CHAPTER 29

MATHEMATICAL SCIENCES
MATHEMATICS

Doctoral Theses

369.   AGGARWAL (Jeetendra)
       Function Spaces and Variants of Continuity.
       Supervisors : Dr. J K Kohli and Prof. S C Arora
       Th 18178

Abstract

It studied two new strong variants of continuity called "F-supercontinuity" and "R-supercontinuity". The notions of F-continuous function and R-continuous function are defined and their interrelations with other weak variants of continuity that already exist in the literature are investigated. Attempts have been made in mathematical literature to examine the closedness either in the topology of pointwise convergence or in the topology of uniform convergence of certain classes of function and with some mild conditions on the domain and range of functions several positive results have been obtained aslo examine the closedness of some more classes of functions either in the topology of pointwise convergence or in the topology of uniform convergence.

Contents

1. Introduction. 2. Strong forms of continuity. 3. Weak forms of continuity. 4. Modifications of continuity. 5. Functions spaces.

370.   ANITA KUMARI
       On *R*-Strong and *S*-Strong Jordan Ideals in Rings and Ternary Rings
       Supervisor : Dr. S K Bhambri
       Th 18179

Abstract

Introduces and studies strong Jordan ideals of a non-commutative ring R and strong Jordan ideals with respect to the set of symmetric

elements in a ring with involution. As an application of these notions some results involving a set corresponding to strong Jordan Ideals have been obtained also study Jordan ideals and prime ideals in ternary rings.

Contents

1. Historical background. 2. Prerequisites. 3. *R*-Strong Jordan ideals. 4. Ternary Jordan ideals in ternary rings. 5. *S*-Strong Jordan ideals.6. Prime ideals in ternary rings.

371. BHARTI
Hyperbolicity, Energy Variability and Chaos in Nonlinear Dynamical Systems.
Supervisors : Dr. L M Saha and Prof. R K Mohanty
Th 18180

Abstract

The work in the thesis is mainly concerned with hyperbolicity, energy variability and chaos. Introduced several key concepts with definitions and some applications. The strange attractors are highly related to invariant set and hyperbolicity these concepts are studied in detail. The suitable models; BVP oscillator, Ueda oscillator and double-wll duffing oscillator as application of energy variability are also introduced the use of Melnikov integral for systems to know the integrability and non-integrability of motion.

Contents

1. Introduction. 2. The concept of hyperbolicity in discrete dynamical systems. 3. Hyperbolicity and bifurcation in one and two dimensional discrete systems. 4. The concept of energy variability in nonlinear dynamical systems. 5. Energy variability and chaos in duffing oscillators.

372. DURGESH KUMAR
Fixed Point Theorems in Symmetric Spaces and Uniform Spaces.
Supervisors : Prof. S C Arora and Dr. J K Kohli
Th 18177

Abstract

Formulate a common fixed point theorem for six mappings, in symmetric spaces satisfying integral type implict relations prove

a common fixed point theorem for two pairs of weakly compatible mappings in the setting of dieudonne complete Tychonoff spaces extend the formulation of Meir-Keler type contractive condition to the framework of Tychonoff spaces and obtain two common fixed point theorems for a pair of R-weakly commuting mappings in uniform spaces.

Contents

1. Introduction. 2. Common fixed point theorems in symmetric spaces. 3. Common fixed point theorems for weakly compatible mappings defined on uniform spaces. 4. Common fixed point theorems for R-weakly commuting mappings and its variants in uniform spaces.5. Common fixed point theorems in probabilistic metric spaces.

373.   GOEL (Neeti)
       Chaos Control in Various Problems of Dynamical Systems.
       Supervisors : Prof. R K Mohanty and Dr. Ayub Khan
       Th 18175

Abstract

Makes explict deliberations and investigations to control the chaotic rotational motion of the satellites by treating them as Hamiltonian systems investigated that the amplitude remains constant upto the second order of approximation by using B.K.M method, and appearance of the resonant solutions indicates the possibilities of complex behaviour.

