

Vector Measures Mathematical Surveys And Monograph

This IMA Volume in Mathematics and its Applications FRACTALS IN MULTIMEDIA is a result of a very successful three-day minisymposium on the same title. The event was an integral part of the IMA annual program on Mathemat ics in Multimedia, 2000-2001. We would like to thank Michael F. Barnsley (Department of Mathematics and Statistics, University of Melbourne), Di etmar Saupe (Institut fUr Informatik, UniversiUit Leipzig), and Edward R. Vrscay (Department of Applied Mathematics, University of Waterloo) for their excellent work as organizers of the meeting and for editing the proceedings. We take this opportunity to thank the National Science Foundation for their support of the IMA. Series Editors Douglas N. Arnold, Director of the IMA Fadil Santosa, Deputy Director of the IMA v PREFACE This volume grew out of a meeting on Fractals in Multimedia held at the IMA in January 2001. The meeting was an exciting and intense one, focused on fractal image compression, analysis, and synthesis, iterated function systems and fractals in education. The central concerns of the meeting were to establish within these areas where we are now and to develop a vision for the future.

This book addresses the mathematical aspects of modern image processing methods, with a special emphasis on the underlying ideas and concepts. It discusses a range of modern mathematical methods used to accomplish basic imaging tasks such as denoising, deblurring, enhancing, edge detection and inpainting. In addition to elementary methods like point operations, linear and morphological methods, and methods based on multiscale representations, the book also covers more recent methods based on partial differential equations and variational methods. Review of the German Edition: The overwhelming impression of the book is that of a very professional presentation of an appropriately developed and motivated textbook for a course like an introduction to fundamentals and modern theory of mathematical image processing. Additionally, it belongs to the bookcase of any office where someone is doing research/application in image processing. It has the virtues of a good and handy reference manual. (zbMATH, reviewer: Carl H. Rohwer, Stellenbosch)

This book introduces the reader the theory of nonlinear inclusions and hemivariational inequalities with emphasis on the study of contact mechanics. The work covers both abstract results in the area of nonlinear inclusions, hemivariational inequalities as well as the study of specific contact problems, including their modelling and their variational analysis. Provided results are based on original research on the existence, uniqueness, regularity and behavior of the solution for various classes of nonlinear stationary and evolutionary inclusions. In carrying out the variational analysis of various contact models, one systematically uses results of hemivariational inequalities and, in this way, illustrates the applications of nonlinear analysis in contact mechanics. New mathematical methods are introduced and applied in the study of nonlinear problems, which describe the contact between a deformable body and a foundation. Contact problems arise in industry, engineering and geophysics. Their variational analysis presented in this book lies the background for their numerical analysis. This volume will interest mathematicians, applied mathematicians, engineers, and scientists as well as advanced graduate students.

Measure Theory Oberwolfach 1979

Geometric Aspects of Banach Spaces

Proceedings, Dublin, 1977

Proceedings of the Conferences on Vector Measures and Integral Representations of Operators

In Honor of Mahouton Norbert Hounkonnou

Filling a gap in the literature, Delay Differential Evolutions Subjected to Nonlocal Initial Conditions reveals important results on ordinary differential equations (ODEs) and partial differential equations (PDEs). It presents very recent results relating to the existence, boundedness, regularity, and asymptotic behavior of global solutions for differential equations and inclusions, with or without delay, subjected to nonlocal implicit initial conditions. After preliminaries on nonlinear evolution equations governed by dissipative operators, the book gives a thorough study of the existence, uniqueness, and asymptotic behavior of global bounded solutions for differential equations with delay and local initial conditions. It then focuses on two important nonlocal cases: autonomous and quasi-autonomous. The authors next discuss sufficient conditions for the existence of almost periodic solutions, describe evolution systems with delay and nonlocal initial conditions, examine delay evolution inclusions, and extend some results to the multivalued case of reaction-diffusion systems. The book concludes with results on viability for nonlocal evolution inclusions.

This volume concentrates on some important and contemporary themes in Banach space theory.

