ICAA '16

2nd INTERNATIONAL CONFERENCE ON ANALYSIS AND ITS APPLICATONS

July 12-15, 2016 Kırşehir / TURKEY

AHİ EVRAN ÜNİVERSİTESİ 2006

Abstract Book

Editors

Vatan KARAKAYA - Mohammad MURSALEEN

Qamrul Hasan ANSARI

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ICAA-2016 Website

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Editors:

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FOREWORDS

Dear Conference Participants,

Welcome to the 2nd International Conference on Analysis and Its Applications (ICAA-2016).

The purpose of the 2nd International Conference on Analysis and Its Applications (ICAA-2016) is to bring together experts and young analysts from all over the world working in analysis and its applications to present their researches, exchange new ideas, discuss challenging issues, foster future collaborations and interact with each other.

The main objective of the workshop is to discuss recent results in nonlinear and variational analysis and their applications, particularly the fixed point theory, optimization and applications to medicine.

We expect the participation of many prominent experts from different countries who will present the state-of-the-art in summability theory, sequence spaces, approximation theory, nonlinear analysis, variational analysis, optimization, and their applications.

The conference brings together about 400 participants from 22 countries (Ajaria, Algeria, Azerbaijan, Bulgaria, China, England, France, India, Indonesia, Iran, Iraq, Morocco, Pakistan, Romania, Saudi Arabia, Senegal, Serbia, South Africa, Taiwan, Tunisia, Turkey, United States of America), out of which 331 are contributing to the meeting with oral and 35 with poster presentations, including nine plenary talks. Also, there are non-presenting 27 participants from India, Kuwait, Oman, Saudi Arabia, Tunisia, Turkey, and Turkmenistan.

It is also a goal of the conference to promote collaborative and networking opportunities among senior scholars and graduate students in order to advance new perspectives. Additional emphasis at ICAA-2016 is put on applications in related areas, as well as other science, such as natural science, economics, computer science and various engineering sciences. The papers presented in this conference will be considered in the journals listed on the conference websites and below:

- Advances in Difference Equations (SCI-Exp),
- Carpathian Journal of Mathematics (SCI-Exp),
- Journal of Nonlinear and Convex Analysis (SCI-Exp),
- Journal of Inequalities and Applications (SCI-Exp.),
- Creative Mathematics and Informatics,
- Istanbul Commerce University Journal of Science.

This booklet contains the titles and abstracts of almost all invited and contributed talks at the **2nd International Conference on Analysis and Its Applications**. Only some abstracts were not available at the time of printing the booklet. They will be made available on the conference website http://icaa2016.ahievran.edu.tr when the organizers receive them. All talks will take place in Faculty of Arts and Sciences in Ahi Evran University, Bağbaşı Campus, Kırşehir/Turkey.

We wish everyone a fruitful conference and pleasant memories in Kırşehir, Turkey.

Prof. Vatan KARAKAYA
On Behalf of Organizing Committee
Chairman
(Rector of Ahi Evran University)

It was a great moment of excitement when Prof. (Dr.) Vatan Karakaya, Rector, Ahi Evran University, discussed with me the matter of organizing the “International Conference on Analysis and Its Applications (**ICAA-2016**)” at Ahi Evran University, Kırşehir. Now it is a matter of great pleasure that the matter of holding this conference is finally materialized. This conference is in the sequel of the first one which was held during December 19-21, 2015 (**ICAA-2015**) in Aligarh Muslim University, India. Being one of the Co-Chairmen of the conference, I feel privileged and delighted to welcome all delegates, eminent mathematicians, speakers and young researchers in this international event. It is expected that the delegates and the participants will be benefitted by the experience of this conference and the legacy of knowledge dissemination will be continued.

I wish all of you to have a nice and enjoyable participation in the conference.

Prof. Mohammad MURSALEEN

Analysis is one of the most important topics in mathematics and has been a focus of attention of all great mathematicians. There are many areas comes under this topic. However, this conference mainly devoted to some selected topics from analysis, mainly, Theory of Summability and Approximation, Fixed Point Theory, Fourier Analysis, Wavelet and Harmonic Analysis, Variational Analysis, Convex Analysis and Optimization, Geometry of Banach Spaces, Sequence Spaces and Matrix Transformations. During the last half century, nonlinear and variational analysis have been developed very rapidly because of their numerous applications to optimization, control theory, economics, engineering, management, medical sciences and other disciplines. On the other hand, the modern summability theory plays a very important role in linking theory of sequence spaces and matrix transformations with measures of noncompactness. Measures of noncompactness are widely used tools in fixed point theory, differential equations, functional equations, integral and integro-differential equations, optimization, etc. In the recent years, measures of noncompactness have also been used in defining geometric properties of Banach spaces as well as in characterizing compact operators between sequence spaces. We expect the participation of many prominent experts from different countries who will present their current research work and will also mention some hot topics for further research.

Prof. Qamrul Hasan ANSARI

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Contents

PLENARY TALKS

UPPER AND LOWER SOLUTION METHOD FOR nth ORDER BVPs ON AN INFINITE INTERVAL

Ravi P. AGARWAL

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Abstract: This work is devoted to study a*n*th order ordinary differential equation on a half-line with Sturm-Liouville boundary conditions. The existence results of a solution and triple solutions are established by employing a generalized version of the upper and lower solution method, Schäuder fixed point theorem, and topological degree theory. In our problem the nonlinearity depends on derivatives, and we allow solutions to be unbounded, which is an extra interesting feature. To demonstrate the usefulness of our results we illustrate two examples.

Keywords: *n*th order ODE, Schäuder fixed point theorem, topological degree theory.

MEASURES OF NONCOMPACTNESS AND THEIR SEVERAL APPLICATIONS

Mohammad MURSALEEN

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Abstract: In this talk, we present technique of measures of noncompactness to characterizecompact operators between some sequence spaces. We also present someapplications of measures of noncompactness to the theory of infinite system ofdifferential equations in some sequence spaces. Further, we present some newresults on applications to integral equations.

Keywords: Measures of noncompactness, differential equations, sequencespaces.

References:

[1] M. Mursaleen. "Differential equations in classical sequence spaces." Revista de la Real Academia de Ciencias Exactas, Físicas y Naturales. Serie A. Matemáticas (2016): 1-26.

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THE CHALLENGE AND MAGIC OF INVERSE PROBLEMS AND THE MATHEMATICS OF SIGNAL PROCESSING

Zuhair NASHED

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Abstract: Inverse Problems deal with determining for a given input-output system an input that produces an observed output, or determining an input that produces an output that is as close as possible to a desired output, often in the presence of noise. Most inverse problems are ill-posed, so their resolution requires some methods of regularization.
Signal Analysis/Processing deals with digital representations of signals and their analog reconstructions from digital representation.Sampling expansions, filters, reproducing kernel Hilbert spaces, various function spaces, and techniques of functional analysis, computational and applied harmonic analysis play pivotal role in this area.
This talk will highlight some land marks in these two areas and discuss some common threads between them. We will show that function spaces, in particular reproducing kernel Hilbert spaces, play a magical role in bothill-posed inverse problems and sampling expansion theorems.
The year 2016 marks the 110th birthday of the great Russian mathematician AndreyNikoayevichTikhonov (October 30, 1906 - October 7, 1993) and the 100th birthday of the great American mathematician Claude Elwood Shannon (April 30, 1916 - February 24, 2001). We celebrate their memory and seminal contributions to regularization theory of ill-posed problems, and sampling expansions and communication theory, respectively.

FIXED POINT ALGORITHMS FOR OPTIMIZATION

Hong-Kun XU

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Abstract: We will report fixed point algorithms and their applications in convex and nonconvex optimization problems.

Keywords: Fixed point algorithms, optimization problems.

QUADRATURE METHODS FOR COMPUTING HIGHLY OSCILLATORY INTEGRALS WITH BESSEL FUNCTIONS

Gradimir V. MILOVANOVIĆ

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Abstract: In this lecture, we deal with integration of rapidly oscillating functions, which appear in the theory of special functions, as well as in applied and computational sciences and engineering. Using suitable integral representations of special functions, we show how existing or specially developed quadrature formulas can be successfully applied to effectively calculation of such highly oscillatory integrals of Fourier type with Hankel kernel, oscillatory Bessel transformation, Bessel-Hilbert transformation, etc. Theoretical results and numerical examples illustrate the efficiency and accuracy of the proposed methods.

Keywords: Gaussian quadrature rule, oscillatory Bessel transform,Hankel function, Whittaker W function, error analysis.

References:

[1] G.V. Milovanović, "Numerical calculation of integrals involving oscillatory and singular kernels and some applications of quadratures", Comput. Math. Appl. 36 (1998), 19-39.

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[5] G.V. Milovanović, "Generalized Gaussian quadratures for integrals with logarithmic singularity", FILOMAT, 30 (2016), 1111-1126.

A GLANCE INTO THE WORLD OF ITERATIVE SCHEMES: STABILITY AND RATE OF CONVERGENCE

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Abstract: Iterative schemes are ubiquitous among the constructive methods in nonlinear analysis. Some of their most important accessories are:

1. Computability; 2.Stability; 3.Rate of convergence (error estimate). Starting from the various numerical demands coming from concrete problems in pure and applied mathematics, the main aim of this talk is to present some recent approaches to study of *stability* and *rate of convergence* of one step and multi-step iterative schemes.

Numerical tests and experiments to illustrate the main ideas of the lecture will also be presented.

Keywords: Iterative schemes,stability, rate of convergence.

COUPLED FIXED POINTS AND DIAGONAL OPERATORS

Adrian PETRUŞEL

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Abstract: In this talk, we will study coupled fixed point problems for single-valued and multi-valued operators. The notion of diagonal operator and its historical roots will be also presented. Our approach is based on the weakly Picard operator technique. Some applications and research directions are also suggested.

References:

[1] V. Berinde, Generalized coupled fixed point theorems for mixed monotonemappings in partially ordered metric spaces, Nonlinear Anal., 74 (2011) 7347-7355.
[2] T. GnanaBhaskar, V. Lakshmikantham, Fixed point theorems in partiallyordered metric spaces and applications, Nonlinear Anal., 65 (2006), 1379-1393.
[3] D. Guo, V. Lakshmikantham, Coupled fixed points of nonlinear operators with applications, Nonlinear Anal., 11 (1987), 623-632.
[4] M.A. Krasnoselskii and P.P. Zabreiko, Geometrical Methods of Nonlinear Analysis, Springer, 1984.
[5] A. Petruşel, G. Petruşel, B. Samet, J.-C. Yao, Coupled fixed point theorems for symmetric contractions in b-metric spaces with applications to operator equation systems, Fixed Point Theory, 17 (2016), no.2, 457-476.

WEAK SHARP SOLUTIONS AND MINIMUM AND MAXIMUM PRINCIPLE SUFFICIENCY PROPERTIES FOR NONSMOOTH VARIATIONAL INEQUALITIES

Qamrul Hasan ANSARI

[1]*Department of Mathematics, Aligarh Muslim University, Aligarh, India*

Abstract: In this talk, we present a brief introduction of nonsmooth variational inequalities defined by of generalized directional derivatives. We first introduce gap functions, and then by using such gap functions we study the minimum and maximum principle sufficiency properties for nonsmooth variational inequalities. We provide several characterizations of these two sufficiency properties. We also study the weak sharp solutions for nonsmoothvariational inequalities and give a characterization in terms of error bound. Some characterizations of the solution sets of nonsmoothvariational inequalities will be presented. Under certain conditions, we prove that the sequence generated by an algorithm for finding a solution of nonsmoothvariational inequalities terminates after a finite number of iterates provided that the solutions set of the nonsmooth variational inequality is weakly sharp. We also study the finite termination property of the gradient projection method for solving nonsmooth variational inequalities under weak sharpness of the solution set.

Keywords: Three step iteration, strong convergence, rate of convergence, data dependence integral equation.

References:

[1] F.Gursoy, V. Karakaya, "A Picard-S hybrid type iteration method for solving a differential equation withretarded argument", arXiv preprint arXiv:1403.2546 (2014).

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INVITED TALKS

AN ALGORITHM OF ASYMPTOTICALLY NONEXPANSIVE MAPPINGS WITHOUT FAST RATE CONVERGENCE CONDITION IN HYPERBOLIC SPACES

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Abstract: In the context of a hyperbolic space, we introduce and study convergence of implicit iterates of a finite family of asymptotically (quasi-) nonexpansive mappings with and without the fast rate convergence condition associated with the family of mappings. The results presented in this paper substantially improve and extend several recent well-known resullts in uniformly convex Banach spaces.

Keywords: Hyperbolic space, asymptotically (quasi-)nonexpansive mapping, common fixed point, implicit iteration process, semi-compactness, $\Delta-$convergence, strong convergence.

References:

[1] W. Guo and Y. J. Cho, On the strong convergence of the implicit iterative processes with errors for a finite family of asymptotically nonexpansive mappings, Appl. Math. Lett., 21(2008), 1046-1052.

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CHEBYSHEV CENTERS, FIXED POINT THEOREMS AND BEST PROXIMITY POINT THEOREMS

P.VEERAMANI

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Abstract: In this talk , it is aimed to discuss the relation between normal structure and the invariance of the set of Chebyshev centers of a non-expansive(isometry) map defined on a weakly compact convex subset of a Banach space. We also indicate some problems involving Chebyshevcenters , normal structure and fixed points of non-expansive (isometry) maps.

Keywords: Nonexpansive maps,Chebyshev centers, best proximity.

OPTIMALITY CONDITIONS FOR GENERALIZED VECTOR EQUILIBRIUM PROBLEMS

Ali FARAJZADEH

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Abstract: In this presentation, existence of a nonempty pointed convex cone with empty topological interior and nonempty algebraic interior for an arbitrary infinite dimensional linear topological space is proved. A multivalued version of Farakas's lemma in the setting of ordered linear spaces is established. By using it, an equivalence relation between the solution set of some generalized vector equilibrium problems and the corresponding minimization problems are provided. The techniques are used in this note different from the KKM theory and fixed point theory. Some examples in order to support the main results are given.

Keywords: Pointed convex coneKKM, farakas's lemma, generalized vector equilibrium problems, minimization problems,infinite dimensional linear topological space.

GENERALIZED MORREY REGULARITY FOR PARABOLIC EQUATIONS WITH DISCONTINUOUS DATA

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Abstract: We obtain two types of results:

- Boundedness of sublinear operators generated by singular and nonsingular integrals in generalized Morrey spaces $M^{p,\varphi}$. Continuity in $M^{p,\varphi}$ of some classical integral operators as the Calderon-Zygmund one.
- Global $M^{p,\varphi}$-regularity of the solutions of boundary value problems for linear uniformly elliptic/parabolic equations with discontinuous coefficients.

The results presented here are published in [1,2,3,4,5].

The research of V. Guliyev was partially supported by the grant of Presidiumof Azerbaijan National Academy of Science 2015.

References:

[1] V. S. Guliyev, S. S. Aliyev, T. Karaman, P. Shukurov, Boundedness of sublinear operators and commutators on generalized Morrey spaces, Integral Equations Operator Theory 71 (3) (2011), 327-355.

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[3] V. S. Guliyev, L. Softova, Global regularity in generalized Morrey spaces of solutions to nondivergence elliptic equations with VMO coeffcients, Potential Anal. 38 (4) (2013), 843-862.

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COMPARATIVE EVALUATION OF A NEW ITERATIVE LEARNING CONTROL ALGORITHM BY NUMERICAL EXAMPLES

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Abstract: Model-based iterative learning control (ILC) [1] of nonlinear dynamical systems is an off-line control algorithm that is routinely used in structural integrity testing of mechanical systems in the laboratory. In a recent paper [2] the connections between the ILC algorithm and Mann iteration was explored and an alternative model-based ILC algorithm was developed, however without a comparative evaluation of the new method in terms of numerical examples. This paper presents a comparative evaluation of the new method in terms of numerical examples similar to those in [2], proving that the new method is competitive with the conventional algorithm.

Keywords:Iterative learning control, nonlinear dynamical systems, Mann iteration.

References:

[1] H.-S. Ahn, Y. Chen, K.L. Moore, "Iterative learning control: brief survey and categorization" IEEETransactionsOn Systems, Man, And Cybernetics, 37(2007):1099-1121.

[2] J.J.A. Eksteen, P.S. Heyns, "An alternative update formula for non-linear model-based iterative learning control",Inverse Problems in Science and Engineering, 24(2016), 860-888.

CONTRIBUTED TALKS

GENERALIZED BOUNDARY PROBLEM GOVERNED BYTHE BILAPLACIENOPERATOR

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Abstract: In this work, we study the existence and the uniqueness of a mathematical model solution of a thin plate with a polygonal rectilinear frontier under generalized boundary conditions such as those of Fourier. Concerning, the particular cases of Laplace.s operators and Lame.s elasticity had been respectively studied by Mghazli in [8] and by Merouani in[7].

Keywords: Boundary Problem, Bilaplacien operator, Existence, Uniqueness.

References:

[1] A. Alvino, P. L. Lions, Trombetti, Comparison results for elliptic and parabolic equations via Schwarz symmetrization, Ann. H. Poincaré Anal. Nonlinéaire 7 (1990) 37-65.
[2] R. Dautray-J. L. Lions, Analyse mathématique et calcul numérique, Tome1, Masson 1988
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[4] S. Gunther, Boris N. Khoromskij, Boundary integral equations for the biharmonic dirichlet problem on nonsmooth domains, Journal of Integral Equations and Application Volume 11, Number 2, Summer 1999.
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ON ORDER OF APPROXIMATION FUNCTION BY GENERALIZEDBERNSTEIN-CHLODOVSKI POLYNOMIALS

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Abstract: The generalized Bernstein-Chlodovsky polynomials order (n,r) defined as a

$$B_{(n,r)}(f;x)=\sum_{k=0}^{n}\sum_{i=0}^{r}\frac{f(\frac{kb_n}{n})}{i!}(x-\frac{kb_n}{n})^i C_n^k(\frac{x}{b_n})^k(1-\frac{x}{b_n})^{n-k}, 0\le x\le b_n \quad (1)$$

Here $\lim\limits_{n\to\infty} b_n=\infty$, $\lim\limits_{n\to\infty}\frac{b_n}{n}=0.$

In particular, if, then (1) coincides with the classical Bernstein-Chlodovsky polynomials

$$B_{(n,r)}(f;x)=\sum_{k=0}^{n}\sum_{i=0}^{r} f(\frac{kb_n}{n})C_n^k(\frac{x}{b_n})^k(1-\frac{x}{b_n})^{n-k}, 0\le x\le b_n,$$

Let the $C^r[0,\infty)$ class r-times continuously differentiable function on the $[0,\infty)$.

Theorem. Let the $C^r[0,\infty)$ and $B_{(n,r)}(f;x)$ is a generalized Bernstein-Chlodovsky polynomials. Then for any fixed $A>0$ asymptotic equality

$$\left\|f(\cdot)-B_{(n,r)}(f;\cdot)\right\|_{C[0,A]}=O(\frac{b_n^{r+2}}{n^{r/2}}\Omega(f^{(r)};\frac{b_n}{\sqrt{n}}))..$$

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STRONG UNIFORM CONSISTENCY RATES OF CONDITIONAL QUANTILES FOR FUNCTIONAL DATA IN THE FUNCTIONAL SINGLE-INDEX MODEL

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Abstract: This presentation, deals with a scalar response conditioned by a functional random variable. The main goal is to estimate nonparametrically the quantiles of such a conditional distribution when the sample is considered as an i.i.d sequence. Firstly, a kernel type estimator for the conditional cumulative distribution function (***cond-cdf***) is introduced. Afterwards, we derive an estimation of the quantiles by inverting this estimated ***cond-cdf*** and asymptotic properties are statedwhen the observations are linked with a single-index structure. We establish the pointwise almost complete convergence and the uniform almost complete convergence (with the rate) of the kernel estimate of this model. The functional conditional quantile approach can be used both to forecast and to build confidence prediction bands.

Keywords: Conditional distribution, conditional quantile, functional data, functional single-index process, small ball probability.

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A NOTE ON THE VALUES OF THE TWISTED BARNES ZETA FUNCTIONS AND THEIR APPLICATIONS

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Abstract: The aim of this paper is to study and investigate some properties of the twisted zeta function related to the complex parameters with positive real parts such as a1; … ; aN. We give many interesting properties of these functions with their functional equations. We also give relationships between these functions and other well-known zeta families such as the Barnes zeta functions the Hurwitz zeta functions and the Riemann zeta functions. Finally we give some applications of these functions by the analytic continuation.

Keywords: Riemann Zeta function, Hurwitz zeta function, Barnes zeta functions, Bernoulli numbers.

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GENERALIZATIONS OF KAPLANSKY'S THEOREM INVOLVING UNBOUNDED LİNEAR OPERATORS

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Abstract: The purpose of this paper is to generalize a very famous result on products of normal operators, due to I. Kaplansky. The context of generalization is that of bounded hyponormal and unbounded normal operators on complex separable Hilbert spaces. Some examples "spice up" the paper. enough so that even monographs have been devoted to them. See for instance [3] and [10].

In this paper we are mainly interested in generalizing the following result to unbounded normal and bounded hyponormal operators.

Keywords: Products of operators, Bounded and unbounded,Normal Hypo normal subnormaloperators, data Kaplansky Theorem, Fuglede Putnam Theorem.

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THE BOUNDEDNESS OF MAXİMAL AND CALDERON-ZYGMUND OPERATORS ON LOCAL MORREY-LORENTZ SPACES

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Abstract: In this talk the boundedness, including the limiting cases, of the Hardy-Littlewood maximal operator M, the Calderon-Zygmund operators T and the maximal Calderon-Zygmund operators T on the local Morrey-Lorentz spaces $M^{loc}_{p,q;\lambda}(R^n)$ will be proved. Further some applications of obtained results will be given.

Keywords: Local Morrey-Lorentz spaces, Maximal operator, Calderon-Zygmund operators, maximal Calderon-Zygmund operators.

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DISCRETIZATION SCHEME TO FRACTIONAL DIFFUSION EQUATION WITH MEMORY TERM

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Abstract: In this work we use the method of Rohe to approximate the solution of fractional diffusion equation with second-order differential Volterra operator and fractional integral condition. Existence and uniqueness of weak solution in an appropriate sense as well as some regularity results are obtained .

TWO-PARAMETER REGULARIZATION METHOD FOR AN ILL-POSED CAUCHY PROBLEM FOR ELLIPTIC EQUATIONS

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Abstract: The paper is devoted to investigating a Cauchy problem for homogeneous elliptic PDEs in the abstract Hilbert spacegiven by u''(t)-Au(t)=0, 0<t<T, u(0)= φ ,u'(0)=0 where A is positive self-adjoint and unbounded linear operator. The problem is severely ill-posed in the sense of Hadamard(1), we shall give a new regularization method for this problem when the operator Ais replaced by $A_\alpha=A(I+\alpha A)^{(-1)}$ and u(0)=φ is replaced by a nonlocal condition. We show the convergence of thismethod and we construct a family of regularizing operators for the considered problem. Convergence estimates are established under a prioriregularity assumptions on the problem data. Some numerical results are given to show the effectiveness of the proposed method.

Keywords: Three step iteration, strong convergence, rate of convergence, data dependence integral equation.

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ON THE EXISTENCE OF POSITIVE SOLUTIONS FOR NONLINEARTHREE-POINT BOUNDARY VALUE PROBLEM

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Abstract: We study the existence of a nonlinear three-point boundary value problem

$$u''(t) + a(t)f\big(u(t)\big) = 0, \quad 0 < t < 1,$$

$$\beta u(0) - \gamma u'(0) = 0, \qquad \alpha u(\eta) = u(1),$$

where $0 < \eta < 1,\ \ 0 < \alpha < {}^{1}/_{\eta},\ \ \beta, \gamma \geq 0,\ \ \beta + \gamma > 0,$ and

$$d = \beta(1 - \alpha\eta) + \gamma(1 - \alpha) > 0.$$

By applying the fixed point theorem in cones, we prove the existence of at least one positive solutions if f is either superlinear or sublinear.

Keywords: Boundary value problems, positive solutions, superlinear and sublinear, operators on a cone

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POSITIVE SOLUTIONS OF A THREE-POINT BOUNDARY VALUE PROBLEM FOR p-LAPLACIAN DYNAMIC EQUATION ON TIME SCALES

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Abstract: We study a three-point boundary value problem for p-Laplacian dynamic equation on time scales. By using the Avery and Peterson fixed point theorem, we prove the existence at least three positive solutions of the boundary value problem. The interesting point is that the non-linear term f involves a first-order derivative explicitly. As an application, an example is given to illustrate the result.

Keywords: Time scales, boundary value problem,p-Laplacian, positive solution, fixed point theorem.

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Δ_p^m-STATISTICAL CONVERGENCE

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Abstract: In this work, we introduce Δ_p^m-statistical convergence and give inclusion relation between $\Delta_p^m(w_q)$-convergence and Δ_p^m-statistical convergence.

Keywords: Statistical Convergence, Difference sequence spaces.

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STURMIAN THEORY FOR SECOND-ORDER DIFFERENTIAL EQUATIONS WITH MIXED NONLINEARITIES

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Abstract: In the presentation, Sturmian comparison theory is developed for the pair of second-order differential equations; first of which is the nonlinear differential equations

$$(m(t)y')'+s(t)y'+\sum_{i=1}^{n} q_i(t)|y|^{\alpha_i-1}y=0, \qquad (\mathbf{A})$$

withmixed nonlinearities $\alpha_1>...>\alpha_m>1>\alpha_{m+1}>...>\alpha_n$, and the second is the nonselfadjoint differential equations

$$(k(t)x')'+r(t)x'+p(t)x=0. \qquad (\mathbf{B})$$

Under the assumption that the solution of Eq. (**B**) has two consecutive zeros, we obtain Sturm-Picone type and Leighton type comparison theorems for Eq. (**A**) by employing the new nonlinear version of Picone's formula that we derive. Wirtinger type inequalities and several oscillation criteria are also attained for Eq. (**A**). Examples are given to illustrate the relevance of the results.

Keywords: Comparison, Leighton, Mixed nonlinear, Nonselfadjoint, Sturm-Picone, Wirtinger.

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A UNIFIED APPROACH TO WEIGHTED L^p HARDY-TYPE INEQUALITIES ON RIEMANNIAN MANIFOLDS

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Abstract: In this work, we provide an approach that recovers and improves most of the Hardy-type inequalities appeared on Riemannian manifolds$M$ to date regarding. More precisely, let M be a complete noncompact Riemannian manifold endowed with a metric $g$and dV, ∇, divandΔdenote respectively the Riemannian volume element, the Riemannian gradient, the Riemannian divergent and the Laplace Beltrami operator on$M$. We proved that if a and b are nonnegative weight functions and w is a positive function such that

$$-div(a(x)|\nabla w|^{p-2}\nabla w) \geq b(x)w^{p-1}$$

almost everywhere in M, then the following L^p Hardy-type inequality

$$\int_M a(x)|\nabla\phi(x)|^p dV \geq \int_M b(x)|\phi(x)|^p dV$$

is valid for all $\phi \in C_0^\infty(M)$ and $p \geq 1$.It is worth emphasizing here that, one can readily obtain as many weighted Hardy-type inequalities as one can construct the functions$a$ and w satisfying the above hypothesis.

Keywords: Riemannian manifolds, Hardy inequality.

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RELATION-THEORETIC CONTRACTION PRINCIPLE

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Abstract: In this presentation, we present yet another new and novel variant ofclassicalBanach contractionprinciple on a complete metricspaceendowed with a binary relation which under universal relationreducestoBanach contraction principle. In process, we observe thatvariouskinds of binary relations such as: partial order, preorder,transitiverelation, tolerance, strict order, symmetric closure etcutilized by earlierauthors in several well-known metrical fixed point theorems canbeweakened to the extent of an arbitrary binary relation.

Keywords: Complete metric spaces; binary relations; contraction mappings.

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DYNAMICS OF A PRE-STRESSED AND IMPERFECTLY BONDED SANDWICH PLATE-STRIP CONSISTING OF ELASTIC LAYERS AND PIEZOELECTRIC CORE

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Abstract: In this presentation, the dynamics of a sandwich plate-strip consisting of a piezoelectric core and elastic layers with initial stress under the action of a time-harmonic force resting on a rigid foundation is considered within the scope of the piecewise homogeneous body model with utilizing of the three dimensional linearized theory of electro-elasticity waves in initially stressed bodies. The piezoelectric core is poled along the direction perpendicular to the rigid foundation and imperfectly bonded to the elastic layers. The mathematical model corresponding to the current situation is created, and the governing system of the partial differential equations of motion is solved by employing Finite Element Method (FEM). The numerical results illustrating the effect of the different dependencies of the problem on the distribution of the stresses and the electric displacementsat the interface planes between the upper and lower elastic layers and the piezoelectric core and between the plate-strip and the rigid foundation are presented. In particular, the influence of a change in the value of the shear-spring imperfectness parameter on the behavior of the corresponding parameter, i.e. the initial stress or the dimensionless frequency, is investigated.

Keywords: Sandwich plate-strip, initial stress, shear-spring type imperfectness, dimensionless frequency, forced vibration.

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TWO WEIGHTED INEQUALITIES FOR FRACTIONALINTEGRALS ASSOCIATED WITH THE LAPLACE-BESSELDIFFERENTIAL OPERATOR

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Abstract: In this report it is proved that two weighted inequalities for fractional integrals $I_{\alpha,\gamma}f$ (B-fractional integrals) associated with the Laplace-Bessel differentialoperator $\Delta_B = \sum_{i=1}^{n} \frac{\partial^2}{\partial x_i^2} + \sum_{j=1}^{k} \frac{\gamma_j}{x_j} \frac{\partial}{\partial x_j}$ (see [1]). This result is an analog of Heinig'sresult [2] for the B-fractional integral.Further, the Stein-Weiss inequality forB-fractionalintegrals is proved as an application of this result.

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This talk is present jointly with A. Serbetci.

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INTEGRAL INEQUALITIES OF HERMITE-HADAMARD TYPE FOR FUNCTIONS WHOSE THIRD DERIVATIVE ABSOLUTE VALUES ARE PREINVEX

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Abstract: In this paper, we establish some new integral inequalities of Hermite-Hadamard's type for functions whose third derivative absolute values are preinvex. Applications to some special means are also considered.

Keywords: Hermite-Hadamardinequality, Preinvex function, Integral inequality, arithmetic mean, logarithmic mean.

TRIGONOMETRIC APPROXIMATION IN WEIGHTED LORENTZ SPACES USING LOWER TRIANGULAR MATRICES

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Abstract: We investigated the approximation to $f$functions in weighted Lorentz spaces by the sums $\tau_n(f,x) = \sum_{k=0}^{n} a_{nk} S_k(f,x)$ where (a_{nk}) will denote a lower triangular regular matrices with nonnegative entries and $S_k(f,x)$ will denote partial sums of Fourier series of fWe obtain the degree of approximation for derivatives of functions in weighted Lorentz spaces.

Keywords: Weighted Lorentz space, trigonometric approximation, Fourier series, Muckenhoupt weight.

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CONFORMABLE FRACTIONAL INTEGRALS AND RELATED GRÜSS TYPE INTEGRAL INEQUALITIES

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Abstract: In the present note, we have given the definition of Conformable fractional integrals and some further properties. In the second part, we have established some Grüss type integral inequalities by using the bounded functions via Conformable fractional integrals.

Keywords: Bounded functions, Conformable fractional integrals, Grüss Inequality.

