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ABSTRACT BOOK

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Ismail KUCUK, Kenan YILDIRIM, Sertan ALKAN

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Contents

Transient Analysis of Switching Mode DC-DC Power Supplies

Mehmet Akbaba[1], Mustafa Gökdağ[2]

[1]Computer Engineering, Karabük University, Turkey
[2]Electrical Engineering, , Karabük University, Turkey
E-mail(s):mehmetakbaba@karabuk.edu.tr, mgokdag@karabuk.edu.tr

Switching-mode DC-DC regulators are used in many applications such as renewable energy conversion. Many different versions of MPPT circuits for solar energy conversion are built around switching-mode DC-DC regulators.

In this study all four basic type switching-mode DC-DC regulators, Buck, Boost, Buck-Boost and Cùk, are modeled in time domain and their transient analysis has been presented in details. In literature the steady-state analysis of these converters are well explored and well known. However their transient performance has not been explored as it deserve. In the literature following drawbacks are involved in the analysis of these regulators which are due to neglecting: a) Resistance of the inductors, b) Resistance of the capacitors, c) Inductance components of the loads. However in practice the load would be inductive. Even with resistive loads there would always be certain associated inductance. In this investigation all the above drawbacks of the existing literature have been taken into consideration.

It is shown that during the transient period very large voltage peaks and current peaks are resulting and these continue for many cycles before dropping to values close to their steady-state values. It is observed that ignoring the stray components mentioned above causes significant errors in the steady-state values. It is recommended that the resulting high peaks must be taken into consideration for component sizing during the design stage as these large transient peaks may shorten the component life cycles over the long periods and may harm some sensitive loads. It is also recommended that the very detailed demonstration of the both transient and the steady-state performance of these regulators could be very informative for the young academics and practicing engineers interested in the switching mode DC-DC voltage regulators.

Keyword(s): Transient performance, DC-DC converters.

Accuracy Assessment of Recent Gene Expression Indices via multi-RGX for One-Channel Microarrays

Vilda Purutçuoğlu[1], Tülay Akal[2]

[1]Department of Statistics, Middle East Technical University, Turkey
[2,]Department of Statistics, Middle East Technical University, Turkey
E-mail(s):vpurutcu@metu.edu.tr, atulay@metu.edu.tr

Affymetrix is the most well-known one–channel microarrays with 25-base pair long. In the estimation of the true signals from this array, different models, called as the gene expression (GE) index, have been suggested in the literature. multi-RGX is one of these recent GE indices which is based on the assumption of the long-tailed symmetric family distribution for the description of the probe pair per array. From comparative studies via benchmark and simulated data, it has been shown that this index is more accurate than its strong alternatives based on the point estimate of the model parameters without loss in computational time. But the variations of these estimates have not been analyzed yet. Hereby, in this study, as the novelty, we initially produce the functional codes of the variance-covariance values of the estimators which are derived from the estimated Fisher Information matrix of the modified maximum likelihood method via the R programming language. From these derivations, we observe that all the expressions in this matrix have closed forms and from their R codes, we see that they can be computed for all dimensional datasets without any computational demand. Then, we apply different bench-mark Affymetrix datasets and evaluate the performances of the confidence intervals and other accuracy measures of the estimated signals by comparing the results of other GE indices. In the comparison, we select its strong alternatives, called FGX, RGX and other well-known GE such as RMA and MBEI. The findings indicate that our new method is more promising than FGX and RGX and it is competitive regarding other well-known GE.

Keyword(s): One-channel microarray, gene expression index, multi-RGX, accuracy measure.

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Cancer Modeling via Biologically Validated Genes

Barış Su Karakelle[1], Vilda Purutçuoğlu[1, 2], Yüksel Ürün[3]

[1] Department of Biomedical Engineering, Middle East Technical University (METU), Turkey
[2] Department of Statistics, Middle East TechnicaL University (METU), Turkey
[3] Department of Medical Oncology, Ankara University Schoold of Medicine, Turkey
E-mail(s):e171636@metu.edu.tr, vpurutcu@metu.edu.tr, yuksel.urun@ankara.edu.tr

The cancer disease is the second most common disease type seen after the frequency of the cardiovascular diseases. The frequency of this genetic disease changes with respect to the gender. Accordingly, the gynecological cancer, which covers ovarian, endometrial or cervical cancer, is the second most common cancer type in women after the breast cancer. Similar to other cancer types, the gynecological cancer is the system disease, meaning that the malfunctions and mutations in the gene regulatory pathways cause this illness. Hereby, in order to diagnose and treat it, it is crucial to understand the activations and the crosstalk of the biological systems that are affected by this cancer. In this study, to detect the changes in interactions between the genes of the same and the distinct pathways under the gynecological cancer, we comprehensively check the associated literature and make a list of the most affected genes. Then, we consider that these core genes can be represented artificially as an oncogenic network and estimate the strength of their interactions by a mathematical model. Later, we extend our system by adding other proteins within the most affected two regulatory networks, so-called MAPK/ERK and PI3K/AKT pathways, under this illness. In this case, the total number of genes used in the analysis becomes 41 proteins. After we infer the interactions of this complex structure by a mathematical model, we further extend our system by including the proteins affected by the crosstalk between systems resulting in 120 proteins roughly. Finally, we estimate this largest network. In all these analyses, we use a microarray dataset which is composed of 3171 genes that are collected under various cancer types. On the other hand, in the underlying three-level inference, we apply the Gaussian graphical model in the mathematical description of the systems and estimate the model parameters via the graphical lasso approach. From the first stage of modeling, we obtain promising results which can be fully validated by the knowledge in the databases. For the following two models, part of our findings are validated and the remainings are reported as an interesting list of interactions that can be further studies. As the future work, we consider to combine different datasets to describe a more general view of this oncogenic network and investigate other mathematical models.

Keyword(s): Cancer modeling, Gaussian graphical model, biological networks, systems biology.

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Comparision of Numerical Optimization Algorithms For Finding Less Risky And Safer 3D UAV Path

Muharrem Selim Can[1], Pınar Çivicioğlu[2]

[1,]College of Aviation, Department of Aviation Electrics and Electronics, Iskenderun Technical University, Turkey. Faculty of Aeronautics and Astronautics Department of Aircraft Electrics and Electronics, Erciyes University, Turkey.
[2,] Faculty of Aeronautics and Astronautics Department of Aircraft Electrics and Electronics, Erciyes University
E-mail(s):muharremcan@erciyes.edu.tr, civici@erciyes.edu.tr

Utilization of UAVs has become an essential tool for many applications such as cargo, photography, search and rescue especially in the last decade. Furthermore, UAVs are often used in military to accomplish difficult and crucial missions. Artificial intelligence techniques can be used for UAVs to handle difficulties such as minimizing fuel consumption. Since aerial vehicles are used in risky and long-term tasks, minimizing fuel consumption for increasing endurance of UAVs is crucial for completing the task. Thus, UAVs can complete their missions with a safer and less risky route. In this paper, the parameters of fuel consumption have been optimized by using optimization algorithms of Differential Evolution (DE), Particle Swarm Optimization (PSO), Gravitational Search Algorithm (GSA), Cuckoo Search Algorithm (CS), Simulated Annealing (SA) and Differential Search Algorithm (DSA). The optimized parameters that minimize fuel consumption and achieve the mission from best path are distance, dangerous zone, surface-to-air missile shields (radar), wind and 3D terrain. For minimum path length, distance is required to be the shortest, dangerous zones and surface-to-air missile shields (radar) should be avoided, and tailwind is preferred to headwind or crosswind. Furthermore, mountains and hills which exist in 3D terrains, should also be avoided. For planning the optimum path, real world 3D digital elevation data have been used. The simulations performed reveal that the best result for path optimization is obtained by using Differential Search Algorithm (DSA).

Keyword(s): Differential Search Algorithm, Unmanned Aerial Vehicle, Path Optimization.

Faber Polynomial Coefficient Estimates For A Certain Class Of Analytic and Bi-Univalent Functions Using Salagean Operator

Bilal Seker

Faculty of Science and Letters, Department of Mathematics Batman University, Batman, Turkey

E-mail(s):bilalseker1980@gmail.com

In this study, considering a general subclass of analytic bi-univalent functions, we determine estimates for the general Taylor-Maclaurin coefficients of the functions in this class. For this purpose, we use the Faber polynomial expansions. In certain cases, our estimates improve some of those existing coefficient bounds

Keyword(s): Bi-univalent, Faber polynomials.,

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Fisher equation with constants-dependent coefficients

Feras Shatat

Emirates College of Technolog(ECT) Abu Dhabi , UAE
E-mail(s):feras.shatat@ect.ac.ae

We have studied the Fisher equation (FE), with constants-dependent coefficients of convection and reaction terms, by using simplified Hirota's method and the Backlund transformations. A class of single soliton solutions and singular single soliton solutions are obtained; We have studied the effect of constants coefficients on physical parameters (Velocity and Amplitude) of solitary wave solutions.

Keyword(s): Fisher equation, Single soliton solutions, simplified Hirota's method

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Generating Sets of Transformation Semigroups $T_{n,r}$

Ebru YİĞİT

Faculty of Art and Sciences, Department of Mathematics, Çukurova University, Adana, Turkey
E-mail(s):eyigit@cu.edu.tr

Let T_n be a full transformation semigroup on a finite set $X_n = \{1,...,n\}$ and $T_{n,r} = S_n \cup K_{n,r}$ where S_n is the symmetric group on X_n and $K_{n,r} = \{\alpha \in T_n : |im(\alpha)| \leq r\}$ is the subsemigroup of T_n. The purpose of this talk is to show that the generating sets of the semigroups $T_{n,r}$ for $1 \leq r \leq n-1$, by considering a set which contains only one element for each partition of n with r terms in any fixed Green's L-class of D_r^T. For this purpose it is enough to consider the Green's L-class $\{\alpha \in T_n : im(\alpha) = X_r\}$ of D_r^T. The results presented in my talk have been obtained in collaboration with Gonca Ayık and Hayrullah Ayık.

Keyword(s): Full transformation semigroup; symmetric group; generating set; rank.

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Investigation of Dual Frequency U-Slot Loaded Microstrip Patch Antenna

Serap Kiriş[1], Pınar Çivicioğlu[2]

[1] Faculty of Aeronautics and Astronautics
Department of Aircraft Electrical and Electronics, Erciyes University, Kayseri, Turkey
Collage of Aviation, Department of Aviation Electrical and Electronics, İskenderun Technical University, Hatay, Turkey
[2]Faculty of Aeronautics and Astronautics
Department of Aircraft Electrical and Electronics, Erciyes University, Kayseri, Turkey
E-mail(s):serapkiris@erciyes.edu.tr, civici@erciyes.edu.tr

Microstrip antennas are commonly used owing to their low volume, light weight, thin profile and the ability of being mounted on surfaces like aircraft, car, etc. It is also easy to fabricate this type of antenna via printed circuit technology. Providing a dual frequency operation is one of the desired properties of a microstrip antenna, which can be achieved by cutting out a U-shaped slot on patch. In this paper, the procedure of cutting out a U-slot from patch has been performed so that current can flow around the path of the slot and generate new resonance frequencies. At the first stage, the impact of cutting such a slot has been investigated by analysis of additional resistance and reactance caused by the slot. Then, total impedance, which consists of the slot impedance and the microstrip-fed antenna impedance, has been observed. Therefore, return loss, which is the criterion to decide whether the antenna is efficient or not, has been obtained in terms of total impedance. At the second stage, multilayer perceptron artificial neural network has been used. The parameters such as dielectric constant and center frequency that depend on the preference of designer have been used as the inputs of the network. Consequently, desired dimensions have been derived at the output of the network with an easier way without requiring all the complicated mathematical calculations.

Keyword(s): Electromagnetics, Microstrip Antennas

Location-Based Emergency Blood-Donor Search System

Cihan Kaya[1], Gulay Tezel[2]

[1] Computer Engineering, Selcuk University, Turkey
[2,] Computer Engineering, Selcuk University, Turkey
E-mail(s):cihankaya42@gmail.com, gtezel@selcuk.edu.tr

Blood has an important role on the vital functions of the body. In any situation causing loss of blood, such as an accident, a surgery, or an illness, blood must be given to the patient without any loss of time. When available blood stocks are not sufficient, announcements are usually made through the media, i.e., radio or television, in order to provide blood for immediate transfusion. This is done either by the relatives of the patient, or by the hospital. Most of the time, however, response is not quick enough, and this whole process is seen as a problem by the hospitals. This study is proposed as a possible solution to the stated problem. The study is aimed to increase the blood donation rate and to reach more people through smartphones and mobile devices, which have become almost an indispensable part of our lives. At an "Emergency Blood-Search" situation, the hospital can specify the blood group needed, and the maximum distance of possible donors to the hospital, and the system can send notification messages to matching donors. The hospital can see the list of donors receiving notification, as well as the list of donors that accept to donate – in fact, even the distance of each such person to the hospital. On the other hand, donors accepting to donate will be able to see the contact information at the hospital end, and the navigation info to reach the hospital. In terms of tools and method, hospital uses web interface and PHP, MySQL, and Google Maps are used for development. For mobile application, Android operating system was used, and the development was based on Java language. Communication between mobile application and the server has been developed in PHP in JSON format.

Keyword(s): Emergency, Location-Based, Blood-Search, Blood donation, Mobile App, Hospital

Mode Identification in 3-phase DC Drives

Mehmet Akbaba

Computer Engineering, Karabük University, Turkey
E-mail(s):mehmetakbaba@karabuk.edu.tr

DC drives are still popular in certain applications such as rolling mills in aluminum or steel industry, due to their very easy and precise control. 3-phase DC drives are used mainly for large loads. They are superior over single-phase DC drives in terms of relatively low line current, better power factor and low ripple factor in motor current and voltage. Bridge rectifiers are used in DC drives. Both in single and 3-phase cases the bridge rectifiers can be either full-wave control or half-wave control. In this investigation only 3-phase half-wave controlled DC drive is considered. It is shown that depending on the value of the thyristor firing angle α, motor and supply parameters and the value of the driven mechanical load there are five distinct modes of operations in these DC drives, Which are named as MODE1, MODE2, MODE3, MODE4 and MODE 5. In MODE1 and MODE3 the motor armature current is continuous. However the supply current is continuous only in MODE1. In MODE 3, because the Freewheeling diode becomes active, the supply current is discontinuous. In all the remaining three MODEs both the motor current and supply current are discontinuous. For $\alpha \leq \pi.3$ motors runs either in MODE1 or MODE2 depending on whether or not the continuity criteria is satisfied:

$$\sin(\pi/3+\alpha-\Phi)+\frac{\sin(\Phi)\exp(-(\pi/3-\alpha)/\beta)-\sin(\alpha-\Phi)}{1-\exp(-2\pi/(3\beta)}\geq\frac{k_T\omega_r}{V_{mL}\cos(\Phi)}$$

Where Φ is the power factor angle of the rotor armature circuit, β=tan(Φ), kT is the motor torque constant, ωr is the rotor angular speed and VmL is the peak value of the supply line voltage. If above given continuity condition is not satisfied them the motor operates in MODE 2. In MODE1 the armature current is composed of two separate equations, which first of these equations governs the rotor current for $0\leq\omega t\leq\pi/3-\alpha$ and second governing equation governs the rotor current for $3-\alpha\leq\omega t\leq 2\pi/3$. It should be noted that ωt is measured from natural commutating point. Due to space limitation these equations could not been presented here.

MODE3 is the continuous current mode with Freewheeling diode active. In this mode either thyristors or of freewheeling diode conducts at a time. Both MODE4 and MODE 5 are discontinuous current modes, but in MODE 4 freewheeling diode is active where as in MODE5 freewheeling diode is not active. Again due to space limitation further information could not been furnished on these modes.