Apart from the underlying theme that all the contributions to this volume pertain to models set in an infinite dimensional space, they differ on many counts. Some were written in the early seventies while others are reports of ongoing research done especially with this volume in mind. Some are surveys of material that can, at least at this point in time, be deemed to have attained a satisfactory solution of the problem, while oth ers represent initial forays into an original and novel formulation. Some furnish alternative proofs of known, and by now, classical results, while others can be seen as groping towards and exploring formulations that have not yet reached a definitive form. The subject matter also has a wide leeway, ranging from solution concepts for economies to those for games and also including representation of preferences and discussion of purely mathematical problems, all within the rubric of choice variables belonging to an infinite dimensional space, interpreted as a commodity space or as a strategy space. Thus, this is a collective enterprise in a fairly wide sense of the term and one with the diversity of which we have interfered as little as possible. Our motivation for bringing all of this work under one set of covers was severalfold.

Function Spaces

Vector Space Measures and Applications I

Proceedings of the Conference Held at Oberwolfach, Germany, June 21-27, 1981

Stochastic Optimal Control in Infinite Dimension

Measure Theory, Oberwolfach 1981

Providing an introduction to stochastic optimal control in infinite dimension, this book gives a complete account of the theory of second-order HJB equations in infinite-dimensional Hilbert spaces, focusing on its applicability to associated stochastic optimal control problems. It features a general introduction to optimal stochastic control, including basic results (e.g. the dynamic programming principle) with proofs, and provides examples of applications. A complete and up-to-date exposition of the existing theory of viscosity solutions and regular solutions of second-order HJB equations in Hilbert spaces is given, together with an extensive survey of other methods, with a full bibliography. In particular, Chapter 6, written by M. Fuhrman and G. Tessitore, surveys the theory of regular solutions of HJB equations arising in infinite-dimensional stochastic control, via BSDEs. The book is of interest to both pure and applied researchers working in the control theory of stochastic PDEs, and in PDEs in infinite dimension. Readers from other fields who want to learn the basic theory will also find it useful. The prerequisites are: standard functional analysis, the theory of semigroups of operators and its use in the study of PDEs, some knowledge of the dynamic programming approach to stochastic optimal control problems in finite dimension, and the basics of stochastic analysis and stochastic equations in infinite-dimensional spaces.

This volume contains recent papers by several specialists in different fields of mathematical analysis. It offers a reasonably wide perspective of the current state of research, and new trends, in areas related to measure theory, harmonic analysis, non-associative structures in functional analysis and summability in locally convex spaces. Those interested in researching any areas of mathematical analysis will find here numerous suggestions on possible topics with an important impact today. Often, the contributions are presented in an expository nature and this makes the discussed topics accessible to a more general audience. Contents:Measurability and Semi-Continuity of Multifunctions (B Cascales)Introduction to Interpolation Theory (F Cobos)Optimality of Function Spaces in Sobolev Embeddings (L Pick)Derivations and Projections on Jordan Triples: An introduction to Nonassociative Algebra, Continuous Cohomology, and Quantum Functional Analysis (B Russo)Weighted Inequalities and Extrapolation (J Duoandikoetxea)A Note on the Of-f-Diagonal Muckenhoupt–Wheeden Conjecture (D Cruz-Uribe, J M Martell and C Pérez)On the Interplay Between Nonlinear Partial Differential Equations and Game Theory (J D Rossi)The Radon–Nikodým Theorem for Vector Measures and Integral Representation of Operators on Banach Function Spaces (E A Sánchez Pérez)The Orlicz–Pettis Theorem for Multiplier Convergent Series (C Swartz) Readership: Graduate students in mathematics and researchers in mathematical analysis.

This book presents nine survey articles addressing topics surrounding positivity, with an emphasis on functional analysis. The book assembles a wide spectrum of research into positivity, providing up-to-date information on topics of current interest. The discussion provides insight into classical areas like spaces of continuous functions, f-algebras, and integral operators. The coverage extends is broad, including vector measures, operator spaces, ordered tensor products, and non-commutative Banach function spaces.