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NEW INTEGRAL INEQUALITIES FOR GEOMETRICALLY CONVEX FUNCTIONS VIA CONFORMABLE FRACTIONAL INTEGRALS

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Abstract: In this paper, Conformable fractional derivative and Conformable fractional integrals have been introduced. Based on these definitions, a new Hadamard type integral inequality have been proved for Geometrically convex functions. Also, we have obtain a new integral identity and by using this identity, we have established some new integral inequalities for Geometrically convex functions via Conformable fractional integrals.

Keywords: Geometrically convex functions, Conformable fractional integrals, Hermite-Hadamard Inequality.

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NEW RESULT IN STABILITY ANALYSIS OF SINGULAR PROBLEM

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Abstract: In this study, the meaning of the stability problem is to calculate the difference of two spectral functions, solutions and potentials when finite numbers of eigenvalues of considered problems is coincided. These type problem for regularSturm-Liouville problems was studied [1],[2].We dealt with this type stability problem for Dirac operators in [4]. Marchenko and Maslov dealt with similar issue in the case of the spectral function coincide on given interval [2].As far as we know,the stability problems for singular operator have not been studied. Moreover, we give a formula for expression of norming constants respect to its two spectra.

Keywords: Stability, Sturm-Liouville Equation,singularity.

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ANALYSIS OF EFFECT OF FLEXIBLE WING ON LIFT AND DRAG COEFFICIENT

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Abstract: Flexible wing is an aircraft wing which is not rigid but can deform in flight. This project is intended to carry out an analysis on flexible wing as well as a rigid wing. The expected outcome is flexible wing provides better Lift and Drag Co-efficient than a rigid wing. The disadvantages of rigid wings such as increased drag, vulnerability to high speed loads and decreased performance during crosswinds are overcome by flexible wings. Flexible wings in aircrafts possess great control over tip vortices, high roll efficiency at high speed. In addition, the induced drag can be reduced which significantly improves the take-off and landing performances. Flexible wings can also be used as an alternate arrangement to cancel the adverse effect of wing tip vortices, which in turn reduces the time between two consecutive take-offs at an airport.The potential applications include all commercial and fighter airplanes which demand high maneuverability.

ROUGH FRACTIONAL MULTILINEAR INTEGRAL OPERATORS ON GENERALIZED WEIGHTED MORREY SPACES

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Abstract: We consider generalized weighted Morrey spaces. In these spaces, we find the sufficient conditions for the boundedness of the fractional multilinear integral operators with rough kernels from one generalized weighted Morrey space to another one.

Keywords: generalized weighted Morrey spaces, fractional multilinear integral operator.

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HYPERBOLIC SMOOTHING METHOD FOR DC PROBLEMS OBTAINED FROM CLUSTERING PROBLEMS

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Abstract: In this study, we focused on the non-smooth unconstrained optimization problems, particularly the differences of two convex functions (DC) problems. They can be obtained from the minimum sum of square clustering (MSSC) problems [1,2]. Clustering is an important problem in data mining. In the literature, the hyperbolic smoothing technique is applied to handle nonsmoothness of optimization problems. A new hyperbolic smoothing method proposed to solve them, which made the possible to use smooth optimization algorithms for this type of non-smooth problems.

Keywords: Hyperbolic smoothing method, DC problem, clastring problem.

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SOME APPROXIMATION PROPERTIES OF TWO DIMENSIONALCHLODOVSKY-BERNSTEIN OPERATORS BASED ON (P, Q) INTEGER

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Abstract: In the present study, we introduce the two dimensional Chlodovskytype Bernstein operators based on $(p, q)-$integer. We examine approximation properties of our new operator by the help of Korovkin-type theorem. Further, we present the local approximation properties and establish the rates of convergence by means of the modulus of continuity and the Lipschitz type maximal function. Also, we give a Voronovskaja type theorem for this operator. And, we investigate weighted approximation properties of these operators and estimate rate of convergence in the same space. Finally, with the help of Maple, illustrative graphics show the rate of convergence of these operators to certain functions.

Keywords: (p, q)-integer, strong convergence,rate of convergence, Voronovskaja type theorem

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GAMMA TYPE GENERALIZATION SZASZ-CHARLIER OPERATORS

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Abstract: In this paper, we define Gamma type generalization Szasz operators which involving Charlier polynomial. We also study the convergence of these operators in a weighted space of functions.

Further, we establish the local approximation properties and establish the rates of convergence by means of the modulus of continuity and the Lipschitz type maximal function. Finally, with the help of Maple, illustrative graphics show the rate of convergence of these operators to certain functions.

Keywords: Gamma type generalization Szasz operators, Charlier polynomial.

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MULTIPLY SOLITARY WAVE SOLUTIONS OF THE HIGHER KDV EQUATIONS IN A STRATIFIED SHEAR FLUID FLOW WITH A FREE SURFACE

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Abstract: Solitary waves solutions are generated by deriving the nonlinear higher order of extended KdV equations for the free surface displacement. The problem formulations of models for internal solitary waves in a stratified shear flow with a free surface are presented. All coefficients of the nonlinear higher order extended KdV equation are expressed in terms of integrals of the modal function for the linear long-wave theory. The electric field potential and the fluid pressure in form traveling wave solutions of the extended KdV equation are obtained. The stability of the obtained solutions and the movement role of the waves by making the graphs of the exact solutions are discussed and analyzed.

Keywords: Internal solitary waves, Higher order of extended KdV equation, wave solutions, modified direct algebraic method.

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EXTENDED TAN-COT METHODFOR THE SOLITIONS TO EVOLUTION EQUATIONS

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Abstract: The proposed extended Tan-Cot method is applied to obtain new exact travelling wave solutions to evolution equation. The method is applicable to a large variety of nonlinear partial differential equations, the Fifth-order nonlinear integrable equation, the symmetric regularized long wave equation, the higher-order wave equation of Kdv type, and Benney-Luke equation. The Extended Tan-Cot method seems to be powerful tool in dealing with nonlinear physical models.

Keywords: Fifth-order nonlinear integrable equation, the symmetric regularized long wave equation (SRLW), the higher-order wave equation of Kdv type, and Benney-Luke equation(B-L)

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STUDY OF A FOURTH-ORDER PARABOLIC EQUATION IN TIME-DEPENDENT DOMAINS

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Abstract: New results on the existence, uniqueness and maximal regularity of a solution are given for a two-space dimensional fourth-order parabolic equation set in conical time-dependent domains. The study is performed in the framework of anisotropic weighted Sobolev spaces. Our method is based on the technique of decomposition of domains. Some details concerning the results given here can be found in [1].

Keywords: Fourth-order parabolic equations, conical domains, anisotropic weighted Sobolev spaces.

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CONVERGENCE THEOREMS OF FIXED POINTS FOR HEMICONTRACTIVE MAPPINGS IN S-PROBABILISTIC NORMED SPACES

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Abstract: In this presentation, we study fixed point problems in S-probabilistic normed spaces. We obtain the definition of probabilistic hemicontractive mapping in a probabilistic normed space. Also, probabilisticconvergence theorems of fixed points for hemicontractive mappings are proved.

Keywords: Probabilistic normed space, hemicontractive mapping, strong convergence, fixed point.

Acknowledgement: The first author was supported by TÜBİTAK- The Scientific and Technological Research Council of Turkey.

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COLLOCATION METHOD USING RADIAL BASIS FUNCTION FOR SOLUTION OF FRACTIONAL CKdV EQUATION

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Abstract: In this paper, collocation method using radial basis functions is applied to solution of fractional compound KdV differential equation. In the solution process, we will use linearization technique for non-linear term existing in the equation. L_2 and L_∞ error norms are calculated with matematica program to compare the approximate solution with exact solution.

Keywords: Radial basis functions, Collocation method, Linearization technique.

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HILBERT TRANSFORM ON LOCAL MORREY-LORENTZ SPACES

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Abstract: In this talk we introduce a new class of functions called local Morrey-Lorentz spaces $M^{loc}_{p,q;\lambda}, 0 < p, q \leq \infty$ and $0 \leq \lambda \leq 1$. These spaces generalize Lorentz spaces such that $M^{loc}_{p,q;0} = L_{p,q}$.We show that in the case $\lambda < 0$ or $\lambda > 1$ the space $M^{loc}_{p,q;\lambda}$is trivial, and in the limiting case $\lambda = 1$ the space $M^{loc}_{p,q;\lambda}$ is the classical Lorentz space $\Lambda_{\infty,t^{1/p-1/q}}$.

We prove that for $0 < q \leq p < \infty$ and $0 < \lambda \leq q/p$, the local Morrey-Lorentz spaces $M^{loc}_{p,q;\lambda}$ are equal to weak Lebesgue spaces $WL_{1/p-\lambda/q}$. Furthermore, we obtain the boundedness of the Hilbert transform in the local Morrey-Lorentz spaces.

Keywords: Morrey spaces, Lorentz spaces, local Morrey-Lorentz spaces, Hilbert transform.

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SOME IDENTITIES ASSOCIATED WITH HURWITZ-LERCH ZETA FUNCTION

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Abstract: In this paper, we firstly introduce a special integral representation associated with Hurwitz-Lerch zeta function. By using this integral representation, we obtain some functional equations for a special case of the Hurwitz-Lerch zeta function, Also we give some remarks for this identities.

Keywords: Hurwitz-Lerch zeta function, Hurwitz zeta function, Riemann zeta function, Leibniz derivative formula.

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APPROXIMATION BY TWO DIMENSIONAL GENERALIZED SZASZOPERATORS

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Abstract: We study approximation theorem for generalized Szasz operator in space a higher order, differentiable weighted continuous functions.

Suppose that$C^{r+2}([0,\infty)\times[0,\infty))$ is a space of r time continuous and differentiable functions is bisemi-axis$([0,\infty)\times[0,\infty))$and $f\in C^{r+2}([0,\infty)\times[0,\infty))$. Let us consider the following Szasz operator for$f\in C^{r+2}([0,\infty)\times[0,\infty))$

$$S_{n,m,r}(f;x,y)=e^{-nx-my}\sum_{k=0}^{\infty}\sum_{l=0}^{\infty}\sum_{i=0}^{r}[(x-\frac{k}{n})\frac{\partial}{\partial x}$$

$$+(y-\frac{l}{m})\frac{\partial}{\partial y}]^i f(\frac{k}{n},\frac{l}{m})\frac{(nx)^k}{k!}\frac{(ml)^l}{l!}$$

Theorem. For $f\in C^{r+2}([0,\infty)\times[0,\infty))$ the following equality is true

$$S_{n,m,r}(f;x,y)=f(x,y)+\frac{(-1)^r f^{(r+1)}(x,y)T_{r+1}(x,y)}{(r+1)!}$$

$$+\frac{(-1)^r(r+1)f^{(r+2)}(x,y)T_{r+2}(x,y)}{(r+2)!}+\frac{\rho_{n,m,r}(x,y)}{(nm)^{r/4}},$$

where

$$\lim_{n,m\to\infty}\rho_{n,m,r}(x,y)=0.$$

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SOME PROPERTIES OF DOUBLE SEQUENCES AND THE *P*-CONVERGENCE OF A DOUBLY-SEQUENCE ITERATION WITH ERROR TERMS IN CAT(0) SPACES

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Abstract: In this presentation, we obtain some properties related to double sequences. Moreover, we prove the *P*-convergence of the Halpern-type double-sequence iteration process with error terms in a CAT(0) space and present an example to support this result. Our results extend and improve some recent results announced in the current literature.

Keywords: Double sequence, iteration process, fixed point, nonexpansive mapping, *P*-convergence,CAT(0) space.

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MEASURE OF NONCOMPACTNESS AND FRACTIONAL DIFFERENTIAL EQUATIONS IN BANACH SPACE

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Abstract: In this paper, we study the existence of solutions for a class of initial value problems for fractional differential equations involving Caputo fractional derivative in Banach space. The arguments are based upon Mönch's fixed point theorem and the technique of measures of noncompactness.

Keywords: Initial value problem, Caputo fractional derivative, measure of noncompactness, fixed point, Banach space.

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A RELIABLE COMPUTATIONAL METHOD for SINGULAR PROBLEMS

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Abstract: In this presentation, a new numerical algorithm is established for singular initial value problems. The solutions are constructed in the series form of the Fibonacci polynomials. The efficiency and validity of the approach are illustrated with few numerical examples.

Keywords: Pseudo-spectral approach, Fibonacci polynomials.

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EKELAND'S VARIATIONAL PRINCIPLE AND ITS APPLICATION TO EQUILIBRIUM PROBLEMS

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Abstract: In this study, we obtain a generalization of vectorial form of Ekeland's variational principle for set valued mapping in Banach space. We get some equivalent results to the mentioned variational principle. As an application of our work, we provide some existence results for equilibrium problems in compact and noncomplete spaces.

Keywords: Ekeland'svariational principle, Equilibrium problems, Set valued mappings, Scalarization function, Banach space.

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DYNAMIC EVOLUTION OF DAMAGE AND FRICTION IN PIEZOELECTRIC MATERIALS

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Abstract: We consider a dynamic frictional contact problem between a piezoelectric body and an obstacle. The contact is bilateral, and the friction is modeled with Tresca's friction law. The material's behavior is described by a nonlinear electro-viscoelastic constitutive law with damage. We derive a variational formulation for the model which is in the form of a system involving the displacement field, the electric potential field, and the damage field. Then we provide the existence of a unique weak solution to the model. The proofs are based on the classical result of nonlinear first order evolution inequalities, the equations with monotone operators and the fixed point arguments.

Keywords: Dynamic process, piezoelectric material with damage, frictional contact,existence and uniqueness ,weak solution, fixed point.

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BACKWARD DOUBLY SDES AND SPDES WITH SUPERLINEAR GROWTH GENERATORS

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Abstract: We deal with multidimensional backward doubly stochastic differential equations (BDSDEs) with a superlinear growth generator and a square integrable terminal datum. We introduce new local conditions on the generator then we show that they ensure the existence and uniqueness as well as the stability of solutions. Our work go beyond the previous results on the subject. Although we are focused on multidimensional case, the uniqueness result we establish is new in one dimensional too. As application, we establish the existence and uniqueness of probabilistic solutions to somesemilinear stochastic partial differential equations (SPDEs) with superlinear growth gernerator. By probabilistic solution, we mean a solution which is representable throughout a BDSDEs.

SUBORBITAL GRAPHS FOR THE RESIDUE CLASS OF PSL(2,Z_n)

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Abstract: For each integer $n \geq 2$, let Z_n denote the ring of integers $mod n$; then the 2x2 unimodular matrices with coefficients in Z_n form a group $SL(2, Z_n)$ in which the matrices $\{\pm I\}$ form a normal subgroup. The natural ring-epimorphism $Z \to Z_n$, $a \mapsto [a]$, induces a group-homomorphism $SL(2, Z) \to SL(2, Z_n)$ and also it is known that dividing $SL(2, R)$ by its center $\{\pm I\}$ we get the group $PSL(2, R) \cong SL(2, R)/\{\pm I\}$. Hence this in turn induces a group-homomorphism ϕ_n from $PSL(2, Z)$to$PSL(2, Z_n)$. In this paper, we investigate some properties of suborbital graphs for the $PSL(2, Z_n)$ group. We obtain edge-circuit conditions and also we find some relations between for the$M$ dessin associated with $\Gamma(n)$.

Keywords: Suborbital graphs, orbit, circuit,dessin,imprimitive action.

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A NEW RESULT ON GENERALIZED ABSOLUTE MATRIX SUMMABILITY

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Abstract: In this presentation, we have generalized a known result dealing with the $\left|\bar{N},p_n\right|_k$ summability to the $\varphi-\left|A,p_n\right|_k$ summability by using the concepts of almost increasing and δ-quasi-monotone sequences. We also obtain some new and known results.

Keywords: Almost increasing sequences, absolute matrix summability, quasi-monotone sequences, infinite series, Hölder inequality, Minkowski inequality.

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ON REFLEXIVITY OF THE BOCHNER SPACE $L^P(\mu, E)$ FOR ARBITRARY μ

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Abstract: Let $\boldsymbol{\mu}$ be a finite positive measure, E a Banach space, and $1 < p < \infty$ a real number.

(a) It is known that the Bochner space $L^P(\mu, E)$ is reflexive if and only if E is reflexive;

(b) it is also known that $\mathcal{L}(L^1(\mu), E) \simeq L^\infty(\mu, E)$ if and only if E has the Radon-Nikodým property (RNP), (where for two Banach spaces $E, F, E \simeq F$ means that they are isometric, and $\mathcal{L}(E, F)$ denotes the Banach space of all bounded operators from E to F.)

In this article we prove that both statements almost hold for any arbitrary positive measure μ as well, more precisely, if υ is the so-called perfect equivalent of μ, (i.e., for each $1 \leq p < \infty$, υ is perfect and they have the same L^P spaces), we have,

(a′) for $1 < p < \infty$, $L^P(\mu, E) \simeq L^P(\upsilon, E)$ is reflexive if and only if E is reflexive,

(b′) $\mathcal{L}(L^1(\mu), E)) \simeq \mathcal{L}(L^1(\upsilon), E) \simeq L^\infty(\upsilon, E)$ if and only if E has the RNP.

Keywords: Reflexivity, Radon-Nikodým property, Bochner space, isometry, perfect measure.

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CERTAIN HERMITE-HADAMARD TYPE INEQUALITIES ASSOCIATED WITH COMFORMABLE FRACTIONAL INTEGRAL OPERATORS

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Abstract: The aim of this article is to obtain some new Hermite-Hadamard type inequalities for convex functions via conformable fractional integral. The results presented here would provide extensions of those given in earlier works.

Keywords: Convex function, Hermite-Hadamard inequality, conformable fractional integral.

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SHOCK AND RAREFACTION WAVES FOR BURGERS MODELS ON SPACETIME GEOMETRIES COMPARISON AND ANALYSIS

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Abstract: The relativistic Burgers model has recently been derived on flat geometry, developed and generalized to several spacetime backgrounds such as Schwarzschild, Friedmann-Lemaitre-Robertson-Walker (FLRW), de Sitter (dS), anti-de Sitter (AdS), Schwarzschild-de Sitter (SdS) and Schwarzschild-anti de Sitter (SAdS) spacetimes. In this work we consider these spacetime geometries in order to analyze the derived Burgers models and their finite volume solutions containing shock/ rarefaction waves both theoretically and numerically. To this end, we establish a second-order Godunov-type finite volume scheme to the relativistic models for approximation of discontinuous solutions and compare each model of interest by illustrating shock and rarefaction wave propagations.

Keywords: Spacetime, Euler equations, relativistic Burgers models, finite volume approximation, shock waves, rarefaction waves, Godunov scheme.

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ON FLOQUET SOLUTIONS FORDISCRETE STURM-LIOUVILLE PROBLEM WITH PERIODIC GENERALIZED FUNCTION POTENTIALS

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Abstract: Floquet theory play a central role for Sturm-Liouville problem and difference equations with periodic potentials. Thistheory for Sturm-Liouville problem and with generalized function potential are studied in [2] and [3] respectively.Floquetsolutions for periodic systems and for Hill difference equation have been investigated in [4] and [1]. In this study, we obtain Floquet solutions fordiscrete Sturm-Liouville problem with periodic generalized function potentials.

Keywords: Sturm-Liouville equation, difference equation, Floquet theory.

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A NONLINEAR HYPERBOLIC PROBLEM FOR VISCOELASTIC EQUATIONS

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Abstract: In this paper, we consider a nonlinear hyperbolic problem for viscoelastic equations with a source term. By basing on Faedo-Galerkin approximations and compactness argument, this work is devoted to prove the existence, uniqueness, and also continuous dependence with respect to the initial data of solutions.

Keywords: Compactness method, continuous dependence, local existence, nonlinear hyperbolic equation, viscoelastic bodies.

PROJECTED TIKHONOV REGULARIZATION METHOD FOR FREDHOLM INTEGRAL EQUATIONS OF THE FIRST KIND

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Abstract: In this talk, we consider a variant of projected Tikhonov regularization method for solving Fredholm integral equations of the first kind. We give the theoretical analysis of this method in the Hilbert space L2(a, b) setting, and we establish some convergence rates under certain regularity on the exact solution andthe kernel k(.,.). Some numerical results are also presented.

Keywords: ill-posed problems, integral equation of the first kind, projected Tikhonov regularization method.

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ON SOME INTEGRAL INEQUALITIES ON TIME SCALES AND APPLICATIONS

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Abstract: The goal of this paper is to derive some generalizations and re nements of certain inequalities of Pachpatte type and Bellman-Bihari type, on time scales, using elementary analytic methods. The given results unify continuous and discrete inequalities and extend some known results in the literature. To show the feasibility of the obtained inequalities, some illustrative examples are also introduced.

SINGULAR QUASILINEAR ELLIPTIC SYSTEMS WITH (SUB-, SUPER-) HOMOGENEOUS CONDITION

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Abstract: In this talk we establish existence, nonexistence and regularity of positive solutions for a class of singular quasilinear elliptic systems subject to (sub-, super-) homogeneous condition. The approach is based on sub-supersolution methods for systems of quasilinear singular equations combined with perturbation arguments involving singular terms.

Keywords: Singular system; p-Laplacian; Sub-supersolution; Schauder's fixed point Theorem; regularity.

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A NOTE APOSTOL TYPE (P,Q)-FROBENIUS-EULER POLYNOMIALS

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Abstract: In this work, we define and introduce a new kind of the Apostol type Frobenius-Euler polynomials based on the (p,q)-calculus and investigate their some properties, recurrence relationships and so on. We give some identities at this polynomial. Moreover, we get (p,q)-extension of Carlitz's main result. In this work, we define and introduce a new kind of the Apostol type Frobenius-Euler polynomials based on the (p,q)-calculus and investigate their some properties, recurrence relationships and so on. We give some identities at this polynomial. Moreover, we get (p,q)-extension of Carlitz's main result.

Keywords: Bernoulli polynomials and numbers, Euler polynomials and numbers, Generating functions, Apostol type Frobenius-Euler polynomials, (p,q)-calculus, (p,q)-Frobenius-Euler polynomials, Generating function, .

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ANALYSIS OF A SECOND ORDER AND UNCONDITIONALLY STABLE BDF2-AB2 METHOD FOR THE NAVIER-STOKES EQUATIONS

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Abstract: In this study, we introduce a second order time stepping BDF2-AB2 method for the Navier-Stokes equations (NSE). It was proven that the method is unconditionally stable and $O(\Delta t^2)$ accurate. We applied the method to several numeral experiments. Numerical results are overlapped with the theoretical results.

Keywords: NSE, Finite Element Method, BDF2-AB2 time discretization ..

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STRONGLY SUMMABLE AND STATISTICALLY CONVERGENT BIVARIATE FUNCTIONS

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Abstract: We extend the de_nitions and basic results on strong summability,statistical convergence and almost convergence from functions of one variable to real valued bivariate functions measurable in the Lebesgue sense on the (1;*1*) _ (1;*1*).

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ASYMPTOTICALLY I_2-CESÀRO EQUIVALENCE OF DOUBLE SEQUENCES OF SETS

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Abstract: In this paper, we dened concepts of asymptotically I_2-Cesaro equivalence and investigate the relationships between the concepts of asymptotically strongly I_2-Cesaro equivalence, asymptotically strongly I_2-lacunary equivalence, asymptotically p-strongly I_2-Cesaro equivalence and asymptotically I_2-statistical equivalence of double sequences of sets.

Keywords: Asymptotically equivalence, Cesarosummability, lacunary sequence, statistical convergence, I-convergence, double sequences of sets, Wijsman convergence.

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A NEW GENERALIZATION OF THE FIBONACCI p –FUNCTIONS WITH PERIOD k

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Abstract: In this presentation, we present the basic properties of the m –extension of Fibonacci p –functions with period k. Specifying p and m, we obtain the Fibonacci $(p = 1, m = 1)$ and Pell $(p = 1, m = 2)$ functions. Furthermore, we define m –extension of odd Fibonacci p –functions with period k. Moreover, we analyze some properties by using notion of $f-$ even and f –odd functions with period k. We also demonstrate the products and quotients of these functions and provide new results in the development of Fibonacci functions with period k.

Keywords: m –extension of Fibonacci p –functions with period k, m –extension of odd Fibonacci p –functions with period k, f –even function with period k, f –odd function with period k.

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ASSOCIATE SPACES OF GENERALIZED WEIGHTED WEAK-LORENTZ SPACES

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Abstract: In this presentation, we characterize associate spaces of generalized weighted weak-Lorentz spaces.

Keywords: Generalized weighted weak-Lorentz spaces, reverse Hardy inequalities, associate spaces.

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SOME REFINEMENTS OF CERTAIN GAMIDOV INTEGRAL INEQUALITIES ON TIME SCALES AND APPLICATIONS

Chiheb TARIK

Abstract: The goal of this paper is to derive some generalizations and refinements of certainsGamidov type integral inequalities on time scales, which provide explicit bounds on unknown functions.To show the feasibility of the obtained inequalities, some illustrative examples are also introduced.

THE RIESZ CAPACITY IN VARIABLE EXPONENT LEBESGUE SPACES

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Abstract: In this paper, we study a capacity theory based on a definiton of a Riesz potential in the Euclidean space. Also, we define Riesz$(\alpha, p(.))$ −capacity and discuss properties of the capacity in the variable exponent Lebesgue space$L^{p(.)}(\mathbb{R}^n)$.

Keywords: The Riesz potential and capacity, the variable exponent Lebesgue spaces.

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ON EXISTING OF FIXED POINT FOR MULTIVALUED MAPPING VIA MEASURE OF NONCOMPACTNESS

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Abstract: In this work, using measure of noncompactness some result on the existence of coupled and tripled fixed point for multivalued set contraction mapping are investigated. As application, the existence of solution, for a system of integral inclusion is studied.

Keywords: Fixed point, multivalued set contraction mapping, measure of noncompactness.

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DEFECT-DEFERRED CORRECTION METHOD FOR THE TWO-DOMAIN CONVECTION-DOMINATED CONVECTION-DIFFUSION PROBLEM

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Abstract: We present a method for solving a fluid-fluid interaction problem (two convection-dominated convection-diffusion problems adjoined by an interface), which is a simplified version of the atmosphere- ocean coupling problem. The method resolves some of the issues that can be crucial to the fluid-fluid interaction problems: it is a partitioned time stepping method, yet it is of high order accuracy in both space and time (the two-step algorithm considered in this report provides second order accuracy); it allows for the usage of the legacy codes (which is a common requirement when resolving flows in complex geometries), yet it can be applied to the problems with very small viscosity/diffusion coefficients. This is achieved by combining the defect correction technique for increased spatial accuracy (and for resolving the issue of high convection-to-diffusion ratio) with the deferred correction in time (which allows for the usage of the computationally attractive partitioned scheme, yet the time accuracy is increased beyond the usual result of partitioned methods being only first order accurate) into the defect-deferred correction method (DDC). The results are readily extendable to the higher order accuracy cases by adding more correction steps. Both the theoretical results and the numerical tests provided demonstrate that the computed solution is unconditionally stable and the accuracy in both space and time is improved after the correction step.

Keywords: Defect deferredcorrection, high accuracy, fluid-fluid interaction, ocean-atmosphere, implicit-explicit.

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NONLINEAR WAVELETS AND THEIR STATISTICAL APPLICATIONS

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Abstract: Nonlinear wavelets and their applications in several areas of both pure and applied mathematicshas provided statisticians with powerful new techniques for nonparametric curve estimation by combining recent advances in approximation theory with insights gained from applied signal analysis.Nonlinear wavelets are localized in both time and frequency and have remarkable approximation properties. In this presentation, we introduce a newnonlinear wavelet-based estimator of the regression function in the right censorship model. An asymptotic expression for the mean integrated squared error of the estimator is obtained to both continuous and discontinuous curves. The given waveletsestimator automatically adapt to a varying degrees of regularity (discontinuities, cusps, sharp spikes, etc.) of the underlying curves to be estimated when compared to other common estimation techniques, such as the kernel method, which may fail in unsmooth situations.

Keywords: censored data, mean integrated squared error, nonlinear wavelets,rate of convergence.

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SOLUTION OF FRACTIONAL HARRY DYM EQUATION WITH COLLOCATION USING RADIAL BASIS FUNCTION

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Abstract: In this paper, collocation method using radial basis functions is applied to solution of fractional Harry Dym differential equation. In the solution process, we will use linearization technique for non-linear term existing in the equation. L_2 and L_∞ error norms are calculated with matematica program to compare the approximate solution with exact solution.

Keywords: Radial basis functions, Collocation method, Linearization technique.

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CHARACTERIZATION AND REVERSIBILITY OF 2D CELLULAR AUTOMATA WITH REFLECTIVE BOUNDARY

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Abstract: In this presentation, it is concentrated on a family of two dimensional (2D) finite linear cellular automata with reflective boundary condition over the ternary field, i.e. Z_3 . It is established a relation between reversibility of cellular automata and characterization of 2D uniform cellular automata with this special boundary condition. We investigate the determination of the characterization problem of the specific cellular automata by using of the matrix algebra theory. Finally, we strongly believe that our uniform CA construction should be applied in real life applications of many scientific areas, such as image applications, cryptology, etc.

Keywords: Two dimensional cellular automata, Reflective boundary condition, Ternary field.

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ANALYSIS OF TRAINING PERFORMANCES OF INTERPOLATION METHODS FOR MODELLING HUMAN BODY MOTION

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Abstract: In this paper, the movements of human are modelled with dynamic movement primitives and then trained by the computer using various interpolation methods including Lagrange, spline and cubic spline. The main aim of the study was to assess the performances of these interpolation data in the training stage and choose the most suitable method in order to decrease the training and testing error for real-time motion capture applications. Training was performed on the Carnegie Mellon University Motion Capture Database. Step and grouping variables are introduced here to minimize the training error for the dataset. Statistical analysis of the results suggests that there are significant differences between the training results of these interpolation methods. The model was created with group value 4 and step value 6 and calculated mean square error for spline, cubic spline and Lagrange interpolations. Mc Nemar's Test, a non-parametric test to identify pairwise performance differences, was applied to the results to find the most suitable interpolation method. Spline and cubic interpolations yielded better results than Lagrange interpolation with z scores of 2.6 and 2.97, while the cubic spline outperformed spline interpolation with a z score of 3.71 with a 99.5% confidence for one and two tailed predictions.

Keywords: motion modelling; interpolation; dynamic movement primitives.

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A FRACTIONAL ORDER MODEL FOR OBESITY EPIDEMIC

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Abstract: In this presentation, we propose a fractional order epidemic model for obesity contagion. The population size is assumed to be non-constant which is more realistic. The model considers vertical transmission of obesity and also obesity related death rate. We give local stability analysis of the model. Finally, some numerical examples are presented.

Keywords: Fractional differential equations, epidemic model, stability analysis, obesity.

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EXISTENCE AND CONVERGENCE THEOREMS FOR MULTIVALUED GENERALIZED HYBRID MAPPINGS IN CAT(κ)SPACES

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Abstract: In this study, we give definition of some multivalued hybrid mappings which are general than multivalued nonexpansive mappings and some others. Also we give existence and convergence results in CAT(κ) spaces.

Keywords: multivalued mappings, generalized hybrid mappings, fixed point, Δ-convergence

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IDEAL CAUCHY CONDITION FOR INFINITE PRODUCTS

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Abstract: In this presentation, we give $\mathcal{I}$-Cauchy and $\mathcal{I}^*$-Cauchy conditions for infinite products and prove the relation between them.

Keywords: Ideal convergence, ideal Cauchy condition, P-ideal.