Keyword(s): 3-phase DC drives, Identification of MODES.

On A New Subclass Of Bi-Univalent Functions

Bilal SEKER

Faculty of Science and Letters, Department of Mathematics Batman University(Batman, Turkey)
E-mail(s):bilalseker1980@gmail.com

In this study, we introduce new subclasses of bi-univalent functions defined in the open disk. Furthermore, we find upper bounds for the second and third coefficients for functions in this class.

Keyword(s): Univalent fuctions, Bi-univalent functions, Coefficient bounds and coefficient estimates

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On Graded 2-Absorbing Quasi Primary Ideals

Rabia Nagehan Uregen[1], Suat Koc[2] and Unsal Tekir[2]

[1]Mathematics, Yildiz Technical University, Turkey
[2] Mathematics, Marmara University, Turkey
E-mail(s):rnuregen@yildiz.edu.tr, skoc@marmara.edu.tr, utekir@marmara.edu.tr

In this study, we introduce graded 2-absorbing quasi primary ideals which is a generalization of graded prime ideals of graded rings. The relations between graded 2-absorbing quasi primary ideals and other graded ideals are considered. We also give some characterization of this notion and obtain some results in special graded rings.

Keyword(s): Please write at most 4 keywords of the study.

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On Graded Weakly Classical Prime Submodules

Rabia Nagehan Uregen[1] and Bayram Ali Ersoy[1]

[1]Mathematics, Yildiz Technical University, Turkey
E-mail(s):rnuregen@yildiz.edu.tr, ersoya@yildiz.edu.tr

Let G be a group with identity e, R a G-graded ring and M an R-module. In this paper, we define graded weakly classical prime submodules and give the examples related to graded weakly prime and graded classical prime submodules. And also we get various results concerning graded weakly classical prime submodules.

Keyword(s): Graded submodule, graded prime submodule**.**

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Pure Elements And Dual Notions Of Prime Elements In Lattice Modules

Emel Aslankarayigit Ugurlu[1], Unsal Tekir[2]

[1] Mathematics, Marmara University, Turkey,
Mathematics, Marmara University, Turkey,
E-mail(s): emel.aslankarayigit@marmara.edu.tr, utekir@marmara.edu.tr

In this paper, we study on multiplication lattice module over a multiplicative lattice. We define multiplication element, idempotent element, pure element and dual notions of prime element in lattice module. Then we get many relations between these elements.

Keyword(s): pure element, dual notion, multiplication element and prime element.

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Relative Ranks of Some Partial Transformation Semigroups

Ebru Yiğit

Faculty of Art and Sciences, Department of Mathematics, Çukurova University, Adana, Turkey
E-mail(s):eyigit@cu.edu.tr

Let P_n be a partial transformation semigroup on a finite set $X_n = \{1,...,n\}$ and $PA_{n,r} = A_n \cup PK_{n,r}$ where A_n is the alternating group on X_n and $PK_{n,r} = \{\alpha \in P_n : |im(\alpha)| \leq r\}$ is the subsemigroup of P_n. In this talk we find the necessary and sufficient conditions for any subset of $PK_{n,r}$ to be a relative generating set of the subsemigroup $PA_{n,r}$ modulo A_n. Then, for each $1 \leq r \leq n-1$, we show that the relative rank of the subsemigroup $PA_{n,r}$ modulo A_n. The results presented in my talk have been obtained in collaboration with Gonca Ayık and Hayrullah Ayık.

Keyword(s): Partial transformation semigroup; alternating group; generating set; relative rank.

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Remarks On Comparison Differential Transform Methods And Their Applications

Eda Yülüklü

Usak University, Science and Art Faculty, Department of Mathematics, Usak, Turkey
E-mail(s): y_eda64@hotmail.com

The goal of this talk is to give and study numerical comparison between the differential transformation method and Adomian decomposition method associated with solving nonlinear dispersive equation. We give some remarks, comments and applications on these methods. Moreover, we compared both methods with exact solutions of the related differential equations. By using these, we investigate solving nonlinear partial differential equations.

Keyword(s): Differential transformation method, Adomian decomposition method, Nonlinear partial differential equations

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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A Capacitated Facility Location-Allocation Problem With Location Risks: A Case Study For Military Weapon Allocation

Cihan Çetinkaya[1], Samer Haffar[2]

[1] Department of Industrial Engineering, Gaziantep University, 27310, Gaziantep, Turkey
2 Department of Industrial Engineering (M.Sc. Student), Gaziantep University, 27310, Gaziantep, Turkey
E-mail(s): cihancetinkaya@gantep.edu.tr, sam.hafar@gmail.com

This paper introduces a mathematical model for solving the multi-product capacitated facility location allocation problem with location risks. The model allocates quantities of various product types to a set of candidate locations while minimizing total transportation and setup costs as well as the risk associated with candidate locations. The mentioned risk emerges from allocating the weapons for other military formations, thus becoming more vulnerable to attacks. A border city weapon allocation problem of Turkish Land Forces (containing 81 nodes) is solved to test the model. It is determined that the mathematical model solves the problem with minimum cost/risk so it can be used for the critical decision making processes during homeland security issues.

Keyword(s): Homeland security, location-allocation problem, weapon allocation, location risks.

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A Comparative Study on Heuristic Distance Functions in Path Planning of Mobile Robots

Zeynep Garip[1], Durmuş Karayel[2], Sinan Serdar Özkan[2], Gökhan Atalı[3]

[1] Computer Programming, Sakarya University, Turkey
[2] Department of Mechatronics Engineering, Sakarya University, Turkey
[3] Mechatronics Program, Sakarya University, Turkey
E-mail(s):zbatik@sakarya.edu.tr, dkarayel@sakarya.edu.tr, sozkan@sakarya.edu.tr, gatali@sakarya.edu.tr

In this study, Manhattan, Euclidean and Diagonal heuristic distance functions have been individually used for path planning of mobile robots based on image processing in a delimited environment and the obtained results have been compared with one another. The proposed study consists of two main parts as image processing and path planning. In the first stage, the image of the surrounding area has been obtained by using a camera. Then, because the robots and the objects had been marked with different colors, locations of robots and objects could be determined from the obtained images. In the second stage, determining the optimum path between the start and destination points has been achieved taking into account criteria such as distance and time. The A * algorithm is used to find the optimal path. Manhattan, Euclidean, Diagonal parameters of the heuristic distance function in the A * algorithm have been modified and their effects on path planning of mobile robots have been examined. After, the results have been compared to each other. Also, a graphical interface based on MATLAB-GUI (Graphical User Interface) has been developed in order to make the proposed method more efficient and easier to use.

Keyword(s): Path Planning, Heuristic functions, A* Algorithm, Mobile Robot

A comparison of scalarization techniques on multi-objective machine scheduling problem with sequence dependent setup times

Zeynep İdil Erzurum Çiçek[1], Zehra Kamışlı Öztürk[1]

[1]Department of IndustrialEngineering, AnadoluUniversity, Turkey
E-mail(s):zierzurum@anadolu.edu.tr, zkamisli@anadolu.edu.tr

In this study, a two objective machine-scheduling problem with sequence dependent setup times is considered. First of all, a mixed integer mathematical model is proposed for the given problem. Two objectives are considered as minimization of make span and total tardiness, simultaneously. At last, some of the scalarization techniques such as weighted sumscalarization, conicscalarization, Benson'smethodareusetoobtainParetofrontsforthismulti-objective problem. Thecomparision of theresultsandperformances of thescalarizationtechniquesaregiven as a summary.

Keyword(s): Machine scheduling, scalarization, multi-objective

A Directional Derivative And Subdifferentials For Set Valued Maps

İlknur Atasever Güvenç[1], Emrah Karaman[2], Mustafa Soyertem[3]

[1]Mathematics, Anadolu University, Turkey
[2]Mathematics, Anadolu University, Turkey
[3]Mathematics, Uşak University, Turkey

E-mail(s):iatasever@anadolu.edu.tr, e.karaman42@gmail.com, mustafa.soyertem@anadolu.edu.tr

Directional derivative and subdifferential are important tools to find solutions of set-valued optimization problems [1,2]. In this study, a directional derivative and two types of subdifferentials are presented for set-valued maps which has partially ordered by $\preccurlyeq_C^{m_1}$ [3] family of image sets. Some existence theorems are given and relations between these notions are examined. Furthermore, some optimality conditions via these subdifferentials and the directional derivative are obtained. These conditions are applied on some illustrative examples.

Keyword(s): Directional derivative, type 1 subdifferential, ,type 2 subdifferential, set-valued optimization

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A Fixed Point Proof of the Convergence of the Modified SP-Iteration Process of Newton-Like

Isa Yildirim

Department of Mathematics, Faculty of Science, Ataturk University, 25240 Erzurum, Turkey
E-mail: isayildirim@atauni.edu.tr

In the present work, we introduce the modified SP-iteration process of Newton-like in $\mathbb{R}$ for solving scalar nonlinear equation $f(x) = 0$. And we give a convergence theorem under weaker conditions involving only f and f' by fixed point techniques.

Keyword(s): Newton-like method, nonlinear equation, fixed point.

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A Fixed Point Result on Metric Spaces with Simulation Functions

Murat Olgun[1], Tuğçe Alyıldız[2], Özge Biçer[3]

[1]Mathematics, Ankara University, Turkey,
[2]Mathematics, Ankara University, Turkey
[3]Mathematics, Ankara University, Turkey/ İstanbul Medipol University, Turkey
E-mail(s):olgun@ankara.edu.tr, tugcekavuzlu@hotmail.com, obicer@medipol.edu.tr

In this paper, taking into account the simulation function we present a new fixed point result which belongs to class of Picard operators on complete metric spaces. We also obtain a nontrivial example contains some previous classes.

Keyword(s): Fixed point, Picard operators, Simulation functions.

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A fixed point theorem for multivalued maps

Özlem Acar[1], İshak Altun[2]

[1]Mersin University, Faculty of Science and Arts, Department of Mathematics, Mersin, Turkey,
[2]Kırıkkale University, Faculty of Science and Arts, Department of Mathematics, Kırıkkale, Turkey
E-mail(s):ozlemacar@mersin.edu.tr, ishakaltun@yahoo.com

In this talk, we mainly study on fixed point theorem for multivalued mappings with δ-distance using Wardowski's technique on complete metric space. Considering this distance, we proved that on a complete metric space every multivalued almost F_{δ}-contraction has a fixed point.

Keyword(s): Fixed points, multivalued map, δ-distance, generalized F-contractions

A Geometric Modeling of the Solution of Two Dimensional Parabolic Equation

İrem Bağlan [2] , Fatma Kanca [1] , Günay Öztürk [2]

[1] Mathematics, Kadir Has University,Turkey
[2] Mathematics, Kocaeli University,Turkey
E-mail(s):isakinc@kocaeli.edu.tr, fatma.kanca@khas.edu.tr, ogunay@kocaeli.edu.tr

Aim of the paper is to investigate solution of the inverse problem of a linear two-dimensional parabolic equation with periodic boundary. Under some natural regularity and consistency conditions on the input data the existence,uniqueness of solution are shown by using the generalized Fourier method. Also, an iteration algorithm for the numerical solution of this problem is constructed. Also, we present the discretization of this problem. Finally, we give a geometric modeling of the solution which corresponds to a surface.
Keyword(s): Two dimensional parabolic equation, egg boxsurface, geometric modeling.

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A Mathematical Approach for Istanbul Stock Exchange Market

Mehmet Yavuz[1], Necati Özdemir[2], Hasan Hüseyin Yıldırım[3]

[1] Mathematics-Computer Sciences, Necmettin Erbakan University, Turkey,
[2] Mathematics, Balıkesir University, Turkey,
[3] Banking and Finance, Balıkesir University, Turkey,
E-mail(s): mehmetyavuz@konya.edu.tr, nozdemir@balikesir.edu.tr, hhyildirim@balikesir.edu.tr

This study is based on the Corporate Governance Index (XKURY) in which the companies applying Corporate Governance Principles are included and their stocks are operand in İstanbul Stock Exchange (BIST) and BIST-100 (XU100) index. Also in this study we aim to compare the direction estimation efficiency of a mathematical model developed with respect to XKURY and XU100. Hence XKURY has been started to be calculated since 31.08.2007, it is seen that there is insufficient number of studies in this area. Thus, trend prediction of XKURY and XU100 with Markov chain theories constitutes the main subject of this study. By using 112 monthly closing values of XKURY and XU100, between 03.09.2007 and 30.12.2016, considering the states of these indexes such that increasing, decreasing and remaining stable the Markov chains have been formed. In order to make Markov chain analysis in relation to prediction of the situation in a future time, the transition probability matrices with respect to the these indexes have been achieved. Taking advantage of these matrices, steady-state analyses of the chains have been made and the trends in a future time of these indexes have been forecasted. Also the values obtained with Markov chain analysis have been compared and the results have been presented with figures and tables. Especially considering investment to these indexes, it is thought that the results obtained are helpful for the individual and institutional investors' investment decisions.

Keyword(s): BIST, Corporate Governance Index, Markov Chain Analysis, Trend Prediction.

A Mathematical Look At Steady-State Branched-Chain Thermal Reaction For The Hydrogen-Oxygen System

Hammed Ogunseye[1] , Samuel Segun Okoya[1]

Department of Mathematics, University of Lagos, Akoka, Yaba, Nigeria
E-mail(s): ogunseyehammed@gmail.com ,ssokoya@gmail.com

In this work a mathematical model is derived to investigate a process based on initiation, chain branching and chain breaking kinetics arising from the hydrogen-oxygen mixture in a reactive vessel. The vessel under consideration is a cylinder of infinite length and the state of the art for branched-chain thermal reaction is presented and reviewed (see e.g., 1-4). The overall process in the vessel is very complex and we make the following realistic assumptions for our study; steady state theory, energy conservation in the adiabatic system and generalized Arrhenius kinetics for the chain branching term while other reaction rates are constant. We subsequently develop a numerical code using Maple software. In this search, results are presented graphically and discussed for the emerging parameters on interest.

The results help to enhance understanding of the interplay between thermal and branched-chain thermal explosions.

Keyword(s): Combustible mixture, Thermal explosions, Branched-chain thermal reaction, Shooting method.

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A mathematical model for inbound and outbound trucks sequence for cross docking

Furkan Yener[1], Harun Resit Yazgan[1], Sena Kır[1], Serap Ercan[1], Ayşegül Sena Kuyumcu[1]

[1]Sakarya University, Engineering Faculty, Department of Industrial Engineering
E-mail(s): fyener@sakarya.edu.tr, yazgan@sakarya.edu.tr, senas@sakarya.edu.tr, serape@sakarya.edu.tr, senaakuyumcu@gmail.com

In recent times, Cross docking become more popular to satisfy increased customer demands and to solve complex logistic operations in supply chain management. In simple terms, Cross docking is a logistics procedure where inbound and outbound trucks change over their products with the help of conveyor systems in a distribution centre. The aim of the study is to minimize scheduled operation time with determining inbound and outbound trucks sequence using a MILP model in cross docking system. The main assumptions of the MILP model is all inbound and outbound trucks are available at time zero and truck changeover time is the same for all inbound and outbound trucks. We examine a number of data sets and produce exist and the proposed sequence of the trucks for a simulation model. The simulation results are presented to illustrate effectiveness of the mathematical model using paired sample t tests. The proposed sequence of inbound and outbound trucks with the model achieve 30% decreasing of total operation time.

