

Some Fixed Point Theorems In Fuzzy N Normed Spaces

Fixed Point Theory and Applications
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Fixed Point Theorems with Applications to Economics and Game Theory
Fixed Point Theory
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Fixed Point Theory and Variational Principles in Metric Spaces
Fixed Point Theory and Its Applications to Real World Problems
Multiple Fixed-Point Theorems and Applications in the Theory of ODEs, FDEs and PDEs
Fixed Point Theory in Metric Spaces
Fixed Point Theory And Applications - Proceedings Of The Second International Conference
Topics in Metric Fixed Point Theory
Metric Structures and Fixed Point Theory
Fixed Point Theorems and Special Solutions of Functional Equations
Fixed Point Theorems and Their Applications
Metrical Fixed Point Theorems
Fixed Point Theorems with Applications
Fixed Point Theory and Applications
Fixed Point Theory and Graph Theory
An In-Depth Guide to Fixed-Point Theorems
Ravi P. Agarwal D. R. Smart
Vittorino Pata Kim C. Border Andrzej Granas V.I. Istratescu Qamrul Hasan Ansari Anita Tomar Svetlin Georgiev Praveen Agarwal Kok Keong Tan Kazimierz Goebel
Dhananjay Gopal Stefan Czerwik Ioannis Farmakis Ioan A. Rus Karima Mebarki Yeol Je Cho Monther Alfuraidan Rajinder Sharma
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this book provides a clear exposition of the flourishing field of fixed point theory starting from the basics of banach s contraction theorem most of the main results

and techniques are developed fixed point results are established for several classes of maps and the three main approaches to establishing continuation principles are presented the theory is applied to many areas of interest in analysis topological considerations play a crucial role including a final chapter on the relationship with degree theory researchers and graduate students in applicable analysis will find this to be a useful survey of the fundamental principles of the subject the very extensive bibliography and close to 100 exercises mean that it can be used both as a text and as a comprehensive reference work currently the only one of its type

this book addresses fixed point theory a fascinating and far reaching field with applications in several areas of mathematics the content is divided into two main parts the first which is more theoretical develops the main abstract theorems on the existence and uniqueness of fixed points of maps in turn the second part focuses on applications covering a large variety of significant results ranging from ordinary differential equations in banach spaces to partial differential equations operator theory functional analysis measure theory and game theory a final section containing 50 problems many of which include helpful hints rounds out the coverage intended for master s and phd students in mathematics or more generally mathematically oriented subjects the book is designed to be largely self contained although some mathematical background is needed readers should be familiar with measure theory banach and hilbert spaces locally convex topological vector spaces and in general with linear functional analysis

this book explores fixed point theorems and its uses in economics co operative and noncooperative games

the theory of fixed points is one of the most powerful tools of modern mathematics this book contains a clear detailed and well organized presentation of the major results together with an entertaining set of historical notes and an extensive bibliography describing further developments and applications from the reviews i recommend this excellent volume on fixed point theory to anyone interested in this core subject of nonlinear analysis mathematical reviews

approach your problems from the right it isn t that they can t see the solution it end and begin with the answers then is that they can t see the problem one day perhaps you will find the final g k chesterton the scandal of father question brown the point of a pin the hermit clad in crane feathers in r van gulik s the chinese maze murders growing specialization and diversification have brought a host of mono graphs and textbooks on increasingly specialized topics however the tree of knowledge of mathematics and related fields does not grow only by putting forth new branches it also happens quite often in fact that branches which were thought to be completely disparate are suddenly seen to be related further the kind and level of sophistication of mathematics applied in various sciences has changed drastically in recent years measure theory is used non trivially in regional and theoretical economics algebraic geometry interacts with physics the

minkowsky lemma coding theory and the structure of water meet one another in packing and covering theory quantum fields crystal defects and mathematical programming profit from homotopy theory lie algebras are relevant to filtering and prediction and electrical engineering can use stein spaces

the book is designed for undergraduates graduates and researchers of mathematics studying fixed point theory or nonlinear analysis it deals with the fixed point theory for not only single valued maps but also set valued maps the text is divided into three parts fixed point theory for single valued mappings continuity and fixed point aspects of set valued analysis and variational principles and their equilibrium problems it comprises a comprehensive study of these topics and includes all important results derived from them the applications of fixed point principles and variational principles and their generalizations to differential equations and optimization are covered in the text an elementary treatment of the theory of equilibrium problems and equilibrium version of ekeland s variational principle is also provided new topics such as equilibrium problems variational principles caristi s fixed point theorem and takahashi s minimization theorem with their applications are also included