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SOME INEQUALITIES FOR *q*-GAMMA FUNCTION

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Abstract: In this presentation, we obtain some monotonicity results for *q*-gamma function and by aid of these, we find some inequalities.

Keywords: Gamma function, *q*-gamma function, monotonicity, inequality.

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SOLVING INVERSE NODAL PROBLEM WITH JUMP CONDITIONS BY USING CHEBISYHEV POLYNOMIALS AND SOME RESULTS ON STABILITY

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Abstract: In this study, we deal with an inverse nodal problem for Sturm-Liouville (SL) equation with eigen parameter-dependent boundary and jump conditions. We give some reconstruction formulas for potential function *q* under a condition and boundary data as a limit by using nodal points. Furthermore, we show that inverse nodal problem for SL equation is stable. Then, we use Chebisyhev polynomials of the first kind for calculating the approximate solution of the inverse nodal problem for SL equation with jump conditions. And, finally we present the numerical results by using some examples.

Keywords: Inverse Nodal Problem, Stability, Sturm-Liouville Equation, Chebisyhev Polynomials

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SPECTRAL THEORY OF DIRAC SYSTEM ON TIME SCALES

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Abstract: In this study, we give some spectral properties of Dirac system on an arbitrary time scale. Furthermore, we have obtained eigenfunctions of first and second canonic forms of this system.

Keywords: Time Scales, Dirac system, Spectral Theory

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SUMMABILITY OF DOUBLE SEQUENCES OF 0’S AND 1’S

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Abstract: In 1909 Borel stated that "Almost all of the sequences consisting of 0's and 1's are Cesàrosummable to (1/2)". Then Hill has generalized Borel's result to general matrices. In this study we investigate the Borel property of 4-dimensional matrices.

Keywords: Double sequences, Pringsheim convergence, the Borel Property, double sequences of 0's and 1's

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UNBOUNDED UPPER AND LOWER SOLUTION METHOD FOR FOURTH-ORDER DELAY DIFFERENTIAL EQUATIONS ON THE HALF-LINE

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Abstract: In this presentation, we introduce existence of solutions for fourth-order boundary value problems with delay terms on an infinite interval. First we present definitions of upper and lower solutions and Nagumo's condition of the problem. Also we establish the Green's function of the problem. Then we give sufficient conditions for the existence of a solution by using upper and lower solution method and the Schauder fixed point theorem. An example is given to illustrate the main result.

Keywords: Upper and lower solution method, delay differential equation, Schauder fixed point theorem.

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STABILITY AND SQUARE INTEGRABILITY OFSOLUTIONS OF NONLINEAR FOURTH ORDER DIFFERENTIAL EQUATIONS WITH DELAY

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Abstract: In this paper, we obtain sufficient conditions for the boundedness and square integrability of the solutions to a certain fourth order non-autonomous differential equations with delay by using Lyapunov's second method. In this work, we extend existing results on fourth order differential equations.

Keywords: Stability, boundedness, Lyapunov functional, delay differential equations, square integrable.

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JENSEN'S INEQUALITY WITH OPERATOR s-CONVEXITY (or BRECKNER s-CONVEXITY) IN HILBERT SPACE AND SOME ITS APPLICATIONS

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Abstract: In this presentation, I introduce a new operator inequality class of Jensen. Furthermore, I obtain new theorems and definitions. Also, Igeneralized this class. Finally, It is given some applications about this inequality.

Keywords: Jensen inequality, operator convex functions, s-convex or Breckner s-convex,

References:

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WIJSMAN STATISTICAL CONVERGENCE OF DOUBLE SEQUENCES OF SETS

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Abstract: In this paper, we study the concepts of Wijsman statistical convergence, Hausdorff statistical convergence and Wijsman statistical Cauchy double sequences of sets and investigate the relationships between them.

Keywords: Statistical convergence, double sequence of sets, Wijsman convergence, Hausdorff convergence.

ROTATIONAL HYPERSURFACE IN 4-SPACE

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Abstract: We consider rotational hypersurface in the four dimensional Euclidean space. We calculate the mean and the Gaussian curvature, and some relations of the rotational hypersurface. Moreover, we give the Laplace-Beltrami operator of the rotational hypersurface.

Keywords: Laplace-Beltrami operator, Rotational hypersurface, Gaussian curvature, mean curvature.

ENNEPER TYPE SURFACES IN 4-SPACE

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Abstract: We study a two parameter family of Enneper-type minimal surfaces using the Weierstrass representation in the four dimensional Euclidean space. We obtain implicit algebraic equations of the surfaces.

Keywords: Enneper-type minimal surfaces, Weierstrass representation, algebraic equation.

ASYMPTOTICALLY I_σ-EQUIVALENCE OF SEQUENCES OF SETS

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Abstract: In this paper, we introduce the concepts of Wijsman$p$-strongly asymptotically invariant equivalence $([W_{V_\sigma}^L]_p)$, Wijsman asymptotically I-invariant equivalence $(W_{I_\sigma}^L)$ and Wijsman asymptotically I^*-invariant equivalence $(W_{I_\sigma^*}^L)$. Also, we investigate the relationships among the concepts of Wijsman asymptotically invariant equivalence, Wijsman asymptotically invariant statistical equivalence, $([W_{V_\sigma}^L]_p)$, $(W_{I_\sigma}^L)$ and $(W_{I_\sigma^*}^L)$.

Keywords: Asymptotically equivalence, I-convergence, invariant convergence, sequences of sets, Wijsman convergence.

GENERALIZED WEIGHTED STATISTICAL CONVERGENCE IN INTUITIONISTIC FUZZY NORMED LINEAR SPACES

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Abstract: In this paper, benefiting from a very recent investigation, we introduce a new statistical convergence type, named weighted λ-statistical convergence to generalize the concept of weighted statistical convergence with respect to the intuitionistic fuzzy norm (μ,υ). Moreover, we establish its relation to weighted statistical convergence and a new summability method, named $\left(\overline{N}_{\lambda},p\right)$- summability with respect to the intuitionistic fuzzy norm (μ,υ).

Keywords: Statistical convergence, strong summability, intuitionistic fuzzy normed linear space.

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OPERATOR IDEAL OF S-TYPE OPERATORS USING WEIGHTED MEAN SEQUENCE SPACE

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Abstract: In this presentation, we give a different class of s-type operators by using the generalized weighted mean sequence space $c_0(u,v)$, and then it is shown that this new class of operators is a quasi-Banach operator ideal. Moreover, their injectivity and surjectivity are investigated according to sort of s-number. Finally, we proof that it is a closed operator ideal.

Keywords: Operator ideals, s-numbers, quasi-norm, weighted mean sequence space.

Acknowledgement: The first author was supported by TÜBİTAK- The Scientific and Technological Research Council of Turkey.

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ON EIGENVALUES AND EIGENFUNCTIONS OF A BOUNDARY VALUE PROBLEM WITH RETARDED ARGUMENT

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Abstract: In this work, we investigate the asymptotic formulas for eigenvalues and eigenfunctions of the boundary value problem for the differential equation

$$u''+q(x)u(x-\Delta(x))+\lambda w(x)u(x)=0,\ x\in\left[0,\frac{\pi}{2}\right)\cup\left(\frac{\pi}{2},\pi\right],$$

with boundary conditions

$$u(0)=0,$$
$$(\beta_1+\beta_2\lambda)u'(\pi)+(\beta_3+\beta_4\lambda)u(\pi)=0$$
$$u(x-\Delta(x))\equiv u(0)\phi(x-\Delta(x))$$

and transmission conditions

$$\gamma_1 u\left(\frac{\pi}{2}-0\right)-\delta_1 u\left(\frac{\pi}{2}+0\right)=0,$$
$$\gamma_2 u'\left(\frac{\pi}{2}-0\right)-\delta_2 u'\left(\frac{\pi}{2}+0\right)=0,$$

where the real valued function $q(x)$ and $\Delta(x)\geq 0$ is continuous on $\left[0,\frac{\pi}{2}\right)\cup\left(\frac{\pi}{2},\pi\right]$, λ is a spectral parameter,

$$w(x)=\begin{cases} w_1^2,\ x\in\left[0,\frac{\pi}{2}\right) \\ w_2^2,\ x\in\left(\frac{\pi}{2},\pi\right]\end{cases}$$

$\gamma_1,\gamma_2,\delta_1,\delta_2$ are arbitrary real numbers ($|\gamma_i|+|\delta_i|\neq 0$) ($i=1,2$), $\phi(x)$ is a initial continuous function on the initial set $E_0=\{x-\Delta(x):x-\Delta(x)<0,t>0\}$ with $\phi(0)=0$.

Keywords: asymptotics of eigenvalues and eigenfunctions, boundary value problems, differential equation with retarded argument; discontinuous coefficient.

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SOME MATRIX CHARACTERIZATIONS ON THE SERIES SPACE $\left|\bar{N}_p^\theta\right|(\mu)$ AND APPLICATIONS

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Abstract: In this study, we introduce the notion of generalized absolute summability method which includes almost well knownsummabilities, and define some related series space $\left|\bar{N}_p^\theta\right|(\mu)$ and also characterize the matrix classes$\left(\left|\bar{N}_p^\theta\right|(\mu), \left|\bar{N}_q^\psi\right|(\lambda)\right)$ and $\left(\left|\bar{N}_p^\theta\right|(\mu), \left|\bar{N}_q\right|\right)$So, we deduce some known results as special cases.

Keywords: Absolute weigtedsummability, matrix transformations, sequence spaces.

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ON THE ONE SUFFICIENT CONDITION FOR SHARP ESTIMATION OF ORTHONORMAL POLYNOMIALS OVER A CONTOUR OF THE COMPLEX PLANE

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Abstract: In this work, we considered the orthogonal polynomials along a contour [1,2]. We investigated the order of the height of the modulus of orthogonal polynomials over a contour with respect to the weighted Lebesgue space, where the contour and the weight function have some singularities at the finite number points on the contour [3.4].
Some sufficiently condition was obtained, when such estimation will be is sharp. Analogous question for arbitrary algebraic polynomials will be considered.

Keywords: Orthogonal polynomials, Algebraic polynomials, Conformal mapping, Quasicircle, Smooth curve.

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WEAK w^2 –STABILITY AND DATA DEPENDENCY OF MANN ITERATIVE SCHEME OF STRONGLY DEMICONTRACTIVE OPERATORS

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Abstract: We continue to examine the stability theory for Mann iterative method of strongly demicontractive operators (SDCOs) in the context of a weaker and more natural notion of stability called weak w^2 –stability to get an insight in the corresponding result obtained in [L. Maruster, St. Maruster, On the error estimation and T –stability of the Mann iteration, J. Comput. Appl. Math., 276 (2015) 110-116]. We also study data dependency of fixed points of SDCOs. Some illustrative examples are also given to validate the theoretical results obtained herein.

Keywords: Mann iteration,weakstability, data dependency, demicontractive mappings.

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APPROXIMATING FIXED POINTS OF ALMOST CONTRACTIONS BY A SIMPLER AND FASTER ITERATIVE SCHEME

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Abstract: Our purpose in this exposition is to prove some convergence and data dependence result in the class of almost contraction operators using a simpler and faster iterative process in the framework of Banach spaces. Some numerical examples are provided to validate the results obtained. Our results improve several known results in the existing literature.

Keywords: Iterative schemes, convergence, data dependence, almost contractions.

References:

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A GENERALIZATION OF SOME MIXED NORM SPACES

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Abstract: In this presentation, we generalize the definition of mixed norm spaces to that of mixed paranorm spaces. We also consider the spaces of sequences that are strongly summable to zero as special cases of mixed paranorm spaces.

Keywords: Mixed norm spaces, mixed paranorm spaces, dual spaces.

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MATRICIALLY DERIVED SOLID BANACH SEQUENCE SPACES

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Abstract: Let F^N denote the vector space of all scalar sequences. If A is an infinite matrixwith non-negative entries and λ is a solid subspace of F^N, then$sol - A^{-1}(\lambda) = \{x \in F^N : A\ |x| \in \lambda\}$ is also a solid subspace of F^N which, under certain conditions on A and λ inherits a solid topological vector space topology from any such topology on λ. Letting $\Lambda_0 = \lambda$and$\Lambda_m = sol - A^{-1}(\Lambda_{m-1})$for m >0, we derive an infinite sequence Λ_0, Λ_1,Λ_2,...of solid subspaces of $F^N$from the inputs A and λ. For A and λ confined to certainclasses, we ask many questions about this derived sequence, and answer a few.

Keywords: Solid sequence space,infinite matrix, projective limit, solid topology.

BOUNDEDNESS OF FRACTIONAL MAXIMAL OPERATOR ON GENERALIZED ORLICZ-MORREY SPACES

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Abstract: We consider generalized Orlicz-Morrey spaces including their weak versions. In these spaces, we find the sufficient conditions for the boundedness of the fractional maximal operator from one generalized Orlicz-Morrey space to another one.

Keywords: generalized Orlicz-Morrey spaces, fractional maximal operator,Riesz potential.

This work was supported by the Ahi Evran University Scientific Research Projects Coordination Unit. Project Number:FEF.E2.16.016

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ON ONE KIND OF POSITIVE OPERATORSIN LEBESGUE SPACE OF HARMONIC FUNCTIONS

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Abstract: In this work we consider some system of positive operators in Lebesgue Space of Harmonic functions and proveKorovkin type theorem in this space.

Keywords: Lebesgue Space of Harmonic functions, Korovkin type theorem, Poisson kernel.

References:

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NUMERICAL RECKONING COINCIDENCE POINTS OF NONSELF MAPPINGS VIA A JUNGK-MODIFIED SP ITERATIVE METHOD

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Abstract: Current literature on the iterative approximation of fixed points reveals that there have been substantial endeavors to introduce diverse iterative methods of self-operators and investigate their more qualitative properties such as convergence, data dependency and stability. Since the case of nonself-mappings is much more complicated than that of self-mappings, it is rarely considered in the literature. Inspired by the work of Khan et al. [1] and [2], here we handle this problem using a new iterative method of two nonself operators.

Keywords: Convergency,data dependency, Jungck-type iterative method.

References:

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COMMON FIXED POINT THEOREMS FOR WEAKLY COMPATIBLE MAPPINGS, EMPLOYING AN IMPLICIT RELATION WITH COMPLEX COEFFICIENTSON COMPLEX VALUED METRIC SPACE

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Abstract:A general common fixed point theorem for two pairs of weakly compatible mappings using an implicit function is proved without any continuity requirement which generalizes the result due to Popa [3, Theorem 3]. We establish common fixed point theorems involving two pairs of weakly compatible mapping satisfying certain rational expressions with complex coefficients are proved in complex valued metric space.

Some related results are also derived besides furnishing illustrative examples to highlight the realized improvements. The presented theorems generalize, extend and improve many existing results in the literature.

Keywords: implicit functions, weakly compatible mappings, complex coefficients, coincidence and Complex valued metric space.

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RESTORATION OF DEGRADED FACE IMAGE USING NON LINEAR DIFFERENTIEL EQUATION FOR RECOGNITION

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Abstract: In this paper, we search to find a good estimate of the degraded face image for recognizing the person presented in this face. First, the degraded face image is restored with an anisotropic diffusion method based on non linear differential equation (PDE). This approach is an efficient new method to remove noise from an image by performing isotropically smooth in the homogeneous region (low gradient) in preference to inhomogeneous region (height gradient) in order to prevent the destruction of discontinuities. After the restoration task, the recognition one is performed using the principal components analysis (PCA) method that decomposes the face image into small set of characteristics (eigenvectors) which catch the total variation in collection of training faces(classes) where each class contains a few images describing a person with different poses and looks (hair style, glasses,…). The training set created a new space called eigenface space where the restored image is projected, so it is redefined in this space using eigenvectors.Finally, we can recognize the person presented in the test face on selecting the face class that have the minimum distance with the projected image using the mean square distance and studding the different cases.Experiments on the Extended Yale B face database where the test face image is artificially degraded using the Gaussian blurshow that the proposed method substantially improves the recognition performance compared to other methods.

Keywords: anisotropic diffusion based on non linear differential equation, linear method based on principal components analysis, restoration of degraded face image, face recognition.

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CHARACTERIZATION OF THREE DIMENSIONAL CELLULAR AUTOMATA WITH PERIODIC BOUNDARY OVER $\mathbb{Z}_m$

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Abstract: A quick look at the literature reveals that there are just a few study regarding with three dimensional cellular automata. This situation motivate us to study the algebraic behavior of three dimensional linear cellular automata over $\mathbb{Z}_m$. We provide necessary and sufficient conditions for a three dimensional linear cellular automata over $\mathbb{Z}_m$to be reversible or irreversible. The obtained result characterizes three dimensional linear cellular automata under the periodic boundary conditions. Finally, we give an application to show validity of our result.

Keywords:3D Cellular automata, Matrix Representation, Finite Fields, Periodic Boundary.

References:

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NUMERICAL APPROACH TO SOLVE SINGULAR INTEGRO-DIFFERENTIAL EQUATIONS USING TAYLOR SERIES EXPANSION

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Abstract: In this paper, we apply Taylor series expansion for approximating and then transform the given nth-order weakly singular linear Volterra and Fredholmintegro-differential equations to one ordinary linear differential equation. The solution of this last differential equation is the approximate solution of the integro-differential equation. Finally, some different examples are considered the results of theseexamples indicated that the procedure of transformation method is simple and effective,and could provide an accurate approximate solution or exact solution.

Keywords: Taylor series expansion,General Abel Integral, Integro-differential Equations, Weakly singular Fredholm integral-equations, Weakly singular Volterraintegral-equations.

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EXTRAGRADIENT METHODFORSOLVING EQUILIBRIUM PROBLEM IN BANACHSPACES

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Abstract: In this presentation, using sunny generalized nonexpansive retraction, which is different from the metric projection,we propose a new extragradientalgorithm for finding the solution setofanequilibriumproblem (*EP*) inBanachspaces.The extragradient method is well known because of its efficiency in numerical test.In all papers, authors have used metric projection in Hilbert spaces andgeneralized metric projection in Banach spaces. Toobtainstrongconvergencefor the sequences which are generatedbyour algorithm, we assume that the equilibrium function f satisfies in φ-Lipschitz-type condition.

Keywords:, Equilibrium problem,Extragradient method, Sunny generalized nonexpansive retraction.

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NUMERICAL INTEGRATION VIA SPARSE GRIDQUASI-INTERPOLATION WITH GAUSSIANS

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Abstract: Sparse grid approximation is one of the most powerful methods for approximation of functions especially in high dimensions, 5-10, say. In this presentation we will define a quadrature formula via quasi interpolation by using sparse grid with Gaussian kernel. Then in order to overcome convergence problem we define multilevel version of this algorithm. Finally we present theresults of numerical experimentation for numerical integration for high dimensions.

Keywords: Sparse grid, quasi interpolation, Gaussians, high dimensional interpolation, quadrature, multilevel algorithm.

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USING KERNEL BASED METHODS FOR NEW TYPE CONFORMABLE ODE PROBLEMS

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Abstract: In this presentation, we introduced a new scheme for solving the newly defined conformableordinary differential equation [1] via the mesh-free numerical method. In order to solve these type differential equations, we use the radial basis functions with collocation technique. Then Wepresent the results of numerical experimentation for numerical solution of newly defined conformable ordinary differential equations.

Keywords: Newly defined conformable derivatives, radial basis fucntions, collocation technique.

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AN EXISTENCE THEOREM OF MULTIPLE POSITIVE SOLUTIONS TO SEMIPOSITONE BOUNDARY VALUE PROBLEMS

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Abstract: In this talk, we investigate the existence of multiple positive solutions for semipositone boundary value problems of three-point boundary conditions by means of the Leggett- Williams fixed point theorem.

Keywords: Positive solution, fixed point theorem, semipositone.

References:

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GENERALIZED ABSOLUTE CESÀRO SUMMABILITY SPACES AND MATRIX OPERATORS

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Abstract: In this presentation, we introduce a new space $|C_{\lambda,\mu}|_k$ as the set of series summable by absolute Cesàrosummability$|C,\lambda,\mu|_k$ of Das [2], investigateits some algebraic and topological properties, and characterize some matrix operators defined on that space. Moreover, these characterizations correspond to problems of absolute summability factors and comparison of thesesummability methods for the special matrix transformations such as identity matrix I and the matrix $W = (w_{n\nu})$defined by $w_{n\nu} = \varepsilon_\nu$for $\nu = n$, zero otherwise. Hence we generalize some well known results of Bosanquet [1],Flett [3], Mehdi [6],Mazhar [5], Orhan and Sarıgöl [10] and Sarıgöl[7,9].

Keywords: Sequence spaces, Absolute Cesàrosummability, matrix transformations, dual spaces, BK spaces.

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A NEW ITERATIVE ALGORITHM FOR QUASI BREGMAN NOEXPANSINE MAPPINGS

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Abstract. In this paper, we propose a new iterative algorithm for finding commonfixed points of infinitely countable family of quasi Bregmannonexpansive operatorsand common solutions of finite family of equilibrium problems in reflexive Banachspaces.

Keywords: Bregman projection, Legendre function, quasi Bregman nonexpansive, Equilibrium problems.

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APPROXIMATE SOLUTIONS OF DELAY PSEUDO-PARABOLIC EQUATIONS

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Abstract: In this presentation, linear and nonlinear pseudo-parabolic equations with time delay are examined. For the solving numerically the considered initial-boundary velue problems difference schemes are constructed and analysed. Based on the method of energy estimates the order of convergence is obtained. The error estimates are obtained in the discrete norm. Some numerical results confirming the expected behavior of the method are shown.

Keywords: Pseudo-Parabolic, Initial-boundary value, Finite Difference, Delay Equations

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SOME IDENTITIES OF THE HUMBERT AND GENERALIZED CHEBYSHEV POLYNOMIALS

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Abstract: In [1], we constructed some generating functions for two-variable polynomials related to a family of the Fibonacci type polynomials and numbers. By using these functions and their functional equations with PDE, we derived many identities and relations associated with some well-known polynomials and numbers such as the Fibonacci numbers, the Fibonacci polynomials, the Jacobsthal polynomials, the Chebyshev polynomials, the Vieta-Fibonacci polynomials, the Vieta-Lucas polynomials, the Humbert polynomials and the Geganbauer polynomials. In this paper, we modify generating functions for the two-variable polynomials of the Fibonacci type polynomials. By using these generating functions, we give many new identities and relations for the Humbert polynomials and the generalized Chebyshev polynomials. Finally, we give some remarks and observations on these generating functions and related infinite series.

Keywords: Generating function, Fibonacci numbers and polynomials, Chebyshev polynomials, Humbert polynomials, Geganbauer polynomials.

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A NEW SMOOTHING METHOD VIA BEZIER CURVE FOR NON-SMOOTH FUNCTIONS

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Abstract:I n this study, we propose a new smoothing technique based on the Bezier curve for non-smooth functions. We use this smoothing approach in a global optimization method and construct an algorithm for this global optimization method. We apply the algorithm to the test problems in order to illustrate the efficiency of the method.

Keywords: Global Optimization, Non-Smooth, Non-Lipschitz, Smoothing

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VIABILITY PROBLEM FOR SECOND ORDER DIFFERENTIAL INCLUSIONS

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Abstract: In this presentation, we derive the optimality conditions for the viability problem for second order differential inclusions. Applying optimality conditions of problems with geometric constraints, optimality conditions for second order discrete inclusions are formulated. Using locally adjoint mapping we conceive necessary and sufficient conditions for the optimality of the discrete approximation problem. Then passing to the limit, sufficient optimality conditions to the optimal problem described by second order differential inclusions are established.

Keywords:second order discrete differential inclusion,transversality condition, Euler-Lagrange inclusion, locally adjoint mapping, dual cone.

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IDENTITIES ON THE $\varepsilon_{4n,1}$-INTEGRAL TRANSFORM

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Abstract: In this presentation the authors prove a Parseval- Goldstein type theorem involving the $\varepsilon_{\{4n,1\}}$- generalized exponential integral transform. The theorem is then shown to yield a number of new identities involving several well- known integral transforms. Using the theorem and its corollaries a number of interesting infinite integrals are presented.

Keywords$\varepsilon_{4n,1}$-transform, L_{4n}-transform, P_{4n}-transform, Laplace transform, Parseval-Goldstein Type Theorems

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ON THE PARANORMED TAYLOR SEQUENCE SPACES

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Abstract: In this study, the sequence spaces $t_0^r(p)$, $t_c^r(p)$ and $t^r(p)$ of non-absolute type which are the generalization of the Maddox's sequence spaces have been introduced and it is proved that the spaces $t_0^r(p)$, $t_c^r(p)$ and $t^r(p)$ are linearly isomorphic to the spaces $c_0(p)$, $c(p)$ and ℓ , respectively. Furthermore, the $\alpha-,\beta-$ and $\gamma-$ duals of these spaces have been computed and their bases have been constructed and some topological properties of these spaces have been investigated. Besides this, some matrix classes have been characterized.

Keywords: Paranormed Taylor sequence spaces, matrix domain, matrix transformations

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ON THE TAYLOR SEQUENCESPACES OF NON-ABSULATE TYPE WHICH INCLUDE THE SPACES ℓ_p and $\ell_\infty : (1 \le p < \infty)$

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Abstract: In this presentation, we introduce Taylorsequence spaces t_p^r and t_∞^r consisting of all sequences whose $T(r)-$transforms are in thespaces ℓ_p and ℓ_∞, respectively. We investigatesome properties and compute $\alpha-$, $\beta-$ and $\gamma-$duals ofthese spaces. Afterwards, we characterize of some matrix classesof Taylor sequence spaces t_p^r and t_∞^r.

Keywords: Taylor sequence spaces, matrix domain, matrix transformations

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LACUNARY STATISTICAL CONVERGENCE OF ORDER $(\boldsymbol{\alpha}, \boldsymbol{\beta})$ AND STRONG $N_{\alpha}^{\beta}(\boldsymbol{\theta}, \boldsymbol{p})$ −SUMMABILITY

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Abstract: In this presentation, we introduce the concepts of lacunary statistical convergence of order $(\alpha,\beta)$and strong$N(\theta,p)$ −summability of order$(\alpha,\beta)$for sequences of complex (or real) numbers and give some inclusion relations between the sets of lacunary statistical convergence of order (α,β), strong $N_{\alpha}^{\beta}(\theta,p)$ −summability and statistical convergence of order (α,β).

Keywords: Statistical convergence, lacunary sequence, strong summability.

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LACUNARY STATISTICAL CONVERGENCE OF ORDER (α,β) IN TOPOLOGICAL GROUPS

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Abstract: In this presentation, the concept of lacunary statistical convergence of order(α,β) is generalized to topological groups, and some inclusion relations between the set of all statistically convergent sequences of order (α,β) and the set of all lacunary statistically convergent sequences of order (α,β) are given.

Keywords: Topological groups, statistical convergence,lacunary sequence.

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A^I–STATISTICAL CONVERGENCE OF ORDER $\alpha(0 < \alpha < 1)$

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Abstract: Following a very recent approach, in this study we investigate A^I-statistical convergence of order α with respect to a sequence of modulus functions where $A=(A_{ki})$ is an infinite matrix and $\lambda=(\lambda_n)$ is a non-decreasing sequence of positive numbers. We call this new convergence as $\left[S_A^\lambda(I,F)\right]^\alpha$ $-$convergence.Furthermore, we define $\left[V_A^\lambda(I,F)\right]^\alpha$ $-$convergence and $\left[S_A(I,F)\right]^\alpha$ $-$convergence and we mainly investigate their relationship.

Keywords: Statistical convergence, ideal, filter, A^I-statistical convergence, $\lambda=(\lambda_n)$ sequence.

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A NUMERICAL ANALYSIS FOR SOLUTION OF DIFFERENTIAL EQUATIONS USING THE COMPLEMENTARY FUNCTIONS METHOD

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Abstract: In some problems the assumption yields a two-point boundary value problem with a governing ordinary differential equation of variable coefficients. Since general analytical solutions of such equations especially for higher order ones are not available a numerical analysis method is employed. One of them is known as Complementary Functions Method (CFM). The main idea of the method is to reduce the boundary value problem to an initial-value problem. The problem considered is written in canonical form to transform a set of n linear ordinary differential equations. The homogeneous and particular solutions are obtained using matrix calculations. This study gives the accurate numerical results for some special cases using the Fortran's subroutines.

Keywords: Complementary functions method, canonical form, boundary value problems.

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PERFORMANCE ANALYSIS OF STOCHASTIC BEAM AND VARIABLE NEIGHBORHOOD SEARCH UNDER PARTIALLY SHADED PHOTOVOLTAIC SYSTEMS

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Abstract: Solar photovoltaic (PV) array which is exposed to the uniform solar irradiance exhibits the non-linear Power-Volt characteristic. Maximum power point (MPP) tracking is challenging due to varying climatic conditions in solar photovoltaic (PV) system. Also, the tracking algorithm becomes more complicated due to the presence of multiple peaks in the power voltage characteristics under the condition of partial shading. This paper presents a Stochastic Beam Search (SBS) based algorithm and Variable neighborhood search (VNS) for maximum power point tracking (MPPT) at partial shading condition in PV system. A mast is placed in front of the modules so as to scatter the partial shading effect over the entire array. The rearrangement of modules is performed without varying the electrical connection of the modules in the array. It is validated that the power generation of array under a moving shadow condition is enhanced and the various partial shading losses are reduced by optimal parameter selection.

Keywords: Solar Photovoltaic; MPPT; Partial Shading,Stochastic beam search, Variable neighborhood search.

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A STUDY ON ABSOLUTE ALMOST CONVERGENCE

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Abstract: Lorentz [1] provided an authentic characterization of almost convergent sequences. Using Lorentz's definitiona lot of papers appeared dealing with almost convergence. Among them Nanda and Nayak [2] defined the concept of almost bounded variation and later Das, Kuttner and Nanda[3] introduced the concept of absolute almost convergence. The aim of this presentation is to survey this two concepts and to describesome of the many resultswhich have been proved for absolute almost convergence. Furthermore, some matrix transformations have been characterized.

Keywords: Almost convergence,absolute almost convergence, absolute summability.

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COMPOSITION OPERATORS ON WEIGHTED BESOV SPACES

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Abstract: Let D denote the open unit disc in the complex plane andA is normalized Lebesgue measure on D. The weightedBesov space Bp(σ); (p > 1) is the space of analytic functions f on D such that $\int_D |f'(z)|^p \sigma(z)dA(z) < \infty$, where σ is a weight function on D. In this article we study composition operators on weightedBesov spaces with admissible Bekolle weights.

Keywords: Composition operator, Bekolle weight, Besov space.

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IMPROVING THE CONVERGENCE ORDER OF THE REGULARIZATION METHOD FOR FREDHOLM INTEGRAL EQUATIONS OF THE SECOND KIND

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Abstract: We build a numerical approximation method, for Fredholm integral equation solution of the second type. This method is based on the regularization by convolution and Fourier seriesexpansion. It provides a better convergence order.

Keywords: Integral equation; Weak singularity; Convolution; Fourier series

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EULER SUMMABILITY KIND VARIOUS CONVERGENCE OF SETS

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Absract. In this paper we peresent definitions of Kuratowski Euler convergence, Hausdorff Euler convergence, Wijsman Euler convergence, Fisher Euler convergence and Mosco Euler convergence of sequences of sets. Also we characterize the connection between of their.

Keywords. Euler convergence, Kuratowski, Hausdorff, Wijsman, Fisher and Mosco convergence.