Keyword(s): Cross docking, MILP, Simulation

A mathematical model for order batching in automotive supply industry

Furkan Yener[1], Harun Resit Yazgan[1], Sena Kır[1], Şeyma Gökmen[1], Turab Akbaş[1]

[1]Sakarya University, Engineering Faculty, Department of Industrial Engineering
E-mail(s): fyener@sakarya.edu.tr, yazgan@sakarya.edu.tr, senas@sakarya.edu.tr, seymaa.gokmenn@gmail.com, turabakbas@gmail.com

In this paper, order batching problem is considered for manual pick and walk order picking system in an automotive distributer warehouse. A new MILP model is presented for clustering orders into the batches. The objective of the model is to minimize total travel distance when producing the proper routes for pickers in a parallel aisle warehouse. Order pickers obey the S-shape routing rule while travelling for picking orders. The warehouse consist of a single Load-Unload (L/U) gateway and aisles of the warehouse unidirectional, therefore pickers do not block each other in aisles. A case study is carried out using a real life example. Proposed and exist routes distance are calculated for the pickers. In a series of extensive numerical experiments shows that batching method decreases the total travel distance for a set of customer orders. Performance of the model is statistically illustrated using the paired sample t-test.

Keyword(s): Order Batching, MILP, S-shape routing, Manual Order picking

A Modelling Approach for Personnel Management: A Case Study in X-Firm

Ayşenur Erdil[1], Mehtap Erdil[2]

[1] Engineering Faculty, Yalova-Marmara University, Turkey
[2] Forestry Faculty, Istanbul University, Turkey
E-mails:runesyalidre61@gmail.com, mehtaperdil2008@gmail.com

Abstract- A system is a group of interacting, interrelated or interdependent business functions, processes, activities or components forming a complex all or the situation, conditions of symmetrical, and orderly fundamental interaction. A database is the construction of data needed to support and record the business of the firm. For the current state of the global and national market, firms need to use all resources on hand very effectively.

One of the most needed and most important resources for companies is the human factor. This resource may affect the success of firm and failure directly. Also, it specifies the current and future place at the competitive market. For this reason, a firm should manage this resource by a scientific method and focus all its effort on this field. Literature survey and preparation part of this subject is presented In this study. The purpose of this research aims to arrange a mathematical modeling usage for handling the human resources. The objective of this resource is to design a system to support personnel management and human resource segment. This system structure can involve database design for the new variables and existing data, performance management, forecasting model, mathematical modeling for this construction and user-friendly approach for consumers and customers. In this study, the structure of system includes a combination of old data, historical data processed via a mathematical model according to the correlation and regression analyses.

Keyword(s): correlation, mathematical modeling, personnel, regression, system**.**

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A motion blur kernel model derived from Euler angles of aerial vehicle

Harun Çelik[1], İlke Türkmen[2], Tuğrul Oktay[3]

[1]Department of Aircraft Electrics and Electronics, Erciyes University, 38039, Kayseri, Turkey.
[2]Department of Aircraft Electrics and Electronics, Erciyes University, 38039, Kayseri, Turkey.
[3]Department of Aeronautical Engineering, Erciyes University, 38039, Kayseri, Turkey.
E-mails: haruncelik@erciyes.edu.tr, titi@erciyes.edu.tr, oktay@erciyes.edu.tr

Recently, performing unmanned aerial vehicles in aerial photography have been increased dramatically. However, images taken by aerial vehicles suffer from their motion significantly. Apparent motion, especially abrupt motion and shake, between camera and imaging scene yields severe motion blur on taken images. In order to reduce motion blur or deblur the blurry images, it is crucial to estimate blur kernel by an accurate model. In this study, an accurate model of motion blur kernel is derived from 2D Euler angles (i.e. roll, pitch and yaw angles) by assuming motion of camera same as motion of aerial vehicle. By this model, it is possible to examine the effects of motion of each angle on image blur, separately. Additionally, this model is appropriate for deblurring images taken by aerial vehicles.

Keyword(s): Motion blur, modelling blur kernel, aerial vehicles.

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A Multi-Criteria Decision Making Methodology For After-Sale Spare Parts Inventory Classification

Muhammet Enes Akpınar[1], Mehmet Ali Ilgın[2]

[1]Affiliation of Author 1(Industrial Engineering, Manisa Celal Bayar University, Turkey)
[2]Affiliation of Author 2(Industrial Engineering, Manisa Celal Bayar University, Turkey)
E-mail(s):enes.akpinar@cbu.edu.tr,mehmetali.ilgin@cbu.edu.tr

Provision of high-quality after-sale service has an utmost importance on market shares of companies in today's highly competitive business environment. The success of after-sale service operations highly depends on the availability of spare parts needed by service personnel. Companies aiming at high availability of after-sale spare parts generally categorize spare parts into different groups based on the importance level of each spare part. Appropriate inventory control policies are then applied for each group. In this study, a multi criteria decision making methodology is proposed for the after-sale spare part inventory classification problem faced by a company. Following the application of the methodology, the results are analyzed and interpreted.

Keyword(s): Multi-criteria decision making, After-sale spare parts inventory.

A New Application of Exp-Function Method

Mehmet Ekici [1]

[1] Department of Mathematics, Bozok University, Yozgat, Turkey
E-mail : ekici-m@hotmail.com

This paper presents exp-function approach for soliton dynamics in optical metamaterials with quadratic-cubic nonlinearity. Singular soliton solutions along with other solutions are obtained by using this approach.

Keyword(s): Solitons, Metamaterials, Quadratic-cubic nonlinearity.

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A new approach for space-time fractional partial differential equations by Residual power series method

Mine Aylin Bayrak [1], Ali Demir[2],

[1]Mathematics, Kocaeli University, Turkey,
[2, 1]Mathematics, Kocaeli University, Turkey
E-mail(s): aylin@kocaeli.edu.tr, ademir@kocaeli.edu.tr

The aim of this paper is to find the approximate analytic solution of any-order space-time fractional differential equations by means of semi-analytical technique, named as residual power series method (RPSM). Our first step is to reduce space-time fractional differential equation to either a space fractional differential equations or a time fractional differential equations before applying RSPM. The main step is to obtain fractional power series solutions by RSPM. At the final step, by illustrative examples we show that RPSM is a very effective, and powerful method for obtaining the solution of any-order space-time fractional differential equations in the form of fractional power series.

Keyword(s): Residual power series method, space-time fractional partial differential equation, Caputo derivative.

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A new approach for the solution of space-time fractional order heat-like partial differential equations by Residual power series method

Ali Demir[1], Mine Aylin Bayrak [2],

[1]Mathematics, Kocaeli University, Turkey,
[2, 1]Mathematics, Kocaeli University, Turkey
E-mail(s):ademir@kocaeli.edu.tr, aylin@kocaeli.edu.tr

The main concern of this article has been to apply the residual power series method (RPSM) effectively to find the exact solutions of fractional-order space-time dependent nonhomogeneous partial differential equations in the Caputo sense. Our first step is to reduce fractional-order space-time dependent non-homogeneous partial differential equations to fractional-order space-time dependent homogeneous partial differential equations before applying the proposed method. Obtaining fractional power series solutions of the problem and reproducing the exact solution is the main step. The illustrative examples reveal that RPSM is a very significant and powerful method for obtaining the solution of any-order time-space fractional non-homogeneous partial differential equations in the form of fractional power series.

Keyword(s): Residual power series method, space-time fractional partial differential equation, Caputo derivative.

A New Approach To Homothetic Motions with Tessarines in semi-Euclidean space

Faik Babadağ

Kırıkkale University, Art & Science Faculty, Turkey
E-mail(s): faik.babadag@kku.edu.tr

In this study, for tessarines in 4-dimension semi-Euclidean space, we describe a variety of algebraic properties and give a matrix that is similar to Hamilton operators and we show that the hypersurfaces obtained by this matrix and a new motion is defined. Then, this motion is proven to be homothetic motion. For this one parameter homothetic motion, we defined some theorems about velocities, pole points, and pole curves. Finally, It is found that this motion defined by the regular curve of order r curve lying curves on the hypersurface M, at every t-instant, has only one acceleration centre of order (r-1).

Due to the way in which the matter is given with dual tessarines, the study gives some formulas, facts and properties about homothetic motion and variety of algebraic properties which are not generally known.

Keyword(s): Tessarines, homothetic motion, Pole curves, Hypersurface.

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A New Approach to Roller Coaster Surface with Ribbon Frame

Selçuk Baş[1], Talat Körpınar[2], Muhammed T. Sarıaydın[3], Vedat Asil[4]

[1]Mathematics, Mus Alparslan University, Turkey,
[2]Mathematics, Mus Alparslan University, Turkey,
[3]Mathematics, Mus Alparslan University, Turkey,
[4] Mathematics, Fırat University, Turkey,

E-mail(s): slckbs@hotmail.com, talatkorpinar@gmail.com, talatsariaydin@gmail.com, vasil@firat.edu.tr

In this paper, Roller Coaster surfaces with Ribbon frame is introduced in Euclidean space 3-space. The Gaussian curvature, mean curvature, first and second fundamental form of coefficients of Roller Coaster surfaces of are examined. We characterize Roller Coaster surfaces in the Euclidean space 3-space.

Keyword(s): Euclidean space, Roller Coaster surfaces, Ribbon frame.

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A New Auxiliary Function Approach Based on New Local Search Strategy

Nurullah Yılmaz[1], Ahmet Şahiner[1]

[1]Department of Mathematics, Suleyman Demirel University, Turkey,
E-mail(s): ahmetnur32@gmail.com,ahmetsahiner@sdu.edu.tr

Auxiliary function methods are effectively used in global optimization of the functions that have many local minima. The traditional auxiliary functions are quite sensitive to parameter changes and the local search strategy of the existing algorithms may cause an increase on the computational costs. In this study, we propose a new auxiliary function method with new auxiliary function and a new (non-traditional) algorithm. The numerical results and comparison with the existing methods on benchmark test problems are presented.

Keyword(s): global optimization, auxiliary function, smoothing technique, local search.

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A New Characterization Inextensible Flows Of Harmonic Evolute Of Ruled Surface Generated By B- Focal Curve With Bishop Frame In E^3

Talat Körpınar [1], Gülden Altay Suroğlu [2], Handan Öztekin [3]

[1]Mathematics, Muş Alparslan University, Turkey
[2,] Mathematics, Fırat University, Turkey
[3] Mathematics, Fırat University, Turkey
E-mail(s): talatkorpınar@gmail.com, guldenaltay23@hotmail.com ,, handanoztekin@gmail.com .

In this paper we give a new characterization for inextensible flows of harmonic evolute of ruled surface which is generated by focal curve Euclidean 3- space. For this characterization we benefit from Bishop frame in E^3.

Keyword(s): Inextensible flow, ruled surface, focal curve, Bishop frame.

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A New Characterization of Curves on Dual Unit Sphere

İlim Kişi[1], Sezgin Büyükkütük[2], Günay Öztürk[3]

[1] Mathematics, Kocaeli University, Turkey
[2] Mathematics, Kocaeli University, Turkey
[3] Mathematics, Kocaeli University, Turkey
E-mail(s):ilim.ayvaz@kocaeli.edu.tr, sezgin.buyukkutuk@kocaeli.edu.tr, ogunay@kocaeli.edu.tr

In this study, we consider unit speed curves whose position vectors can be written as linear combination of their Serret-Frenet vectors on dual unit sphere. We obtain some results of T-constant, and N-constant type of curves on dual unit sphere.

Keyword(s): Dual unit sphere, T-constant, N-constant.

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A New Result On Asymptotic Stability Of Solutions Of Neutral Differential Equations

Melek Gözen[1],Cemil Tunç[2]

[1] Erciş Faculty of Management, Yüzüncü Yıl University,65080, Van-Turkey
[2] Department of Mathematics, Faculty of Sciences, Yüzüncü Yıl University, 65080, Van-Turkey
E-mail(s):melekgozen2013@gmail.com,cemtunc@yahoo.com

Abstract: In this work, we describe certain sufficient conditions guaranteeing the asymptotic stability of every solution of a neutral differential equation of first order. Our analysis mainly relies on the definition of an appropriate Lyapunov functional. The obtained result includes and improves some results in the literature.

Keyword(s): Neutral differential equation, time-varying delay, Lyapunov functional.

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A New Type Tubular Surface with Pointwise 1-Type Gauss Map in Euclidean 4-space $\mathbb{E}^4$

İlim Kişi[1], Günay Öztürk[2]

[1]Mathematics, Kocaeli University, Turkey
[2]Mathematics, Kocaeli University, Turkey
E-mail(s):ilim.ayvaz@kocaeli.edu.tr, ogunay@kocaeli.edu.tr

In this study, we consider the Gauss map of a tubular surface which is constructed according to parallel transport frame of its spine curve. We show that there is no tubular surface with harmonic Gauss map. Moreover, we give a complete classification of this kind tubular surface with pointwise 1-type Gauss map in Euclidean 4-space $\mathbb{E}^4$.

Keyword(s): Tubular surface, Gauss map.

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A Note On a Relation Between Linear Positive Operators and Orthogonal Polynomials

Didem Aydın Arı

Mathematics, Kırıkkale University, Turkey
E-mail(s):didem@kku.edu.tr

Orthogonal polynomials have useful properties in the study of mathematical and physical problems. These polynomials are related to linear positive operators. In this talk, I give some approximation properties of linear positive operator which includes orthogonal polynomials.

Keyword(s): Linear positive operator, orthogonal polynomials, approximation by polynomials

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A note on array-type polynomials related to some special numbers and polynomials

Abdelmejid Bayad[1], Yilmaz Simsek[2]

[1]Laboratoire Analyse et Probabilités, Université d'Evry Val d'Essonne, 23 Boulevard de France, F-91037 Evry, France
[2]Akdeniz University Faculty of Science Department of Mathematics Antalya, Turkey
E-mail(s): bayadabdelmejid@yahoo.fr, ysimsek@akdeniz.edu.tr

In this talk, we give some properties and applications on array polynomials including the Stirling type numbers of the second kind, the Apostol-Bernoulli numbers and polynomials. By applying lambda-delta operator, we derive some identities and relations for the array-type polynomials. Moreover, we give observations and remarks on applications of the array-type polynomials.

Keyword(s): Generating functions, Bernoulli numbers and polynomials, Apostol-Bernoulli numbers and polynomials, Lambda-Bell numbers and polynomials, Lambda-array polynomials, Stirling numbers of the second kind.

A NOTE ON A GENERALIZATION OF ⊕-SUPPLEMENTED MODULES

Burcu Nişancı Türkmen

Amasya University, Turkey
E-mail(s):burcunisancie@hotmail.com

In this talk, we introduce the concept of FI-⊕-supplemented modules and obtain the various properties of these modules. In particular, we prove that if every left module over a semilocal ring is FI-⊕-supplemented, then the ring is left perfect.

Keyword(s): fully invariant submodule, supplement, perfect ring.

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A Note on Neutrosophic Field

Banu Pazar Varol [1], Vildan Çetkin [2], Halis Aygün[3]

[1, 2, 3] Kocaeli University, Department of Mathematics, Umuttepe Campus, Kocaeli, Türkiye

E-mail(s):banupazar@kocaeli.edu.tr, vcetkin@gmail.com , halis@kocaeli.edu.tr

Neutrosophy was introduced by Smarandache in 1999 to handle the indeterminate information. Then Wang et al. specified the definition of neutrosophic set which is called single valued neutrosophic set. The single valued neutrosophic set is a generalization of classical set, fuzzy set, intuitionistic fuzzy set etc. Single valued neutrosophic set is applied to algebraic and topological structures. In this paper, we study the algebraic nature of neutrosophic field of a given classical field. Then we observe its main properties and equivalent characterizations.

Keyword(s): Neutrosophic set, single valued neutrosophic set, field, homomorphism.