Functional Analysis: Surveys and Recent Results III

Proceedings of the Sixth Conference : Wroclaw, Poland : 3-8 September 2001

Proceedings of the Second International Conference on Probability in Banach Spaces, 18-24 June 1978, Oberwolfach, Germany

Proceedings of the Conference Held at Oberwolfach, Germany, July 1-7, 1979

Proceedings of the Fifth International School

The papers included in this volume deal with the following topics: convex analysis, operator theory, interpolation theory, theory of real functions, theory of analytic functions, bifurcation theory, Fourier analysis, functional analysis, measure theory, geometry of Banach spaces, history of mathematics. Contents: Biographical and Historical Articles:Tingfu Wang — His Life and Contribution to Mathematics (H Hudzik et al.)Roman Taberski, His Life and Work (J Musielak & P Pych-Taberska)Research Articles:Images of Operators in Rearrangement Invariant Spaces and Interpolation (S V Astashkin)Taylor Spaces — Approximation Space Theory Approach (Y Brudnyj)On Extension Property of Cantor-Type Sets (A Goncharov)On Absolutely Summing Operators from C(K) with Values in Banach Lattices (C Michels)A Characterization of Hilbert Spaces (B Randrianantoanina)The Positivity Property of Function Spaces (H Triebel)and other papers Readership: Theoretical physicists and mathematicians. Keywords:Convex Analysis;Operator Theory;Fourier Analysis;Bifurcation Theory

This book presents developments in the spectral theory of convolution operators of matrix functions. It studies the contractivity properties of matrix convolution semigroups and details applications to harmonic functions.

This volume compiles research results from the fifth Function Spaces International Conference, held in Poznan, Poland. It presents key advances, modern applications and analyses of function spaces and contains two special sections recognizing the contributions and influence of Wladyslaw Orlicz and Genadi Lozanowskii.

Operator-Valued Measures and Integrals for Cone-Valued Functions

Equilibrium Theory in Infinite Dimensional Spaces

Random and Vector Measures

Essays in Honour of Antonio Plans

Mathematical Image Processing

This Proceedings contains a collection of articles by front-line researchers in Mathematical Analysis, giving the reader a wide perspective of the current research in several areas like Functional Analysis, Complex Analysis and Measure Theory. The works are a fundamental source for current and future developments in these research fields. The articles and surveys have been collected as well as reference results scattered in the corresponding literature and thus, are highly useful to researchers.

In this survey the authors endeavor to give a comprehensive examination of the theory of measures having values in Banach spaces. The interplay between topological and geometric properties of Banach spaces and the properties of measures having values in Banach spaces is the unifying theme. The first chapter deals with countably additive vector measures finitely additive vector measures, the Orlicz-Pettis theorem and its relatives. Chapter II concentrates on measurable vector valued functions and the Bochner integral. Chapter III begins the study of the interplay among the Radon-Nikodym theorem for vector measures, operators on \$L_1\$ and topological properties of Banach spaces. A variety of applications is given in the next chapter. Chapter V deals with martingales of Bochner integrable functions and their relation to dentable subsets of Banach spaces. Chapter VI is devoted to a measure-theoretic study of weakly compact absolutely summing and nuclear operators on spaces of continuous functions. In Chapter VII a detailed study of the geometry of Banach spaces with the Radon-Nikodym property is given. The next chapter deals with the use of Radon-Nikodym theorems in the study of tensor products of Banach spaces. The last chapter concludes the survey with a discussion of the Liapounoff convexity theorem and other geometric properties of the range of a vector measure. Accompanying each chapter is an extensive survey of the literature and open problems.

This volume contains a selection of articles on the theme "vector measures, integration and applications" together with some related topics. The articles consist of both survey style and original research papers, are written by experts in thearea and present a succinct account of recent and up-to-date knowledge. The topic is interdisciplinary by nature and involves areas such as measure and integration (scalar, vector and operator-valued), classical and harmonic analysis, operator theory, non-commutative integration, andfunctional analysis. The material is of interest to experts, young researchers and postgraduate students.

Pettis Integral and Measure Theory

Matrix Convolution Operators on Groups

Models and Analysis of Contact Problems

Mathematical Structures and Applications

Delay Differential Evolutions Subjected to Nonlocal Initial Conditions

Examines the theory of measures having values in Banach spaces. This book deals with countably additive vector measures finitely additive vector measures, the Orlicz-Pettis theorem and its relatives. It also concentrates on measurable vector valued functions and the Bochner integral.

A unified treatment of the theory of 'stopping times' for probability theorists and statisticians.

This book reflects the progress made in the forty years since the appearance of Abraham Robinson's revolutionary book Nonstandard Analysis in the foundations of mathematics and logic, number theory, statistics and probability, in ordinary, partial and stochastic differential equations and in education. The contributions are clear and essentially self-contained.