fixed point theory initially emerged in the article demonstrating existence of solutions of differential equations which appeared in the second quarter of the 18th century joseph liouville 1837 later on this technique was improved as a method of successive approximations charles emile picard 1890 which was extracted and abstracted as a fixed point theorem in the framework of complete normed space stefan banach 1922 it ensures presence as well as uniqueness of a fixed point gives an approximate technique to really locate the fixed point and the a priori and a posteriori estimates for the rate of convergence it is an essential device in the theory of metric spaces subsequently it is stated that fixed point theory is initiated by stefan banach fixed point theorems give adequate conditions under which there exists a fixed point for a given function and enable us to ensure the existence of a solution of the original problem in an extensive variety of scientific issues beginning from different branches of mathematics the existence of a solution is comparable to the existence of a fixed point for a suitable mapping the book fixed point theory its applications to real world problems is an endeavour to present results in fixed point theory which are extensions improvements and generalizations of classical and recent results in this area and touches on distinct research directions within the metric fixed point theory it provides new openings for further exploration and makes for an easily accessible source of knowledge this book is apposite for young researchers who want to pursue their research in fixed point theory and is the latest in the field giving new techniques for the existence of a superior fixed point a fixed point a near fixed point a fixed circle a near fixed interval circle a fixed disc a near fixed interval disc a coincidence point a common fixed point a coupled common fixed point amiable fixed sets strong coupled fixed points and so on utilizing minimal conditions it offers novel applications besides traditional applications which are applicable to real world problems the book is self

contained and unified which will serve as a reference book to researchers who are in search of novel ideas it will be a valued addition to the library

multiple fixed point theorems and applications in the theory of odes fdes and pdes covers all the basics of the subject of fixed point theory and its applications with a strong focus on examples proofs and practical problems thus making it ideal as course material but also as a reference for self study many problems in science lead to nonlinear equations $Tx = f(x)$ posed in some closed convex subset of a banach space in particular ordinary fractional partial differential equations and integral equations can be formulated like these abstract equations it is desirable to develop fixed point theorems for such equations in this book the authors investigate the existence of multiple fixed points for some operators that are of the form Tf where T is an expansive operator and f is a k set contraction this book offers the reader an overview of recent developments of multiple fixed point theorems and their applications about the authors svetlin g georgiev is a mathematician who has worked in various areas of mathematics he currently focuses on harmonic analysis functional analysis partial differential equations ordinary differential equations clifford and quaternion analysis integral equations and dynamic calculus on time scales khaled zennir is assistant professor at qassim university ksa he received his phd in mathematics in 2013 from sidi bel abbès university algeria he obtained his habilitation in mathematics from constantine university algeria in 2015 his research interests lie in nonlinear hyperbolic partial differential equations global existence blow up and long time behavior

this book provides a detailed study of recent results in metric fixed point theory and presents several applications in nonlinear analysis including matrix equations integral equations and polynomial approximations each chapter is accompanied by basic definitions mathematical preliminaries and proof of the main results divided into ten chapters it discusses topics such as the banach contraction principle and its converse ran reurings fixed point theorem with applications the existence of fixed points for the class of α ψ contractive mappings with applications to quadratic integral equations recent results on fixed point theory for cyclic mappings with applications to the study of functional equations the generalization of the banach fixed point theorem on branciari metric spaces the existence of fixed points for a certain class of mappings satisfying an implicit contraction fixed point results for a class of mappings satisfying a certain contraction involving extended simulation functions the solvability of a coupled fixed point problem under a finite number of equality constraints the concept of generalized metric spaces for which the authors extend some well known fixed point results and a new fixed point theorem that helps in establishing a kelisky rivlin type result for q bernstein polynomials and modified q bernstein polynomials the book is a valuable resource for a wide audience including graduate students and researchers

this volume contains current works of researchers from twelve different countries on fixed point theory and applications topics include in part nonexpansive

mappings multifunctions minimax inequalities applications to game theory and computation of fixed points it is valuable to pure and applied mathematicians as well as computing scientists and mathematical economists

metric fixed point theory has proved a flourishing area of research for many mathematicians this book aims to offer the mathematical community an accessible self contained account which can be used as an introduction to the subject and its development it will be understandable to a wide audience including non specialists and provide a source of examples references and new approaches for those currently working in the subject