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A Numerical Computation of (k; 3)-Arcs in The Left Semifield Plane of Order 9

Ziya Akça [1], Ayşe Bayar [2], Süheyla Ekmekçi [3]

[1]Department of Mathematics-Computer, Eskişehir Osmangazi University, Turkey,
[2]Department of Mathematics-Computer, Eskişehir Osmangazi University, Turkey
[3] Department of Mathematics-Computer, Eskişehir Osmangazi University, Turkey
E-mails: zakca@ogu.edu.tr, akorkmaz @ ogu.edu.tr, sekmekci@ ogu.edu.tr

In this paper, an algorithm for the classification of (k; 3)-arcs in the projective plane of order 9, coordinatized by elements of a left semi field, denoted by SFPG(2; 9) is given.

Keyword(s): (k; 3)-Arcs, Projective Plane

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A Numerical Scheme to Obtain Approximate Solutions of Two-dimensional Telegraph Equation

Şuayip Yüzbaşı[1], Murat Karaçayır[2]

[1] Akdeniz University, Department of Mathematics, Antalya, Turkey
[2] Akdeniz University, Department of Mathematics, Antalya, Turkey
E-mails: syuzbasi@akdeniz.edu.tr, mkaracayir@akdeniz.edu.tr

Two-dimensional telegraph equation is a second order linear partial differential equation that is mostly used in wave propagation of electric signals in a cable transmission line. In this paper, we are interested in obtaining approximate solutions of two-dimensional telegraph equation given with initial and Dirichlet boundary conditions. Using a numerical scheme reminiscent of the discrete Galerkin method, we transform the given problem to a system of linear algebraic equations. The solution of this linear system yields the desired approximate solution in the form of a polynomial of three variables. We also discuss residual correction, which aims to improve the accuracy of a given approximate solution by estimating its error function.

Keyword(s): Two-dimensional telegraph equation, Partial differential equations, Numerical solutions, Galerkin method.

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A Picking and Transport System to Recycle of End of Life Tires

Sena Kır[1], Harun Reşit Yazgan[2], Furkan Yener[3], SerapErcan Cömert[4]

[1, 2, 3, 4]Sakarya University, Engineering Faculty, Department of Industrial Engineering, Sakarya, Turkey
E-mail(s):senas@sakarya.edu.tr, yazgan@sakarya.edu.tr, fyener@sakarya.edu.tr, serape@sakarya.edu.tr

End of life tires (ELT) are hazardous waste and damage the environment due to the chemicals which is contained in. Therefore recycling of the ELT is important for environment and society. In this study, a new picking and transportation system was proposed with considering transportation cost. The proposed system aims to find the best solution which minimize the transportation cost. In addition to this, using capacity of the recycling facilities in Turkey optimally was aimed too. A new mixed integer mathematical model was proposed for solution. Because of the implementation problem is not suitable to optimize in finite solution time, a cluster first-route second approach was proposed also. As a result of this method, quantities of ELT which transport from cities to recycling facilities were found. Finally the optimum routes were found using traveling salesman problem algorithm between the recycling facilities and the cities which were in the same transportation cluster.

Keyword(s): End of life tire management, End of life tire recycling in Turkey, Mixed integerprogramming, Clustering analysis.

A Refined Theory for Periodically Laminated Plates

Ömer Fatih Yalçın[1], Yalçın Mengi[2]

[1]Civil Engineering, İstanbul University, Turkey
[2]Engineering Sciences, Middle East Technical University, Turkey
E-mail(s): fyalcin@gmail.com, mengi@metu.edu.tr

In this study, a dynamic refined theory, based on an approximate plate model is proposed for a periodic layered composite with two alternating laminae. In the establishment of the theory, a mixture type of smoothing operation (homogenization) is used in the direction perpendicular to layering. It contains asymptotically the Floquet periodicity conditions as the order of the continuity get larger and facilitates the analysis of the composite, in particular when the number of laminae in the composite is large. The formulation is presented in general terms: the material of laminae is taken as triclinic elastic with no material symmetry, thermal effects are included, the order of the approximate theory is kept arbitrary, and all kinds of deformation modes in the composite are accommodated. The reflective and refractive properties of interfaces are well accounted for by the theory, which is due to accommodating in the theory the interface conditions correctly with the use of face variables appearing in the approximate plate model. This property permits the theory to predict the periodic structure of spectra with passing and stopping bands for harmonic waves normal to layering. The prediction of the theory improves along frequency and wave number axes with the orders of the theory and continuity conditions respectively, approaching the exact asymptotically in the limit.

Keyword(s): Laminated Plate, Dynamic Theory.

A Related Fixed Point Theorems With F-Contraction On Two Metric Spaces

Murat Olgun[1], Özge Biçer[2], Tuğçe Alyıldız[3], İshak Altun[4]

[1]Mathematics, Ankara University, Turkey,
[2]Mathematics, Ankara University, Turkey/ İstanbul Medipol University, Turkey,
[3]Mathematics, Ankara University, Turkey,
[4]Mathematics, Kırıkkale University, Turkey/ King Saud University, Saudi Arabia
E-mail(s):olgun@ankara.edu.tr, obicer@medipol.edu.tr, tugcekavuzlu@hotmail.com, ishakaltun@yahoo.com

Recently, Wardowski introduced the concept of F-contraction on complete metric space which is proper generalization of ordinary contraction. In the present paper, we proved a related fixed point theorem with F-contraction mappings on two complete metric spaces.

Keyword(s): Metric spaces, fixed point theory, related fixed point.

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A simpler and faster iterative projection method for solving general nonconvex variational inequalities

Faik Gürsoy, Kadri Doğan[2],Vatan Karakaya[3],Müzeyyen Ertürk[4]

[1,4]Adiyaman University, Mathematics, Adiyaman, Turkey,
[2]Department of Mathematics and Science Education, Artvin Coruh University, Artvin, Turkey
[3]Yildiz Tecnical University, Department of Mathematical Engineering, Istanbul, Turkey
E-mail(s):faikgursoy02@hotmail.com, dogankadri@hotmail.com, vkkaya@yildiz.edu.tr, merturk3263@gmail.com

We continue to study the theme of general convex variational inequalities. In particular, we focus on a simplified form of an iterative projection method introduced by Noor et al. (Appl. Comput. Math., 10 (2):309-320, 2011) to get an insight in the corresponding strong convergence result obtained therein. Our investigations show that this simplified form provides higher convergence rate as compared to the it's predecessor.

Keyword(s): General nonconvex variational inequalities, Iterative projection method, Convergence, Rate of convergence.

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A Study on Generalization of Extended Weighted Performance Criterion for Artificial Neural Networks

Çağatay Bal[1], Serdar Demir[2]

[1]Department of Statistics, Mugla Sitki Kocman Universtiy, Mugla, Turkey
[2,]Department of Statistics, Mugla Sitki Kocman Universtiy, Mugla, Turkey
E-mail(s):cagataybal@mu.edu.tr, serdardemir@mu.edu.tr

As an error criterion type, Extended Weighted Information Criterion (EWIC) which is motivated from Weighted Information Criterion (WIC) has been introduced in [13]. Considering the suggestions, we decided that it would be more appropriate to use the term "Extended Weighted Performance Criterion (EWPC)" instead of EWIC anymore. In the related study, results of the application showed that EWPC is capable to give noticeable performance among other measures. EWPC includes MSE, RMSE, R4MS4E, MAPE, MAE, GMAE, MdAE, MdAPE, NS, MRAE, MdRAE, GMRAE, RMSPE, RMdSPE, SMAPE, SMdAPE, MSMAPE, MASE, and RMSSE with fixed coefficients. In this study, we attempt to generalize the results of our previous study. For this purpose, we performed an extended application study, which consists of seven different simulated time series and six different exchange rate time series data. The results based on comparing of the error criteria show that EWPC generally performs well in most cases.

Keyword(s): Artificial Neural Networks, Extended Weighted Performance Criterion, Model Selection, Performance Measure

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A Study on Separability in Soft Topological Space

Cigdem Gunduz Aras[1], Nilay Akyil[2]

1,2 Department of Mathematics, Kocaeli University, Kocaeli, 41380-Turkey
E-mail(s): caras@kocaeli.edu.tr, nilakyil@gmail.com

The concept of soft topological space was introduced by some authors. In the present paper, we investigate some basic notions of soft topological spaces by using new soft point concept. Later we give $T_i -$ soft space and the relationships between them are discussed in detail.

Keyword(s): soft set, soft point, soft topology, soft separation axioms.

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A Study for Adaptation of Image Stitching to Big Data Frameworks

Hayrunnisa Sarı, Ahmet Sayar

Computer Engineering Department, Kocaeli University, Kocaeli, Turkey,
E-mail(s): hnisa_sari@hotmail.com , ahmet.sayar@kocaeli.edu.tr

In this study, we adopt image stitching process to bigdata frameworks. To do so, an algorithm is presented to merge two large images in accordance with Hadoop's map/reduce computation paradigm. Images are first converted to bitmaps which are represented as matrices of 0s and 1s. The algorithm then finds the best possible match among two matrices by trying all possible overlapping situations. The main aim of the study is improving the performance and scalability of image stitching processes by using a bigdata framework based on map/reduce distributed computation paradigm.

Keyword(s): Big Data, Image Stitching, Hadoop Map/Reduce

A subordination theorem for p-valent uniformly starlike and convex functions

H. Özlem Güney[1], F. Müge Sakar[2]

[1] Mathematics, Dicle University, Turkey,
[2] Mathematics, Batman University, Turkey,
E-mails:ozlemg@dicle.edu.tr, mugesakar@hotmail.com

In this presentation, we give an interesting subordination theorem for analytic p-valent uniformly starlike and uniformly convex functions defined by convolution. In this study we use the definition and a lemma due to Wilf. While we obtain this theorem, we consider coefficient estimate which was obtained by Aouf et al. For the special parameteres, we show that our results are generalize of the results given by Singh.

Keyword(s): p-valent functions, analytic function, subordination, subordinating factor sequences.

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A Variable Exponent Hardy's Inequality For Some Nonlinear Equation And Its Aplication

Kader Şimşir[1], Yusuf Zeren[2], Farman Mamedov[3]

[1] Mathematics, Yıldız Technical University, Istanbul, Turkey,
[2] Mathematics, Yıldız Technical University, Istanbul, Turkey,
[3] Mathematics and mechanics institute, Nat. Acad. Sci., Baku, Azerbaijan
E-mail(s): kadersimsir@gmail.com, yzeren@yildiz.edu.tr, farman-m@mail.ru

In this work, we consider a solvability of the boundary value problem, employing recent results on valiable exponent Hardy's inequality. We search for a solution of this problem in variable exponent Sobolev's spaces. More details related to these results can be found in [1-3].

Keyword(s): Variable exponent Sobolev's spaces, Hardy's inequality, Boundary value problem.

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Activity Suggestion Decision Support System Design In The Online Learning Environment

Hakan Kör[1], Hasan Erbay[2*], Melih Engin[3]

[1] Computer Programming, Sungurlu Vocational School, Hitit University, Turkey
[2*] Computer Engineering, Kırıkkale University, Turkey
[3] Management Science And Information Systems, Uludağ University, Turkey
E-mail(s): hakankor19@gmail.com, hxe68@yahoo.com, melihengin@uludag.edu.tr

Decision support systems are developed for organizations to enable decision makers to take healthier and more reasonable actions. These systems are made available to students and educational administrators in online learning environments to improve academic performance of the students, especially to ensure a higher success rate. In online learning environments, students use different types of course materials and interaction tools. However, they often have difficulty in choosing the course content and activities that will positively affect their academic performance.

In this study, an activity suggestion model is created using a decision support system for online learning environments. The model mines students' data and searches past records to find the best activity path. Possible attributes and data for the data warehouse to be used in the data mining process are acquired via Moodle Learning Management System(LMS). Later, the attributes that contribute to increasing the performance of the model are filtered to apply the data mining process. Several decision tree classification algorithms are used for prudential estimation procedures in the data mining process. However, it is observed that the C5 algorithm outperforms other decision tree algorithms.

In addition to the data mining procedure, various statistical information such as the demographic structure of the sample, weekly success, individual's success rates, and student's course materials usage periods are also integrated into the model to improve its performance.

Keyword(s): Online Learning, Data Mining, Educational Data Mining, Classification Methods, Decision Tree Algorithms, C5 Decision Tree Algorithm.

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Affine Differential Invariants of a Planar Curve

Uğur Gözütok[1], Yasemin Sağıroğlu[2]

[1]Department of Mathematics, Karadeniz Technical University, Turkey
[2]Department of Mathematics, Karadeniz Technical University, Turkey
E-mails : ugurgozutok@ktu.edu.tr, sagiroglu.yasemin@gmail.com

In this study, arc length and curvature which are affine differential invariants of a curve on the plane are investigated. We associate Lie transformation group theory with affine differential geometry and obtain the invariants by means of group operators. Also formulas obtained from group operators are applied to affine group and its all subgroups.

Keyword(s): Affine differential invariants, affine arc length, affine curvature.

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An Active Control of a Beam-String Continuous System

Melih Cinar[1], Ismail Kucuk[2]

[1]Mathematical Engineering, Yildiz Technical University, Turkey,
[2]Mathematical Engineering, Yildiz Technical University, Turkey.
E-mails: mcinar@yildiz.edu.tr, ikucuk@yildiz.edu.tr

This paper deals with an active optimal control of free transverse vibrations of an elastically bonded continuous beam-string system. The aim of the paper is to minimize the physical energy through displacement and the velocity of the system. For this purpose, the actuators are placed in the domain of the system. A performance index functional which comprises of modified energy functional of the system and the expenditure of the actuators is also introduced. To minimize the performance index functional calculus of variation is used and the necessary conditions for the optimality are derived in the form of Fredholm integral equations. A numerical example is illustrated to show the applicability of the proposed technique.

Keywords: Optimal Control, beam, string.

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An Application for Fibered Fano Planes

Süheyla Ekmekçi[1], Ziya Akça [2], Ayşe Bayar[3]

[1] Department of Mathematics-Computer, Eskişehir Osmangazi University, Turkey,
[2]Department of Mathematics-Computer, Eskişehir Osmangazi University, Turkey
[3] Department of Mathematics-Computer, Eskişehir Osmangazi University, Turkey
E-mails: sekmekci@ogu.edu.tr, zakca @ ogu.edu.tr, akorkmaz @ ogu.edu.tr

In this work, a computer program is designed to determine all fibered projective planes with base projective plane which is Fano plane. By applying this program we obtain the fiber points and lines of all these fibered projective planes using membership degrees of the points.

Keyword(s): Fibered Projective Plane, Fiber Point, Fiber Line.

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An Application for Certain Generalized Bernstein Operators in the Approximation Theory

Müzeyyen Özhavzalı[1], Ayhan Aydın[2]

[1]Department of Mathematics, Kırıkkale University, Turkey,
[2,] Department of Mathematics, Atılım University, Turkey
E-mails:tmuzeyyen@kku.edu.tr, ayhan.aydin@atilim.edu.tr

In this study, we give a Korovkin-type approximation theorem for sequences of positive linear operators on the space of all continuous real valued functions defined on [a,b]. We also give convergence and some approximation properties for sequences of positive linear operators constructed by means of the Bernstein operator and its three generalized operators i.e generalized Bernstein operator, Stancu operator and a Chlodowsky type generalization of Stancu polynomials called Stancu-Chlodowsky polynomials. We made a comparison between the approximations obtained by the generalized Bernstein operator, Stancu operators and the Stancu-Chlodowsky polynomials by figures and by calculating the errors in the approximations. Figures and numerical results verify the results of theories.

Keyword(s): Approximation, Generalized Bernstein Operator, Comparison, Error.