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GIBBS MEASURES FOR THE POTTS-SOS MODEL WITH FOUR STATES ON CAYLEY TREE OF ORDER ARBITRARY

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Abstract: In this paper, we study a new model, the so-called Potts and solid-on-solid model (mixed P-SOS model),with spin values 0,1,2,3 on a Cayley tree of order arbitrary. We prove the existence Gibbs measures by analyzing fixed points of one-dimensional system of equations. We obtain all translation-invariant splitting Gibbs measures corresponding to the model.These measures are categorized by solutions to a nonlinear vector-valued functional equation.

Keywords: Cayley tree, Gibbs measure, Potts-Sos model, Configuration space.

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BOUNDEDNESS OF THE CALDERON-ZYGMUND SINGULAR INTEGRAL OPERATOR AND ITS COMMUTATORS ON MODIFIED MORREY SPACES

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Abstract:
Let$1 \leq p < \infty$, $0 \leq \lambda \leq n$, $[t]_1 = \min\{1, t\}$. We denote by $\tilde{L}_{p,\lambda} = \tilde{L}_{p,\lambda}(\mathbb{R}^n)$ the modified Morrey space, as the set of locally integrable functions $f(x), x \in \mathbb{R}^n$, with the finite norms

$$\|f\|_{\tilde{L}_{p,\lambda}} = \sup_{\substack{t>0, \\ x\in\mathbb{R}^n}} \left([t]_1^{-\lambda} \int_{B(x,t)} |f(y)|^p dy \right)^{\frac{1}{p}}$$

We study the boundedness of the Calderon-Zygmund singular integral and its commutators on modified Morrey spaces.

Keywords: Calderon-Zygmund singular integral operator, commutator Calderon-Zygmund singular integral operator, modified Morrey space, BMO space.

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ON WEIGHTED IYENGAR TYPE INEQUALITIES FOR CONFORMABLE FRACTIONAL INTEGRALS

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Abstract: In this presentation, we establish integral inequalities of Iyengar's inequality type involving conformable fractional integrals.

Keywords: Iyengar inequality, weighted quadrature rule, conformable fractional integral.

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ON TRIGONOMETRIC APPROXIMATION BY DEFERRED-NÖRLUND $(D.N_p)$ MEANS IN LIP α CLASS

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Abstract: In [1], Lal studied the degree of approximation for the functions belonging to the Lip α $(0<\alpha\leq 1)$ class using Cesáro-Nörlund $(C^1.N_p)$ means of their Fourier series where $p:=\{p_n\}$ is a non-increasing sequence. Later Mishra *et al.* investigated the degree of approximation of conjugate functions belonging to the Lip α class by $(C^1.N_p)$ means of conjugate series of its Fourier series in [2] where the condition of monotonicity on the sequence p was a replaced by a weaker assumption. In [3], we know that the deferred Cesáro means which was considered by Rp Agnew has useful properties not possessed by the Cesáro means. Taking into deferred Cesáro means we will give Deferred-Nörlund $(D.N_p)$ means and with this perspective we shall present results related to trigonometric approximation of functions belonging to Lipschitz class by the $(D.N_p)$ means of its Fourier series. Moreover, we state results on degree of approximation to conjugates of functions belonging to Lipschitz class by the $(D.N_p)$ means of its conjugate Fourier series.

Keywords: Lipschitz class, Deferred-Cesaromeans, Deferred-Nörlund means, Trigonometric approximation

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EXPONENT OF CONVERGENCE OFSOLUTIONS OFCERTAIN LINEAR DIFFERENTIAL EQUATIONS IN THE DISC

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Abstract: In this paper we investigate the n-iterated exponent of convergence of $f^{(i)}$-φ where $f \neq 0$ is a solution of linear differential equation with analytic or meromorphic coefficients in the unit disc and φ is a small function of f by making use the Nevanlinna theory of values distribution of a meromorphic function (see [1]). This work is an extension and counterpart of recent results in the complex plane by Xu et al.[2] and Tu et al. [3],to the unit disc.

Keywords: Linear differential equations, exponent of convergence of solutions, order of growth.

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COUPLED COINCIDENCE POINT THEOREMS FOR A GENERALIZED COMPATIBLE IN PARTIALLY METRIC SPACES

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Abstract: In this presentation, in the setting of partially ordered metric spaces, using the notion of generalized compatibility of a pair $\{F, G\}$, of mappings $F, G: X \times X \to X$, we establish the existence and uniqueness of coupled coincidence point involving (φ, ψ)-contractive condition without mixed G-monotone property of F.Hence the derived coupled fixed point results do not have the mixed monotone property of F. Our results improve and generalize the results of Jain et al. (Journal of Inequality and Applications 2012 2012:285.) and Berinde (Nonlinear Anal. TMA 74, 983-992 (2011)).

Keywords: Coupled coincidence point, generalized compatibility, ordered set.

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A VARIATION ON HALF CAUCHY SEQUENCES

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Abstract: In this presentation, we investigate the concepts of up continuity and down continuity. A real valued function f on a subset E of IR, the set of real numbers is up continuous if it preserves upward half Cauchy sequences, i.e. the sequence $(f(\alpha_n))$ is upward half Cauchy whenever (α_n) is an upward half Cauchy sequence of points in E; and is down continuous if it preserves downward half Cauchy sequences, i.e. the sequence $(f(\alpha_n))$ is downward half Cauchy whenever (α_n) is a downward half Cauchy sequence of points in E, where a sequence (α_k) of points in IR is called upward half Cauchy if for each $\in>0$ there exists an $n_0\in$IN such that $\alpha_n - \alpha_m<\in$ for $m>n\geq n_0$, and called downward half Cauchy if for for each $\in>0$ there exists an $n_0\in$IN such that $\alpha_m - \alpha_n<\in$ for $m>n\geq n_0$. It turns out that not only the set of up continuous functions, but also the set of down continuous functions is a proper subset of the set of continuous functions.

Keywords: Sequences, series, summability, continuity.

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A VARIATION ON LACUNARY STATISTICAL QUASI CAUCHY SEQUENCES

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Abstract: In this presentation, the concept of a lacunarystatistically δ-quasi-Cauchy sequence is investigated. In this investigation, we proved interesting theorems related to lacunarystatistically δ-ward continuity, and some other kinds of continuities. A real valued function f defined on a subset A of IR, the set of real numbers, is called lacunary statistically δ-ward continuous on Aif it preserves lacunary statistically δ-quasi-Cauchy sequences of points in A, i.e. $(f(\alpha_k))$ is a lacunary statistically δ-quasi-Cauchy sequence whenever $(\alpha_k)$is a lacunary statistically δ-quasi-Cauchy sequence of points in A, where a sequence (α_k) is called lacunary statistically δ-quasi-Cauchy if $(\Delta\alpha_k)$ is a lacunary statistically quasi-Cauchy sequence. It turns out that the uniform limit process preserves this kind of continuity, and the setof lacunary statistically δ-ward continuous functions is a closed subset of the set of continuous functions.

Keywords: Sequences, series, summability, continuity.

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ONCOMPUTING THE AVERAGE LOWER DOMINATION NUMBERSOF SOME TREES

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Abstract: Let $G=(V(G),E(G))$ be an undirected simple connected graph and let $D\subseteq V(G)$ be a set of vertices. The set D is a k*-dominating set of* G if $|N_G(u)\cap D|\geq k$ for all $u\in V(G)\setminus D$, where $k\in \mathrm{N}^+$. The k-*domination number* $\gamma_k(G)$ of G is the minimum cardinality of a k-dominating set of G.1-domination number is also called domination number $\gamma(G)$ and1-domination set is called dominating set.The averagelower domination number of G, denoted by $\gamma_{av}(G)$,is defined as $\gamma_{av}(G)=\frac{1}{|V(G)|}\Sigma_{v\in V(G)}\gamma_v(G)$, where the lower domination number $\gamma_v(G)$ is the minimum cardinality of a dominating set of the graph G that contains the vertex v.In this presentation, exact values of the average lower domination number and average lower 2-domination number of some trees namely comet graph, double comet graph, k-ary tree and E_p^t graph are obtained.

Keywords: Connectivity; Domination number; Average lower domination numbers; Trees.

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THE AVERAGED MODULUS OF SMOOTHNESS AND ONE SIDED APPROXIMATION IN ORLICZ SPACES

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Abstract: In this presentation, firstly we give basic properties of averaged modulus of smoothness in Orlicz spaces L_{φ}^{*}. Then we prove some direct and converse one sided approximation problems in Orlicz spaces L_{φ}^{*}

Keywords: Averaged modulus of smoothness, one sided approximation, direct theorem, converse theorem.

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ON THE PARAMETERIZED SINGULARLY PERTURBED BOUNDARY VALUE PROBLEMS

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Abstract: In this presentation, the boundary value problems for parameterized singularly perturbed second-order nonlinear ordinary differential equation are considered. The boundary layer behavior of the solution and its first and second derivatives have been established. Examples are presented which are in agreement with the theoretical analysis.

Keywords: Depending on a parameter, Asymptotic bounds, Singular perturbation, Boundary layer.

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OPERATIONS ON $\mathbb{B}^{-1}$-CONVEX SETS AND $\mathbb{B}^{-1}$-CONVEX FUNCTIONS

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Abstract: $\mathbb{B}^{-1}$-convexity that is an important abstract convexity type for mathematical economy was introduced in [1,2]. Its applications to mathematical economy were given in [2]. Separationof $\mathbb{B}^{-1}$-convex sets by $\mathbb{B}^{-1}$-measurable maps was studied in [3]. $\mathbb{B}^{-1}$-convex functions were defined and examined in [4]. In this presentation, we introduce some new operations on $\mathbb{B}^{-1}$-convex sets and $\mathbb{B}^{-1}$-convex functions.

Keywords: Abstract convexity, $\mathbb{B}^{-1}$-convex sets, $\mathbb{B}^{-1}$-convex functions.

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SOME SPECIAL NUMBERS AND POLYNOMIALS RELATED TO K-ARY LYNDON WORDS

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Abstract: The aim of this talk is to investigate k-ary Lyndon words of length prime and their generating functions. Firstly, we survey and investigate not only these numbers related arithmetical functions, Mobius inversion formula, Necklace polynomials, but also de Bruijn sequences and graphs. Finally, we give relations between the numbers of k-ary Lyndon words of length prime and many numbers such as the Bernoulli numbers, the Euler numbers and the Frobenius-Euler numbers.

Keywords: Lyndon words, Necklace polynomials, De Bruijn sequences, Generating functions, Special numbers, Special polynomials, Arithmetical functions, Mobius inversion formula.

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A NEW ITERATION SCHEME FOR A HYBRID PAIR OF NONEXPANSIVE MAPPINGS

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Abstract: In this paper, we construct an iteration scheme involving a hybridpair of nonexpansive mappings and utilize the same to prove someconvergence theorems. In process, we remove a restricted condition(called end-point condition) in Sokhuma and Kaewkhao's results[Sokhuma and Kaewkhao, Fixed Point Theory Appl. 2010, Art. ID618767, 9 pp.].

Keywords: Banach space, convergence theorems, fixed point.

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TAUBERIAN THEOREMS FOR WEIGHTED MEANS OF DOUBLE SEQUENCES OF FUZZY NUMBERS

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Abstract: In this paper, we give necessary and sufficient Tauberian conditions under which convergence in Pringsheim's sense of a double sequence of fuzzy numbers follows from convergence of weighted means (N,p,q). These conditions are weaker than the two-dimensional analogues of Landau's condition and Schmidt's slow oscillation condition.

Keywords: Fuzzy numbers, double sequences,slow oscillation, (N,p,q) summability, Tauberian theorems.

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SPECTRAL SINGULARITIES OF THE IMPULSIVE STURM LIOUVILLE OPERATORS ON THE SEMI AXIS

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Abstract: We consider the second order differential equation

(1) $\quad -y'' = \lambda^2 \rho(x) y,\ x \in [0,\infty)\backslash\{1\}$
with boundary condition

(2) $\quad y(0) = 0$

and impulsive condition

(3) $\quad \begin{bmatrix} y_+(1) \\ y'_+(1) \end{bmatrix} = \begin{bmatrix} a & b \\ c & d \end{bmatrix} \begin{bmatrix} y_-(1) \\ y'_-(1) \end{bmatrix}$

wherea,b,c,d are complex numbers,

$$\rho(x) = \begin{cases} \gamma^2 & if\ 0 \le x < 1 \\ 1 & if\ 1 < x < \infty \end{cases}, \quad \gamma > 1$$

and λ is a spectral parameter. Let L denote the operator generated by (1),(2) and (3) in $L^2(0,\infty)$. In this study, we investigate eigenvalues and spectral singularities of L depending on the choice of coupling constants a,b,c,d.

Keywords: Sturm Liouville operators, spectral singularity, impulsive condition.

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NORM INEQUALITIES FOR A PARTICULAR CLASS OF MATRICES

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Abstract: In this talk, we discuss some norm inequalities for accretive dissipative 2x2 block matrices. More precisely, we prove Schatten p-norm inequalities for this particular class of matrices. Our results generalize and improve some earlier results.

Keywords: Accretive-dissipative matrix, Schattenp-norm, Inequality.

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ZWEIER SUPER BANACH SPACES

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Abstract: This In this paper, we have given some definitions and theorems about super metric (or ultra metric) and super normed(or ultra normed) spaces which exists in the mathematical litrature knowledge base. After, we have defined some new type super-Banach spaces which are super isomorphic to some super Banach spaces and given some intersting properties. Furthermore, some inclusions are proved about these new type super Banach.

Keywords: Ultra metric, ultra norm, super norm, non-Archimedean space, ultra convergent.

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AN OPTIMAL MULTIPLE SWITCHING PROBLEM UNDER WEAK ASSUMPTIONS

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Abstract: This work studies the problem of optimal multiple switching in finite horizon, when the switching costs functions are continuous and belong the class D. This problem is solved by means of the Snell envelope of processes.

Keywords: Real options, Snell envelope, stopping time, optimal switching.

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ROBIN BOUNDARY VALUE PROBLEM FOR THE BELTRAMI EQUATION

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Abstract: In this work, we present a solvability condition of the Robin boundary value problem for the Beltrami equation with constant coefficients given by $w_{\bar{z}} + cw_z = f, f \in L_p(D,\mathbb{C}) \cap C(\overline{D},\mathbb{C}); p > 2, \left[w(z) + \frac{\partial w}{\partial \nu}\right]\Big|_{\partial D} = \gamma, \gamma \in C(\overline{D},\mathbb{C})$ on the unit disk $D = \{z \in \mathbb{C} : |z| < 1\}$. We also present an elementary solution using singular operator.

Keywords: Beltrami equation, Robin boundary vale problem, singular integral operator.

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A SIMPLE APPROACH TO THE SOLUTION OF SPECIAL STRUCTURED NONHOMOGENEOUS HIGHER ORDER LINEAR DIFFERENTIAL EQUATIONS WITH CONSTANT COEFFICIENTS

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Abstract: Due to such Differential Equations is linear with Constant Coefficient; it is solved by the consecutive integral method, the undetermined coefficients method and variation of parameters method. Nevertheless, for higher order of *n,* the undetermined coefficients method is required solutions of multi-variable undefined linear equations system. Variations of parameters method is also required both obtaining linear equations system with many-unknowns coefficients in the form of derivative functions and integration of such unknown coefficients in the form of derivative functions in these systems.

All of these methods are include difficulties. In the present work, a simple approach to the solution of special structured nonhomogeneous higher order linear differential equations with constant coefficients is presented. The proposed method can be used directly and briefly. This method is proved with sample solutions.

Keywords: Higher Order Linear Differential Equations, Constant coefficient, Nonhomogeneous solution, simple approach.

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ON SOME PROPERTIES OF VECTOR-VALUED WEIGHTED VARIABLE EXPONENT SOBOLEV SPACES

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Abstract: In this presentation, we define vector-valued weighted variable exponent Sobolev spaces and mention some their basic properties, such as completeness, separable, reflexive and uniformly convex. Furthermore, we obtain several density theorems in this spaces. Finally, we give some results about embeddings theorems and its applications in vector-valued weighted variable exponent Sobolev spaces.

Keywords: Vector-valued variable exponent weighted Sobolev space, Embeddings, Density theorem.

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EDGE OPERATIONS IN GRAPHS AND ZAGREB INDICES

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Abstract: Topologic indices, also called graph indices, are important mathematical tools which give information about the graph. The first and second Zagreb indices are two of them. They were calculated for many graph types and there are also general results on them. In this paper we study the change of these indices when an edge is deleted. Also the change of the first Zagreb index when a number of edges are deleted is calculated. These enables us to study the properties of larger graphs in terms of the properties of smaller graphs which can be calculated easily..

Keywords: Graph, topological index, Zagreb index, edge operations.

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INITIAL TIME DIFFERENCE GENERALIZED MONOTONE ITERATIVE TECHNIQUE UNIFIED BY THE UPPER AND LOWER SOLUTIONS

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Abstract: In this work, the monotone iterative methods for initial value problems have been investigated by choosing upper and lower solutions with initial time difference when the forcing function has sum of two different natural ones.

Keywords: Initial time difference, monotone iterative technique, existence theorems, comparison results.

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ON NONLINEAR BOUNDARY VALUE PROBLEM

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Abstract: In this article, the existence and non-existence of a semi-linear elliptic equation with nonlinear boundary value problem is studied. Moreover, the uniqueness of the solution that corresponding to the boundary value andthe local behavior of the solution are proved.

Keywords: Nonlinear boundary value problem, existence, uniqueness, local extrema, positive solution.

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UNIFIED RELATION-THEORETIC METRICAL FIXED POINT THEOREMS UNDER AN IMPLICIT CONTRACTIVE CONDITION WITH AN APPLICATION

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Abstract: The main purpose of this article is to establish metrical relation-theoretic fixed pointtheorems via an implicit contractive condition which is genera l enough to yield a multitude of corollaries corresponding to several well known contraction conditions (e.g. Banach (Fund. Math. 3, 133-181(1922)), Kannan (Am. Math. Mon. 76, 405-408 (1969)), Reich (Can. Math. Bull. 14, 121-124(1971)),Bianchini (Boll. Unione Mat. Ital. 5, 103-108 (1972)), Chatterjea (C. R. Acad. Bulg. Sci. 25,727-730 (1972)), Hardy and Rogers (Can. Math. Bull. 16, 201-206 (1973)), _Ciri_c (Proc. Am. Math.Soc. 45, 267-273 (1974)) and several others) wherein even such corollaries are new results on theirown. As simple we utilize our main results, to prove a theorem on the existence and uniqueness of the solution of an integral equation besides furnishing an illustrative example.

Keywords: Complete metric space, binary relations, implicit relations, fixed point.

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PARAMETRIC ORDERED GENERALIZED VARIATIONAL INCLUSIONS INVOLVING NODSM MAPPINGS

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Abstract: In this paper, we consider $\left(\beta, \frac{\lambda}{\omega}\right) - NODSM$ set-valued mappings and we define a resolvent operator as $J_{\omega M, \frac{\lambda}{\omega}} = \left[I + \frac{\lambda}{\omega}(\omega M)\right]^{-1}$. We discussed some properties of the resolvent operator $J_{\omega M, \frac{\lambda}{\omega}}$ and then applied it to solve a parametric ordered generalized variational inclusion problem in real ordered Banach spaces.

Keywords: Central factorial numbers, Stirling numbers, Shifting operator, Averaging operator, Combinatorial sum, Generating function.

ON SOMERESULTOF NEW THREE-STEP ITERATION PROCESS ON THE CONVEX METRIC SPACES

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Abstract: In this presentation, we introduce a new three step iteration process and show that theiteration process converges to the unique fixed point of contraction mappings on the convex metric spaces. Furthermore, we obtain this iteration process is equivalent to Mann iteration method and T-stable.

Keywords: Fixed point iteration, strong convergence,convex metric spaces

ON THE CONVERGENGE RESULTOF NEW THREE-STEP ITERATION PROCESS ON THE GENERALIZED BANACH SPACES

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Abstract: In this presentation, we introduce a new three step iteration process and show that theiteration process strongly converges to the unique fixed point of contraction mappings on the G- Banach spaces. Furthermore, we obtain this iteration process is equivalent to Mann iteration method.

Keywords: Fixed point iteration, strong convergence,G-Banach spaces

BACKWARD SOBOLEV TYPE FRACTIONAL STOCHASTIC EVOLUTION EQUATIONS IN HILBERT SPACES

Kerboua MOURAD

Abstract. In this paper, we examine the approximate controllability of class of semilinear fractional backward stochastic evolution equations of Sobolev type in Hilbert spaces. We use Hölder's inequality, fixed point technique, fractional calculus, stochastic analysis and methods adopted directly from deterministic control problems for the main results. A new set of sufficient conditions is formulated and proved for the fractional backward control system to be approximately controllable. An example is given to illustrate the abstract results.

Keywords: Approximate controllability, backward fractional Sobolev type equation, stochastic system, fixed point technique, semigroups.

q- GREEN'S FORMULA ON THE COMPLEX PLANE IN THE SENSE OF HARMAN

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Abstract: Consider the square discrete set

$$D = \{z_{mn} = aq^m + iaq^n = (aq^m, aq^n): 0 \leq m,n \leq \infty; m,n \in \mathbb{N}\}$$

on the complex domain $\mathbb{C}$ where$0 < q < 1, a \in \mathbb{R}^+ = (0,\infty)$. The discrete^m boundary of D is $\partial D = \gamma_1 \cup \gamma_2 \cup \gamma_3 \cup \gamma_4$ where

$$\gamma_1 = \{aq^n: 0 \leq n < \infty: n \in \mathbb{N}\}, \gamma_2 = \{a+iaq^n: 0 \leq n < \infty: n \in \mathbb{N}\}$$

$$\gamma_3 = \{aq^n + ia: 0 \leq n < \infty: n \in \mathbb{N}\}, \gamma_4 = \{iaq^n: 0 \leq n < \infty: n \in \mathbb{N}\}.$$

In this work, we proved the following Green's Identity in the sense of Harman

$$\int_{\gamma} (f * g)(\zeta) d_q\zeta = \frac{1-q}{q} a \sum_{m=0}^{\infty} \sum_{n=0}^{\infty} [f(z_{mn}) Bg(qz_{mn}) - qg(qz_{mn}) Lf(z_{mn})]$$

for the discrete functions $f(z), g(z)$ defined on D. We also presented some corollaries of this result. Here,

$$Bg(z) = \bar{z}g(z)xg(x, q^{-1}y) + iyg(q^{-1}x, y);$$

$$Lf(z) = \bar{z}f(z)xg(x, qy) + iyg(qx, y)$$

for $z = x + iy$

Keywords: q-derivative, line q-integrals, q-Green's Formula, q-analogue of Cauchy Integral Formula.

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BERNOULLI MATRIX-COLLOCATION METHOD FOR SOLVING GENERAL FUNCTIONAL INTEGRO-DIFFERENTIAL EQUATIONS WITH HYBRID DELAYS

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Abstract: In this presentation, we apply a matrix method based on Bernoulli polynomials and collocation points to solve integro-functional equations with hybrid delays. The main problem is reduced to a system of algebraic equations by using this method. After solving this system, we have the coefficients of the approximate solution of the given problem. The accuracy and applicability of this method is illustrated by examples by using developed error-estimation technique related to residual function.

Keywords: Bernoulli polynomials,Functional-differential equations, Pantograph equations, Collocation-Matrix method.

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A NEW UNIDIMENSIONAL BISECTION METHOD FOR GLOBAL OPTIMIZATION

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Abstract: In this talk, the global optimization problem of a univariate function satisfying the Lipschitz condition over an interval with an unknown Lipschitz constant is considered. In the proposed algorithm, the objective function is evaluated at two equidistant points for each generated interval. The optimization operates at both local and global levels, where bisection is used instead of trisection, consequently, more complete information about the objective function is considered than using the central-sampling strategy as used in most DIRECT-type algorithms. The performance of the new method is analyzed in terms of of the most popular and widely used criteria; the number of iterations, the number of function evaluations, and the computer (CPU) time in comparison with the well known DIRECT algorithm. We show that it is possible to extend univariate algorithms for high dimension problems, this can be done in the framework of diagonal methods, but this investigation is still under way.

Keywords: Global optimization, Lipschitz optimization, bisection, diagonal partitions.

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COMPACTNESS OF MAXIMAL OPERATOR IN WEIGHTED LEBESGUE SPACES WITH VARIABLE EXPONENT

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Abstract: $\rho:(0,l)\to(1,\infty)$ measurable function, $L^{p(x)}(0,l)$; $f:(0,l)\to R$ measurable functions class. f is positive functions $I=(a,b)$, $L^p(a,b,w)=L^p(w)$ weighted Lebesgue space norm is

$$\|f\|_{p,w}=\left(\int_a^b |f(x)|^p w(x)dx\right)^{1/p}<\infty, \quad 0<p<\infty. \quad f:(0,l)\to R$$

measurable functions, so that $\limsup_{x\to 0}|f(x)-f(0)|\ln\frac{1}{W(x)}<\infty$.

Theorem: Let $p,q\in\Lambda_0\cap\pi$ and $f(x)\geq 0$ measurable functions with $p^->1$,
$q(0)\geq p(0)>1$. If there are conditions

$$\limsup_{t\to 0} V(t)^{1/q(0)}W(t)^{1/p'(0)}=0 \quad \text{and} \quad \sup_{t\in(0,\infty)} V(t)^{1/q(0)}W(t)^{1/p'(0)}<\infty.$$

Then from $L^{p(\cdot)}(0,l)$ to $L^{q(\cdot)}(0,l)$,

$$Mf(x)=\sup_{r>0}\frac{1}{|B(x,r)|}\int_{\bar{B}(x,r)} f(y)dy$$ maximal operator is compact.

Keywords: Maximal operator, variable exponent, weighted functions, Lebesgue space.

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FIXED POINT THEOREMS FOR INTEGRAL TYPE MAPPINGS IN BANACH SPACE

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Abstract: In this presentation, we introduce a new mapping called Reich integral type. We prove existence of fixed points for mapping defined on Banach spaces satisfying the Reich integral type condition. Also, we prove that Picard-Mann hybrid iteration process converges to unique fixed point of this mappings. Furthermore, we show that Picard-Mann hybrid iteration process is equivalent to Mann iteration method. Finally, we give a stabilty result for Reich integral type mapping by using Picard-Mann hybrid iteration process.

Keywords: Strong convergence, integral type mappings, stability

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STATISTICALLY CONVERGENCE OF SEQUENCES OF FUZZY NUMBERS BY A MODULUS FUNCTION

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Abstract: In this study, we generalize the concept of Δ-statistical convergence defined by a modulus function of sequences of fuzzy numbers using the sequence $\theta = (k_r)$ and give some inclusion relations.

Keywords: Statistical Convergence, Lacunary Sequence, Fuzzy Numbers.

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ON SOME INVARIANT SEQUENCE SPACES

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Abstract: Invariant sequence spaces are much important in topological sequence spaces theory. Especially, it is very helpful for investigations of the duality of sequence spaces. For instance, if the sequence space X satisfies the condition $\boldsymbol{l_\infty}.\boldsymbol{X}=\boldsymbol{X}$ then its **α-, β-** and **γ-** duals are same [4]. Garling [2]investigated $\boldsymbol{B}$**-** and $\boldsymbol{B_0}$**-**invariant sequence spacesand Buntinas [3] introduced and investigated$\boldsymbol{q}$**-** and $\boldsymbol{q_0}$**-** invariant sequence spaces and recently, Grosse- Erdmann [1] studied on $\boldsymbol{l_1}$ invariant sequence spaces.In this study, we introduceand investigate$\boldsymbol{q_0^r}$-invariant sequence spaces, that is, sequence spaces $\boldsymbol{X}$with$\boldsymbol{q_0^r}.\boldsymbol{X}=\boldsymbol{X}$.

Keywords:*FK*-sequence spaces,Köthe-Toeplitz duals, *AK-, AB-, σB-* and *σK-* properties of a sequence.

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ON SOLIDNESS OF SEQUENCE SPACES

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Abstract: An *FK*- sequence space $\boldsymbol{X}$ is said to be solid if the condition $\boldsymbol{l}_{\infty}.\boldsymbol{X} = \boldsymbol{X}$ holds. This property plays a prominent role within the theory of sequence spaces. Goes proved that if $\boldsymbol{X}$ is a solid *FK*- space then it has *FAK*- property [1]. Sember defined *UAB*- and *UFAK*- properties which are same in a *K*- space $\boldsymbol{X}$, and he showed that every sequence in a solid *FK*- space has *UFAK*- property [2]. In this study, we investigate solidness of *FK*- sequence spaces.

Keywords:*FK*- spaces, solid spaces, Köthe-Toeplitz duals, *UFAK*- and *UAB*- properties of a sequence.

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THREE-STEP ITERATIVE SCHEME FOR APPROXIMATING FIXEDPOINTS OF MULTIVALUED NONEXPANSIVE MAPPINGS

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Abstract: In this presentation,we introduce a new three-step iterative scheme to approximate a common fixed point of multivalued nonexpansive mappings in a uniformly convex real Banach space and establish strong and weak convergence theorems for the proposed process. Our results extend important results .

Keywords: Three step iterative scheme, multivalued mappings, strong and weak convergence.

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INVERSE SPECTRAL AND INVERSE NODAL PROBLEMS FOR STRUM-LIOUVILLE EQUATIONS WITH POINT δ'-INTERACTION

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Abstract: We study inverse spectral and inverse nodal problems for Strum-Liouville equations with point δ'-interaction a finite interval. Inverse spectral problems consist in recovering operators from their spectral characteristics. Such problems play an important role in mathematics and have many applications in natural sciences (see, for example, monographs [1,3,5]). Inverse nodal problems consist in constructing operators from the given nodes (zeros) of eigenfunctions (see [2,4,6]). In this study, uniqueness results are proved, and using the nodal set of eigenfunctions the given problem reconstucted.

Keywords: Strum-Liouville Equations, Inverse spectral and Inverse Nodal Problems, Point δ' -Interaction.

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LOG-CONVEXITY OF WEIGHTED AREA INTEGRAL MEANS OF MONOMIALS ON THE UNIT DISK

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Abstract: An open problem (see [1], p.12) about finding necessary and sufficient conditions on parameters a and p for which the weighted area integral mean of monomials is log-convex with respect to the log(r) is solved. Here, a modification of the method developed in a series of papers [2], [3], [4], [5] is applied. Furthermore, an example of a generalized weight function is considered and it is demonstrated that in the case p=2 log-convexity in log(r) of this type of integral means does not depend on the asymptotic behavior of the weight function.

Keywords: logarithmic convexity, holomorphic functions, Hardy spaces, area integral means

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POROSITY LIMIT AND CLUSTER POINTS OF REAL VALUED SEQUENCES

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Abstract: In this talk, we shall define notions of porosity-limit and porosity-cluster point of real valued sequences. These two notions, are not equivalent and they are compared with the usual limit point of sequences. Then, we give some theorems about the sets of porosity limit and porosity cluster points of real valued sequences. Also we will show that, if the set$\mathbb{N}\backslash M$ is porous, where $M = \{k \in \mathbb{N}: x_k \leq x_{k+1}\}$, and x is bounded on M, then x is a porosity convergent sequence.

Keywords: Localupper porosity, porosity of subsets of natural numbers, porosity convergence, porosity limit points, porosity cluster points.