it is an indisputable argument that the formulation of metrics by fréchet in the early 1900s opened a new subject in mathematics called non linear analysis after the appearance of banach s fixed point theorem because the underlying space of this theorem is a metric space the theory that developed following its publication is known as metric fixed point theory it is well known that metric fixed point theory provides essential tools for solving problems arising in various branches of mathematics and other sciences such as split feasibility problems variational inequality problems non linear optimization problems equilibrium problems selection and matching problems and problems of proving the existence of solutions of integral and differential equations are closely related to fixed point theory for this reason many people over the past seventy years have tried to generalize the definition of metric space and corresponding fixed point theory this trend still continues a few questions lying at the heart of the theory remain open and there are many unanswered questions regarding the limits to which the theory may be extended metric structures and fixed point theory provides an extensive understanding and the latest updates on the subject the book not only shows diversified aspects of popular generalizations of metric spaces such as symmetric b metric w distance g metric modular metric probabilistic metric fuzzy metric graphical metric and corresponding fixed point theory but also motivates work on existing open problems on the subject each of the nine chapters contributed by various authors contains an introduction section which summarizes the material needed to read the chapter independently of the others and contains the necessary background several examples and comprehensive literature to comprehend the concepts presented therein this is helpful for those who want to pursue their research career in metric fixed point theory and its related areas features explores the latest research and developments in fixed point theory on the most popular generalizations of metric spaces description of various generalizations of metric spaces very new topics on fixed point theory in graphical and modular metric spaces enriched with examples and open problems this book serves as a reference for scientific investigators who need to analyze a simple and direct presentation of the fundamentals of the theory of metric fixed points it may also be used as a text book for postgraduate and research students who are trying to derive future research scope in this area

this is the only book that deals comprehensively with fixed point theorems overall of mathematics their importance is due as the book demonstrates to their wide applicability beyond the first chapter each of the other seven can be read independently of the others so the reader has much flexibility to follow his her own interests the book is written for graduate students and professional mathematicians and could be of interest to physicists economists and engineers

as a very important part of nonlinear analysis fixed point theory plays a key role in solvability of many complex systems from mathematics applied to chemical reactors neutron transport population biology infectious diseases economics applied mechanics and more the main aim of fixed point theorems with applications is to explain new techniques for investigation of different classes of ordinary and partial differential equations the development of the fixed point theory parallels the advances in topology and functional analysis recent research has investigated not only the existence but also the positivity of solutions for various types of nonlinear equations this book will be of interest to those working in functional analysis and its applications combined with other nonlinear methods such as variational methods and the approximation methods the fixed point theory is powerful in dealing with many nonlinear problems from the real world the book can be used as a textbook to develop an elective course on nonlinear functional analysis with applications in undergraduate and graduate programs in mathematics or engineering programs

fixed point theory applications volume ii

fixed point theory and graph theory provides an intersection between the theories of fixed point theorems that give the conditions under which maps single or multivalued have solutions and graph theory which uses mathematical structures to illustrate the relationship between ordered pairs of objects in terms of their vertices and directed edges this edited reference work is perhaps the first to provide a link between the two theories describing not only their foundational aspects but also the most recent advances and the fascinating intersection of the domains the authors provide solution methods for fixed points in different settings with two chapters devoted to the solutions method for critically important non linear problems in engineering namely variational inequalities fixed point split feasibility and hierarchical variational inequality problems the last two chapters are devoted to integrating fixed point theory in spaces with the graph and the use of retractions in the fixed point theory for ordered sets introduces both metric fixed point and graph theory in terms of their disparate foundations and common application environments provides a unique integration of otherwise disparate domains that aids both students seeking to understand either area and researchers interested in establishing an integrated research approach emphasizes solution methods for fixed points in non linear problems such as variational inequalities split

feasibility and hierarchical variational inequality problems that is particularly appropriate for engineering and core science applications

this book details fixed point theory a gripping and wide ranging field with applications in multifold areas of pure and applied mathematics the content comprises both theoretical and practical applications the evolution of the main theorems on the existence and uniqueness of fixed points of maps are presented applications covering topological properties a nonlinear stochastic integral equation of the hammerstein type the existence and uniqueness of a common solution of the system of urysohn integral equations and the existence of a unique solution for linear equations system are included in this selection since the included chapters range from broad elucidations to functional research papers the book provides readers with a satisfying analysis of the subject as well as a more comprehensive look at some functional recent advances

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Introduction

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