problem, functional equations, and dynamical systems have been exploited.

Embeddings of discrete metric spaces into Banach spaces recently became an important tool in computer science and topology. The purpose of the book is to present some of the most important techniques and results, mostly on bilipschitz and coarse embeddings. The topics include: (1) Embeddability of locally finite metric spaces into Banach spaces is finitely determined; (2) Constructions of embeddings; (3) Distortion in terms of Poincaré inequalities; (4) Constructions of families of expanders and of families of graphs with unbounded girth and lower bounds on average degrees; (5) Banach spaces which do not admit coarse embeddings of expanders; (6) Structure of metric spaces which are not coarsely embeddable into a Hilbert space; (7) Applications of Markov chains to embeddability problems; (8) Metric

## Read Online Isometries On Banach Spaces Function Spaces Monographs And Surveys In Pure And Applied Mathematics

characterizations of properties of Banach spaces; (9) Lipschitz free spaces. Substantial part of the book is devoted to a detailed presentation of relevant results of Banach space theory and graph theory. The final chapter contains a list of open problems. Extensive bibliography is also included. Each chapter, except the open problems chapter, contains exercises and a notes and remarks section containing references, discussion of related results, and suggestions for further reading. The book will help readers to enter and to work in a very rapidly developing area having many important connections with different parts of mathematics and computer science.

[Copyright: 3d4a62468caac48363105c097955d876](#)