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An Effective Approach For Semicommutative Rings

Handan Kose[1], Abdullah Harmancı[2]

[1]Mathematics, Ahi Evran University, Turkey,
[2] Mathematics, Hacettepe University, Turkey
E-mail(s): handan.kose@ahievran.edu.tr, harmanci@hacettepe.edu.tr

Let R be a ring with identity and an ideal I. In this work, we introduce a class of rings generalizing semicommutative rings which is called I-semicommutative. The ring R is called I-semicommutative whenever ab=0 implies aRb is contained I for any a, b in R. We investigate general properties of I-semicommutative rings and show that several results of semicommutative rings can be extended to I-semicommutative rings for this general settings.

Keyword(s): Semicommutative rings, J-semicommutative rings, Ideal extensions, Nil semicommutative rings.

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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An Efficient Heuristic for Subset Sum Problem

Emrullah Sonuc[1]

[1] Computer Engineering, Karabuk University, Turkey
E-mail: esonuc@karabuk.edu.tr

Subset Sum Problem (SSP) is a special case of the knapsack problem and is known NP-complete. This study presents an effective heuristic method based on Simulated Annealing (SA) algorithm for solving the SSP. The aim of the SSP is to find a subset in a given array that contains n positive integers W = [w1, w2, …, wn]. Sum of the elements in a subset must be equal to a given sum S which is an objective value. SSP can be formulated as follows:

$$max \sum_{i=1}^{n} w_i x_i ,\ x_i \in \{0,1\}$$

$$s.t. \sum_{i=1}^{n} w_i x_i \leq S$$

Before starting the method, one element in a given array is chosen randomly. The proposed method uses two techniques for each iteration of the method. One of these techniques is a classical swapping operator which exchanges two elements. The other technique is randomly selecting one element and adding this element into subset. The proposed method uses the SA algorithm for the acceptance probability after implementation of swapping operator. A set of seven SSP datasets are used to test the usefulness of the proposed method. In term of quality solutions, the proposed method is capable of delivering good quality results for the SSP datasets.

Keyword(s): subset sum problem, heuristic, simulated annealing.

An efficient method based on Lucas polynomials for solution of Lane-Emden type functional differential equations with delays

[1] Nurcan Baykuş Savaşaneril,[2] Mehmet Sezer

1 Izmir Vocational School, Dokuz Eylül University, Izmir, Turkey
2 Celal Bayar University, Faculty of Science, Department of Mathematics, 45040, Manisa, Turkey
E-mail(s): [1] nurcan.savasaneril@deu.edu.tr [2] mehmet.sezer@cbu.edu.tr

The Lane-Emden type equations and the related initial and boundary value problems play an important role in astrophysics, physics and engineering. In recent years, to solve these problems both analytically and numerically which have applicationins in various branches of pure and applied sciences, several numerical and analytical methods have been given. . But it may not be possible to find the analytical solutions of such problems for all coefficient functions. In this study, by means of the matrix relations between the Lucas and Taylor polynomials, and their derivatives, a novel numerical method is modified and developed for solving Lane-Emden type functional (delay differential and differential-difference) equations.

The method reduces the solution of the Lane-Emden type functional equation to the solution of a matrix equation corresponding to system of algebraic equations with the unknown Lucas coefficients. Also, some illustrative examples along with an error analysis based on residual function are included to demonstrate the validity and applicability of the proposed method.

Keyword(s): Lane-Emden equation; Lucas and Taylor polynomials; Collocation and matrix methods; Functional differential equations.

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Analysis And Prevention Against Electrical Risks At Industrial Enterprises

Hamaidi Brahim[1], Omeiri Hanane[2], Zerouali Bilal[3]

[1] Faculty of Engineering Department of Electromechanical, Electromechanical engineering laboratory ,University BADJI Mokhtar of Annaba – Algéria.
[2], Faculty of Engineering Department of Electromechanical, Electromechanical engineering laboratory ,University BADJI Mokhtar of Annaba – Algéria.
[3] Faculty of Engineering Department of Electromechanical, Electromechanical engineering laboratory ,University BADJI Mokhtar of Annaba – Algéria.
E-mail(s):ham5615@yahoo.fr; hananeomeiriahoo.fr ;zeroualibilal@yahoo.fr

Whe a shortcircuit appears on a work, the protections. Tripping of circuit breakers framing this structure. If this function is correct. The circuit-breakers of the other structures shall not be triggered. In the case The circuit-breakers of other structures must be triggered to ensure the elimination Of the defect, but in as small a number as possible. Besides their primary function is to oppose the current flow between conductors, insulators were also strong role to mechanically hold the conductors in the predetermined conditions. The role of insulation is to serve as a barrier. We know that the vast majority of electrical or electronic equipment operating under and the important role played by the permittivity in the storage of energy in a capacitor, or to reduce parasitic capacitances. When increasing the value of the applied electric field has an insulator, it leads to an irreversible destructive process called dielectric breakdown. Any electrical or electronic equipment consists of a judicious arrangement of conductive materials used to transport electrical energy (or information) or it must be the use of insulating materials and to help prevent this one from getting lost in taking the shortest path to a potential to another. For that, our job is to study all the phenomena that make an insulator having satisfactory characteristics can be seen in the short term it will fall over time as a result of the electric field resulting in a dielectric breakdown, and propose a method to choose a solid insulator for a given application.

Keyword(s): electrical failures - degradation - . protections - circuit-breakers - electrical installation.

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Approximate Solutions of Singularly Perturbed Differential Equations by a Numerical Scheme Based on Inner Product

Murat Karaçayır[1], Şuayip Yüzbaşı[2]

[1] Akdeniz University, Department of Mathematics, Antalya, Turkey
[2] Akdeniz University, Department of Mathematics, Antalya, Turkey
E-mails: mkaracayir@akdeniz.edu.tr, syuzbasi@akdeniz.edu.tr

Singularly perturbed differential equations arise in the modelling of many scientific phenomena such as bistable devices and pupillary light reflex. In this paper, our main interest is to obtain approximate solutions of second order singularly perturbed delay differential equations having a small shifting parameter given with boundary conditions. In this scheme, we seek solutions in the form of a polynomial of degree N. Then, by a suitable utilization of inner product with monomials up to order N, we transform the given problem to a system of linear algebraic equations, whose solutions are taken as the coefficients of the approximate solution polynomial. We also discuss residual correction, which aims to improve the accuracy of a given approximate solution by estimating its error function.

Keyword(s): Singularly perturbed differential equations, Numerical solutions, Inner product.

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Arf Numerical Semigroups with Multiplicity Eight

Meral Süer[1], Halil İbrahim Karakaş[2], Sedat İlhan[3]

[1] Faculty of Science and Literature, Department of Mathematics, Batnan University, Turkey,
[2] Faculty of Commercial Sciences, Department of Banking and Finance, Başkent University, Turkey,
[3] Faculty of Science, Department of Mathematics, Dicle University, Turkey.
E-mail(s): meral.suer@batman.edu.tr, karakas@baskent.edu.tr, sedati@dicle.edu.tr

In this study we will have all Arf numerical semigroups families with multiplicity eight and fixed conductor.

Keyword(s): Numerical Semigroups, Arf Numerical Semigroups, Multuplicity, Conductor.

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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Assessment of a Refined Theory for Bilaminated Composites

Ömer Fatih Yalçın[1], Yalçın Mengi[2]

[1] Civil Engineering, İstanbul University, Turkey
[2] Engineering Sciences, Middle East Technical University, Turkey
E-mail(s): fyalcin@gmail.com, mengi@metu.edu.tr

In this study, a refined dynamic theory developed for periodically layered composites is assessed by using spectra of harmonic plane waves propagating in an infinite composite. This assessment method is chosen since a dynamic model is described and characterized completely by its spectrum; thus, the match of spectrum with the exact may be used as a criterion for the validity of the model. The establishment of the exact spectra for harmonic waves involve writing elasticity equations for each lamina, considering continuity conditions at interfaces and imposing Floquet periodicity conditions. On the other hand, the establishment of the approximate spectra predicted by the refined theory is very simple and straightforward. In the study, the dispersion relations of both approximate and exact theory are constructed for waves propagating perpendicular, parallel and obliquely to layering and the dispersion curves obtained from these relations are compared. The comparison involves also the displacement mode shapes at some selected points on dispersion curves. The numerical results reveal that: the theory predicts the exact wave profiles closely and this prediction improves, as expected, as the number of pairs in the composite increases.

Keyword(s): Bilaminated Composites, Spectral Assessment.

Asymptotic Expressions of Eigenvalues and Their Numbers for a Second Order Differential Operator

Erdoğan Şen

Department of Mathematics, Namık Kemal University, Tekirdağ, Turkey
E-mail:erdogan.math@gmail.com

Let H be a seperable Hilbert space and let $H_1 = L_2(H;[0,\pi])$ denotes the set of all strongly measurable functions f with values in H.

Let us consider the operators l_0 and l in H_1 defined by

$$l_0[y] = -y''(t) + Ay(t)$$
$$l[y] = -y''(t) + Ay(t) + Q(t)y(t)$$

with the boundary conditions $y(0) = -y(\pi),\ y'(0) = -y'(\pi)$. Here $A : \Omega(A) \to H$ is a densely defined self-adjoint operator in H with $A = A^* \geq E$ where $E : H \to H$ is identity operator and Q is a self-adjoint operator.

In this study, we investigate the asymptotic behaviour of eigenvalues and their numbers for the operators l_0 and l.

Acknowledgement

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Keyword(s): Spectrum, self-adjoint operator, asymptotics of eigenvalues.

Boolean Ideals in Near rings

Funda Taşdemir[1], Melek Taş[2]

[1]Department of Mathematics, Bozok University, Turkey,
[2,] Department of Mathematics, Graduate School of Natural and Applied Sciences, Bozok University, Turkey,
E-mail(s):funda.tasdemir@bozok.edu..tr, tasmelek10@gmail.com

A near-ring is a generalization of a ring where two axioms are omitted: addition is not necessarily abelian and only one distributive law holds. In this study, we extended the concept of Boolean near-ring to ideals of near-rings, called Boolean ideals. If N/P is a Boolean near-ring, where P is an ideal of a near-ring N, then we call P as the Boolean ideal of N. We obtain some relationships between prime ideals and Boolean ideals in near-rings. It is proved that a Boolean ideal is also an IFP ideal. Furthermore, some relations between annihilator ideals and Boolean ideals are investigated. We provide examples to illustrate our results.

Keyword(s): Boolean near ring, Boolean ideal, prime ideal, IFP ideal.

On the Cardinality of the Semigroups $O_n(A)$ and $O_n^+(A)$

Melek Yağcı

Mathematics, Çukurova University, Turkey
E-mail(s): msenol@cu.edu.tr

For $n \in \mathbb{N}$, let T_n be the (full) transformations semigroup (under composition) on the finite chain $X_n = \{1, \ldots, n\}$, under its natural order and let O_n be the semigroup of all order-preserving transformations in T_n. For any non-empty subset A of X_n, let $O_n(A)$ and $O_n^+(A)$ be the subsemigroups of all order-preserving and A-decreasing, and of all order-preserving and A-increasing transformations on X_n, respectively. In this talk, we calculate the cardinality of the semigroups $O_n(A)$ and $O_n^+(A)$.

Keyword(s): (Full) Transformations, order-preserving, A-decreasing (A-increasing).

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Coefficient Bounds for M-fold Symmetric Analytic Bi-Bazilevič Functions Using by Faber Polynomial Expansion

F. Müge Sakar[1], H. Özlem Güney[2]

[1]Faculty of Management and Economics, Department of Business Administration, Batman University, Batman, Turkey
[2]Faculty of Science, Department of Mathematics, Dicle University , Diyarbakır, Turkey,
E-mail(s): [1]mugesakar@hotmail.com, [2]ozlemg@dicle.edu.tr

A function is said to be bi-univalent in the open unit disc D, if both the function f and its inverse are univalent in the unit disc. In this presentation, we introduce and investigate a subclass of analytic and bi-univalent functions in the open unit disk D. The behaviour of these types of functions are unpredictable and not much is known about their coefficients. Also, coefficient bound for the general Taylor Maclaurin coefficients of the m-fold symmetric analytic functions are determined. Some interesting recent developments involving other subclasses of analytic and bi-univalent functions are also briefly mentioned.

Keywords: Coefficient bounds, Bazilevič functions, Faber polynomial, bi-univalent

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Coincidence points problem in generalized convex metric spaces

Faik Gürsoy, Müzeyyen Ertürk[2], Vatan Karakaya[3], Kadri Doğan[4]

[1,2]Adiyaman University, Department of Mathematics, Adiyaman, Turkey,
[3] Yildiz Tecnical University, Department of Mathematical Engineering, Istanbul, Turkey
[4]Department of Mathematics and Science Education, Artvin Coruh University, Artvin, Turkey
E-mail(s):faikgursoy02@hotmail.com, merturk3263@gmail.com, vkkaya@yildiz.edu.tr, dogankadri@hotmail.com

A new Jungck-type implicit iteration method, as a simplified form of the iteration method introduced by Hussain et al. (Filomat 31:8 (2017), 2303–2320) is introduced to approximate coincidence points of contractive-like operators with less computational efforts and higher convergence rate. It is shown that the new iteration method is equivalent to Hussain et al.'s iteration and is faster than various iteration methods when all they converge to the same coincidence point. Furthermore, a data dependency result is obtained under weak parametric restrictions in generalized hyperbolic spaces. Some numerical examples are provided to validate the results obtained herein and to exhibit the effciency of our iteration method. The results of this paper are the substantial improvements of the corresponding ones obtained by Hussain et al. (Filomat 31:8 (2017), 2303–2320) and many others in the literature.

Keyword(s): Coindidence points, Jungck-type iterations, Stability, Data dependency.

Combination of Interval-Valued Neutrosophic Soft Set and Graph Theory

Yıldıray Çelik[1]

[1]Department of Mathematics, Ordu University, Turkey
E-mail(s):ycelik61@gmail.com

In this paper, we combine the concepts of interval-valued neutrosophic soft set and graph theory. We introduce notations of interval-valued neutrosophic soft graph and complete interval-valued neutrosophic soft graph. We also present several different types operations including cartesian product, union, restricted union, intersection and restricted intersection on interval-valued neutrosophic soft graphs and investigate some properties of them.

Keyword(s): Interval-valued neutrosophic set, Interval-valued neutrosophic graph, Interval-valued neutrosophic soft graph.

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Common fixed points of φ-hemicontractive and nonexpansive operators in Banach spaces

Isa Yildirim

Department of Mathematics, Faculty of Science, Ataturk University, 25240 Erzurum, Turkey
E-mail(s):isayildirim@atauni.edu.tr

In this work, we prove that some strong convergence theorems for the iteration process in [4] for approximating common fixed point of φ-hemicontractive and nonexpansive operators in a nonempty convex subset of a Banach space.

Keyword(s): Common fixed point, φ-hemicontractive and nonexpansive operators, Banach spaces

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Compact Modular Metric Spaces And Some Fixed Point Results

Kübra Özkan[1], Ali Mutlu[2], Utku Gürdal[3]

[1,2,3] Department of Mathematics, Manisa Celal Bayar University, Turkey,
E-mail(s): kubra.ozkan@cbu.edu.tr, ali.mutlu@cbu.edu.tr, utku.gurdal@cbu.edu.tr

Contractiveness of a self-mapping on a complete modular metric space does not ensure existence of a fixed point. On the basis of the fact that, in this study, we state some contractive-type fixed point theorems on compact modular metric spaces.

Keyword(s): modular metric spaces, fixed point, compact modular metric.