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RELATION-THEORETIC METRICAL FIXED POINT THEOREMS UNDER NONLINEAR CONTRACTIONS

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Abstract: We establish fixed point theorems for nonlinear contractions on a metric space (not essentially complete) endowed with an arbitrary binary relation. Our results extend, generalize, modify and unify several familiar results especially those contained in Samet and Turinici [Commun. Math.Anal. 13, 82-97 (2012)] and Alam and Imdad [J. Fixed Point Theory Appl. 17(4), 693-702 (2015)]. Interestingly a corollary to one of our main results proved under symmetric relation which remains a sharpened version of a theorem due to Samet and Turinici. Finally, we use examples to highlight the realized improvements in the present paper.

Keywords: Complete metric spaces; binary relations; contraction mappings; fixed point.

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STEADY-STATE SKELETON OF THE 3D POINT CLOUDS VIA QUANTUM GRAPHS

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Abstract: Point Clouds are mathematical concepts that can be sourced by shape acquisition devices, such as laser range scanners, with applications in geoscience, archival arts, prosthetics medicine, manufacturing, and security. These 3D scanners provide in general raw data in the form of unorganized point clouds. With the increasing popularity and very broad applications of this source of data, it is computationally less complex and has less error possibilities to work directly with this representation, without having to go to the intermediate step of fitting a surface to it. In our study, we aim to solve one of the skeleton construction problems of geometry processing by using the so called Quantum Graphs whose edges are the solution of the initial-boundary problem of the Sobolev functions. We first obtain the vertices of the Quantum Graph by using the local Rips-Vietoris complex representation of the point cloud, and then solve the second order ODE called steady-state equation by using the Homotopy Perturbation Method respect to the initial-boundary conditions at the vertices.

Keywords: Quantum Graphs, Point Cloud Processing, Homotopy Perturbation Method, Rips-Vietoris Complex

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NUMERICAL SOLUTION OF A SINGULARLY PERTURBED PROBLEM BY USING HYBRIDIZABLE DISCONTINUOUS GALERKIN METHOD

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Abstract: In this work, a current numerical method called as hybridizable discontinuous Galerkin (HDG) method is presented for solving a type of singularly perturbed problem (SPP) with boundary conditions (BCs). The main feature of the HDG method is that it can be implemented in an efficient way through a hybridization procedure which reduces the globally coupled unknowns to approximations at the element boundaries. For stability of the global linear system which is constructed for SPP, it is a crucial point to choose stability parameter.It has to be suitably defined to guarantee the existence and uniqueness of the numerical solution. However, the associated matrix in the system is tridiagonal, symmetric ve positive definite. Thus, HDG method is accomplishedly implemented ordinary or partial differential equations. From this point of view, HDG approximation of the SPP with boundary layer is examinedon some examples forL^2-norm.

Keywords: Hybridizable discontinuous Galerkin method, singularly perturbed problem, hybridization, stability parameter

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THE DYNAMICS OF POSITIVE SOLUTIONS OF A HIGHER ORDER DIFFERENCE EQUATION WITH ARBITRARY POWERS AND DELAYS

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Abstract: The purpose of this talk is to investigate the local asymptotic stability of equilibria, the periodic nature of solutions, the existence of unbounded solutions and the global behavior of solutions of the nonlinear difference equation

$$x_{n+1} = \frac{\alpha x_{n-(k+1)}}{\beta + \gamma x^{p}_{n-k} x^{q}_{n-(k+2)}}, n = 0,1,...$$

where the parameters $\alpha, \beta, \gamma, p, q$ are non-negative numbers and the initial values $x_{-(k+2)}, x_{-(k+1)}, \ldots, x_{-1}, x_0$ are arbitrary positivenumbers.

Keywords: Equilibria, global stability, periodicity, oscillation, solution.

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NUMERICAL SOLUTION OF NONLINEAR FRACTIONAL-INTEGRO DIFFERENTIAL EQUATIONS AND SYSTEMS

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Abstract: In this presentation, a numerical method, namely perturbation-iteration algorithm (shortly PIA), have been employed to give approximate solutions of some nonlinear fractional-integro differential equations (FIDEs) and systems. Comparing with the exact solutions and some other method solutions, we prove that the PIA produces reliable and accurate results for FIDEs. We also give some tables and figures to illustrate our results.

Keywords: Fractional-integro differential equations, Caputo fractional derivative, Initial value problems, Perturbation-Iteration Algorithm.

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FIXED POINTS FOR SOME MULTIVALUED MAPPING IN G_p – METRIC SPACES

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Abstract: In [4],Banach defined a theorem about existence and uniqueness of fixedpoint.Also In [3],W.Takahashi studied fixed point on multivalued mapping in metric space. In this work, we carried this contractions to G_P metric spaces which a newgeneralized metric spaces, by means of multivalued mappings. Firstly, we İmplement

Banach contraction such that for all $x, y, z \in X, H_{G_p}(Tx, Ty, Tz) \leq \alpha G_p(x, y, z)$where $\alpha \in (0,1)$. Other one, we apply for Takahashi contractive, such that for all

$$x, y, z \in X, H_{G_p}(Tx, Ty, Tz) \leq k\left(G_p(x, y, z)\right). G_p(x, y, z)$$

where k is a function of $(0, \infty)$to$[0, 1)$ such that $\lim_{r \in t^+} k(r) < 1$ for every $t \in [0, \infty)$.Thus, we proved that existenceof fixed point in G_P metric spaces with multivalued mapping using these contractions.

Keywords: Fixed point, Multivalued mapping, $\boldsymbol{G_P}$ metric space

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FIXED POINT THEOREMS FOR EXPANSIVE MAPPINGS IN G_p-METRIC SPACES

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Abstract: In the present paper, we define the concept of expansive mapping in the context of G_p-metric spaces in a similar manner expansive mapping in metric spaces. Furthermore, we obtain some results on fixed points of expansive type mappings. Also, we prove some common fixed point results for expansive mappings by using the notion of weak compatibility in G_p-metric space. Our results generalize some comparable results in metric spaces and partial metric spaces to G_p-metric spaces. Moreover, some examples are introduced in order to support our new results.

Keywords: Fixed point theorems, Gp-metric space, expansive mappings, weakly compatible mappings.

Acknowledgements: M. Kaya has been supported by the Scientific and Technological Research Council of Turkey (TUBITAK Programme, 2211-A).

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SOME PROPERTIES OF GENERALIZED METRIC SPACES

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Abstract: In this presentation, we give some results in G-metric spaces and introduce the notions of G-uniformly continuity and G-Cauchy continuity. We investigate the relations between the classes of G-unifomly continuous, G-Cauchy continuous and G-continuous functions. Also we characterize G-totally bounded sets in generalized metric spaces via G-Cauchy sequences.

Keywords: G-metric spaces, G-convergence,G-Cauchy sequences, G-continuity.

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ON RIESZ SECTIONS IN SEQUENCE SPACES

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Abstract: The theory of FK-spaces was introduced by Zeller in [1] and some properties of sectional subspaces in FK-spaces were investigated by Zeller in [2]. The notion of Cesaro sections in FK-spaces was studied in [3]. In [4], Buntinas examined Toeplitz sections in sequence spaces and characterized some properties.In this presentation, we introduce Riesz sections in sequence spaces and examine some properties of them.

Keywords: FK-spaces, K-spaces, Sequence spaces, AK-spaces, semi-conservative space.

Acknowledgements: M. TEMİZER ERSOY has been supported by the Scientific and Technological Research Council of Turkey (TUBITAK Programme, 2228-B).

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STABILITY AND CONVERGENCE ANALYSIS OF THE FINITE ELEMENT DISCRETIZATION OF THE NAVIER-STOKESTIME-FILTERING REGULARIZATION

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Abstract: In order to regularize the flow problems, one approach is the time relaxation method. In this study, considers a time relaxation model which consists of adding a term "κ(u-ubar)" to the NSE, NSE-TLES model, to damp fluctuations exponentially in time, which is explored by Layton, Pruett and Rebholz. First, an implicit time discretization of the model is given. After then, we analyzed its stability and convergence of the algorithm. Numerical experiments for the model are presented.

Keywords: Time relaxation; Finite element method; Navier-Stokes equations; Time-filtering regularization.

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INVERSE NODAL PROBLEM FOR p-LAPLACIAN BESSEL EQUATION

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Abstract: In this note, we solve inverse nodal problem for Bessel type *p*-Laplacian problem

$$-(y'^{(p-1)})' = (p-1)\big(\lambda - \omega(x)\big)y^{(p-1)}, 1 \leq x \leq a$$

$$y(1) = y(a) = 0$$

on a special interval. We obtain some nodal parameters like nodal points and nodal length. In addition, we reconstructed the potential function by nodal points. Results obtained in this paper are similar to Classical Sturm-Liouville problem. However these type equations are considered with a condition defined at the origin, We solve the problem on an interval [1,a] that problem is not singular.

Keywords: Inverse Nodal Problem, PrüferSubstitution, Bessel Equation

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ON WIJSMAN ASYMPTOTICALLY DEFERRED STATISTICAL EQUIVALENT OF SEQUENCES

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Abstract: [3] introduced definitions for asymptotically equivalent sequences and asymptotic regular matrices. Patterson [4] extended these concepts by presenting an asymptotically statistically equivalent analogy of these definitions and natural regularity conditions for nonnegative summability matrices. In this study we introduce the concepts of Wijsmanasymptoticallydeferred statistical equivalent and Wijsmanstrong asymptotically deferred equivalent of sequences. Some relations between Wijsmanasymptotically deferred statistical equivalent and Wijsmanstrong asymptoticallydeferred equivalent of sequences are given.

Keywords: Wijsman Statistical Convergence, Asymptotically Statistical Equivalent, Deferred Statistical Convergence ; Deferred CesàroSummability.

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NECESSARY CONDITIONS AND SUFFICIENT CONDITIONS FOR NONEXISTENCE RESULTS TO CERTAIN EVOLUTION EQUATION

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Abstract: This work is concerned with establishing necessary or sufficient conditions for the existence of solutions for certain nonlinear evolution equations. We shall see that the existence of solutions depends on the behavior at infinity with both initial data and the coefficient functions. The non global existence is also discussed.

Keywords: Fujita critical exponent, non-existence, nonlinear evolution equation.

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ANALYTICAL SOLUTION OF A CLASS OF NONLINEAR VOLTERRA INTEGRAL EQUATIONS USING VARIATIONAL ITERATION METHOD

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Abstract: In this paper, one type of volterra integralequations (VIEs) isclassified to be nth-order VIE of fourth-kind. This class ofnth-order VIE usually occurs in many fields of physics andengineering. The nth-order VIE of fourth-kind is converted tonth-order ordinary differential equations (ODEs). This nth-order ODE is then,solved using variational iteration method (VIM). A new iterationtechnique is proposed to solve a class of nonlinear integralequations. It shows that the variational iteration method (VIM) isefficient and powerful tool for dealing with this class ofnonlinear integral equations. Some examples are selectedto illustrate theeffectiveness and simplicity of the method. Thecomparison of the results of VIM with those obtained by classicalmethod reveals that VIM is very effective, convenient and quiteaccurate to both linear and nonlinear problems. It is predictedthat VIM can be widely applied inthe mathematical model of different problems in physics and engineering.

Keywords: Integral equations; Voltera integral eqution; VIE; nth-order; VIM; systemof ODEs.

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A NOT ON PROPERTIES THAT IMPLY THE FIXED POINT PROPERTY

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Abstract: We show that Banach c0 (Γ) with Day's norm space satisfy the weak fixed point property , and prove the relationship between the weakly 2-rotund (W2R) and the fixed point property of Banach spaces under renorming . Moreover distinguish between this property and other geometrical properties that imply the fixed point property.

Keywords: Fixed point property; Day's norm; Weakly 2-rotund.

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INTEGRAL TYPE ALMOST CONTRACTION MAPPINGS IN METRIC SPACES

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Abstract: In this presentation, The concept of integral type almost contraction is introduced and then two fixed point theorems for this class of operators in complete metric spaces are proven. Our results extend some fixed point theorems due to Rhoades, Ciric and many others.

Keywords: strong convergence, contractive condition of integral type, metric space.

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MAXIMUM NORM ANALYSIS OF SCHWARZ METHOD FOR ELLIPTIC QUASI-VARIATINALIN EQUALITIE

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Abstract: Schwarz method has been used to solve the stationary or evolutionary boundary valued problems on domains which consists of two or more overlapping sub-domains. In this paper we provide a maximum norm analysis of an overlapping Schwarz method on non- matching girds for a quasi-variational inequalities generalized where the obstacle and the second member depends of the solution. We proved that the discretization on every sub-domain converges in uniform norm and we give a result of approximation for the method in uniform norm.

Keywords: Schwarz method, quasi-variational inequalities, L^∞-error estimate.

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VARIATION DIMINISHING INTEGRAL OPERATORS OF THE CONVOLUTIONS TYPE ASSOCIATED WITH THE DUNKL OPERATOR ON \R

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Abstract: Using harmonic analysis associated with Dunkl operator on \R we give necessary and sufficient conditions such that the number of sign changes of a convolution transforms T(f) associated with Dunkl operator never exceeds the number of sign changes of the function f.

PERTURBED PARTIAL FRACTIONAL ORDER FUNCTIONAL DIFFERENTIAL EQUATIONS WITH INFINITE DELAY IN FRECHET SPACES

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Abstract: In this paper we investigate the existence of solutions of perturbed partial hyperbolic differential equations of fractional order with finite delay and Caputo's fractional derivative by using a nonlinear alternative of Avramescu on Frechet spaces.

Key words : Partial functional differential equation, fractional order,left-sided mixed Riemann-Liouville integral, Caputo fractional-order derivative, finite delay, Frechet space.

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ON SHERMAN'S INEQUALITY

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Abstract: Generalizations of Sherman's inequality for a convex function of higher order are obtained by applying Hermite interpolating polynomials.The results for particular cases, namely, Lagrange, (m; n-m) and two-point Taylor interpolating polynomials are also cosidered. The Gruss and Ostrowski type inequalities related to these generalizations are given.

ON GENERALIZED DIFFERENCE SEQUENCES OF FUNCTIONS

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Abstract: In this presentation, we introduce the concepts of pointwiseΔ_m^r –convergence and uniform Δ_m^r-convergence sequences of functions. Furthermore some relations between the spaces of sequences of functions c(Δ_m^r,F(p)),c_0(Δ_m^r,F(p)),c(Δ_m^r,F),c_0(Δ_m^r,F(u)) and ℓ_∞(Δ_m^r,F(u)) are examined.

Keywords: Difference sequence, Sequences of functions.

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INVERSE SOURCE PROBLEM FOR TIME-FRACTIONAL HEAT EQUATION WITH A GENERALIZED IMPEDANCE BOUNDARY CONDITION

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Abstract: In this paper, an inverse problem of reconstruction of a time-dependent source term in a one-dimensional time-fractional diffusion equation from the energy measurement and generalized impedance boundary condition is studied. This problem is obtained from a classical diffusion problem by replacing the time derivative with a fractional derivative. The well-posedness of the inverse problem is shown by using the generalized Fourier method.

Keywords: Fractional diffusion equation, Genarilezed Impedance Boundary Condition, Inverse source problem, Generalized Fourier method.

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A HYBRIDIZABLE DISCONTINUOUS GALERKIN METHOD FOR A CLASS OF FRACTIONAL BOUNDARY VALUE PROBLEM

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Abstract: In this work, we present a hybridizable discontinuous Galerkin (HDG) method for solving a class of fractional boundary value problem that involves Caputo derivative withorder $\alpha \ \beta >$. One of the main properties of HDG methods is that they are efficiently implementable since it is possible to eliminate all internal degrees of freedeom and obtain a global linear system that only involves unknowns at the element interfaces. Since the global matrix in the linear system is tridiagonal, symmetric and positive definite, the method gives effective and convergent results in the ordinary and partial differential equations. Also, an appropriate choice of the stability parameter has a very important effect on the convergence of the obtained system. Therefore, the HDG method is investigated for the mentioned fractional boundary value problems. We display the results of a series of numerical experiments to ascertain by using MATLAB programme.

Keywords: Hybridizable discontinuous Galerkin method, boundary value problem, fractional derivative, fractional calculus.

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OSTROWSKI TYPE INEQUALITIES FOR GENERALIZED s-CONVEX FUNCTIONS IN THE SECOND SENSE

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Abstract: In this paper, we first obtain a generalized integral identity for twice localdifferentiable functions. Then, using functions whose second local derivatives in absolutevalue at certain powers are generalized s-convex in the second sense, we obtainsome new Ostrowski type inequalities.

Keywords: Local fractional integral, Hermite-Hadamard inequality, Generalized Convex Functions, Hölder's İnequality, Generalized Ostrowski inequality.

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ON *I*-CONVERGENCE OF SEQUENCES OF FUNCTIONS IN 2-NORMED SPACES

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Abstract: In this paper, we study concepts of convergence and idealconvergence of sequence of functions and investigate relationships between them and some properties such as linearity in2-normed spaces. Also, we prove a decomposition theorem for ideal convergent sequences of functions in 2-normed spaces.

Keywords: Ideal, Ideal convergence, Sequence of functions, 2-normed spaces.

DEFECT-DEFERRED CORRECTION METHOD FOR A FLUID FLOW AT HIGH REYNOLDS NUMBERS

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Abstract:A method is presented, that combines the defect and deferred correction approaches to approximate solutions of Navier-Stokes equations at high Reynolds number. The method is of high accuracy in both space and time, and it allows for the usage of legacy codes –a frequent requirement in the simulation of turbulent flows in complex geometries. The two-step method is considered here; in order to obtain a regularization that is second order accurate in space and time, the method computes a low-order accurate, stable and computationally inexpensive approximation (Backward Euler with artificial viscosity) twice. The results are readily extendable to the higher order accuracy cases by adding more correction steps. Both the theoretical results and the numerical tests provided demonstrate that the computed solution is stable and the accuracy in both space and time is improved after the correction step. We also perform a qualitative test to demonstrate that the method is capable of capturing qualitative features of a turbulent ow, even on a very coarse mesh.

ALMOST CONVERGENCE METHOD WITH FRACTIONAL ORDER OPERATOR

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Abstract: The purpose of this paper is twofold. First, basic concepts such as Gamma function, almost convergence, fractional order difference operator and sequence spaces are given as a survey character. Thus, the current knowledge about those concepts are presented. Second, we construct the almost convergent spaces with fractional order difference operator and compute dual spaces which are help us in the characterization of matrix mappings. After we characterize to the matrix transformations, we give some examples. In this paper, the notation $\Gamma(n)$ will be shown the Gamma function. For $n \notin \{0, -1, -2, \dots\}$, Gamma function defined by an improper integral $\Gamma(n) = \int_0^\infty e^{-t} t_{n-1} dt$.

Keywords: Gamma Function, almost convergence, fractional order operator, matrix domain

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ON SOME FIXED POINT THEOREMS WITH GENERALIZED CONTRACTIONSIN COMPLETE CONE METRIC SPACE SENDOWED WITH A PARTIAL ORDER AND INVOLVING A GRAPH

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Abstract: The aim of this presentation is to present some fixed point theorems for generalized contractions by altering distance functions in a complete cone metric spaces endowed with a partial order and involving a graph.

Keywords: Complete cone metric space,fixed point theorem,generalized contraction,graph.

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DISCUSSION ON ADVECTION-DIFFUSION EQUATION THROUGH FINITE DIFFERENCE SCHEMES

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Abstract: The aim of this presentation is to numerically discuss physical behaviorof the advection diffusion equation. To achieve this, fundamental finite difference schemes are used both in time and in space. In order to realize properly the physical behavior of the model, the produced solutions have been discussed in terms of advection-diffusion relation. The current schemes seem to be trustworthy and moderate alternative to understand numerical thinking for these kinds of models.

Keywords: Advection diffusion equation,finite difference scheme, numerical modelling, physical behavior.

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THE GENERATING FUNCTIONS FOR THE FAMILY OF THE GENERALIZED BERNOULLI POLYNOMIALS

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Abstract: We study the generalization Bernoulli numbers and polynomials attached to a periodic group homomorphism. By using a fixed periodic group homomorphism,.we obtain not only multiplication formulas, but also some new identities for the generalized Bernoulli polynomials.

TWO NEW PROOFS OF GENERALIZED BIPERIODIC FIBONACCI IDENTITY IN TERMS OF THE DETERMINANTS OF TRIDIAGONAL MATRIX

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Abstract: In this study, we present two new proofs of generalized Fibonacci identity $q_{m+n-1} = q_m q_n a^{\xi(mn+n-m)-1} b^{1-\xi(mn+n-m)} + q_{m-1} q_{n-1} a^{-\xi(mn)} b^{\xi(mn)}$ via the determinants of *nxn* tridiagonal matrix evaluating by Laplace expansion method and constructing 2x2 square matrices, where *m*,*n* are any two positive integers, $\{q_n\}_{n=0}^{\infty}$ is the generalized Fibonacci sequence and $\xi(n) = \begin{cases} 0 & \text{if } n \text{ is even,} \\ 1 & \text{if } n \text{ is odd,} \end{cases}$ is the parity function.

Keywords: Generalized Fibonacci sequence, Tridiagonal matrix, Laplace expansion method.

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SOME NOTES ON THE SEQUENCE SPACES $l_p^\lambda(G^m)$ AND $l_\infty^\lambda(G^m)$

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Abstract: In this work, we introduce the sequence spaces $l_p^\lambda(G^m)$ and $l_\infty^\lambda(G^m)$ derived by the domain of the composition of m-th order generalized difference matrix and lambda matrix. Moreover, we determine some topological properties and examine inclusion relations related to those spaces. Furthermore, we give Schauder basis for the space $l_p^\lambda(G^m)$. Finally, we determine $\alpha-,\beta-$ and $\gamma-$duals of the spaces $l_p^\lambda(G^m)$and $l_\infty^\lambda(G^m)$.

Keywords: Sequence Space, Matrix Transformation, Matrix Domain, Schauder Basis, Duals, Topological Property.

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A PARAMETERIZED SINGULARLY PERTURBED BOUNDARY VALUE PROBLEM

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Abstract: This article is concerned with the parameterized second order boundary value problem with layer behavior. Asymptotic estimates for the solution and its first and second derivatives have been established. The obtained results are important for construction and analysis of appropriate approximate methods. The illustrative examples are given.

Keywords: Depending on a parameter, Asymptotic bounds, Singular perturbation, Boundary layer.

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p-ADIC GIBBS MEASURES FOR THEISING-VANNIMENUS MODEL ON CAYLEY TREE OF ORDER THREE

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Abstract:

Keywords: Cayley tree, *p*-adic Gibbs measure, *p*-adic Ising-Vannimenus model, Dynamics Systems.

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AN EXISTENCE THEOREM FOR ANALYTIC SOLUTION OF A FRACTIONAL DIFFERENTIAL EQUATION WITH CAPUTO DERIVATIVE

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Abstract: In this work, we investigate the existence of analytic solution of an initial value problem for the nonlinear fractional differential equation with Caputo derivative by using Schauder fixed point theorem and a new technique related to Schwarz Lemma for analytic functions of several variables.

Keywords: Fractional differential equation, existence and uniqueness, fixed point theorem, Schwarz's lemma.

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SOME CONVERGENCE AND DATA DEPENDENCE RESULTS IN A GENERAL CLASS OF CONTRACTIVE TYPE OPERATORS

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Abstract: In this presentation, we study convergence and data dependence results of the iteration method, which was introduced by Thianwan and Suantai in [1], for a general class of operators. Also,we support our results with examples. Our study generalizes some results in the literature.

Keywords: Iterative schemes,convergence, data dependence

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INTEGRABLE SOLUTIONS OF A NONLINEAR INTEGRAL EQUATION VIA SCHAEFER-KRASNOSELSKII FIXED POINT THEOREM

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Abstract: We study the existence of solutions of nonlinear volterra equation in the space $L^1([0,+\infty[)$. With the help of Schaefer-Krasnoselskii fixed point theorem and the theory of measure of weak noncompactness, we prove an existence result for a functional integral equation. An example is given to support our results.

Keywords: Krasnoselskii fixed point theorem, measure of noncompactness, nonlinear integral equation.

A FIXED POINT PROOF OF THE CONVERGENCE OF A NEWTON-LIKE METHOD OBTAINED BY THE NORMAL S-ITERATION PROCESS

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Abstract: In this paper, we indicate a new Newton-type iterative methodin $\mathbb{R}$. It is shown that this process converges to the unique solution of the scalarnonlinear equation $f(x) = 0$, under some conditions, involving only $f$and f'. Finally, we present numerical examplesto support the analytic result proved herein.

Keywords: Fixed point, Newton's method, nonlinear operator.

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A REARRANGEMENT ESTIMATE FOR THE GENERALIZED MULTILINEAR ANISOTROPIC FRACTIONAL INTEGRALS

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Abstract: In this report, author studies$L_{p_1} \times L_{p_2} \times \cdots \times L_{p_k}$boundedness of the generalized multilinear anisotropic fractional integral operators. O'Neil type inequality for the generalized multilinear fractional integral is proved. Was given a new proof of the Hardy-Littlewood-Sobolevmultilinear anisotropic fractional integration theorem, based on a pointwise estimate of the rearrangement multilinear anisotropic fractional type integral.

CALSSES OF I-CONVERGENTDOUBLE SEQUENCES OVER N-NORMED SPACES

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Abstract: In this article, I introduce some new classes of I-convergent double sequence spaces over n-normed spaceusing the concept of sequence of modulii and double lacunary sequence space. I have studied and proved their algebraic and topological properties and some inclusion relations. Some useful examples have been constructed to understand new terms defined in this article. By varying different parameters used in the definition of these spaces, a case study of changes in their behavior has been shown.

Keywords: I-convergence,lacunary sequence space, n-norm, double sequence.

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ON SOME GEOMETRICAL PROPERTIES

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Abstract: In this paper, we study some geometric properties in some Banach spaces. We construct tensor product of some Banach spaces and investigate of some geometric properties.

Keywords: Tensor products, geometrical properties, Banach space.

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AVERAGE VECTOR FIELD METHOD AND CAPUTO FRACTIONAL DERIVATIVE DEFINITION FOR LINEAR FRACTIONAL SCHRÖDINGER EQUATION

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Abstract: In this study, linear fractional Schrödinger equation with its initial and boundary conditions is studied by using Average Field Vector (AVF) method. Caputo fractional derivative definition is applied to the fractional part of the equation to express it with integer order of derivatives. In the solution of the problem, finite differences discretization along the spatial coordinate and AVF method along the time coordinate have been applied. Dispersion analysis is applied to ensure consistency and convergency of the method used. The result shows that the applied method in this study is an applicable technique.

Keywords: Linear fractional Schrödinger equation, Caputo fractional derivative definition, average vector field method, dispersion analysis.

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SOME CONTRACTIONS AND FIXED POINT THEOREMS IN MODULAR METRIC SPACES

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Abstract: We introduce some properties in modular metric spaces, then show that some contractions and fixed point theorems in this modular metric spaces. Moreover, we show that type of modular metric spaces are useful. Finally, some given examples will be helpful to understand this construction.

Keywords: modular metric spaces, fixed point theorem,contractions.

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ALGORITHM FOR ZEROS OF MAXIMAL MONOTONE MAPPINGS IN CLASSICAL BANACH SPACES

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Abstract: In this presentation, we introduce a new iteration process and show that this iteration process converges strongly to a zeros of a bounded maximal monotone operator defined in a 2-uniformly convex and q-uniformly smooth or p-uniformly convex and 2-uniformly smooth real Banach space. Using this result, we deal with the convex minimization problem. Our theorems improve and unify most of the results that have been proved in this direction for this important class of nonlinear mappings. Furthermore, our new technique of proof is of independent interest.

Keywords: monotone mappings, zeros, iteration process

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SPECTRAL ANALYSIS OF MATRIX STURM-LIOUVILLE OPERATORS

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Abstract: In this presentation, we introducea boundary value problem (BVP) consisting of a second order non-selfadjoint matrix Sturm-Liouville equation and boundary conditions that depend on quadratic eigenvalue parameter.

Keywords: Eigenvalues, spectral singularities, spectral analysis, Sturm-Liouville operator.

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NEW RESULTS ON GRAPH PRODUCT OF SPECIAL SEMIGROUPS

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Abstract: In this presentation, we introduce a new results for a important graph product over special semigroups.In detail, we will investigate some graph parameters and some graph numbers for that product of any two monogenic semigroup graphs $\Gamma_1(S_M)$ and $\Gamma_2(S_M)$.

Keywords: Graphs, Graph product, Monogenic semigroup graph.

References:

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PRINCIPAL FUNCTIONS OF DISCRETE STURM-LIOUVILLE EQUATIONS WITH HYPERBOLIC EIGENPARAMETER

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Abstract: In this study, we take under investigation principal functions corresponding to the eigenvalues and the spectral singularities of the boundary value problem (BVP) $a_{n-1}y_{n-1}+b_ny_n+a_ny_{n+1}=\lambda y_n, n\in\mathbb{N}$ and $(\gamma_0+\gamma_1\lambda)y_1+(\beta_0+\beta_1\lambda)y_0=0$ where (a_n) and (b_n) are complex sequences, λ is a hyperbolic eigenparameterand γ_i, $\beta_i\in\mathbb{C}$ for $i=0,1$.

Keywords: Spectral analysis, spectral singularities, eigenvalues, discrete equations.

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WIJSMAN *I*-INVARIANT CONVERGENCE OF SEQUENCES OF SETS

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Abstract: In this paper, we study the concepts of Wijsman*I*-invariant convergence (I_σ^W), Wijsman I^*-invariant convergence (I_σ^{*W}), Wijsman *p*-strongly invariant convergence ($[WV_\sigma]_p$) and investigate the relationships among Wijsman invariant convergence, ($[WV_\sigma]_p$), (I_σ^W) and (I_σ^{*W}). Also, we introduce the concepts of (I_σ^W)-Cauchy sequence and (I_σ^{*W})-Cauchy sequence of sets.

Keywords: Invariant, I-convergence, Wijsman convergence.

ON NEW FIXED POINTS THEOREMS FOR SET CONTRACTION MULTIVALUED MAPPINGSAND APPLICATIONS TO DIFFERENTIAL INCLUSIONS

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Abstract: In this work,combining the conceptof measure of noncompactness with fixed point theory for multivalued mappings, we present new existence theorems for different type of set contraction multivalued maps. We also introduce a new class of mappings which are general than Meir-Keeler mappings. Finally, we use these results are then used to investigate the existence of mild solutions for anonlocalevolution differential inclusion without the compactness assumption.

Keywords: Multivalued mappings; Measure of noncompactness; fixed points;evolution differential inclusion.

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APPLYING POWELL'S SYMMETRICAL TECHNIQUE TO CONJUGATE GRADIENT METHODS WITH THE GENERALIZED CONJUGACY CONDITION

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Abstract: A new conjugate gradient method for unconstrained optimization, is proposed by applying the Powell symmetrical technique in a sense to be defined.Using the Wolfe line search conditions, the global convergence property of the method is also obtained, on the basis of the spectral analysis of the conjugate gradient iteration matrix and the Zoutendijk's condition for steepest descent methods. Preliminary numerical results for a set of 86 unconstrained optimization test problems, verify the performance of the algorithm and show that the GDSHS1 algorithm is competitive with the FR and □+ algorithms.

Keywords: Conjugate gradient method, symmetrical technique, Generalized onjugacy condition,spectral analysis, global convergence.