Probability in Banach Spaces II

Nonlinear Inclusions and Hemivariational Inequalities

Vector Measures

Young Measures and Compactness in Measure Spaces

Stopping Times and Directed Processes

Many problems in science can be formulated in the language of optimization theory, in which case an optimal solution or the best response to a particular situation is required. In situations of interest, such classical optimal solutions are lacking, or at least, the existence of such solutions is far from easy to prove. So, non-convex optimization problems may not possess a classical solution because approximate solutions typically show rapid oscillations. This phenomenon requires the extension of such problems' solution often constructed by means of Young measures. This book is written to introduce the topic to postgraduate students and may also serve as a reference for more experienced researchers.

Includes also Minutes of [the] Proceedings, and Report of [the] President and Council for the year (beginning 1965/66 called Annual report).

Integration theory deals with extended real-valued, vector-valued, or operator-valued measures and functions, but different approaches are used for each case. This book develops a general theory of integration that simultaneously deals with all three cases.

Advanced Courses of Mathematical Analysis V

Vector Measures, Integration and Related Topics

Proceedings of the Fourth International School - In Memory of Professor Antonio Aizpuru Tomas

Russian Mathematical Surveys

Mathematics Without Boundaries

This volume contains 22 articles on topics of current interest in functional analysis, operator theory and related areas. Some of the papers have connections with complex function theory in one and several variables, probability theory and mathematical physics. Surveys of some areas of recent progress in functional analysis are given and related new results are presented. The topics covered in this volume supplement the discussion of modern functional analysis in the previous Proceedings volumes. Together with the previous volumes, the reader obtains a good impression of many aspects of present-day functional analysis and its applications. Parts of this volume can be used profitably in advanced seminars and courses in functional analysis.

This contributed volume features invited papers on current research and applications in mathematical structures. Featuring various disciplines in the mathematical sciences and physics, articles in this volume discuss fundamental scientific and mathematical concepts as well as their applications to topical problems. Special emphasis is placed on important methods, research directions and applications of analysis within and beyond each field. Covered topics include Metric operators and generalized hermiticity, Semi-frames, Hilbert-Schmidt operator, Symplectic affine action, Fractional Brownian motion, Walker Osserman metric, Nonlinear Maxwell equations, The Yukawa model, Heisenberg observables, Nonholonomic systems, neural networks, Seiberg-Witten invariants, photon-added coherent state, electrostatic double layers, and star products and functions. All contributions are from the participants of the conference held October 2016 in Cotonou, Benin in honor of Professor Mahouton Norbert Hounkonnou for his outstanding contributions to the mathematical and physical sciences and education. Accessible to graduate students and postdoctoral researchers, this volume is a useful resource to applied scientists, applied and pure mathematicians, and mathematical and theoretical physicists.

Deals with the structural analysis of vector and random (or both) valued countably additive measures, and used for integral representations of random fields. This book analyzes several stationary aspects and related processes.

Fractals in Multimedia

Surveys in Pure Mathematics

Functional Analytic Methods for Evolution Equations

Positivity

Dynamic Programming and HJB Equations

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.

This book consists of five introductory contributions by leading mathematicians on the functional analytic treatment of evolutions equations. In particular the contributions deal with Markov semigroups, maximal L^p -regularity, optimal control problems for boundary and point control systems, parabolic moving boundary problems and parabolic nonautonomous evolution equations. The book is addressed to PhD students, young researchers and mathematicians doing research in one of the above topics.

Intended as a self-contained introduction to measure theory, this textbook also includes a comprehensive treatment of integration on locally compact Hausdorff spaces, the analytic and Borel subsets of Polish spaces, and Haar measures on locally compact groups. Measure Theory provides a solid background for study in both harmonic analysis and probability theory and is an excellent resource for advanced undergraduate and graduate students in mathematics. The prerequisites for this book are courses in topology and analysis.

Advanced Courses of Mathematical Analysis IV

Essen, July 6-10, 1982 and on Functional Analysis-Banach Space Geometry, Essen, November 25-26, 1982

Canadian Journal of Mathematics

Proceedings of the Royal Irish Academy

The Strength of Nonstandard Analysis

The papers included in this volume deal with the following topics: convex analysis, operator theory, interpolation theory, theory of real functions, theory of analytic functions, bifurcation theory, Fourier analysis, functional analysis, measure theory, geometry of Banach spaces, history of mathematics.

Measure Theory

The Fifth Conference

Canadian Mathematical Bulletin

Duality in Measure Theory