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Compact Operators in generalized absolute Cesàro summability spaces

G. Canan Hazar Güleç [1], M. Ali Sarıgöl[1]

[1]Mathematics, Pamukkale University, Turkey
E-mails:gchazar@pau.edu.tr , msarigol@pau.edu.tr

In this study we establish some identities or estimates for operator norms and the Hausdorff measure of noncompactness of certain operators on a new space derived as the set of all series summable by generalized absolute Cesàro summability the method. Further, by applying the Hausdorff measure of noncompactness, we establish the necessary and sufficient conditions for such operators to be compact and so the some well known results are generalized.

Keyword(s): spaces, Absolute Cesàro summability, compact operator, Hausdorff measure of noncompactness.

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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Comparison of Feed Forward Neural Networks and Partially Linear Model for Estimation of Right-Censored Data

Çağatay Bal[1], Ersin Yılmaz[2]

[1]Department of Statistics, Mugla Sitki Kocman Universtiy, Mugla, Turkey
[2],Department of Statistics, Mugla Sitki Kocman Universtiy, Mugla, Turkey
E-mail(s):cagataybal@mu.edu.tr, ersinyilmaz@mu.edu.tr

Estimation of right-censored data is a common problem in survival analysis. This paper presents the effects of covariates on a right-censored response variable with unknown distribution with two different methods which are partially linear regression model based on smoothing splines and feed forward neural networks. Because of the censored data, response variable is replaced by synthetic data which is proposed by Koul et. al. (1988) for both methods. The purpose of this study, making a comparison between these two estimation procedures and choosing the best method. In order to do that, this study is supported by a real data example.

Keyword(s): Feed-forward ANN, Smoothing spline, Right-censored data, Nonparametric techniques

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Comparison of Predicting Abilities of Data Mining Algorithms in Educational Data

Hasan Erbay[1], Hakan Kör[2]

[1] Computer Engineering, Kırıkkale University, Turkey
[2*] Computer Programming, Sungurlu Vocational School, Hitit University, Turkey
E-mail(s): hakankor19@gmail.com, hxe68@yahoo.com

In recent years, with the continuous improvement of internet technologies and it's speed, it has been observed that the traditional classroom environments of most state or private universities are moved to virtual classrooms. People who use the system need to be guided well in order to make these systems that offer equality of opportunity to people with independent learning from time and location more effectively. In this study, the best guessing algorithm was used to predict the success of the students who follow online in the lessons using their previous qualifications. In the scope of the study, success prediction algorithms for the future are examined and tested. Among these are the algorithms of KNN, Neural Network, Random Forest, Time Series, C & R Tree, Bayes, Quest, K-Means algorithms that provide prediction over 70%. The highest prediction success is the Random Forest Algorithm with 82.63%.

Keyword(s): Data Mining, Educational Data Mining, Prediction Algorithms, Random Forest Algorithm.

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Comparison of several numerical schemes for simulation of one-dimensional advection-dispersion equation

Ersin Bahar[1], Gurhan Gurarslan[1]

[1]Department of Civil Engineering, Pamukkale University, Turkey
E-mail(s):ebahar@pau.edu.tr, gurarslan@pau.edu.tr

Although being simultaneous processes, advection and dispersion processes do mass transportation in quite different ways. While advection process takes place in the flow direction, dispersion process takes place both in the flow direction and opposite to flow direction. The existence of hyperbolic (advection) and parabolic (dispersion) terms in the advection-dispersion equation brings some difficulties in the numerical solution of the problem. In the case classical finite difference and finite element methods are used in the numerical solution of the advection-dispersion equation, one encounters two important disadvantages called numerical dispersion and artificial oscillation. In this study, a variety of numerical methods such as finite difference method (Crank-Nicolson, MacCormack, TVD MacCormack and Saulyev schemes), differential quadrature method and characteristics method which are frequently used to solve advection-dispersion equation are compared. Comparisons made through one-dimensional examples whose analytical solutions are given in the literature.

Keyword(s): Advection-dispersion; method of characteristics; finite difference method, differential quadrature method.

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Comparison Of Some Mathemetical Models For The Amounts Of Protein Content From Goats By Single Or Twin Births

Ufuk Karadavut[1] Füsun Coşkun[2] Galip Şimşek[3] Gökhan Zekeriya Bulut[4]

[1] University of Ahi Evran, Agicultural Faculty, Kırşehir/TURKEY

[2,] University of Ahi Evran, Agicultural Faculty, Kırşehir/TURKEY

[3] University of Ahi Evran, Agicultural Faculty, Kırşehir/TURKEY

[4] University of Ahi Evran, Agicultural Faculty, Kırşehir/TURKEY

E-mail(s):ukaradavut@ahievran@edu.tr;
isun.coskun@ahievran.edu.tr;galipsimsek@hotmail.com;zekbul@gmail.com

This study was conducted to determine the relative amount of protein content from the breeders raised in the farmer's hands. This study was conducted at a commercial goat farm in Kırşehir province. Milk samples were collected from 45 dairy goats once a month through 5 mounts and test day milk yield were recorded. Change in protein content of the goats gave birth twin and single were estimated by linear and nonlinear models. For this purpose linear model($y = a + bx$), quadratic($y = a + bx + cx^2$), cubic $y = a + bx + cx^2 + dx^3$), power $y = ax^b$), exponentional $(y = ae^{bx})$, and logistic $(y = a/(1 + be^{-cx})$ were used. Cubic model was the best goodness of fit among models because of the highest coefficient of determination (R2) and lowest mean square error (MSE) R2 valves for the goats give birth single and twin were respectively 99,6% and 97,9% and MSE values were respectively 0.032 and 0.061 for Cubic model. However Exponential and Logistic Model had lowest R2 valves and highest MSE values among the models that were used in this study.

Keyword(s): protein content, comparison, goat, mathematical model

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Comparison of Three Artificial Neural Network Approaches for Estimating Long Term Aging of Asphalt Cement

Yüksel Taşdemir

Faculty of Engineering and Architecture, Department of Civil Engineering, Bozok University
E-mail(s):yuksel.tasdemir@bozok.edu.tr

Asphalt cement is one of the main component of the asphalt mixtures due to the its viscoelastic properties. The aging in asphalt cement occurs at production which is called short term aging and during the service life in the pavement that is known as long term aging. As a result of aging the viscoelastic properties of asphalt cement is changed and age hardening can accelerate distresses such as fatigue, low temperature cracking and moisture damage. The long-term aging prediction models have been developed in research studies over the years.

In this study, three different artificial neural network approaches, namely feedforward back propagation (FFBP), radial basis function based neural network (RBNN), and generalized regression neural networks (GRNN) were used for estimating of the long term aging of asphalt cement. For the analyses, 31 experimental data were used. The data were randomized and divided into two parts, training and testing. 19 data were used for training and the remaining 12 data were used for testing.

The determination coefficient (R2) and root mean square error were used as evaluation criteria of the FFBP, RBNN, and GRNN models. The experimental results were compared with these models. The comparison results indicate that the FFBP models are superior to the GRNN and RBNN models in modeling of the long term aging of asphalt cement. The high value of determination coefficient and the low value of RMSE in testing set indicate that the developed models can be used for the prediction of the long term aging of asphalt cement. The FFBP model has the smallest RMSE (0.1741 centipoise) and the highest R2 (0.99) in estimating of the long term aging of asphalt cement. The ranking of prediction on long term aging of asphalt cement was obtained as FFBP, RBNN, and GRNN, respectively.

Keyword(s): Long term aging, artificial neural network approaches.

Complete Intersection Homological Dimensions

Fatemeh Mohammadi Aghjeh Mashhad

Islamic Azad University, Parand Branch, Tehran, Iran.
E-mail(s):mohammadifh@ipm.ir

In this paper, we study complete intersection homological dimensions. Let (R, m, k) be a local ring. We will prove that R is regular if and only if R is complete intersection and CI-regular. Also, we prove that R is complete intersection if and only if the complete intersection injective dimension of k is finite. We will show that R is Cohen-Macaulay if there exists either a nonzero Cohen-Macaulay R-module of finite complete intersection projective dimension or a nonzero finitely generated R-module of finite complete intersection injective dimension.

Keyword(s): Complete intersection homological dimensions, Cohen-Macaulay ring, Gorenstein ring, regular ring.

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Complete System of Invariants of Vectors for Isometry Group in n-Dimensional Unitary Space

Hüsnü Anıl Çoban[1]

[1]Department of Mathematics, Karadeniz Technical University, Turkey
E-mail(s):hacoban@ktu.edu.tr

In this study, the invariants of vector systems for isometry group are investigated. Then, the complete system of invariants of vectors for isometry group in n-dimensional unitary space is obtained and it is also shown that this complete system is a minimal complete system.
Keyword(s): Unitary geometry, unitary space, isometry group, invariant.

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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Completeness of Quasi Metric Space and Some Fixed Point Results

Gonca Durmaz[1], İshak Altun[2]

[1]Science Faculty, Department of Mathematics, Çankiri Karatekin University, Çankırı, Turkey,
[2]Art & Science Faculty, Department of Mathematics, Kirikkale Univertsity, Kirikkale, Turkey
E-mail(s): gncmatematik@hotmail.com, ishakaltun@yahoo.com.

The purpose of this talk is to investigate the feasibility of the studies of metrical fixed point theory on quasi metric space, which has a comprehensive structure space and has a more application on computer science and semantics. On a metric space, definition of Cauchy sequence and completeness of the space depends on metric. Hence, these terms are indispensable terms for fixed point theory. In the studies of metrical fixed point theory, it is essential method that showing the sequence, which is obtained by an iteration, is Cauchy in a complete metric space. To obtain the quasi metric version of studies of metrical fixed point theory, we need to correspondance to quasi metric version of these two fundamental concepts. However, a result of researches shows that there are seven different definitions of Cauchy sequence on the quasi metric space. On the other hand, the convergence of a sequence in quasi metric spaces can be defined in three different ways according to quasi metric, dual quasi metric and the metric obtained by quasi metric. When considering these conditions, the completeness of the quasi metric space can be defined in twenty-one different ways. Then, in the studies on fixed point theory in quasi metric spaces, the searching which Cauchy sequence and which completeness terms are more suitable and more advantageous has significant importance. In this talk by taking into account the various existing completeness of such spaces in literature, studies on fixed point theory in quasi metric spaces will be carried out.

Keyword(s): Fixed Point, Quasi Metric, Completeness.

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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Computational and Mathematical Analysis For The Effect of Temperature During an Action Potential Generation

Sevgi Şengül Ayan

Industrial Engineering, Antalya International University, Turkey,
E-mail(s):sevgi.sengul@antalya.edu.tr.

All cells exhibit a voltage difference across the cell membrane but excitable cells are the ones that are able to produce and respond to electrical signals. Nerve cells or neurons, muscle cells, heart cells and secretary cells such as pituitary cells, pancreatic beta cells are examples of electrically excitable cells. In 1952, Hodgkin and Huxley analyzed the ion movement during an action potential generation and defined the first mathametical model of action potential generation. This model is important because it is not only one of the most successful mathematical models in the quantification of a biological phenomenon, but in addition the model, with modification, can be applied to many kinds of neurons and other excitable cells. Action potential of various neurons shows difference in seperate part of the body. These differences are due to the complex interaction of many elements such as ion channels or ion transporters. Numerical models and analysis are very important tools to understand how this complex system is working even in the simplest form. Hodgkin-Huxley Model is a succesful example that used the experimental results with mathematical model for the first time. In the model, there are K+ channels, Na+ channels and the leak current due to the Cl- ions. The measure to find the contributions of these ion channels to the different phases of the action potential and how much is defined by Sengul et al. (2014) mathematically. This measure is applied only for Na and K channels. In this project, we will apply this measure to various ion channel dynamics. Firstly group of HH type minimal models with different ion channel combinations for different excitable cells will be defined. Applying our contribution measure to these models will reveal how much specific ion channels effect the action potential and which part. It has been known that temperature effects the cell signaling. But how changing temperature effects the ion channel dynamics is still an open question. We would like to answer this question with using the HH type models that we defined. Whether the contributions of ion channel dynamics change with temperature and if they change how much is this change will be analyzed in this project. To do it, we will add the temperature term in our models and we will apply the contribution analysis with different temperature values and later the necessary numerical and dynamical system analysis will be done to compare and clarify our results.

Keyword(s): Hodgkin-Huxley Model, temperature effect, contribution analysis, action potential.

Reference(s): Sengul, S., Clewley, R., Bertram, R., Tabak, J. Determining the contributions of divisive and subtracting feedback in the Hodgkin-Huxley model, Journal of Computational Neuroscience, doi: 10.1007/s10827-014-0511-y., 2014

INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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Conic Functions based Classification Algorithms for Machine Learning and Data Mining

Emre Cimen[1], Gurkan Oztruk[1]

[1]Department of Industrial Engineering, Anadolu University, Turkey
E-mail(s):ecimen@anadolu.edu.tr, gurkan.o@anadolu.edu.tr

Conic functions (CF) based classifiers have been introduced to solve classification problems in machine learning and data mining areas a decade ago. CF based algorithms are shown in several articles that are competitive with other well known algorithms in the literature. In all these algorithms, conic functions for classification are found by solving a mathematical programming model. These types of algorithms have some advantages e.g., require solving linear programming (LP) model rather than quadratic programming (QP) model, do not need any kernel function as it is used in support vector machines. Furthermore, obtained classifiers by these algorithms have very short testing times which is very important for real time applications. In this study, conic functions based classification algorithms is reviewed with experimental results on real data sets and some future research topics are discussed.

Keyword(s): Data mining, classification, mathematical programming, machine learning

INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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Construction of MDS Cyclic Codes over Finite Fields

Halit Ince[1], Mehmet Ozen[2]

[1]Mathematics, Sakarya University, Turkey,
[2] Mathematics, Sakarya University, Turkey
E-mail(s): ince@sakarya.edu.tr, ozen@sakarya.edu.tr

MDS codes have many applications in communication channels and extensively used in data storage systems and cyclic codes have efficient decoding and encoding algorithms. In this work, we construct [p; k; p - k + 1] MDS cyclic codes over the field Fp for any given prime p and positive integer k less than p.

Keyword(s): Cyclic codes, MDS codes, finite fields

K_a −convergence and Korovkin Type Approximation

Sevda ORHAN[1], Kamil DEMİRCİ[2]

[1]Department of Mathematics Sinop University Sinop, Turkey,
[2]Department of Mathematics Sinop University Sinop, Turkey,
E-mails: sevdaorhan@sinop.edu.tr, kamild@sinop.edu.tr

In the present paper, we study a Korovkin type approximation theorem in the setting of K_a −convergence that contains the classical result. We also study the rate of K_a −convergence and afterwards, we give some concluding remarks.

Keyword(s): K_a −convergence, Korovkin theorem, statistical convergence, almost convergence

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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Convergence Theorems of a Faster Iteration Process Including Multivalued Mappings with Analytical and Numerical Examples

Birol Gündüz[1], Osman Alagöz[2], Sezgin Akbulut[3]
[1]Mathematics, Erzincan University, Turkey.
[2]Mathematics, Bilecik Şeyh Edebali University, Turkey.
[3]Mathematics, Ataturk University, Turkey.
E-mail(s): birolgndz@gmail.com, osman.alagoz@bilecik.edu.tr, sezginakbulut@atauni.edu.tr

In this paper, we first gave the modified version of the iteration process of Thakur et al. [11] which is faster than the Picard, the Mann [7], the Ishikawa [8], the Noor [5], the Agarwal et al. [7], and the Abbas et al. [9] processes. Secondly, we proved weak and strong convergence theorems of this iteration process for multivalued quasi nonexpansive mappings in uniformly convex Banach spaces. Thirdly, we supported our theorems with analytical examples. Finally, we compared rates of convergences for multivalued version of iteration processes mentioned above via a numerical example.