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CONVERGENCE OF SPLIT-STEP FOURIER COLLOCATION METHOD FOR BENJAMIN-BONA-MAHONY TYPE EQUATIONS

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Abstract: In this paper, we study stability, consistency and the convergence analysis of fully discretized Benjamin-Bona-Mahony (BBM)equations of the type $u_t - \partial_x^2 u_t = Au + \frac{1}{2}\partial_x(u^2)$,where A is an unbounded linear differential operator. In paper [1], a third order local and a second order global error bounds for the same problem is obtained in time using Strang splitting. Here, we study on fully discretized solution with Strang splitting in time and Fourier collocation in space under suitable regularity assumptions on exact solution. First we prove stability and construct a local error bound via Fourier interpolation operator and time discretization error. Then with the help of Lady Windermeres' fan argument, we obtained a fully discretized global error bound. Finally the results are tested on a numerical example.

Keywords: Operator splitting method, Fourier collocation method, Nonlinear Partial differential equation, KdV-BBM equation, error bound.

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HERMIT-HADAMARD TYPE INEQUALITIES FOR CO-ORDINATES LOG-CONVEX STOCHASTIC PROCESSES

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Abstract: The main aim of the present is to introduce co-ordinated log-convex stochastic processes. Moreover, we prove Hermit-Hadamard type inequalities for co-ordinated log-convex stochastic processes and obtain some important results for these processes.

Keywords: Hermit-Hadamard inequality, co-ordinated log-convex function, log-convex stochastic processes, co-ordinated log-convex stochastic processes

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A NEW SMOOTHING APPROXIMATION TO PIECEWISE SMOOTH FUNCTIONS AND APPLICATIONS

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Abstract: In this study, we introduce smoothing approximations for piecewise smooth functions. First, we give a new definition for piecewise smooth functions. Second, present a new local smoothing approximation for both one dimensional and n-dimensional piecewise functions. Third, we apply our smoothing approach three important area such as optimization,data modeling and geometric design. We give some numerical examples in order to illustrate the efficiency of our method.

Keywords: Piecewise smooth function, Smoothing approximation, Optimization,

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ON THE A FAMILY SAVING MODEL

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Abstract: In this study, we are interested in the family saving model for a family sets which is given by Kolmogorov equation

$$\frac{\partial u}{\partial t}=-\frac{\partial}{\partial x}(Cu)+\frac{1}{2}\frac{\partial^2}{\partial x^2}(bu)+f$$

where $u=u(x,t)$ is density distribution of family saving. Nonlocal boundary conditions which describes total family saving and number of families on the definite interval are considered for the model. By the Fourier method, solution of the problem is examined. In addition, Method of Lines method and Crank Nicolson method are applied to family saving model with integral boundary conditions. Errors of numerical methods are presented.

Keywords: Sturm-Liouville problem, nonlocal boundary conditions, family saving model, method of lines, Crank Nicolson method

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CONVERGENCE ANALYSIS OF DIFFERENCE METHOD FOR VOLTERRA DELAY-INTEGRO-DIFFERENTIAL EQUATION

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Abstract: This study is concerned with the finite-difference solution of singularly perturbed initial value problem for a linear first order Volterraintegro-differential equation with delay. The method is based on the method of integral identities with the use of exponential basis functions and interpolating quadrature rules with the weight and remainder terms in integral form. The emphasis is on the convergence of numerical method. It is shown that the method displays uniform convergence in respect to the perturbation parameter. Numerical results are also given.

Keywords: Delay-integro-differential, delay difference scheme, uniform convergence, singular perturbation.

MSC: 65L11, 65L12, 65L20, 65R05, 65R20.

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A GENERALIZATION OF THE EXPONENTIAL AND LINDLEY DISTRIBUTIONS VIA THE KUMARASWAMY-G FAMILY

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Abstract: In this study, we introduce a new generalization of the exponential and Lindley distribution via Kumaraswamy-G family of the distribution. The new distribution has the following cumulative distribution function,

$$F(x,a,b,\alpha,\beta)=1-\left(1-\left[1-\frac{(\alpha+\beta+\alpha\beta x)e^{-\alpha x}}{\alpha+\beta}\right]^{a}\right)^{b},x>0,$$

where $a,b,\alpha,\beta>0.$ Furthermore, we obtain several properties of this new distribution such as special cases and its density shapes, hazard rate function, moments, maximum likelihood estimations. Finally we end the paper with data analysis and conclusions.

Keywords: extended exponential distribution, Lindley distribution,Kumaraswamy-G family, generalized distribution.

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CONVERGENCE THEOREMS FOR A FAMILY OF MULTIVALUED NONEXPANSIVE MAPPINGS IN HYPERBOLIC SPACES

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Abstract: In this article we introduce a new iteration process inspired by the iteration [1]to prove strong convergence andΔ-convergence for a finite family of nonexpansive multivalued mappings in hyperbolic spaces. The results presented here extend some existing results in the literature.

Keywords: Hyperbolic spaces, Δ-convergence,nonexpansivemultivalued mapping.

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COMPLETE ABSTRACT DIFFERENTIAL EQUATIONS OF ELLIPTIC TYPE WITH ROBIN'S CONDITION IN A NON-COMMUTATIVE FRAMEWORK

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Abstract: In this work we give some new results on Robin abstract problem of second order differential equations of elliptic type with coefficient-operator in a non-commutative framework. We study the case f∈Lp(0,1;X), 1<p<∞ with X is UMD Banach spaces, using the representation formula of the solution given in M. Cheggag et al. [4]. Necessary and sufficient conditions of compatibility are established to obtain a strict solution. This work completes the ones studied by M. Cheggag et al. [4] and [5].

Keywords: Abstract differential equations, Robin boundary conditions, fractional powers of operators, bounded imaginary powers, analytic semigroups theory, UMD space, non-commutativity.

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EXTREMAL FUNCTIONS FOR STARLIKE FUNCTIONS ANDCONVEX FUNCTIONS

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Abstract: In this paper, we obtain new extremal functions for starlike functions and convex functions on the range$0 \leq \alpha \leq \frac{1}{2^{r+1}}$, defined on the unitdisk using analytic and univalent functions.

Keywords: Starlike functions, convex functions, analytic functions, extremal function.

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DYNAMIC SEMI-DISCRETE SURFACES OF REVOLUTION

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Abstract: Discrete Differential Geometry considers all kinds of discrete objects such as polygons, polyhedral surfaces etc. and has a long range of applications in many areas. One kind of manifolds arise from this subject are bivariate function of one discrete and one continuous variable, so called semi-discrete surfaces. Such mixed continuous-discrete objects can be seen as a limit case of purely discrete surfaces, or as a semi-discretization of smooth surfaces. Rather than the constant step discretization methods, Time Scales Calculus can also be effective to discretize smooth surfaces, since they directly converge to smooth part of the underlying manifold. Besides, with the chosen of discrete and continuous time scale, it is also possible to obtain local dynamic semi-discretization of smooth surface. In this study we briefly introduce such semi-discretization of smooth surfaces by using time scales calculus. Also semi-discrete surfaces are included and can be looked at in different ways- on the one hand as a discrete (or smooth) evolution of a curve from the point of view of transformations of curves, and on the other hand as approximation of a surface by a sequence of merged strips. The present study mainly investigates semi-discrete surfaces of revolution. We give some definitions of dynamic semi-discrete surface by using the Trigonometric functions on time scales. Also, we discuss basic theorems about the study.

Keywords: Semi-Discrete Surface, Discrete Differential Geometry, Time Scales Calculus, Mimetic Discretization

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ON SOME PROPERTIES OF POISSON AND CAUCHY TYPE INTEGRALS IN WEIGHTED MORREY TYPE SPACES

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Abstract:I n this work, we consider weighted form of Morrey-type spaces and some properties of shift operator in weighted Morrey-type spaces. We established some analogues of classical results in this case.

Keywords: Morrey-type spaces, weighted Morrey-type spaces, Poisson Integral, Caucy Integral

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ON I_2-ASYMPTOTICALLY λ²-STATISTICAL EQUIVALENT DOUBLE SET SEQUENCES

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Abstract: In this paper, we introduce the concept of I_2-asymptotically λ²-statistically equivalence of multiple L for the double sequences $\{A_{\{k,l\}}\}$ and $\{B_{\{k,l\}}\}$ Also we give some inclusion relations.

Keywords: I_2-convergence, λ²-convergence, asymptotically equivalence, double sequences, set sequences.

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ON THE ALMOST EVERYWHERE STATISTICAL CONVERGENCE OF SEQUENCES OF FUZZY NUMBERS

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Abstract: In this paper, we define the concept of almost everywhere statistical convergence of a sequence of fuzzy numbers and prove that a sequence of fuzzy numbers is almost everywhere statistically convergent if and only if its statistical limit inferior and limit superior are equal. To achieve this result, new representations for statistical limit inferior and limit superior of a sequence of fuzzy numbers are obtained and we show that some properties of statistical limit inferior and limit superior can be easily derived using these representations.

Keywords: Sequence of fuzzy numbers, almost everywhere statistical convergence, statistical limit inferior, statistical limit superior.

DYNAMICS OF A DISCRETE-TIME HOST PARASITOID

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Abstract: In this presentation, we investigate the stability of the coexistence fixed point of a host parasitoid model with certain parameters.

Keywords: Host parasitoid model, stability analysis, fixed point.

References:

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STABILITY BEHAVIOR OF A MODIFIEDNICHOLSON-BAILEY MODEL

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Abstract: This study presents the dynamical results of the model by obtaining the fixed points existing in the host-parasitoid model. Also, the resultsare confirmed by the examples.

Keywords:,Discrete-time system,Nicholson Bailey model,stability analysis, fixed point.

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ON $p-$ADIC GAMMA FUNCTION

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Abstract: In the present work, we consider $p-$adic gamma function. We obtain the derivative of the $p-$adic gamma function and Volkenborn integral of derivativeof $p-$adic gamma function is obtained. Also, we compute value of the Volkenborn integral for Mahler base.

Keywords: Volkenborn integral, p-adic gamma function,Mahler coefficients.

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APPROXIMATION PROPERTIES OF KING TYPE(p,q)-BERNSTEIN OPERATORS

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Abstract: In this presentation we deal with a King type modification of (p,q)-Bernstein operators. We investigate the Korovkin type approximation of both (p,q)-Bernstein and King type (p,q)-Bernstein operators under different conditions from the previous works. We prove that the error estimation of King type of the operator is better than that of the classical one whenever $0 \leq x \leq \frac{1}{3}$.

Keywords: Korovkin theorem, (p,q) integers, (p,q)-Bernstein operators, King type operators, rate of convergence.

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ON THE NUMERICAL SOLUTION OF THE KLEIN-GORDON EQUATION BY EXPONENTIAL B-SPLINE COLLOCATION METHOD

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Abstract:A finite element collocation method based on exponential-type cubic B-spline functions is formulated for the numerical solutions some initial boundary value problems constructed on the Klein-Gordon equation. The time order of the equation is reduced to convert the equation to a coupled system of equations of order one in time. The time discretization of the resultant system is accomplished by the Crank-Nicolson method. Then, following the linearization of the nonlinear terms, the space discretization is completed using exponential cubic B-spline collocation method. Finally, balancing the initial state makes the iteration algorithm ready to run. Some problems are solved by using the proposed algorithm. The error between the exact and approximate solutions is measured by using various discrete norms in some distinct steps. The plots of the obtained numerical solutions are also depicted to examine the motion.

Keywords: Finite element method, collocation method, Klein-Gordon equation, Exponential cubic B-spline.

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SOLVING LINEAR FRACTIONAL EQUATIONS WITH CONSTANT COEFFICIENTS USING LAPLACE TRANSFORM METHOD UNDER CTIT TRANSFORMATION

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Abstract: We propose an adapted Laplace transform method using cosmic time-individual time (CTIT) transformation which enables to reduce the problem of finding a solution for a linear fractional differential equation in fractional domain to a problem in ordinary domain and provide estimates for accuracy of the computations with comparative graphs showing the behaviour of the solutions.

Keywords: Laplace transform, CTITtransformation, linear fractional differential equation, fractional domain, ordinary domain.

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THE SPACE W($L^{p(.),q(.)}, L^r_\omega$) AND BOUNDEDNESS OF THE HARDY-LITTLEWOOD MAXIMAL FUNCTION ON W($L^{p(.),q(.)}, L^r_\omega$)

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Abstract: In this paper, we define a new weighted variable exponent Wiener amalgam space W($L^{p(.),q(.)}, L^r_\omega$)whose local component is variable exponent Lorentz space and the global component is weighted Lebesgue space. We give some characterizations of this space. At the end of the paper we discuss boundedness and unboundedness of the Hardy-Littlewood maximal function on W($L^{p(.),q(.)}, L^r_\omega$).

Keywords: Variable exponent Lorentz space, Hardy-Littlewood maximal function, Wiener amalgam space.

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ON THE GROWTH RATE OF ALGEBRAIC POLYNOMIALS THROUGH THEIR NORM IN BERGMAN SPACE

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Abstract: In many areas of research in mathematics (in approximation theory, embedding theory and etc.), one can be faced with two important problems given in the following: a) Determining how to undergo a change of (semi)norm of the holomorphic function when the given region expands; b) Determining the relationships between different (semi)norms of analytic functions in a given finite Jordan region on the complex plane in the various (semi)normed space [2]. We will consider this problems for algebraic polynomials of complex variables in the well known Bergman space. We will investigate the following problems: evaluating the increase of the modulus of polynomials in the exterior of the given region with respect to the norm of the polynomial in the this region [3,4]; determining a change of (semi)norm of polynomials for the given region.

Keywords: Algebraic polynomials, Quasionformal mapping, Quasicircle.

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DELAY DIFFERENTIAL OPERATORS AND SOME SOLVABLE MODELS IN LIFE SCIENCES

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Abstract: Using the methods of spectral theory of differential operators in Hilbert spaceL^2 –solvability of some models arising in life sciences is investigated. Particularly, concrete solvable models are given.

Keywords: Hilbert space and direct sum of Hilbert spaces;delay differential operator; bounded and boundedly solvable operators; extension of an operator; Hutchinson's, Houseflies, Drug-free and medical models.

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STATISTICALLY RELATIVELY A-SUMMABILITY OF CONVERGENCE OF DOUBLE SEQUENCES OF POSITIVE LINEAR OPERATORS

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Abstract: In this presentation, we introduce the concept of statistically relatively A-summability. Based upon this definition and A-statistically relatively uniform convergence for double sequences of functions, we prove a Korovkin-type approximation theorem. Also, we present a strong application.

Keywords: A-statistically relatively uniform convergence, statistically A-summability, positive linear operator, Korovkin theorem.

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SOME SPECTRAL PROPERTIES OF LINEAR OPERATORS ON EXOTIC BANACH SPACES

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Abstract: In this work, we present some results concerning the operators defined on various classes of exotic Banach spaces, containing in particular those studied respectively by V. Ferenczi [7, 8] and T. Gowers with B. Maurey [14, 15]. We show that, on hereditarily indecomposable or quotient hereditarily indecomposable Banach space X, the set of bounded Fredholm operators is dense in L(X), this gives that the boundary of bounded Fredholm operators is nothing else but the ideal of strictly singular operators if X is hereditarily indecomposable Banach space (resp. the ideal of strictly cosingular operators if X is quotient hereditarily indecomposable Banach space). On the other hand, a comparison between sufficiently rich and exotic Banach spaces is given via some properties of the two maps spectra and Wolf essential spectra.

Keywords:

Fredholm perturbation, semi-Fredholm operator, Fredholm operator, hereditarily indecomposable Banach space, essential spectrum.

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SUPPORT VECTOR MACHINES SVM

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Abstract: The support vector machines or wide margin separators SVM are a class of algorithms based on the search for the optimal hyperplane margin, where possible, classroom or properly separated data. The principle is to find from a training set a classifieur, or a classificatory function, the generalization ability (quality forecast) is the largest possible. SVM were developed in the 1990s based on theoretical considerations of Vladimir Vapnik on the development of statistical learning theory. SVM were quickly adopted for their ability to work with large data, the small number of hyper parameters, their theoretical guarantees, and good results in practice. SVMs have been applied to numerous fields (bioinformatics, information retrieval, computer vision, finance …)

Keywords: Classification, Support vector machines.

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CHARACTERIZATION OF MIXED MODULUS OF SMOOTHNESS IN WEIGHTED Lp SPACES

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Abstract: In this work we consider the mixed modulus of smoothness of fractional order in the Lebesgue spaces with Muckenhoupt weights on two dimensional torus. We obtain a characterization class for the mixed modulus of smoothness of fractional order. Also direct and inverse estimates of angular trigonometric approximation of functions in these spaces. An equivalence between the mixed modulus of smoothness and K-functional and realization functional are established.

Keywords: Mixed modulus of smoothness, Muckenhoupt weight, weighted Lebesgue space, characterization class for modulus of smoothness.

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SOME DIRECT APPROXIMATION THEOREMS IN WEIGHTED ORLICZ SPACES

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Abstract: In 1963, Chen [10] generalized the definition of Orlicz spaces saving almost all known properties of them. In this definition, the generating Young function of Orlicz spaces is not necessary to be convex. The definition and applicationsto approximation theory Orlicz spaces with Muckenhoupt weights in the sense of Chen was given by AKGUN [11]. In this work, using this definiton, we generalize the results obtained in the papers [2, 3, 4] to the weighted Orlicz spaces having generating Young functions not necessary to be convex. We obtained some direct theorems of approximation thorems in these spaces.

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UNCONDITIONALLY CAUCHY SERIES AND ZEWIER MATRIX METHOD

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Abstract: In thispaper, we give some results about completeness of the spaces by means of Zewier matrix method. Also, we characterize continuityof the operators $T_x: S \to X$by weakly unconditionally Cauchy series.

Keywords: Zweier matrix, completeness, unconditionally Cauchy series.

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TAUBERIAN CONDITIONS FOR DOUBLE SEQUENCES WHICH ARE STATISTICALLY SUMMABLE (C,1,1) IN FUZZY NUMBER SPACE

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Abstract: In this presentation, we introduce the concept of statistically summability (C,1,1) for double sequences in fuzzy number space E^n and also we give some tauberian conditions for double sequences of fuzzy numbers that are statistically summable (C,1,1).

Keywords: Double sequences; statistical convergence; statistical summability (C,1,1); fuzzy number space

THE REALIZATION OF THE FEEDBACK AMPLIFIER DESIGN WITH USING ARTIFICIAL NEURAL NETWORK

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Abstract: Operational amplifiers (op-amps) are the most widely used type of linear integrated circuits. There are many advantages to using back in a system design as increase the bandwidth of the amplifier and improve stability. The design of a non-inverting feedbackamplifier circuitusing Artificial Neural Network (ANN)in this study was performed. The developed ANN model has been trained byLevenberg Marquardt algorithm for design feedbackamplifier circuit.After the input and output parameters of proposed ANN model were determined, the most suitable ANN architecture and training parameters were selected.Finally, trained network was tested and it was used for design feedback amplifier circuit.

Keywords: Non-inverting feedback amplifier, Artificial Neural Network.

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PREDICTION OF HARDNESS VALUES OF COLD WORKED Al/SiC$_p$ COMPOSITE AT DIFFERENT REDUCTION RATIO BY ADAPTIVE NEURO-FUZZY INFERENCE SYSTEM

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Abstract: Aluminum alloys are used widely in the aerospace and, more recently, in the automotive industry as well as in defense industry.The production and potential applications of metal matrix composites have been dramatically increased with technological developments.In this theoretical study, hardness values of the metal matrix composites (MMCs) reinforced with SiC particles has been predicted using by Adaptive Neuro-Fuzzy Inference System (ANFIS) after cold working process at different reduction ratio. To evaluate prediction capabilities of the proposed ANFIS model, the obtained results were compared with experimental data in terms of statistical values used in the literature. It was shown that there are very good correlation between the predicted and the experimental values. The other results have been discussed in details.

Keywords: Three step iteration, strong convergence,rate of convergence, data dependence integral equation.

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DIFFERENCE SEQUENCE SPACES AND MATRIX TRANSFORMATIONS OF SOME BILATERAL SEQUENCES

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Abstract: In this study, we introduce difference sequence spaces of some bilateral sequences $X(\Delta,\mathbb{Z})$, where X denotes one of the sequence spaces of $l_\infty, \mathrm{c}, or\ c_0$. For instance $l_\infty(\Delta,\mathbb{Z}) = \{\mathrm{x} = (\mathrm{x_k})_{\mathrm{k}\in\mathbb{Z}}: \Delta\mathrm{x} \in l_\infty(\mathbb{Z})\}$.Besides we compute continuous $\alpha, \beta, and\ \gamma$ duals of these spaces $X(\Delta,\mathbb{Z})$. Finally we characterize some matrix transformations between these bilateral sequence spaces.

Keywords: Bilateral sequences, difference sequence spaces, duals, matrix transformations.

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TWO-WEIGHTED INEQUALITIES FOR MULTIDIMENSIONALHARDY OPERATOR IN VARIABLE WEIGHTEDLEBESGUESPACES WITH MIXED NORM

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Abstract: In this report, a two-weight boundedness of multidimensional Hardy operator and its dual operator acting from weighted Lebesgue spaces with mixed norm into weighted variable Lebesgue spaces with mixed norm spaces is given. In particular, a new type two-weight criterion of multidimensional Hardy operator is obtained.

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GROWTH OF SOLUTIONS OF LINEAR DIFFERENTIAL EQUATIONSAROUND AN ISOLATED ESSENTIAL SINGULARITY

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Abstract: In this paper we study the growth of solutions of certain class of lineardifferential equations around an isolated essential singularity point. Forthat we transform by making use a conformal mapping certain results from thecomplex plane to a neighborhood of a singular point. We will see that thereare large similarities between the complex plane results and thisinvestigation.

Keywords: Linear differential equations, local growth of solutions, essential isolated singularity.

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ALGEBRAIC PROPERTIES OF JOIN AND CORONA PRODUCT OF GRAPHS

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Abstract: Given any two graphs, it is possible to obtain a new graph from them using some certain operation. There are several operations on graphs. Two of them are join and Corona product. In this talk, we determine the abstract algebraic structure of the set of simple connected graphs according to join and Corona product of two given graphs. Also some new properties are obtained.

Keywords: Graph theory, graph operation, join, Corona product

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COMMON FIXEDPOINT THEOREMS FOR WEAKLLY SUBSEQUENTIALLY CONTINUOUS MAPS IN MODIFIED INTUISNISTIC METRIC SPACES

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Abstract: The aim of this work is to prove common fixed point theorems for two weakly subsequentially continuous and compatible of type (E) pairs of self mappings which satisfying implicit relation in modified intuitionistic fuzzy metric spaces, an example is given to illustrate our results, our results improve and generalize some previous results.

Keywords: Common fixed point, weakly subsequentialy continuous, compatible of (E), implicit relation, modified intuitionistic fuzzy metric space.

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EXPONENTIAL STABILITY OF SOME NEURAL NETWORK SYSTEMS OF COHEN-GROSSBERG TYPE

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Abstract: Our main concern in the expected oral talk is the study of some neural network systems of Cohen-Grossberg type which are extensively applied in various areas of science and technology such as in neurobiology, image processing and so one. Time delays are introduced in the system because of the finite switching speed of the signal transmission and amplification time. To the knowledge of the reader time delays could cause instability and even oscillation of a given model, and so appropriate assumptions are really needed to avoid chaos, divergence or bifurcation states. We will first establish the existence of a unique equilibrium point for such a system, and then, by using Halanay inequality, we prove that the obtained unique equilibrium is exponentially asymptotically stable.

Keywords: Cohen-Grossbergnural network systems; equilibrium point; Halanay inequality; exponential stability.

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EXACT SOLUTIONS AND CONSERVATION LAWS OF 3+1 DIMENSIONAL YTSF EQUATION

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Abstract: In this study, we derive exact traveling wave solution of the (3+1) dimensional potential-YTSF equation by a generalized Kudryashov method.Moreover, conservation laws are derived for the underlying equation by employing the multiplier method with the first order multipliers.

Keywords: Exact solution, Conservation laws, Multiplier method.

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GENERALIZED RESULT OF GLOBAL SOLUTIONS TO A CLASS OF A REACTION-DIFFUSION SYSTEM

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Abstract: We prove in this work a generalized result of global classical solutions in time to a class of a reaction diffusion system defined on a bounded domain in R^n.

Keywords: Reaction-diffusion equations, positivity of solutions, global existence, uniform boundedness, continuous semigroups, Lyapunov functional.

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A MODIFIED REGULARIZATION METHOD FOR A NON-LINEAR ABSTRACT PARABOLIC EQUATION

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Abstract: In this work, we study the abstract backward parabolic problem. This problem is known to be severely ill posed. We regularize this problem, using a new modified regularization method to obtain a family of approximate well posed problems. We also give the error estimate between the regularized solution and the exact solution (when it exists). Moreover, some other convergence results are also established.

Keywords: Ill-posed problem, nonlinear backward problem, quasi-reversibility value methods, quasi-boundary value-methods.

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ASYMPTOTIC BEHAVIOR OF WEAKLY COUPLED THERMOELASTIC WAVE MODEL

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Abstract: This paper has two objectives. First, we propose a system of partial differential equations describing the behavior of a one-dimensional thermoelastic structure occupying a bounded interval of R. For an initial-boundary value problem associated with this system, we prove a global well-posedness result in a certain topology under appropriate regularity

conditions on the data. Further, we show that under particular classes of 'natural' boundary conditions, the energy associated to the system decays polynomially to zero. Secondly, we consider the case where the domain is unbounded and we study conditions under which stability estimates still holds.

Keywords: thermoelastic structure, contraction semigroups, polynomial decay.

ON THE CONVERGENCE FOR A SEQUENCE OF INTERVALS OF FUZZY NUMBERS

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Abstract: In this study, we show that,if the n th term of a sequence $X = \{[X_n, Y_n]\}$of intervals of fuzzy numbers contains the n th term of such another sequence $Z = \{[Z_n, W_n]\}$for each positive integer n, then the limit of$X$ contains the limit of Z, provided that these limits exist. Moreover, we show that this situation may not hold in the context of rough convergence.Furthermore, we demonstrate how to construct a convergent/rough convergent sequence of fuzzy numbers from a convergent/rough convergent sequence of intervals of fuzzy numbers.

Keywords: Rough convergence; Sequence of intervals of fuzzy numbers.

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SOME INEQUALITIES FOR DOUBLE INTEGRALS AND APPLICATIONS FOR CUBATURE FORMULA

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Abstract: We establish an Ostrowski type inequality for double integrals of second order partial derivative functions which are bounded. Then, we deduce some inequalities of Hermite-Hadamard type for double integrals of functions whose partial derivatives in absolute value are convex on the co- ordinates on rectangle from the plane. Finally, some applications in Numerical Analysis in connection with cubature formula are given.

Keywords: Ostrowski inequality, Hermite-Hadamard inequality, co-ordinated convex mapping, cubature formula.

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SOME PERTURBED INEQUALITIES OF OSTROWSKI TYPE FOR TWICE DIFFERENTIABLE FUNCTIONS

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Abstract: We establish new perturbed Ostrowski type inequalities for functions whose second derivatives are of bounded variation. In addition, we obtain some integral inequalities for absolutely continuous mappings. Finally, some inequalities related to Lipschitzian derivatives are given.

Keywords: Function of bounded variation, Perturbed Ostrowski type inequalities.

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ON THE PALINDROMICS CONTINUED FRACTIONS IN THE FIELD F_q((X^{-1}))

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Abstract: In 2007 B. Adamczewski and Y. Bugeaud have proved that if the continued fractions expansion of a non quadratic real x begin with sufficiently large palindrome then x is transcendent. In this paper we study the same problem in the fields of formal power series over a finite fields. We recall that Schmidt's theorem is not valuable in this case.

CONVERGENCE THEOREMS FOR EQUILIBRIUM PROBLEMSAND GENERALIZED HYBRID MAPPINGS

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Abstract: In this presentation, we introduce a new modified Ishikawa iteration prosses for finding a common element of the solutions set of an equilibrium problem and the set of fixed points of generalized hybrid mappings in a Hilbert space. Our results generalize and improve some existing results in the literature. A numerical example is given to illustrate the usability of our results.

Keywords: Equilibrium problem,Fixed point, Hybrid method, Hilbert space, Weak convergence, Strong convergence.

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HYERS-ULAM-RASSIAS STABILITY OF A VOLTERRA INTEGRO-DIFFERENTIAL EQUATION

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Abstract: In this presentation, by applying the fixed point alternative method, we give a necessary and sufficient condition in order that a Volterraintegro-differetial equation has the Hyers-Ulam-Rassias stability under some additional conditions.

Keywords: Fixed point method, integro-differential equation, Hyers-Ulam-Rassias stability.

References:

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APPROXIMATION PROPERTIES OF ANALYTIC FUNCTIONS BY THE SEQUENCES OF *k*-POSITIVE LINEAR OPERATORS IN SOME SUBSPACE OF ANALYTIC FUNCTIONS

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Abstract: It is known that Korovkin type theorem is not valid in the space of analytic functions. In this presentation, we put in evidence that Korovkin type theorem is true for the space A_g, the space A_g consists of analytic functions whose coefficients satisfy the inequality $|f_k| \leq M_f\, g(k)$ such that $g(k) = 1 + k^2$. The theorem is proved by choosing the test functions as $g_\vartheta(z) = \sum_{k=0}^{\infty} k^\vartheta\, z^k$, $\vartheta = 0, 1, 2$ and finally, an example is given.

Keywords: Korovkin type theorem, *k*-positive linear operators, analytic functions

References:

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HERMITE-HADAMARD AND SIMPSON-LIKE TYPE INEQUALITIES FOR DIFFERENTIABLE *p*-QUASI-CONVEX FUNCTIONS

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Abstract: In this paper, we give a new concept which is a generalization of the concepts quasi-convexity and harmonically quasi-convexity and establish a new identity. A consequence of the identity is that we obtain some new general inequalities containing all of the Hermite-Hadamard and Simpson-like type for functions whose derivatives in absolute value at certain power are p-quasi-convex. Some applications to special means of real numbers are also given.

Keywords.p-Quasi-convex functions, Hermite-Hadamard type inequality,Simpson inequality.

References:

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ON SOME EQUALITIESOF ORDINARY LEAST SQUARES AND BEST LINEAR UNBIASED ESTIMATORS UNDER A GENERAL PARTITIONED LINEAR MODEL

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Abstract: Estimations of partial coefficients in a general regression models involve some complicated operations of matrices and their generalized inverses. In this presentation, we consider a general partitioned linear model$\mathcal{M} = \{\boldsymbol{y},\ \boldsymbol{X_1\beta_1} + \boldsymbol{X_2\beta_2}\ ,\ \sigma^2\boldsymbol{\Sigma}\}$andits stochastically restricted modelwithout any rank assumptions. We give necessary end sufficient conditions for the equalities of the ordinary least squares estimators (OLSEs) and best linear unbiased estimators (BLUEs) of $\boldsymbol{X\beta}$.Also,we give an example for the equality of BLUEs of $\boldsymbol{X\beta}$under a general linear model and its stochastically restricted model.

Keywords: General linear model,stochastically restricted model, partitioned linear model, OLSE, BLUE.

References:

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SOME RESULTS ON THE GENERALIZED MELLIN TRANSFORMS AND APPLICATIONS

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Abstract: This presentation discusses the generalized Mellin transform and its properties with examples and applications to integral and partial differential equations. Several simple lemmas and theorems dealing with general properties of the generalized Mellin transform are proved. The main focus of this study is to develop the method of the generalized Mellin transform to solve partial differential equations and integral equations in applied mathematics.

Keywords: Fourier transform, Mellin transform, generalized Mellin transform, integral and partial differential equations.