Contents

1. Introduction. 2. Non-resonant and resonant planner oscillation of the satellite. 3. Controlling chaos in an artificial earth satellite. 4. Control of chaos in non-linear planar oscillation of a satellite in elliptic orbit. 5. Chaos control in the problem of a satellite. 6. Chaotic motion in the problem of dumbell satellite.

374.   JAIN (Ranjana)
       Operator Space Tensor Products of C*-Algebras and their Ideal Structure.
       Supervisor : Prof. Ajay Kumar
       Th 18230

Abstract

This work unviel some algebraic as well as structural properties

of operator space projective tensor product. In addition to it, few properties related to tensor products with respect to other norms, the Haagerup norm and the Banach space projective tensor norm, are also studied. It concentrates on the analysis of the relationship between the tensor product of the biduals and the bidual of the tensor product of C*-algebras, and operator spaces, mainly with respect to the Haagerup norm and the operator space projective norm.

Contents

1. Introduction. 2. Operator space projective tensor product. 3. Embeddings of tensor products into bidual. 4. Algebraic structure of A⊗B. 5. Spectral synthesis for operator space projective tensor product. Bibliography.

375.   MADAN (Surbhi) NEE SURBHI SHARDA
Bounds for Codes Locating / Blockwise Correcting Repeated Burst Errors.
Supervisor :   Prof. B K Das
Th 18278

Abstract

Study obtained lower and upper bounds on the number of parity check digits required for the existence of codes that detect 2-repeated bursts of length b or less and 2-repeated low-density bursts of length b or less with weight ω or less occurring within a single sub-block and indentifying the sub-block containing errors. Similar bounds for codes that are able to correct such errors occurring within in single sub-block have also been obtained.

Contents

1. Introduction. 2. Repeated Burst Error Locating Linear Codes. 3. Blockwise repeated burst error correcting linear codes. 4. Repeated low-density burst error locating linear codes. 5. Blockwise repeated low-density burst error correcting linear codes. 6. Syndromes of shifts in cyclic codes. Bibliography.

376.   PRAMOD KUMAR
On Armendariz Semirings.
Supervisor : Prof. Vishnu Gupta
Th 18277

Abstract

It introduces Armendariz and quasi-Armendariz semirings and their power-serieswise (p.s.) analogue. Discuss various properties of these semirings and find the relationships among these semirings and provide diffeent examples and counterexamples related to these semirings. Further introduce the notions of weak Armendariz semirings, weak quasi-Armendariz semirings, McCoy semirings, quasi-McCoy semirings, weak McCoy semirings, weak quasi-McCoy semirings and their power-semirings (p.s.) analogue. The notions of strongly right Baer semirings, strongly right quasi-Baer semirings, strongly right p.p. semirings, strongly right quasi-p.p. semirings and their generalizations are also discussed.

Contents

1. Introduction. 2. Armendariz and quasi-armendariz semirings. 3. Weak armendariz and weak McCoy semirings. 4. Quasi-gaussian and quasi-symmetric semirings. 5. Strongly baer and strongly quasi-baer semirings. Bibliography.

377. RAJ KUMAR
On Frames in Banach Spaces and their Conjugate Spaces.
Supervisor : Dr. Shiv K Kaushik
Th 18176

Abstract

Studies Banach frames and made an attempt to enrich the theory of frames for Banach spaces with some new concepts and results. The study of retro Banach frames for conjugate Banach spaces and various concepts related to retro Banach frames have been done. Approximations and atomic decompositions in Banach spaces. T-norm and K-norm with respect to an atomic decomposition in a Banach space have been defined. Examples have been given to show the existence of T-norms and K-norms. Also, shrinking atomic decompositions has been given. Further, atomic decompositions of type P and type P^* have been defined and a characterization of atomic decompostion of type P and type P^* has been obtained.

Contents

1. Historical background. 2. Prerequisites. 3. Frames in banach spaces. 4. Frames in conjugate banach spaces. 5. Approximations and atomic decompositions in banach spaces.

378.   SHARMA (Sumit Kumar)
        Study of Atomic Decompositions in Banach Spaces.
        Supervisors : Dr. R K Panda and Dr. S K Kaushik
        Th 18279

Abstract

It studied various properties in the context of atomic decompositions, similar stomic decompositions unconditional atomic decompositions and some generalizations of atomic decompositions in Banach spaces. Unconditional atomic decompositions in Banach spaces have been introduced and studied.