Keyword(s): faster iteration, Banach spaces, quasi-nonexpansive multivalued mapping, fixed point theory

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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Detecting of Clogged Flow Pipe with Ground-Penetrating Radar (GPR)

Mahmut Sarı[1], Nafız Maden[1], Serkan Öztürk[1]

[1]Department of Geophysics, Gümüşhane University, Turkey
E-mail(s):msari@gumushane.edu.tr, nmaden@gumushane.edu.tr, serkanozturk@gumushane.edu.tr

In large complex structures, the congestion of main flow pipes causes major problems for identification of clogged zones. In recent years, Ground-Penetrating Radar (GPR) method is commonly being used for damage free detection of structures (Holden et al., 2002; Cheng et al., 2013). High-frequency electromagnetic waves were being used in this method and its low cost, rapid use and non-destructive operation are the main advantages of this method. In this study, congestion in washbasin of Gümüşhane University, Engineering and Natural Sciences Faculty was detected by using GPR method. All measurements were conducted on the route where the main flow pipe crosses and Ramac Mala device with 500 MHz frequency was used on 31 3.5 m-long lines having 40 cm distance between each other. 2-Dimensional and 3-Dimensional vertical sections were obtained by using REFLEXW 7.2 software in order to analyze data acquired from inversion method. In GPR sections, hyperbolas with high amplitudes were seen in the zones where flow pipe passes. Information on slope of flow pipe was provided by examining the association of these hyperbolas with the depth. As a remarkable result of the study, clogged zones in the washbasin flow were detected. It was stated that unclogging the clogged zones of the flow pipe will not fully contribute to the resolution of the problem. Therefore, it was suggested to provide necessary slope to the flow pipe by completely removing and mounting back.

Keyword(s): Gümüşhane University, Ground-Penetrating Radar, Clogged zones, Flow pipe.

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Determination of an unknown time dependent coefficient for the time fractional heat equation

Ali Demir[1], Mine Aylin Bayrak [2],

[1]Mathematics, Kocaeli University, Turkey,
[2, 1]Mathematics, Kocaeli University, Turkey
E-mail(s):ademir@kocaeli.edu.tr, aylin@kocaeli.edu.tr

The main concern of this article has been to apply the residual power series method (RPSM) effectively to find the exact solutions of fractional-order space-time dependent nonhomogeneous partial differential equations in the Caputo sense. Our first step is to reduce fractional-order space-time dependent non-homogeneous partial differential equations to fractional-order space-time dependent homogeneous partial differential equations before applying the proposed method. Obtaining fractional power series solutions of the problem and reproducing the exact solution is the main step. The illustrative examples reveal that RPSM is a very significant and powerful method for obtaining the solution of any-order time-space fractional non-homogeneous partial differential equations in the form of fractional power series.

Keyword(s): Residual power series method, space-time fractional partial differential equation, Caputo derivative.

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Determination of Parameter for Euler-Bernoulli Equation with Periodic Boundary Condition

Fatma Kanca [1] and İrem Bağlan [2]

[1] Management and Information Systems, Kadir Has University,Turkey
[2] Mathematics, Kocaeli University,Turkey,
E-mail(s): fatma.kanca@khas.edu.tr ,isakinc@kocaeli.edu.tr,

In this research, we consider a coefficient problem of an inverse problem of Euler - Bernoulli Equation with periodic boundary and integral overdetermination conditions. We prove the existence, uniqueness and continuously dependence upon the data of the solution by iteration method. Also we consider numerical solution for this inverse problem by using linearization.

Keyword(s): Inverse Coefficient Problem, Periodic boundary condition, Euler-Bernoulli equation, Fourier method.

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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Determination of Suitable Equipment Number for Efficient Planning in a Container Terminal

Canan Bektaş[1], Murat Çolak[2], Gülşen Aydın Keskin[3]
[1]Industrial Engineering, Kocaeli University, Turkey
[2]Industrial Engineering, Kocaeli University, Turkey
[3]Industrial Engineering, Kocaeli University, Turkey
E-mail(s):cananbektas01@gmail.com , colak.murat@kocaeli.edu.tr, gaydin@kocaeli.edu.tr

It has become important to transport products to customers with the increase of global trade in recent years. At this point, it is necessary to select a low cost transportation mode. As it is known, marine transportation is the most used transport type at international level. In this context, seaports serving vessels to meet the demand for sea transport are evaluated as an important part of supply chain. Therefore, seaports should increase their service level. Port operations has become more complex as a result of increasing demand and workload. Effective management of these complex processes is crucial for increasing customer service level. Minimization of waiting times, container yard planning and minimization of total discharging time are objectives to be optimized in ports. In this study, it is aimed to determine the most suitable terminal truck and rubber tyred gantry (RTG) crane number to be used for vessel discharging by means of simulation in a container terminal. For this aim, ARENA 14.0 simulation software is utilized as a decision support tool. In the scope of the study, vessels are divided into three types as big, medium and small according to their movement amount. As a result of simulation, vehicle per gang the most suitable terminal truck number are determined as 5,4 and 4 for big, medium and small vessels, respectively. Similarly, RTG crane number are obtained as 2,2 and 1 at the end of the simulation. By the way, a reducement is provided in energy and work-force costs due to improvement at equipment number.

Keyword(s): ARENA, Container Terminal, Equipment Planning, Simulation

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Determining the Temporary Housing Location for Natural Disaster Victims by Fuzzy Axiomatic Design

Sena Kır[1], Harun Reşit Yazgan[2], Gizem Berkdemir[3]

[1, 2, 3] Sakarya University, Engineering Faculty, Department of Industrial Engineering, Sakarya, Turkey
E-mail(s): senas@sakarya.edu.tr, yazgan@sakarya.edu.tr, gizemberkdemir@hotmail.com

Tectonic, seismic, topographic and climatic nature of Turkey causes natural disasters such as flood, snow slide, landslide, and earthquake. After a natural disaster, temporary tent cities should be established in order to provide the life safety of natural disaster victims and support them. The main objective of this problem is to determine the best housing location that will meet requirements of the disaster victims as soon as possible. In this study, the best housing location was determined to establish a temporary tent city in the event of a natural disaster in Sakarya. The problem has a structure containing a multiple criteria and uncertainties. Therefore, the fuzzy axiomatic design technique was used to make a choice between candidate locations in Sakarya. Primarily, selection criteria and their convenience levels were determined considering humanitarian charter and minimum standards in humanitarian response. After that, all candidate locations were evaluated according to these criteria and the best one was determined.

Keyword(s): Multi criteria decision making, Humanitarian aid, Fuzzy axiomatic design.

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Development of short run quality control charts for a hard-chrome plating company

Mehmet Ali Ilgın[1], Muhammet Enes Akpınar[2]

[1]Industrial Engineering, Manisa Celal Bayar University, Turkey
[2]Industrial Engineering, Manisa Celal Bayar University, Turkey
E-mail(s): mehmetali.ilgin@cbu.edu.tr, enes.akpinar@cbu.edu.tr

Short run production involves the production of different types of products in small quantities. Use of classical statistical process control (SPC) charts for short run production processes does not provide healthy information for process improvement. That is why development of control charts peculiar to short run production processes has an utmost importance. In this study, short run SPC charts were developed for a hard chrome plating company. A number of process improvement alternatives were also proposed after interpreting the charts.

Keyword(s): Short run production, quality control, statistical process control.

On Reduction of Exhausters via a Representation of Support Functions

Didem Tozkan

Department of Mathematics, Faculty of Science, Anadolu University, Eskişehir, Turkey
E-mail(s):dtokaslan@anadolu.edu.tr

Exhausters are families of compact, convex sets which provide minimax or maximin representations of positively homogeneous functions and they are efficient tools for the study of nonsmooth functions [1]. Upper and lower exhausters of positively homogeneous functions are employed to describe optimality conditions in geometric terms and also to find directions of steepest descent or ascent. Since an upper/lower exhauster may contain infinitely many compact convex sets, the problem of minimality and reduction of exhausters naturally arise. There are several approaches to reduce exhausters [2,3,4]. In this study, in the sense of inclusion-minimality, some reduction techniques for upper exhausters of positively homogeneous functions defined from $\mathbb{R}^2$ to $\mathbb{R}$ is proposed by means of a representation of support functions. These techniques have concrete geometric meanings and they form a basis of a necessary and sufficient condition for inclusion-minimality of exhausters. Some examples are given to illustrate each reduction tecnique.

Keyword(s): Exhausters, reduction, support function, inclusion minimality.

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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Different Regression Relations between b-value and Dc-value for the North Anatolian Fault Zone, Turkey

Serkan Öztürk[1]

[1]Department of Geophysics, Gümüşhane University, Turkey
E-mail(s):serkanozturk@gumushane.edu.tr

This study focused on the application of different regression models in order to estimate the most suitable and reliable empirical relation between Gutenberg-Richter *b*-value, frequency-magnitude relation of earthquakes, and fractal dimension *Dc*-value, a powerful tool for quantifying the self-similarity of a geometrical object, for the earthquakes in and around the North Anatolian Fault Zone (NAFZ). The earthquake catalog was compiled from Bogazici University, Kandilli Observatory and Research Institute (KOERI), and includes 40.108 shallow events with magnitude≥1.0 and depth<70 km. For a detailed analysis, the NAFZ is divided into 15 seismotectonic sub-regions. In order to estimate the most appropriate and reliable empirical relation between *b*-value and *Dc*-value, four different regression norms (Öztürk, 2014) as (a) L_2 or Least Squares Regression, (b) L_1 or Least Sum of Absolute Deviations Regression, (c) Total Least Squares or Orthogonal Regression and, (d) Robust Regression were applied to the database. For all regression fits, following linear relations were estimated with their correlation coefficients (R^2 or r): Dc=2.44-0.57*b with r=-0.95 for L_2 regression, Dc=2.44-0.57*b with r=-0.95 for L_1 regression, Dc=2.43-0.56*b with r=-0.94 for Robust regression, and Dc=2.46-0.58*b with r=-0.98 for Orthogonal regression. Öncel at al., (1995) suggested a relationship between *b*-value and *Dc*-value for the western part of the NAFZ as Dc=2.74-1.52*b with r=-0.56. As seen from the correlation coefficients of the regressions fits in this study and in Öncel et al., (1995), Orthogonal regression fit having a stronger negative correlation coefficient than those of the others can be suggested as more appropriate and reliable. This empirical relation is accordance with the other relationship for the same area but it can be suggested that the equation from Orthogonal regression fit can be proposed as more up-to-date for the NAFZ earthquakes and surrounding area.

Keyword(s): North Anatolian Fault Zone, Regression norm, Empirical relation, Correlation coefficient

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Discrete Form of Caputo Fractional Order Riccati Differential Equation with Generalized Piecewise Constant Argument

Nur Cengiz[1], Duygu Aruğaslan[1], Mevlüde Yakıt Ongun[1]

[1] Mathematics, Süleyman Demirel University, Turkey,
E-mail(s):nurcengiz90@gmail.com, duyguarugaslan@sdu.edu.tr, mevludeyakit@sdu.edu.tr

In this study, we propose Caputo fractional order Riccati differential equation with piecewise constant argument of generalized type. We perform a discretization process for the sfractional differential equation. We obtain a nonautonomous difference equation, which has two fixed points with different signs. Then, we investigate the stability of the positive fixed point of the obtained nonautonomous difference equation. While investigating stability, we take the behaviour of solutions in a neighbourhood of the positive fixed point into account and we give sufficient conditions for asymptotic stability. We show instability of the negative fixed point of the autonomous difference equation. Additionally, we give simulations showing the asymptotic stability and instability of the nonautonomous and autonomous difference equations, respectively.

Keyword(s): Differential equations with piecewise constant argument of generalized type, fractional Riccati differential equation, nonautonomous difference equation, stability.

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Distribution Of The Lower Boundary Functional Of A Semi-Markov Random Walk Process With Delaying Barrier

Selahattin Maden

Ordu University, Faculty of Arts and Sciences, Department of Mathematics, 52200, Ordu, TURKEY
E-mail(s):maden55@mynet.com

In this paper, a step process of semi-Markov random walk with delaying barrier on the zero-level is constructed and the Laplace transformation of the distribution of first crossing time of this process into the delaying barrier at zero level is obtained. Also, the expectation and standard diversion of a boundary functional of the process are given.

Keyword(s): Semi-Markov random walk, Delaying screen, Laplace transformation, Distribution function.

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
10-12 May, 2017, Istanbul, Turkey

Domination Integrity of Some Graph Classes

Ayşe Beşirik[1], Elgin Kılıç[2]

[1]Mathematics, Ege University, Turkey
[2]Mathematics, Ege University, Turkey
E-mail(s): 91150000857@ogrenci.ege.edu.tr, elgin.kilic@ege.edu.tr

The stability of a communication network has a great importance in network design. There are several vulnerability measures used to determine the resistance of network to the disruption in this sense. Domination theory provides a model to measure the vulnerability of a graph network. A new vulnerability measure of domination integrity was introduced by R. Sundareswaran in his Ph.D. thesis and defined as $\mathrm{DI}(\mathrm{G}) = \min\{ |\mathrm{S}| + \mathrm{m}(\mathrm{G}-\mathrm{S}) : \mathrm{S} \in \mathrm{V}(\mathrm{G})\}$ where $\mathrm{m}(\mathrm{G}-\mathrm{S})$ denotes the order of a largest component of graph $\mathrm{G}-\mathrm{S}$ and S is a dominating set of G. The domination integrity of an undirected connected graph is one such a measure that works on the whole graph and also the remaining components of graph after any break down. Here we determine the domination integrity of wheel graph, bistar graph , friendship graph, thorn graph of path and cycle which are commonly used graph models in network design.

Keyword(s): Integrity, domination, domination integrity
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Dunford-Pettis Operators and Schur Property

Deniz Üçüncü[1], Erdal Gül[2]

[1] Mathematics, Yildiz Technical University, Turkey,
[2,] Mathematics, Yildiz Technical University, Turkey
E-mail(s): ucuncudeniz@gmail.com, gul@yildiz.edu.tr

In this work we consider Dunford-Pettis Operators and investigate its connection with Schur Property.

Keyword(s): Banach Space, Banach lattice, duality, weak topology

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Dynamical Stress Field Problem for a Prestressed Anisotropic Plate-strip with Finite Length

Mustafa Eröz[1]

[1]Department of Mathematics, Faculty of Arts and Sciences, Sakarya University, 54187, Sakarya, Turkey
E-mail(s): mustafaeroz@gmail.com

The influence of initial stress on a pre-stressed orthotropic plate-strip with finite length resting on a rigid half plane is investigated by utilizing Three-Dimensional Linearized Theory of Elastic Waves in Initially Stressed Bodies. The material of the plate-strip is assumed to be orthotropic. Finite element modeling is developed for the considered boundary-value problem. Some numerical results concerning the influence of initial stress and finiteness of the length of the plate-strip are presented.

Keyword(s): Anisotropic material; Initial stress; Stress distribution; Finite element method.

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EEG Visual Stimuli Detection Using Hessenberg Decomposition Kernel ELM

Apdullah Yayık[1], Yakup Kutlu[2]

[1]Alparslan Defence Sciences Institute, National Defence University, Turkey
[2]Department of Computer Engineering, İskenderun Technical University, Hatay, Turkey
E-mail(s):apdullahyayik@gmail.com, yakup.kutlu@istek.edu.tr

Main objective of Brain Computer Interface (BCI) systems is to enable non-muscular communication platform. The BCI system proposed in this study is based on P300 event related potential (ERP) and is tested with constructed EEG database includes 19 able-bodied subjects. Using linear algebra techniques, Hessenberg Decomposition based Extreme Learning Machine (ELM), namely HessELM, is also proposed and compared with conventional ELM in terms of performance measurements and training duration. Since reducing the number of channels is of an utmost importance, in particular, in the development of portable EEG-based BCI systems, channel selection is performed using Correlation-based Feature Selector (CFS) and 4 channels are selected as the most dominant ones. As result almost 100% general accuracy is achieved in shorter training duration using HessELM classifier.