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APPROXIMATE SOLUTION FOR SOLVING THE SINE-GORDON EQUATION BY REDUCED DIFFERENTIAL TRANSFORM METHOD WITH FIXED GRID SIZE

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Abstract: In this study, we applied relatively, a new algorithm to the reduced transformation method [3] for solving sine-Gordon equation and RDTM with fixed grid size was formed [1-2]. This method is an effective method for solving partial differentiable equations in literature.To present the RDTM with fixed grid size's effectiveness an example is given [4-5]. In the application part, we compare numerical results with the exact solutions and solutions of the variational iteration method (VIM).

Keywords: Reduced differential transform method, Variational iteration method, sine-Gordon equations.

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EULER SPIRALS

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Abstract: In this talk, we give some characterizations of Euler spirals. We show the relations between Euler spirals and Bertrand curves. Moreover, many different approaches about Euler spirals are presented in three dimensional Euchlidean space and Minkowski space.

Keywords: Euler spirals, Bertrand curves, curvature.

SIMPLE EQUATION METHOD FOR TRAVELING WAVESOLUTIONS OF SOME NONLINEAR PARTIAL DIFFERENTIAL EQUATIONS

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Abstract: In this study, we study simple equation method for traveling wavesolutions of the Dodd-Bullough-Mikhailov (DBM) equation, the Liouville equation and fifth order KdV equation.

Keywords: Traveling wavesolutions, simple equation method, Dodd-Bullough-Mikhailov (DBM) equation, Liouville equation, fifth order KdV equation.

References:

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ENTROPY CONVERGENCE FOR SEQUENCES OF FUZZY NUMBERS

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Abstract: In this presentation, we have introduced entropy convergence (E-convergence) for sequence of fuzzy numbers and proved some theorems about entropy convergent sequences spaces.

Keywords: Entropy, fuzzy numbers, sequence of fuzzy numbers.

References:

[1] M.Şengönül, "An Application of Fuzzy Sets to Veterinary Medicine", Theory and Applications of Mathematics & Computer Science 6 (1) (2016) 1–12.

[2] T. C. Chin, "The entropy difference of triangular fuzzy numbers with arithmetic operations", Journal of "ir.lib.kuas.edu.tw" (1), 53–75.

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ENTROPY VALUE OF QRS COMPLEX IN THE ELECTROCARDIOGRAPHY

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Abstract: In this presentation, we introduce entropy concept in fuzzy sets to QRS complex in ECG. QRS complex is maybe the most prominent component of ECG and mostly related to myocardial infarction (MI) state. Negative and positive deflections in QRS complex employed as a fuzzy set and entropies of QRS complex belong patients with cardiac diseases compared with control group and some results acquired.

Keywords: Entropy, QRS complex, ECG, Fuzzy numbers, Fuzzy sets

References:

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OPTIMIZATION OF HIGHER ORDER POLYHEDRAL DISCRETE AND DIFFERENTIAL INCLUSIONS

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Abstract: In this presentation, we concern with one of the difficult and interesting fields-higher order polyhedral optimization described by ordinary discrete and differential inclusions. The optimality problem for higher order discrete inclusions are reduced to the problem with finite number of geometric constraints. By using higher order difference operators with problem for higher order differential inclusions, we associate the discrete-approximation problem, approximating it. The derivation of sufficient conditions for optimality of higher order differential inclusions is implemented by passing to the formal limit as the discrete steps tend to zero. Finally we prove the sufficient conditions of optimality for higher order polyhedral differential inclusions with boundary value constraint.

Keywords: Polyhedral, differential inclusions, Euler-Lagrange inclusion.

References:

[1] J.-P. Aubin, A. Cellina, "Differential Inclusions", Springer-Verlag, Grundlehren der Math.Wiss, (1984).

[2] E.N. Mahmudov, "Approximation and Optimization of Discrete and Differential inclusions", Elsevier, (2011).

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WEIGHTED APPROXIMATION BY NONLINEAR DOUBLE SINGULAR INTEGRAL OPERATORS

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Abstract: In this work, we present some theorems on pointwise convergence of nonlinear double singular integral operators depending on threeparameters in weighted sense.

Keywords: Pointwise Convergence, degree of pointwise convergence, nonlinear double singular integral operator.

References:

[1] R. Taberski, "Singular integrals depending on two parameters", RocznickiPolskiegotowarzystwamatematycznego, Seria I. Pracematematyczne, VII, 1962.

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ON STATISTICAL CONVERGENCE OF SEQUENCES OF FUNCTIONSIN 2-NORMED SPACES

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Abstract: Statistical convergence and statistical Cauchy sequence in 2-normed spacewere studied by Gürdal and Pehlivan [M. Gürdal, S. Pehlivan, Statistical convergencein 2-normed spaces, Southeast Asian Bulletin of Mathematics, (33) (2009), 257264].In this paper, we get analogous results of statistical convergence and statistical Cauchysequence of functions and investigate some properties and relationships between them in2-normed spaces.

Keywords: Statistical convergence, Sequence of functions, Statistical Cauchy sequence, 2-normed spaces.

References:

[1] M. Gürdal, S. Pehlivan, Statistical convergence in 2-normed spaces, Southeast Asian Bulletin of Mathematics, (33) (2009), 257-264.

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SOME DOUBLE SEQUENCE SPACES OF INTERVAL NUMBERS

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Abstract: Interval arithmetic was first suggested by Dwyer in[3]. In [2], Chiao introduced the sequences of interval numbers and defined usual convergence of sequences of interval number. Esi and Yasemin in [1] defined the metric spaces $\overline{c_0}(f,p,s)$, $\overline{c}(f,p,s)$, $\overline{l_\infty}(f,p,s)$ and $\overline{l_p}(f,p,s)$ of sequences of interval numbers by a modulus function. In this study, we consider a generalization for double sequences of these metric spaces by taking a ψ function, satisfying the following conditions, instead of s parameter. For this aim, let $\psi(k,l)$ be a positive function for all $k,l\in\mathbb{N}$ such that (i) $\lim_{k,l\to\infty}\psi(k,l)=0$ and (ii) $\Delta_2\psi(k,l)=\psi(k-1,l-1)-2\psi(k,l)+\psi(k+1,l+1)\geq 0$ or $\psi(k,l)=1$.

Therefore, according to class of functions which satisfying the conditions (i) and (ii) we deal with the metric spaces $\overline{c_0}^2(f,p,\psi)$, $\overline{c}^2(f,p,\psi)$, $\overline{l_\infty}^2(f,p,\psi)$ and $\overline{l_p}^2(f,p,\psi)$ of double sequences of interval numbers defined by a modulus function and state some topological theorems and inclusions related to these spaces.

Keywords: Interval numbers, complete metric spaces, modulus function.

References:

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APPROXIMATING SOLUTIONS OF NONLINEAR ABSTRACT MEASURE DIFFERENTIAL EQUATIONS

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Abstract: In this paper the existence theorem as well as approximations of the solutions of initial value problems of first order nonlinear abstract measure differential equations is proved under the mixed generalized Lipschitz and Caratheodory conditions. We rely our results on a hybrid fixed point theorem of Dhage in partially ordered normed linear spaces. The abstract measure differential equations in which ordinary derivative is replaced by the derivative of set functions, namely, the Radon-Nokodym derivative of a measure with respect to another measure.

$$\frac{dp}{d\mu} = f(x, p(\overline{S_x})) + g(x, p(\overline{S_x})) \qquad (1)$$

$$P(E) = q(E), E \in M_0. \ \ a.e.[\mu] on \, \overline{x_0 z}$$

$$\mu, f, g : S_z \times R \to R$$

The existence of the solutions to (1) is proved by Dhage and Bellale by using a new nonlinear alternative of Leray-Schauder type developed in this paper. Also we apply a approximation solution Dhage's hybrid fixed point theory for nonlinear mapping in partially ordered metric spaces.

Keywords: Approximating solution, Abstract Measure differential equation, Initial value Problems, Hybrid fixed point theorem

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ON λ-CONVERGENCE OF SECOND ORDER ANDNEW BANACH SPACES

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Abstract: The notion of λ-convergence and λ-boundedness were given by Mursaleen and Noman in [4]. In this presentation we introduce the λ-convergence and λ-boundedness of second order. We examine the relation between of the ordinary convergence and λ-convergence of second order. Thenwe define new BK-spaces of non-absolute type. We investigate some topological properties and establish some inclusion relations concerning with those spaces.

Keywords:BK-spaces, Difference sequence spaces.

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COMPARISON OF SOME SET OPEN AND UNIFORM TOPOLOGIES ON C(X,Y)

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Abstract: Let X,Y be topological spaces and C(X,Y) be the set of all continuous functions from X to Y. The set C(X,Y) can be endowed with set open or uniform topologies on particular families of subsets of X. We give here a comparison between some of these topologies and give a criterion for their coincidence.

Keywords: Function spaces, set open topology, uniform topology, Y-compact sets.

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SOLUTION OF A LINEAR MULTIOBJECTIVE PROBLEM BY THE ADAPTIVE METHOD

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Abstract: In this presentation, we introduce a new method to solve a linear multiobjective programming problem with bounded variables using the principle of the adaptive method.

We propose a procedure for finding an initial efficient pointwithout having to calculate a feasible point, and we develop a method to findefficient points, weakly efficient points, andsubefficient points.

Then we give a detailed algorithm for computing all efficient. A numerical example is utilized to illustrate the applicability of the proposed method.

Keywords: Linear program, multiobjective linear programming,bounded variables,suboptimality criterion, adaptive method,efficient points, subefficient points.

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GROUPS WHOSE PROPER SUBGROUPS ARE HYPERCENTRAL

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Abstract: Let X be a class of groups. A group is said to be minimal non-X if it is not an X-group, while all its proper subgroups belong to X. We will denote minimal non X-groups by MNX-groups. Many results have been obtained on MNX-groups, for varions choices of X (see [1], [2], [3], [4]). In particular, in [2] a complete description infinitely generated MNN groups, where N denotes the class of nilpotent groups. Xu [3] has described the structure of infinitely generated MNFN-groups.

To ease the discussion we also introduce some abbreviations. A group G is said to be MNZA-group if all its proper subgroups are hypercentral, but G it self is not. Here we proved if G is a finitely generated MNZA-group is a perfect group which has no proper subgroup of finite index and such that G/Frat is an infinite simple group, where Frat(G) stands for Frattini subgroup of G.^{} In section 2; we discuss infinitely generated MNZA-groups. The following results are obtained.

Keywords: Hypercentral groups, Minimal non-nilpotent groups.

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SOLUTION OF FRACTIONAL ORDER ORDINARY DIFFERENTIAL EQUATION: A NUMERICAL APPROACH

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Abstract: In this article a fractional order ordinary differential equation (FDE) is attempt to solve applying a new geometrical approach. We establish some new criteria to obtain the solution of a fractional order differential equation with integer order initial condition. Based on the geometrical interpretation of the fractional derivatives, the solution curve is approximated numerically. Two special phenomena are employed for concave upward and downward curves.

Keywords: Fractional order ordinary differential equation; geometrical interpretation; numerical solution.

ERROR ANALYSIS FOR EXTENDED DISCONTINUOUS GALERKIN(XDG) METHODS

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Abstract: In this presentation we introduce an extended discontinuous Galerkin (XDG) method. Our XDG scheme is based on the Babuska-Zlamal approach and we apply it to a class of prototype elliptic boundary value problems that have solutions consisting of smooth functions perturbed by a set of high frequency modes which occupy a narrow frequency band. The XDG scheme we study is enriched by trigonometric functions that cover the range of these perturbations. A theoretical error analysis is provided that shows the method converges and gives specifics on its accuracy.These error estimates are provided in terms of the degree of the polynomials used in the approximation and the largest high frequency.

Keywords: Discontinuous Galerkin (DG), Babushka-Zlamal DG scheme,High Frequency,Extended Discontinuous Galerkin.

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ON A C*- MODULE NORMED SPACE AND ITS TOPOLOGICAL PROPERTIES

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Abstract: One knows that Hilbert spaces have important roles in many area, such as statistics, quantum mechanics, etc. In 1953, Irving Kaplanskygenerlized the notion of Hilbert spaces. He introduce C*-module Hilbert spaces by defining an inner product likefunction on a left module, which take values in a C*-algebra.

In this work, inspired by the Kaplansky's, we construct a notion of a C*-module normed space. Further, we observe some topological properties of the space as well.

Keywords: C*-algebra, left-module, positive element, lattice.

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NUMERICAL SOLUTIONS OF SINGULARLYPERTURBED TURNING POINT PROBLEMS EXHIBITING ANINTERIOR LAYER VIA MAGNUS SERIES EXPANSION METHOD

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Abstract: In this presentation, we present the numerical solutions of singularly perturbed turning point problems exhibiting an interior layer, which is near the turning point, by means of the Magnus series expansion method. The method is applied to three different turning point problems with different orders and then numerical results are illustrated with figures in detail. Finally, we show that the higher order method is more powerful than the lower order one for solving singularly perturbed turning point problems exhibiting an interior layer by comparing the numerical results.

Keywords: Magnus Series Expansion Method, Singular Perturbation, Turning Point.

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ON GENERALIZATION ABSOLUTE RIESZ SUMMABILITY FACTORS OF FOURIER SERIES

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Abstract: In this presentation, we define two general theorem on $\left|A, p_n\right|_k$ summability factors of Fourier series by using matrix transformation undersuitable conditions. By using this theorem, we obtain some new results concerning other important summability methods.

Keywords: Summability factors, Absolute matrix summability, Fourier series, Hölder inequality, Minkowski inequality.

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SPECTRAL SINGULARITIES OF IMPULSIVE DISCRETE DIRAC OPERATORS

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Abstract: In this presentation, we consider the operator L generated in $L_2(Z, C^2)$ by the following Discrete Dirac equation for $\forall\, n \in Z\{-1,0,1\}$ için

$$y_{n+1}^{(2)} - y_n^{(2)} = \lambda y_n^{(1)}$$

$$-y_n^{(1)} + y_{n-1}^{(1))} = \lambda y_n^{(2)}$$

with impulsive condition

$$\begin{pmatrix} y_1^{(1)} \\ y_1^{(2)} \end{pmatrix} = \begin{pmatrix} a & b \\ c & d \end{pmatrix} \begin{pmatrix} y_{-1}^{(1)} \\ y_{-1}^{(2)} \end{pmatrix}$$

where a,b,c,d are complex numbers. We investigate eigenvalues and spectral singularities of L depending on the choice of the constants a,b,c,d and generalize the results obtained in [1-2] to the dicrete Dirac operator L. Note that, the spectral theory of L without impulsive conditions was investigated in detail in [3-4].

Keywords: Discrete Dirac equation, Discrete Dirac operator, spectral singularities,eigenvalues, interaction point.

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FIXED POINT RESULTS FOR BERINDE-TYPE ALMOST CONTRACTIONS ON G_p-METRIC SPACES

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Abstract: In this paper, we define the concepts of (δ, L)-almost contraction, (φ, L)-almost contraction and Ćirić-type almost contraction in the sense of Berinde in G_p-complete G_p-metric space. Furthermore, we prove the existence of fixed points and common fixed points of mappings satisfying Berinde type contractions stated above and also provide the conditions which are necessary for the uniqueness of fixed points and common fixed points. Consequently, we obtain the generalizations of comparable results in the literature. In addition, we introduce a few examples to ensure the existence of our results.

Keywords: Fixed point, common fixed point, Gp-metric space, Berinde-type almost contractions.

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WIJSMAN I_2-INVARIANT CONVERGENCE OF DOUBLE SEQUENCE OF SETS

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Abstract: In this paper, we study the concepts of Wijsman invariant statistical convergence, WijsmanI_2-invariant convergence ($I^{\sigma}{}_{W_2}$), Wijsman $I^*{}_2$-invariant convergence ($I^{*\sigma}{}_{W_2}$), Wijsman p-strongly invariant convergence ($[W_2V_\sigma]_p$) of double sequence of sets and investigate the relationships among Wijsman invariant convergence, $[W_2V_\sigma]_p$, $I^{\sigma}{}_{W_2}$ and $I^{*\sigma}{}_{W_2}$. Also, we introduce the concepts of $I^{\sigma}{}_{W_2}$-Cauchy double sequence and $I^{*\sigma}{}_{W_2}$-Cauchy double sequence of sets.

Keywords: Invariant, I-convergence, Wijsman convergence, double sequence.

A PRIORI ESTIMATES OF SOLUTIONS BOUNDARY VALUE PROBLEMS FOR THE HIGHER ORDER ELLIPTIC EQUATIONS IN GENERALIZED MORREY SPACES

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Abstract:A priori estimates are derived for the solutions boundary value problems for the higher order elliptic equations generalized Morrey spaces. This problem on bounded smooth domains is considered. Also one obtains $L_{p,\lambda} - L_{q,\lambda}$ regularity estimates. On bases this estimates the solvability this problem in generalized Morrey spaces is proved..

TWO PARAMETRIC (P; Q)-STANCU-BETA OPERATORS AND THEIR APPROXIMATION PROPERTIES

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Abstract: The purpose of this paper is to introduce two parametric (p; q)-analogue of the Stancu-Betaoperators. We study approximating properties of these operators using the Korovkin's approximation theorem and also study a direct theorem. We also obtain the Voronovskaja type estimate for these operators. Furthermore, we study the weighted approximation results and pointwise estimate for theseoperators. Finally, we present statistical approximating results for these operators.

Keywords: Two parametric Stancu-Beta operators; Linear positive operators; Korovkin theorem; Lipschitz functions; Modulus of continuity; Voronovskaja estimate; Statistical convergence.

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A COMPARISON OF FINITE-DIFFERENCE METHOD BY FIRST ORDER AND SECOND ORDER CENTRAL DIFFERENTIATION FORMULAS FOR LINEAR ODES UP TO FOURTH DEGREE AND A GENERALIZED CODE

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Abstract: The finite-difference method is applied to two second degree, a third degree, and a fourth degree linear ordinary differential equations (LODEs), whose analytical solutions are available, by using the first order and next the second order central differentiation formulae (FOCDF, SOCDF), with step sizes of Δx = 0.1, 0.05, 0.02, 0.01, separately. Usage of SOCDF is not observed to yield a convincing betterment while necessitating more laborious algebraic manipulations in transferring the LODEs to finite-difference equations. A computer program commonly applicable to any LODE up to the fourth degree is coded, which is to be linked to a sub-program comprising the coefficients of the resultant finite difference equations of the particular problem handled. Both programs use FOCDFs, and the results are improved by the extrapolation-to-the-limit formula, which is observed to yield more accurate results than the case using SOCDF with the same Δx.

Keywords: boundary-value-problem type of linear ordinary differential equations

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MATHEMATICAL ANALYSIS OF LENGYEL-EPSTEIN MODEL BY FRACTIONAL-ORDER DIFFERENTIAL EQUATIONS SYSTEMS

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Abstract: The examined model in this study is fractional-order form of the dimensionless Lengyel-Epstein model being the oscillating chemical reactions. In this sense, it is obtained the following system of two fractional-order differential equation:

$$\begin{aligned} D^{\alpha}x(t) &= F(x,y) = a - x - 4\frac{xy}{1+x^2} \\ D^{\alpha}y(t) &= G(x,y) = bx\left(1 - \frac{y}{1+x^2}\right) \end{aligned} \qquad (1)$$

where $\alpha \in (0,1]$. It is founded the positive equilibrium point. In addition that, the stability analysis of equilibrium point of model (1) is made. Results of this analysis are supported via numerical simulations drawn by datas obtained from literature.

Keywords: Fractional-order differential equation system, mathematical model, stability analysis, equilibrium points, oscillating chemical reactions.

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GLOBAL EXISTENCE AND BOUNDEDNESS OF SOLUTIONS FOR A TYPE OF NONLINEAR INTEGRO DIFFERENTIAL EQUATIONS OF THIRD ORDER

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Abstract: In this article, a kind of nonlinearintegro-differential equations of third orderis dealt. The global existence andboundednessof solutions are discussed. In the proofof main theorem is used Lyapunov's second (direct) method by constructing an appropriate Lyapunov function. The resultobtained in this papercontains and enlarges some well known resultson the third order nonlinear differential equations with delay in the literature. We also give an example to show the impressiveness of the method utilized.

Keywords: Lyapunov functional, integro-differential equation, global existence

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A NEW RESULT ON THE CONTINUABILITY AND BOUNDEDNESS OF SOLUTIONS TO A CLASS OF VECTOR DIFFERENTIAL EQUATIONS OF THIRD ORDER WITH DELAY

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Abstract: In this paper, we use Lyapunov's second method, by constructing an appropriate Lyapunov functional, sufficient conditions which warrant the continuability and boundedness of all solutions to a kind of nonlinear vector differential equations of third order with constant retarded argument are established. Also, we give an example to illustrate the theoretical analysis in this study and to check the impressiveness of the method employed.

Keywords: Lyapunov functional, continuability, boundedness, third order.

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AN INVERSE NODAL PROBLEM TO CONSTRUCT COULOMB POTENTIAL FOR *p*-LAPLACIAN STURM-LIOUVILLE EQUATION WITH POLYNOMIALLY BOUNDARY CONDITIONS

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Abstract: In this study, we solve an inverse nodal problem for *p*-Laplacian Sturm-Liouville equation with coulomb potential when boundary condition polynomially dependent on spectral parameter. Then, we obtain asymptotic expansion of eigenvalues and nodal parameters by using modified Prüfer substitution. Finally, we construct coulomb potential by nodal lengths.

Keywords: Inverse Nodal Problem,Prüfer Substitution, Coulomb Potential

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SOME GENERAL RESULTS FOR THE AVERAGE LOWER 2-DOMINATION NUMBER OF GRAPHS

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Abstract: In a communication network, thevulnerability measures the resistance of the network to disruption of operation after the failure of certain stations or communication links. The average lower 2-domination number is newly defined for the graph vulnerability.

In this presentation, the abovementioned new parameter is defined and examined. Then, upper and lower bounds are determined and exact formulas are found for the average lower 2-domination number of any graph G .Finally, some results are obtained for the average lower 2-domination number of join graph.

Keywords: Graph vulnerability; Connectivity; Network design and communication; Domination number; Average lower 2-domination number.

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A NEW EFFECTIVE METHOD TO SOLVE NONLINEAR PARTIAL DIFFERENTIAL EQUATIONS: THE UNIFIED METHOD

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Abstract: In this paper, we construct and present a new effective method called the unified method for solving nonlinear partial differential equations (NPDEs). Compared to other methods, the significant contribution of the unified method is firstly to unify the family of tanh function methods and the family of (G′/G) expansion methods. Secondly, it gives many more solutions for NPDEs direct, concise and simple manner than the total of these two families. Also, the unified method gives these abundant solutions without using tedious and complex algorithm on computer programs. Afterwards, we demonstrate the effectiveness of the unified tanh method by seeking more exact solutions of the Lonngrenwave equation.

Keywords: The tanh function method; The extended tanh function method; The modified extended tanh function method; The complex tanh function method; (G′/G) expansion method; The new approach of generalized (G′/G) expansionmethod; The (G′/G,1/G) expansion method; Nonlinear partial differential equations; Travelling wave solution; The unified method; The LonngrenWave Equation.

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THE MULTIDIMENSIONAL REVERSE HARDY-TYPE INEQUALITIES FOR SUPREMAL OPERATOR

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Abstract: In this presentation, we give the characterization of the inequalities

$$\|gw\|_{p,\mathbb{R}^n} \le C \left\| v(t)\|g\|_{\infty,\,{}^{c}B(0,t)} \right\|_{q,(0,\infty)}$$

and

$$\|gw\|_{p,\mathbb{R}^n} \le C\left\| v(t)\|g\|_{\infty,B(0,t)} \right\|_{q,(0,\infty)}$$

for all non-negative measurable functions on $\mathbb{R}^n$ when $0 < p, q \le \infty$. Here w and v are weight function on $\mathbb{R}^n$and $(0,\infty)$, respectively, $B(0,t)$ is the ball in $\mathbb{R}^n$ centered at the origin of radius t and ${}^{c}B(0,t) := \mathbb{R}^n \setminus B(0,t)$.

Keywords: Hardy Inequality, supremal operator, discretization.

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ON STATISTICAL CONVERGENCE WITH RESPECT TO THE GEOMETRIC MEAN AND ITS APPLICATIONS TO APPROXIMATION THEOREMS

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Abstract: In the present paper, we extend the notions of statistical convergence and statistical summabilityin the sense of Geometric calculus. In first, we introduce geometric statistically convergence and statistically geometric summability with respect to the geometric density. Later, we define weighted versions of both above notions. Based on the definition of geometric linearity, we prove a Korovkin type approximation theorem and give an example via Bernstein positive linear operator. Furthermore, we estimate the rate of convergence in terms of modulus of continuity in geometric sense. Finally, we examine some Voronovskaja type results connected with geometric Taylor expansion.

Keywords:

Geometric statistically convergence, statistically geometric summability,Korovkin and Voronovskaja type approximation theorems, geometric modulus of continuity, rates of convergence.

NECESSARY AND SUFFICIENT CONDITIONS FOR FIRSTORDER DIFFERENTIAL OPERATORS TO BE ASSOCIATED WITH A GENERALIZED CAUCHY-RIEMANN OPERATOR IN CLIFFORD ANALYSİS

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Abstract: In this paper we consider initial value problems of type

$$\partial_t u = F\left(t,x,u,\partial_{x_i}u\right) := \sum_{i=0}^{n} A^{(i)}\left(t,x\right)\partial_{x_i}u + B\left(t,x\right)u + C\left(t,x\right)$$

$$u\left(0,x\right) = u_0\left(x\right)$$

in the space of generalized monogenic functions $u\left(t,x\right)$ in the sense of Clifford Analysis satisfying the differential equation

$$D_\lambda u := Du + \lambda u = 0,$$

where $t \in \left[0,T\right]$ is the time variable $x = \left(x_0, x_1, \cdots\right.$ runs in abounded and simply connected domain in $\mathbb{R}$, λ is a real number,and D is the Cauchy-Riemann operator of Clifford analysis. We provenecessary and sufficient conditions on the coefficients of the operator F under which F is associated with the generalized Cauchy-Riemannoperator D_λ, i.e. F transforms the set of all solutions of the differentialequation $D_\lambda = 0$ into solutions of the same equation for fixedly chosen t. This criterion makes it possible to construct operators F for whichthe initial value problem is uniquely solvable for an arbitrary initial generalized monogenic function u_0 by the method of associated spaces constructed by W. Tutschke [5] and the solution is also generalized monogenic for each t.

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INVERSE NUMERICAL RADIUS INEQUALITY FOR REPRODUCING KERNEL HILBERT SPACE OPERATORS

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Abstract: A basic inequality for numerical radius is the power inequality stating that $w(A^n) \leq w^n(A), (n = 1, 2, \ldots)$. This inequality is well known in the literature. But, the inverse inequality $w^n(A) \leq Cw(A^n)$ for any $n > 0$ with some constant C are not well studied in the literature. Also, the analog inequality for the Berezin number of operators on the Reproducing Kernel Hilbert Space is not investigated in general. So, in this paper, we give new some inverse inequalities for numerical radius and Berezin number of some operators..

Keywords: Numerical radius, Hilbert-type inequality, Berezin number, positive operator.

Acknowledgement: This work is supported by TÜBA through Young Scientist Award Program (TÜBA-GEBİP/2015)

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SECOND-ORDER BOUNDARY VALUE PROBLEM ON A HALF-LINE

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Abstract: In this presentation, we deal with second-order three-point boundary value problem with integral boundary condition on a half-line. By using fixed point theorems, we give sufficient conditions for the existence solutions of the problem. Also, an example which supports our result is indicated.

Keywords: Infinite interval problems, Schauder's fixed point theorem, Integral boundary conditions.

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PARABOLIC OBLIQUE DERIVATIVE PROBLEM WITH DISCONTINUOUS COEFFICIENTS IN GENERALIZED WEIGHTED MORREY SPACES

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Abstract: In this report it is proved that global weighted Morrey-type regularity of the solution of the regular oblique derivative problem for linear uniformly parabolic operators with VMO coefficients. Also authors show that if the right-hand side of the parabolic equation belongs to certain generalized weighted Morrey space $M^{p,\varphi}(Q,\omega)$, than the strong solution belongs to the generalized weighted Sobolev-Morrey space $W^{p,\varphi}_{2,1}(Q,\omega)$ (see [1,2]).

The research of V. Guliyev and M. Omarova was partially supported by the grant of Presidium of Azerbaijan National Academy of Science 2015.

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FIXED POINT THEOREMS FOR MAPPINGS (E.A)-PROPERTY IN PARTIAL METRIC SPACE

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Abstract: In consideration of the concept of integral type (Branciari type) contractive condition and (E.A)-property, we proved fixed point theorems for two pairs of mappings satisfying (E.A)-property under (psi,fi)-contractions of integral type in partial metric spaces.

RIESZ POTENTIAL IN GENERALIZED MORREY SPACES ON THE HEISENBERG GROUP

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Abstract: In this report, it is proved that Riesz potential operator on the Heisenberg group $\mathbb{H}$ is bounded on generalized Morrey spaces $M_{p,\varphi}(\mathbb{H}$ (see [1]). The boundedness conditions are formulated in terms of Zygmund type integral inequalities. Based on the properties of the fundamental solution of the sub-Laplacianon $\mathbb{H}$, were proved two Sobolev-Stein embedding theorems for generalized Morrey and Besov-Morrey spaces.

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ON EXISTENCE AND CONVERGENCE THEOREMS FOR A NEW GENERAL NONLINEAR MAPPING ON CAT(0) SPACES

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Abstract: In this presentation, we introduce a new nonlinear hybrid mapping which is more general than 2-generalized hybrid mappings on CAT(0) spaces. Then we prove existence and convergence theorems for class. Our results is generalization of corresponding results in literature.

Keywords: Three step iteration, strong convergence,rate of convergence, data dependence integral equation.

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SOME THEOREMS ABOUT STATISTICAL CONVERGENCE ON TIME SCALES

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Abstract: In this study we introduce statistical convergentsequence spaces on an arbitrary time scale and examine some inclusion relations among them.

Keywords: Statistical Convergence, Time scales.

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AUTO-BÄCKLUND TRANSFORMATION FOR SOME NONLINEAR PARTIAL DIFFERENTIAL EQUATION

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Abstract: In this paper, we apply auto-Bäcklund transformation for Sharma-Tasso-Olver (STO) equation and fourth order equation of the Burgers hierarchy. We obtain solitary wave solutions of these equations. Auto-Bäcklund transformation was developed as a direct and simple method to obtain solutions of nonlinear partial differential equations by Fan.

Keywords: Auto-Bäcklund transformation, STO equation, fourth order equation of the Burgers hierarchy, solitary wave solution

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A NEW APPROACH TO FRACTIONAL q-DIFFERENCE EQUATIONS AND THE q-LAPLACE TRANSFORM

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Abstract: In this presentation, we introduce a new form of fractional q-difference equationsderived the fractional q,ρ-derivative. Wealso introduce the q,ρ-Laplace transform and the q,ρ-convolution to solve new type the fractional q-difference equations.

Keywords: The q,ρ-Laplace transform, the q,ρ-convolution, the fractional q,ρ-integral, the fractional q,ρ-derivative.

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ON THE CONSTRUCTION OF GENERAL SOLUTION OF THE EQUATION $\frac{\partial w(z)}{\partial \overline{\phi(z)}} - \frac{1}{2}\overline{\phi(z)}^{-1}\tilde{\lambda}\overline{w(z)}=0$

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Abstract: This essay is an attempt to construct the general solution of $\frac{\partial w}{\partial \bar{\phi}} = Aw + B\bar{w}$ type equation which has special choosing of coefficients. Where the unknown$w(z) = (w_{ij}(z))$ is$m \times s$ matrix valued function, $\phi(z)$is a generating solution for Q-holomorphic function and$A = \{a_{ij}(z)\}$and$B = \{b_{ij}(z)\}$are commuting with Q.