Contents

1. Introduction and basic concepts. 2. Atomic decompositions. 3. Unconditional atomic decompositions. 4. Approximative atomic decompositions. 5. T-atomic Decompositions.

379.   VARINDER KUMAR
        On Frames of Subspaces for Banach Spaces.
        Supervisors : Dr. R K Panda and Dr. S K Kaushik
        Th 18174

Abstract

Studies frames of subspaces (Fusion Banach frames) and *AD*-Frames as generalizations of Banach frames and fusion bi-Banach frames in banach spaces. Example and counter-examples have been given to distinguish various type of fusion Banach frames. Also, it has been proved that a banach space having a Banach frame, also possesses a fusion banach frame. However, a Banach space having a fusion Banach frame need not have a Banach frame. Complete fusion Banach frames have been defined and it has been proved that a weaklycompactly generated Banach space has a complete fusion Banach frame and hence every reflexive banach space has a complete fusion Banach frame.

Contents

1. Historical background. 2. Prerequisites. 3. Fusion Banach frames. 4. Fusion Bi-Banach frames. 5. *AD*-frames. 6. *AD*-frames satisfying property S and property *B*.

M.Phil Dissertations

380. BHAMBRI (Divya)
Fuzzy Bounded Linear Operators.
Supervisor : Dr. Vagisha Sharma

381. DHINGRA (Mansi)
Weak Sharp Minima for Optimization and Variational Inequality Problems.
Supervisor : Dr. C S Lalitha

382. DINESH KUMAR
Fatou's No Wandering Domain Conjecture : Sullivan's Proff.
Supervisor : Dr. Sanjay Kumar

383. DEEPTI KAUR
Image Space Analysis for Constrained Extremum Problems and Applications.
Supervisor : Dr. C S Lalitha

384. GOYAL (Sarika)
Weierstrass Theorem with Weights.
Supervisor : Dr. Ratikanta Panda

385. GUPTA (Shikha)
Orthogonal Frames and Normal Operators.
Supervisor : Dr. Pawan Bala

386. JYOTI
Generalized Invexity with Applications in Mathematical Programming.
Supervisor : Dr. Promila Kumar

387. MAHESH KUMAR
Norm Continuity for C_{0} - Semigroups.
Supervisor : Dr. Sachi Srivastav

388. MANTRY (Poonam)
Study of Class of Operators : g-Frames.
Supervisor : Dr. Shiv Kumar Sahdev

389. MITTAL (Nikita)
Some Aspect of Cone-Convexity, Generalized Cone-Convexity and Approximate Efficiency in Vector Optimization.
Supervisor : Dr. Surjeet Suneja

390. NAGPAL (Sumit)
First and Second Order Differential Subordinations and Radius Problems for Caratheodary Functions.
Supervisor : Dr. V Ravichandran

391. RANI KUMARI
Hankel Operators on Bergman Spaces.
Supervisor : Dr. Sharda Sharma Gautam

392. SANJAY KUMAR
On Some Aspects of Fuzzy Integer Linear Programming Problems.
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393. SANJEEV KUMAR
Nonlinear Dynamics and Chaos Control.
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394. SETIA (Nikita)
High Accuracy Numerical Methods Using Matlab for the Solution of Non Linear Partial Differential Equations by Finite Difference Method.
Supervisor : Prof. R K Mohanty

395. SHARMA (Kanika)
Some Aspects of Non Differentiable Min Max Programming.
Supervisor : Dr. Manjari Srivastava

396. VANDANA
Approximate Identities and Ideals in Banach Algebras.
Supervisor : Prof. Ajay Kumar

397. VIRENDRA KUMAR
On Finite Difference Approximations of Various Order for a Class of Parabolic Partial Differential Equations.
Supervisor : Dr. Urvashi Arora

398. WADHWA (Kriti)
Study of Topological Properties of Solution Sets of Vector Optimization and Set Valued Vector Equilibrium Problems.
Supervisor : Dr. Surjeet Suneja