Keywords: Q-holomorphic functions, singular coefficients, generalized analytic functions.

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CENTRAL FACTORIAL TYPE NUMBERS ASSOCIATED WITH AVERAGING OPERATOR

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Abstract: The aim of this paper is to give and investigate the properties of the numbers $y_1(n,k;\lambda)$ via their generating functions. These numbers are related to the Stirling numbers of the second kind and the other numbers like as combinatorial sums. We use some operators which are related to the translation or shifting operator and averaging operator. We give relationships between these numbers and these operators. Finally, we completed our results by given further comments and remarks.

Keywords: Central factorial numbers, Stirling numbers, Shifting operator, Averaging operator, Combinatorial sum, Generating function.

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STABILITY OF NONLINEAR VOLTERRA-FREDHOLM INTEGRO DIFFERENTIAL EQUATION: A FIXED POINT APPROACH

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Abstract: The aim of this presentation is to establish the Hyers-Ulam stability and the Hyers-Ulam-Rassias stability of the class of nonlinear Volterra Fredholm integro-differential equations via fixed point method in Banach spaces.

Keywords: Volterra-Fredholm integro differential equation Hyers-Ulam stability, fixed point method.

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ON STATISTICAL E-CONVERGENCE OF DOUBLE SEQUENCES

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Abstract: In this paper we have introduced the concepts of statistical e-limit superior and e-limit inferior for real double sequences and proved some fundamental properties of st_e-limit superior and inferior. Using the concept of statistical e-convergence for double real sequences, weobtain a Korovkin-type approximation theorem for double sequences of positive linearoperators defined on the space of all 2π-periodic and real valued continuous functionson the real two-dimensional space. Furthermore, we display an application which showsthat our new result is stronger than its classical version.

Keywords: Double sequence space, e-convergence, statistical e-convergence, Positive linear operator,Korovkin-type approximation theorem.

THE VARIATIONAL FORMULATION OF AN INVERSE PROBLEM FOR A PARABOLIC EQUATION

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Abstract: In this presentation, the variational formulation of an inverse problem for a parabolic equation is considered. The existence and uniqueness of solution of variational problem is proved. The necessary condition for this solution is given.

Keywords: Variational problem, Inverse Problem,Parabolic equation

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COMPACTNESS OF FRACTIONAL MAXIMAL OPERATOR IN WEIGHTED $L^{p(x)}(0,\ell)$ SPACE

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Abstract: $B(x,r)=\{y\in R^n : |x-y|<r\}$ and $B(x,r)=B(x,r)\cap\Omega$,

Ω is a non-empty open set in R^n, d_Ω denotes the diameter of Ω

$\rho_{p(.)}(f)=\int_0^l |f(x)|^{p(.)}dx<\infty$ modul function (finite),If there is

$\underset{x\in(0,l)}{ess\sup}\, p(x)<\infty$ then f modul is

$$\|f\|_{L^{p(.)}(0,l)}=\inf\left\{\lambda>0:\rho_{p(x)}\left(\frac{f}{\lambda}\right)<\infty\right\}$$

$w(x)^{p'(x)}\in L^1(B(0,a))$, $v(x)^{q(x)}\in L^1(a,l)$; $V(x)=\int_x^l v(y)^{q(y)}dy$,

$$W(x)=\int_0^x w(y)^{p'(y)}dy$$

Theorem: Let $f(x)\geq 0$ measurable functions with $p^- >1$, $q(0)\geq p(0)>1$.

If there are conditions $\lim_{t\to 0}\sup V(t)^{1/q(0)}W(t)^{1/p'(0)}=0$ and

$\sup_{t\in(0,\infty)} V(t)^{1/q(0)}W(t)^{1/p'(0)}<\infty$. Then from $L^{p(.)}(0,l)$ to $L^{q(.)}(0,l)$

$$M^{a(.)}f(x)=\sup_{r>0}\frac{1}{|B(x,r)|^{1-\frac{a(x)}{n}}}\int_{\bar{B}(x,r)} f(y)dy$$

fractional maximal operator is compact.

NEW SOLUTIONS OF THE SPACE-TIME FRACTIONAL SHARMA-TASSO-OLVER EQUATION WITH CONFORMABLE DERIVATIVE

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Abstract: The main purpose of this article is to find the exact and approximate solutions of conformable space-time fractional Sharma-Tasso-Olver equation using first integral method (FIM) and q-homotopy analysis method (q-HAM) respectively. The obtained exact and numerical solutions are compared with each other. Also, the numerical results obtained by q-HAM are compatible with the exact solutions obtained by FIM; hence, it is clearly seen that these techniques are powerful and efficient in finding approximate and exact solutions for nonlinear conformable fractional PDEs.

Keywords: First Integral Method; Sharma-Tasso-Olver Equation; q-Homotopy Analysis Method; Conformable Fractional Derivative.

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NONCOMMUTATIVE SPACE AND 2D SCHRÖDINGER EQUATION WITH CENTRAL POTENTIAL

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Abstract: We obtain exact solutions of the 2D Schrdinger equation with the Singular Even-Power Potential in non-commutative space, using the Power-series expansion method. Hence we can say that the Schrdinger equation in non-commutative space describes to the particles with spin (1/2) in an external uniform magnitic eld. Where the noncommutativity play the role of magnetic field with created the total magnetic moment of particle with spin 1/2, who in turn shifted the spectrum of energy. Such effects are similar to the Zeeman splitting in a commutative space.

Keywords: Central potential, Noncommutative Geometry.

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DETERMINING THE CENTER OF GRAVITY AND SIMILARITY MEASURES OF SEQUENCE SPACES OF TRIANGULAR FUZZY NUMBERS

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Abstract: In this presentation, firstly, we mention (t_1, t_2)- type fuzzy numbers and their algebraic operations, shortly. After, we calculate the COG(center of gravity) points of a sequence of (t_1, t_2)- type triangular fuzzy numbers. Furthermore, we present the methods to measure the degree of similarity between sequencesof(t_1, t_2)- type fuzzy numbers. By this way, we contribute to the fuzzy risk analysis.

Keywords: Fuzzy number, COG, similarity measure, fuzzy risk analysis, sequence space.

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OBTAINING MATHEMATICAL MODELS OF THE PIEZOELECTRIC SYNTHETIC JET

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Abstract: In this study mathematical models of a piezoelectric driven synthetic jet was obtained via bond graphs technique. Synthetic jets are known as a mechanism that can blow and absorb the fluid through an orifice by movement of the diaphragm. Mathematical expressions, transfer function, state space representation and port-Hamiltonian model of the system were found by the bond graphs representation which is a graphical method and based on the energy flow between the system elements. Different representations of the system were simulated with MATLAB and the results similarity with each other were determined.

Keywords: Bond graphs, modeling, synthetic jet, port-Hamiltonian representation.

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LACUNARY I_σ-CONVERGENCE

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Abstract: In this study, the concept of lacunary invariant uniform density of any subset A of the set$\mathbb{N}$ of positive integers is defined. Associate with this, the concept of lacunary$I$-invariant convergencefor real number sequences is given. Also, we examine relationships between this new type convergenceconcept and the concepts of lacunary invariant summability, strongly lacunary$q$-invariant convergenceand lacunary invariant statistical convergence which are studied in this area before. Finally, introducinglacunaryI^*-invariant convergence concept and lacunary I-invariant Cauchy sequence concepts, wegive the relationships among these concepts and relationships with lacunary$I$-invariant convergenceconcept.

Keywords: Statistical convergence, lacunary sequence, invariant convergence, I-convergence, I-Cauchysequence.

EXISTENCE AND NONEXISTENCE FOR NONLINEAR PROBLEM

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Abstract: Let $\phi \subset \mathbb{R}$ be a bounded regular domain of $\mathbb{R}$. We consider the following class of elliptic problem

$$\begin{cases} -\Delta u = \dfrac{u^q}{d^2} & in\,\Omega \\ u > 0 & in\,\Omega \\ u = 0 & on\,\partial\Omega \end{cases}$$

where $0 < q \le 2^* - 1$. We investigatethe question of existence and nonexistence of positive solutions depending on the range of the exponent q.

Keywords: Hardy inequality, Nonlinear elliptic problems, singular weight.

MAXIMUM PRINCIPLE FOR OPTIMAL CONTROL PROBLEM OF FORWARD BACKWARD WITH A JUMP IN THE MEAN-FIELD MODEL

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Abstract: We prove a necessary and sufficient condition for optimal control of controlled forward-backward stochastic differential equation with random jumps in the mean-field type. The coefficients of our system depend on the law of the solution, the control variable is allowed to enter both diffusion and jumps coefficients.

ON A SOLUTIONS IN PC(0,b;X) OF SOME INTEGRAL EQUATION WITH APLLICATION TO AN IMPLULSIVE SEMILINEAR DIFFERENTIAL EQUATION

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Abstract: This paper is devoted to establishing the existence of solutions of some integral equation with Krasnosel'skij's theorem in the space PC(0;b,X). The Hausdorff measure of noncompactness and the Monch's theorem are used. An application to solving a first order semilinear impulsive differential equation with nonlocal conditions is given.

Keywords: impulsive differential equations, fixed point theorem, mild solution, measure of noncompactness.

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PERSISTENCE AND GLOBAL STABILITY IN A BEDDINGTON-DEANGELIS TYPE THREE SPECIES FOOD CHAIN

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Abstract: Our investigation concerns the three-dimensional continuous time dynamical system which models a predator-prey food chain.This model is based on the Beddington-DeAngelis-type functional response. Primarily, we study from the viewpoint of permanence (uniform persistence). The Beddington-DeAngelis functional response is similar to the Holling type-II functional response but contains a term describing mutual interference by predators. Also, we establish criteria under which we have boundedness of solutions, existence of an attracting set.Finally, by constructing a proper Lyapunov function, we obtain a sufficient condition for global stability of the positive equilibrium.

Keywords: Boundedness, Uniform persistence, Global stability, Lyapunov functional.

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POSTER SESSION

ON THE PARABOLIC EQUATION WITH NONLOCAL CONDITIONS

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Abstract: In this work, we consider a boundary value problem for parabolic equation with integral conditions as boundary conditions and instead of the initial value condition we imposed the nonlocal condition of integral type. We obtain sufficient conditions for the unique solvability of the considered problem in L_(p) (1≤p<∞) space.

Keywords. Parabolic Equation, Abstract Differential Equation, Semigroup with singularity, Integral condition.

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A NONLOCAL SPECTRAL PROBLEM

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Abstract: We consider a second-order ordinary differential operator with a spectral parameter and homogeneous integral conditions containing the unknown function and its derivative. We obtain an a priori estimate of the solution for sufficiently large values of the parameter. Also we prove the Fredholm solvability of the problem.

Keywords. Differential equation, integral condition, Fredholm property, priori estimate.

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FIXED POINT THEOREM AND EM ALGORITHM

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Abstract: When we are confronted with solving nonlinear equations which do not admit explicit solutions, we must use approximate methods based on iterative processes or algorithms. One of the best known iterative methods is the fixed point theorem, often appliedin analysis or algebra. Inour case, we will apply this method in astochastic context. By means of this application, we showthe relationship between this method and the EM algorithm, whichis an iterative process, often applied in statistics.

Keywords: Fixed point, EM algorithm, linear model, nonlinear equation.

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A NEW MODIFIED SCHEME FOR LINEAR SHALLOW-WATER EQUATIONS

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Abstract: In this presentation, we propose a modified scheme [1] for simulating irregular wave trains (IWTs) propagation dispersive of tsunami with suitable initial and boundary conditions by applying the alternating direction implicit (ADI) method. The convergence, stability and consistency criteria of the scheme have been studied. We introduce a weakly dissipative terms into improved linear Boussinesq equations (ILBqs) that permits the mathematical tool to simulating a transoceanic propagation dispersive of tsunami in both ocean and laboratory experimental. The new numerical dispersion of the proposed model is manipulated to replace the physical dispersion of (ILBqs) by controlling dispersion-correction parameters. The new model developed in this study is applied to propagation of Heraklion tsunami scenario1 (HTS1) of the 365 AD earthquake. The resulting scheme is efficient and practical to implement. Furthermore, a comparison between the present results with another existing numerical method has been reported and we found that they are in a good agreement.

Keywords:
Improved Linear Boussinesq equations; Numerical dispersion-correction parameter; ADI scheme; Dissipation effects; Tsunamis.

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ELECTRO-VISCOELASTIC ANTIPLAN CONTACT PROBLEM WITH POWER FRICTION LAW

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Abstract: In this paper we present an antiplane contact problem where the material is considered electro-viscoelastic and the friction is modeling by the power friction law. First, we derive the mathematical model, and we try to construct the variational formulation. Then we establish the existence of a unique weak solution to the model.

Keywords: Contact problem, electro-viscoelastic material, variational formulation, power friction law.

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HIGH ORDER BOUNDARY VALUE PROBLEMS AT RESONANCE ON AN UNBOUNDED INTERVAL

Assia FRIOUI

Abstract: The aim of this paper is the solvability of a class of higher order differential equations with initial conditions and an integral boundary conditionon the half line. Using coincidence degree theory by Mawhin and constructing suitable operators, we prove the existence of solutions for the posed resonance boundary value problems.

THE FRACTIONAL-ORDER MATHEMATICAL MODELING OF BACTERIAL RESISTANCE AGAINST MULTIPLE ANTIBIOTICS IN CASE OF LOCAL BACTERIAL INFECTION

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Abstract: The proposed local bacterial infection model in this study is fractional-order form of model suggested in [1].In this respect, the population sizes of sensitive and resistant bacteria to multiple antibiotics at time t is denoted by$S$and$R$, respectively, In addition that, the concentration of the i-th antibiotic, $i = 1,2, \dots, n$ is showed by $C_i(t)$. Therefore, it is obtained the following system of $(n + 2)$fractional-order differential equation:

$$
\begin{aligned}
D^\alpha S(t) &= \beta_S S\left(1 - \frac{S+R}{K}\right) - S\sum_{i=1}^{n}(\overline{q_i} + \overline{\alpha_i})C_i - \mu_S S \\
D^\alpha R(t) &= \beta_r R\left(1 - \frac{S+R}{K}\right) - S\sum_{i=1}^{n}\overline{q_i}C_i - \mu_R R \\
D^\alpha C_i(t) &= \Lambda_i - \mu_i C_i, \qquad i = 1,2, \dots, n
\end{aligned}
\tag{1}
$$

where $\alpha \in (0,1]$. The parameters used in the model (1) are as follows: it is presumed that bacteria follow a logistic growth with carrying capacity K. The parameter β_S and β_r are the birth rate of susceptible and resistant bacteria, respectively. The sensitive and resistant bacteria to multiple antibiotics have per capita natural death rates $\mu_S$and μ_R, respectively. During the administration of the i-th antibiotic, a number of resistant bacteria to it can be showed up due to mutations of exposed sensitive bacteria to such antibiotic, it is modeled this situation by the term $\overline{q_i}C_iS$ where $\overline{q_i}$ is the mutation rate of sensitive bacteria due to exposure to i-th antibiotic. Sensitive bacteria also die due to the action of the antibiotics, and it is assumed that this situation in model is by the term $\overline{\alpha_i}C_iS$, where $\overline{\alpha_i}$ is the death rate of sensitive bacteria due to exposure to i-th antibiotic…

CHELYSHKOV COLLOCATION APPROACH FOR A MODEL DESCRIBING BIOLOGICAL SPECIES LIVING TOGETHER

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Abstract: In this presentation, a numerical technique called Chelyshkov collocation method has been developed to solve a system of two nonlinear integro-differential equations which arises in biological model problems. This technique is essentially based on the truncated Chelyshkov series and its matrix representations together with collocation points. Also, to demonstrate the validity and applicability of technique, several test problems are given and the results are compared with the results ofsome existing methods in literature.

Keywords: System of nonlinear integro-differential equations, Chelyshkov polynomials and series, Biological species,Collocation points.

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EXISTENCE OF SOLUTIONS FOR P(X)-SOLITONS TYPEEQUATIONS IN SEVERAL SPACE DIMENSIONS

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Abstract: In this presentation, we study a class of Lorentz invariant nonlinear field equations in several space dimensions. The main purpose is to obtain soliton-like solutions with variable exponent. The fields are characterized by a topological invariant, we call the charge.We prove the existence of a static solution which minimizes the energy among the configurations with nontrivial charge.

Keywords: Soliton, variational calculus, variable exponents and splitting lemma.

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THE EXISTENCE OF SOLUTIONS FOR A FRACTIONAL-ORDER BOUNDARY VALUE PROBLEM

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Abstract: In this study, we are investigated the existence of solutions for a fractional-order boundary value problem by using some fixed point theorem on the cone. An example isalso given to illustrate the main result.

Keywords: Fractional-order, fixed point theorem,boundary value problem.

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PROPERTIES OF MINIMIZING CURVES FOR GEOMETRIC OPTIMAL CONTROL PROBLEMS

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Abstract: The optimal control theory is a very important part of the optimization problem solving optimal control problems. In this paper we give a geometric approach to a problem of optimal control, where it uses the basic concepts of calculus of variations, such as the Euler-Lagrange equation as a necessary condition for optimality, the principle maximum of Pontriagaine (PMP), which gives an analytical aspect to the optimal control problem and allows us to study some property functions that de.nes the criterion to minimize the regularity of solutions (minima or maxima). One other very important aspect is the geometric aspect that used to .nd the geodesics (surveying), their natures, their numbers requires a geometric background as .elds, vector, vector spaces, eligible curve... So in may de.ne an optimal control problem governed by EDO geometrically by giving some conditions.

Keywords.
optimal control, the principle of maximum Pontriaguine, calculus of variations.

A NEW APPROACH OF THE CUTTING PLANE ALGORITHM USING INTERIOR POINT METHOD

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Abstract: This paper deals with the computation of cutting plane algorithm using interior point method, with a special application to the solution of convex differentiable programming problems. The interior point method is closely related to the classical method of path following, but the cuts are generated from different, more central, points in order to achieve deeper cuts and thereby accelerate convergence. The method is quite general in purpose as it can be applied to a large class of convex differentiable and nondifferentiable optimization problems.

Keywords: Convex optimization, Cutting plane algorithm, Interior point method, Path following algorithm.

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ON THE GENERALIZATIONOF THE GRAPH-DIRECTED ITERATED FUNCTION SYSTEMS

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Abstract: In this presentation, we first introduce classical (hyperbolic) iterated function systems (IFS), countable iterated function systems (CIFS) and graph-directed iterated function systems (GIFS). Then we define the notion of graph-directed countable iterated function system (GCIFS) as a generalization of CIFS to the graph-directed case in the sense of Secelean(see [4,5]). We also give some novel examples as an attractor of some GCIFS.

Keywords: Iterated function systems (IFS), countable IFS, graph-directed IFS.

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APPROXIMATION OF THE UNILATERAL CONTACT PROBLEM BY THE FINITE ELEMENT METHOD

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Abstract: Several problems in mechanic, physics, control and those dealing with contacts lead to study of systems of variational inequalities. In this study we considered a deformed elastic solid with a unilateral contact of a rigid body. This model has been studied by Lions, J.L. and G. Stampacchia [8]. In this paper, we studied the existence, uniqueness and continuity of the deformation of this solid with respect to the data.

Keywords: Contact, variational inequalities, finite element methods.

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SOME SPECIAL CURVES AND MANNHEIM CURVES IN THREE DIMENSIONAL EUCLIDEAN SPACE

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Abstract: In this paper we investigate some special curves which have Mannheim curves and Mannheim partner curves and obtain some characterizations about them.

Keywords: Mannheim curves, Mannheimpartner curves, curvature, torsion

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LAMB SHIFT IN HYDROGEN LIKE ATOM INDUCED FROM NON COMMUTATIVE QUANTUM SPACE TIME

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Abstract: In In this work we present an important contribution to the non-commutative approach to the hydrogen atom to deal with lamb shift corrections. This can be done by studying the Klein-Gordon equation in a non-commutative space-time as applied to the Hydrogen atom to extract the energy levels, by considering the second-order corrections in the non commutativity parameter and by comparing with the result of the current experimental results on the Lamb shift of the 2P level to extract a bound on the parameter of non-commutativity. Phenomenologically we show that the non-commutativity effects induce lamb shift corrections.

Keywords: Klein-Gordon equation, non-commutative space, quantum Hydrogen atom.

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MODELING AND CONTROL FOR NONLINEAR SYSTEM

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Abstract: Continuous processes in the plastics, textile paper and other industries, require several drives working in synchronism. The aim of this paper is to control speed of the winding system, and to maintain a constant mechanical tension between the rollers of the system. Several controllers are considerer, including sliding-mode control (SMC) single input/single output (SISO) and SMC multi input/multi output (MIMO) and Proportional-integral (PI/MIMO) . Since the PI control method can be applied easily and is widely known, it has an important place in control applications. But this method is insensitive to parameter changes. The advantage of an SMC is its robustness and ability to handle the non-linear behaviour of the system. The main contribution of this paper consists of designing MIMO sliding mode control law of a distributed parameter based on the original model for which the control variables are coupled. The performances of the control law are illustrated by means of simulations and compared to previous results obtained by SISO and (PI-MIMO) control laws.

Keywords: component; Winding system, induction machine Proportional-integral (PI), sliding mode control

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EXISTENCE OF POSITIVE SOLUTIONS FOR SOME SYSTEMS OF SINGULAR SECOND-ORDER DIFFERENTIAL EQUATIONS

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Abstract: In this work, we are concerned with the existence and the multiplicity of nontrivial positive solutions for a boundary value problem of a second-order differential equations system subject to an integral boundary condition and posed on the positive half-line. The positive nonlinearities depend on the solution and their derivatives and may have space singularities. New existence results of single and multiple solutions are obtained by means of the fixed point index theory on special cones in some weighted Banach spaces. Examples with numerical computations are included to illustrate the obtained existence theorems. This work surveys and generalizes previous works.

Keywords:
Second-order differnetialequations, systems, positive solutions, fixed point theory.

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ON INVARIANT WIDE BAND NOISE FILTER

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Abstract: Kalman filtering is one of the most essential results of filtering theory. Originally it was set as a method for estimating linear systems disturbed by white noise process. Later on it was proved that the real noises are not exactly white, they are wide band. The noticeable characteristic of wide band noises is that they are observed only by autocovariance functions, which means that infinitely many distinct wide band noises may have the same autocovariance function. In this presentation we introduce an invariant result of linear filtering when the signal and observations are disturbed by independent wide band noise and white noise, respectively. The important feature of this result is that it depends on the autocovariance function and free of the relaxing function.

Keywords: Kalman filtering, white noise, wide band noise.

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ANALYSE AND STUDY OF ANTIPLANE ELECTRO-VISCOELASTIC CONTACT PROBLEM

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Abstract: In this work we assume that the material is electro-elastic and the friction is modeled with Tresca's law and the foundation is assumed to be electrically conductive. First we derive the well posedness mathematical model. In the second step, we give the classical variational formulation of the model which is given by a system coupling an evolutionary variational equality for the displacement field and a time-dependent variational equation for the potential field. Then we prove the existence of a unique weak solution to the model by using the Banach fixed-point Theorem.

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ON FINITE ELEMENT APPROXIMATION IN THE L^{∞}-NORM OF SYSTEM OF PARABOLIC QUASI-VARIATIONAL INEQUALITIES RELATED TO STOCHASTIC CONTROL PROBLEMS

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Abstract: This paper deals with the numerical analysis of system of parabolic quasi variational inequalities related to stochastic control problems. An optimal L^{∞}-convergence of a piecewise linear finite element method is established using the concept of subsolution and discrete regularity.

Keywords: Parabolic quasi variational inequalities, Hamilton-Jacobi-Bellman equation, finite element methods, subsolutions method, L^{∞}-asymptotic behavior.

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THE EFFECT OF ALLEE FACTOR ON STABILITYIN A NONLINEAR DISCRETE-TIME POPULATION MODEL INVOLVING DELAY

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Abstract: In this study, I will present the effect of Allee factor on the local stability of equilibrium point of the discrete-time population model involving delay generated for k=1 in [1] with a different approach. The results demonstrate that the Allee effect either reduces the local stability of equilibrium point of the population dynamic model or increases.

Keywords: Allee effect, Discrete-time models, Local stability

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OPTIMAL CLAIM BEHAVIOUR FOR VEHICLE DAMAGE INSURANCES

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Abstract: In this paper we ananlyse the optimal claim behavior of a risk sensitive of a risk sensitive policy holder having a vehicle damage insurance.

It is proved that the optimal decision is of the form : to claim for damages only if its amount exceeds a certain limit. Moreover, we also derive the optimal stopping rule to terminate the insurance. Finally, some computational results are presented.

Keywords: Bonus-malus systems; Automobile insurance; Markov decision processes.

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VOLTERRA INTEGRO-DIFFERENTIAL EQUATIONS OF CONVOLUTION TYPE

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Abstract: In this poster, the operational matrices of piecewise constant orthogonal functions on the interval [0,1) are used to solve Volterra integro-differential equations of convolution type without solving any system. Begin we obtain Laplace transform of the problem and then we find numerical inversion of Laplace transform by operati- onal matrices. Examples are given to illustrate our results.

Keywords: Volterra integro-differential equation; Piecewise constant orthogonal functions; Laplace transforms; Inversion of Laplace transform.

THE WEAK SOLUTION OF ANTIPLANE ELECTRO-VISCOELASTIC CONTACT PROBLEM WITH REGULARIZED FRICTION LAW

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Abstract: In this work we study the weak solutionof the antiplane electro-viscoelastic problem with regularized frictionlaw. In additionto the mathematical interest in the convergence result when the viscosity is very small,this is of importance from a electro-mechanical point of view, asit indicates that the case of elasticity with friction may beconsidered as a limit case of visco-elasticity with friction.

Keywords: Contact problem, antiplane, friction, formulation variationnelle, electro-visco-elasticity.

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NEW EXACT SOLUTIONS OF NONLINEAR PARTIAL DIFFERENTIAL EQUATIONS USING TRIAL EQUATION METHOD

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Abstract: Nonlinear partial differential equations have a significant role in several scientific and engineering fields. These equations appear in solid state physics, fluid mechanics, chemical kinetics, plasma physics, population models, nonlinear optics, and many others. Many mathematicians and physicists work in the field using a variety of powerful methods to study nonlinear phenomena, such as the inverse scattering method, the Bäcklund transformation method, the Darboux transformation, Hirota's bilinear transformation, the homogeneous balance method, the tanh method, sine-cosine method, the exp-function method, the G'/G-expansion method, and so on. These methods derived many solutions to most nonlinear evolution equations. Recently, Professor Liu proposed a powerful methodcalled trial equation method for finding exact solutions to nonlinear differential equations. By using his method, the nonlinear differential equation is reduced to an ordinary differential equation under the travelling wave transformation. Then, the ODE is reduced to the elementary integral form. Finally, the complete discrimination system for polynomial is used to solve the corresponding integrals. We can obtain the classification of all single travelling wave solutions to the equation. This idea is competent to solve divers types of nonlinear differential equations. The trial equation method and complete discrimination system for polynomial give a lot of new solutions to many nonlinear differential equations that are presented in this paper.

Keywords: The Nonlinear Partial Differential Equation, Complete Discrimination System for Polynomial, Trial Equation Method, Exact solution.

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A STUDY OF THE APPLICATION OF CHAOS TO THE GLOBAL OPTİMİZATION

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Abstract: In this communication we undertake a performance analysis for a new class of evolutionary algorithms called chaos optimization algorithm (COA), recently proposed by Caponetto and al. [1], [2], [3], It was originally proposed to solve nonlinear optimization problems with bounded variables. Different chaotic mapping have been considered, combined with several working strategy. In this work, a chaotic strategy is proposed based on a new two-dimensional discrete chaotic attractor. Experiments results showed that the proposed algorithm can achieve good performance.

Keywords: Chaos; Chaos optimization; discrete map ; Global optimization.

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DETERMINATION OF SOME NON LINEAR GROWTH CURVES WITH THE SUM OF SQUARE REDUCTION TEST FOR TURKEYS REARING IN FREE RANGE SYSTEM

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Abstract: In this study was aimed to determine non linear growth curves of live weight of turkey breedBritish United Turkeys (BUT) Big 6in rearing free range system. For this, turkeys were grown for 8-20 weeks. Live weights were modeled with fitting Generalized Logistic, Logistic and Gompertz growth curves. Coefficient of Determination (R^2), residual sum of square (RSS) and mean square error (MSE) were used as comparison criteria. As results, growth curve fitting revealed that Generalized Logistic (0,951) and Logistic models (0,953) provided similar R^2, but they had lower than RSS (953,247 and 954,122) and MSE values (12,36 and 13,25) according to Gompertz model. Gompertz model showed in high RSS (1026,2) and MSE (26,35) values both for sex and low value of R^2(0,912). According to the sum of square reduction test, female have the highest live weight potential (5208 g), as male have the smaller (4502 g).

Key Words: Growth Curves, Free Range System, Modeling, Turkeys

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LOCAL CONDITIONS FOR THE EXISTENCE OF CYCLES

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Abstract: In this presentation, we deal with the existence of cycles in a particular extension of claw-free-graphs namely the quasi-claw-free graphs. A graph G is quasi-claw-free if for any two vertices x and y with distance 2 there exist a vertex $u \in N(x) \cap N(y)$ such that $N(u) \subseteq N[x] \cup N[y]$.

In this paper, we are interested in local conditions on graphs such as triangularly connected graphs. A graph G is triangularly connected if for every pair of edges e_1, $e_2 \in E(G)$,G has a sequence of triangles T_1, T_2, .., T_l such that $e_1 \in T_1$, $e_2 \in T_l$ and $E(T_i) \cap E(T_{i+1})$ 6= $\emptyset$for $1 \leq i \leq l-1$.

We prove that every triangularly connected quasi-claw-free graph is almost fully cycle extendable. Therefore, Ainouche's conjecture is once again solved.

Keywords: Cycles, Hamiltonicity, connected, claws.

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MAPPINGS BETWEEN C*- ALGEBRAS THAT PRESERVE THE SPECTRUM

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Abstract: In this study, we show that a * - homomorphism $\varphi : A \to B$ between unital commutative C*- algebras A and B which verify $r_B(\varphi(x)) = r_A(x)$ for any $x \in A_+$ satisfies the property to preserve spectrum andhence adjoint mapping $\varphi^* : \Delta(B) \to \Delta(A)$ is surjective, that is, φ^* maps maximal ideal space of B to maximal ideal space of A.

Keywords:C*- algebra, Gelfand transform, maximal ideal, spectrum, complex homomorphism, topological divisor of zero.

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EXISTENCE OF MINIMAL AND MAXIMAL SOLUTIONS FOR A SECOND ORDER QUASILINEAR DYNAMIC EQUATION WITH INTEGRAL BOUNDARY CONDITIONS

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Abstract: This work is concerned with the construction of the minimal and maximal solutions for a second order quasilinear dynamic equation with integral boundary conditions, where the nonlinearity is a continuous function. We also give an example to illustrate our results.

Keywords: Integral boundary conditions, upper and lower solutions, monotone iterative technique, time scale, p-Laplacian.

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2nd INTERNATIONAL CONFERENCE ON ANALYSIS AND ITS APPLICATONS

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This is to certify that

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