Keyword(s): Brain computer interface; HessELM, event related potential, P300

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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Effect of loading angle on dynamic response of plate with finite length on rigid foundation

Ahmet Daşdemir

Department of Mathematics, Faculty of Arts and Sciences, Kastamonu University, Turkey.
E-mail(s): ahmetdasdemir37@gmail.com

In this presentation, the dynamic response of a plate with initial stress under the action of a point-wise time-harmonic force resting on a rigid foundation is investigated within the scope of the piecewise homogeneous body model with utilizing of the three dimensional linearized theory of elasticity waves in initially stressed bodies (TLTEWISB). It is assumed that the body has finite length in all the directions and materials used for the problem are elastic, isotropic and homogeneous. The mathematical modelling of the problem under consideration is composed, and the governing system of the equations of motion is solved by employing Finite Element Method (FEM). The numerical results illustrating the dependencies of different problem parameters are presented. In particular, the influence of a change in the value of angle of the force applied to the considered plate on the frequency response of that is investigated.

Keyword(s): Dynamical stress field problem; finite element method; initial stress; time-harmonic load; forced vibration

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Efficient Computation of Highly Oscillatory Singular Integrals with Generalized Freud Type Weight Functions

Dilan Kılıç Kurtoğlu[1], Ali İhsan Hasçelik[2],Mehmet Kurtoğlu[3]

[1]Mathematics, Gaziantep University, Turkey
[2]Mathematics, Gaziantep University, Turkey
[3]Electrical-Electronics Engineering, Gaziantep University, Turkey
E-mail(s):dilankilic_89@hotmail.com, aihascelik@yahoo.com, mkurtoglu@gantep.edu.tr

In this work, we are concerned with numerical computation of highly oscillatory singular integrals of the form

$$I(f)=\int_a^b f(x)\left(x-a\right)^{\alpha} e^{i\omega\left(x-a\right)^m}dx,\ \ \alpha>-1,\ \omega ?\ \ 1,\ i=\sqrt{-1},\ m=2,3. \qquad (1)$$

which arise in many applications in applied mathematics, natural sciences, engineering and medicine, such as optics, acoustics, scattering problems, electromagnetic, electrodynamics, quantum mechanics. For large ω the classical integration rules such as Newton-Cotes, Gauss-Legendre, Gauss-Jacobi are not suitable for the computation of this type of integrals because they require too many function evaluations to obtain an accurate approximation for the integral. Also, Filon method, Levin method and the asymptotic method are efficient for the computation of highly oscillatory integrals without singularity. They are not efficient for the computation of the integral (1). Hence, several methods have been proposed for numerically computing these type of integrals. These methods are the Numerical Steepest Descent method, Clenshaw-Curtis method. Numerical Steepest Descent method is very efficient and faster than existing methods for highly oscillatory integrals with analytic integrands.

In this study, assuming f is analytic in a region containing the interval of integration we use the Numerical Steepest Descent method. However, in order to apply this method to integral (1) it is required to construct Gauss integration rules with respect to the Freud-type weight functions $w_m(x)=\exp(-x^m)x^{-\alpha}$. Numerical examples show that the proposed method is more efficient than the other methods suitable for the integral (1).

Keyword(s): Highly oscillatory singular integral, Gauss integration method, numerical steepest descent method.

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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Efficient Tree Methods in Regime-Switching Models

Guillaume Leduc[1]

[1]Department of mathematics, American University of Sharjah, UAE
E-mail(s):gleduc@aus.edu

While the convergence rates of tree-methods in the Black-Scholes model have been analyzed in great details, very few results have been established when regime-switching is introduced. We describe here how recombining two-type trinomial trees (hexanomial trees) can be used to efficiently price European options. We show how the exact rate of convergence can be obtained for a broad class of piecewise smooth payoff functions. This rate of convergence is of order $1/n$ for continuous payoff functions and $\sqrt{1/n}$ when the payoff is discontinuous. This improves results in the literature which were valid only for option with very smooth payoff functions.

Keyword(s): Black-Scholes, convergence rate, regime-switching models, trinomial trees.

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Eikonal Helix Which Generated By Vectorial Moments of Curves in Three Dimensional Heisenberg Group

Gülden Altay Suroğlu [1], Talat Körpınar [2], Handan Öztekin [3]

[1]Mathematics, Fırat University, Turkey
[2,] Mathematics , Muş Alparslan University, Turkey
[3] Mathematics, Fırat University, Turkey
E-mail(s): guldenaltay23@hotmail.com , talatkorpınar@gmail.com, handanoztekin@gmail.com .

In this paper we deal with eikonal helix which generated by vectorial moments curves in H_3. We define f-eikonal T-dual helix curves and we give characterizations for a f-eikonal T-dual slant helix curve in H.

Keyword(s): Heisenberg group, eikonal helix, vectorial moment.

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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Elliptic Quaternions and Rotations

Mustafa Özdemir

Akdeniz Üniversity, Faculty of Science, Deparment of Mathematics, Antalya, Turkey.
E-mail(s): mozdemir@akdeniz.edu.tr

Elliptical rotation is the motion of a point on an ellipse through some angle about a vector. The purpose of this paper is to examine the generation of elliptical rotations and to interpret the motion of a point on an elipsoid using elliptic quaternions, elliptic inner product and elliptic vector product. In this paper, we define elliptic quaternions and generate an elliptical rotation matrix using those quaternions.

Keyword(s): Elliptic Quaternion, Rotation Matrix, Elliptical Inner and Vector Product.

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Empirical Relationships between the Surface Wave Magnitude and Moment Magnitude for the Iranian Earthquakes

Serkan Öztürk[1], Mohammad R. Ghassemi [2], Mahmut Sarı[1]

[1]Department of Geophysics, Gümüşhane University, Turkey
[2,]Research Institute for Earth Sciences, Geological Survey of Iran, Iran
E-mails: serkanozturk@gumushane.edu.tr, m.r.ghassemi@gsi.ir, msari@gumushane.edu.tr

The aim of this study is to obtain a uniform dataset regarding the magnitude scales between the surface wave magnitude (Ms) and moment magnitude (Mw) for the Iranian earthquakes. Magnitude type in the original database for the Iranian earthquakes have usually been given as Ms. The catalog used in this study is taken form Ghassemi (2016). Ghassemi (2016) suggested several empirical relations between different parameters such as surface rupture length, maximum displacement and moment magnitude for different earthquake fault mechanism in Iran. For this purpose, Ghassemi (2016) used a dataset for the instrumental Iranian earthquakes between 1900 and 2014 in order to convert the Ms to Mw, and proposed a relation of Mw=1.020+0.848*Ms with a R2=0.852 (correlation coefficient) by using the Least Squares Regression (L2). Many practical problems encountered in quantitative oriented disciplines entail finding the best suitable approximate solution to an over determined system of linear equations. For this reason, we tested three different regression methods in addition to L2 in order to estimate the most suitable and reliable empirical relation between Ms and Mw for the Iranian earthquakes. The estimation models were considered as (i) L1 or Least Sum of Absolute Deviations Regression, (ii) Robust Regression and, (iii) Total Least Squares or Orthogonal Regression (Öztürk, 2014). The linear relations of Mw=1.182+0.818*Ms with R2=0.792 for L1 norm regression, Mw=1.084+0.838*Ms with R2=0.829 for Robust regression, and Mw=0.668+0.913*Ms with R2=0.986 for Orthogonal regression were derived. The results show that the representation of empirical relationship estimated from Orthogonal regression model can be considered as the most suitable and reliable. Therefore, we suggest the Orthogonal regression fit to be used for the other empirical relations, such as the maximum surface rupture length, maximum surface displacement, and the associated maximum credible earthquakes more appropriate and trustworthy for the estimation of earthquake magnitudes in the other studies in the Iranian region.

Keyword(s): Iranian earthquakes, Regression, Empirical relationship, Correlation coefficient.

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Existence of nonoscillatory solutions of second-order neutral differential equations with distributed deviating arguments

M. Tamer Şenel[1], Tuncay Candan[2], Bengü Çına[3]

[1]Mathematics, Erciyes University, Turkey,
[2, 1]Mathematics, Ömer Halis Demir University, Turkey
[31]Mathematics, Cumuriyet University, Turkey
E-mail(s):senel@erciyes.edu, tcandan@ohu.edu, bcina@cumhuriyet.edu

In this study we shall consider some sufficient conditions for the existence of nonoscillatory solutions of variable coefficient nonlinear second order neutral differential equation with distributed deviating arguments and forcing term. Our results improve and extend some existing results. We use the Banach contraction principle to obtain new sufficient conditions for the existence of nonoscillatory solution.

Keyword(s): Fixed point, Second-order, Distributed deviating argument, Nonoscillatory solution.

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Existence of Solutions for Lidstone Boundary Value Problems on Time Scales

Erbil Çetin[1], Fatma Serap Topal[2]

[1,2] Faculty of Science, Department of Mathematics, Ege University, Izmir, 35100, Turkey
E-mail(s):erbil.cetin@ege.edu.tr, f.serap.topal@ege.edu.tr

In this study, we consider a 2nth order dynamic equation with Lidstone boundary conditions on a time scale which is nonempty closed subset of R. Firstly, the Green's function of the problem and its properties are given which is important in main results. Secondly, the existence of one and two positive solutions for Lidstone boundary value problems on time scales are obtained by using Krasnosel'skii fixed point theorem. Examples are given to illustrate our results. When the time scale T is chosen as R or Z, the problem is the corresponding continuous or discrete boundary value problem.

Keyword(s): Lidstone boundary value problem; Green's function; positive solution; time scale.

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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Experiments on Size Optimization of Trusses with BB-BC Algorithm

Hakan Özbaşaran[1]

[1]Eskişehir Osmangazi University, Department of Civil Engineering, Eskişehir/Turkey,
E-mail(s):ozbasaran@ogu.edu.tr

The objective of the structural optimization is to minimize the cost of the structures, which can be replaced by the total weight of the structure in most cases, while satisfying the design requirements. In the last decades, great attention has been paid to structural optimization and applications of metaheuristic optimization methods have become very popular. These optimization methods mostly provide solutions with adequate precision for multi-dimensional constrained structural optimization problems from an engineering point of view. However, they should be specifically tuned for the considered optimization problem to obtain satisfactory results. Big Bang - Big Crunch algorithm is one of the efficient metaheuristic algorithms introduced in 2006, which simulates the famous theory on the evolution of the universe. Since size optimization of trusses is an inviting challenge in structural optimization, this simple algorithm is utilized to find optimal designs of the trusses and enhancements for the algorithm are presented by numerous researchers. This study revisits the size optimization of trusses with Big Bang - Big Crunch algorithm, discusses the previously introduced modifications and presents the results of a few experimental changes.

Keyword(s): truss, optimization, big bang - big crunch, metaheuristic

Fan-Gottesman Compactification and Completeness

Ceren Sultan Elmalı[1], Tamer Ugur[2]

[1]Department of Mathematics, Faculty of Science,Erzurum Technical University, 25100 Erzurum-TURKEY
[2]Department of Mathematics, Faculty of Science,Atatürk University, 25240 Erzurum-TURKEY
E-mail(s):ceren.elmali@erzurum.edu.tr,tugur@atauni.edu.tr

It is investigated that Fan-Gottesman compactification of $(X, d)$is homeomorphic to the completion of (X, d^{φ}) totally bounded metric space. As application, we construct Fan-Gottesman compactification of $(\mathbb{R}^n, d_E)$; where $d_E$is the euclidean metric and $n \geq 2$ and show that Fan-Gottesman compactification of $(\mathbb{R}^n, d_E)$ is homeomorphic to its completion.

AMS Subject Classi.cation Number: 54D35

Keyword(s): Fan-Gottesman compactication, completion

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Dynamical Analysis of Beam-Type Structural Elements with Discontinuities

B. Gültekin Sınır[1], Duygu Dönmez Demir[2], Emine Kahraman[3]

[1] Civil Engineering, Manisa Celal Bayar University, Turkey
[2] Mathematics, Manisa Celal Bayar University, Turkey
E-mail(s):gultekin.sinir@cbu.edu.tr, duygu.donmez@cbu.edu.tr

In this study, a general model corresponding to the structural elements such as beams, strings, rods, etc. with discontinuities is introduced. The general mathematical model, a partial differential equation depending on time and spatial variables, consists of some linear differential operators. These differential operators have variable coefficients. For solving proposed model, a different approach is introduced. The mentioned approach has the advantages of the numerical method in the discontinuity case as well as the perturbation technique in the dynamical analysis. Two problems including discontinuity are considered to indicate accuracy of present method. Finally, the comparisons of the numerical and analytical results are presented.

Keyword(s): General model; Method of multiple scales; Finite differences method; Discontinuity function

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Finite Difference Scheme for One Nonlinear Parabolic Averaged Integro-Differential Equation

Zurab Kiguradze[1, 2], Maia Kratsashvili[3, 4]

[1]I.Vekua Institute of Applied Mathematics of Iv. Javakhishvili Tbilisi State University (Department of Mathematical Modelling and Numerical Mathematics, Tbilisi, Georgia)
[2]Georgian Technical University (Department of Mathematics, Tbilisi, Georgia)
[3]Sokhumi State University (Faculty of Mathematics and Computer Sciences, Tbilisi, Georgia)
[4]St. George's British Georgian School (Department of Mathematics, Tbilisi, Georgia)
E-mail(s): zkigur@yahoo.com, maiakratsashvili@gmail.com

Investigation of differential and integro-differential models describing applied processes represent the actual sphere of modern mathematics. It is doubtless that construction of algorithms for approximate solutions, computer realization and analysis of the numerical results of corresponding initial-boundary value problems are very important.

Mathematical models of real processes often lead to partial integro-differential equations of parabolic type. It is known that most of those problems have nonlinear character which essentially complicates of their study. Investigation and numerical solution of nonlinear integro-differential equations, appear for instance, as a result of significant process of mathematical modeling of electromagnetic field propagation in the medium. Various initial and initial-boundary value problems for those models and for their generalization are studied by many authors. Making certain physical assumptions in mathematical description of the same process of electromagnetic field propagation into a substance, Prof. Laptev proposed one of such generalization in his doctoral dissertation which he called as an averaged integro-differential model and pointed out their importance and complexity of their investigation. One should note that in this direction rather extensive bibliographical overview is given in the recently published monograph - T. Jangveladze, Z. Kiguradze, B. Neta, Numerical Solution of Three Classes of Nonlinear Parabolic Integro-Differential Equations. Elsevier, ACADEMIC PRESS, 2016.

Investigations for the above-mentioned averaged models are conducted for some special cases so far. In particular, narrow class of nonlinearities are studied by scientists. In our work class of nonlinearity is widened and more general diffusion coefficients are considered. Existence, uniqueness and large time behavior of solutions of the initial-boundary value problem for that model are fixed. Corresponding finite difference scheme is constructed and investigated. Stability and convergence of that scheme is proven. Results of numerical experiments with appropriate tables and graphical illustrations are given. Results of numerical experiments fully agree with theoretical researches in both, in convergence of the finite discrete scheme as well as in asymptotic behavior of solution.

Keyword(s): Nonlinear partial integro-differential equations, asymptotic behavior, semi-discrete and finite difference schemes, convergence.

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First order differential equations and fourth degree with the Painleve property

Toufik Laadj[1], Khaled M'hamed-Messaoud[2], Arezki Kessi[3]

[1]Department of mathematics, University of Science and Technology USTHB, Algiers, Algeria
[2,]Department of mathematics, University of Science and Technology USTHB, Algiers, Algeria
[3]Department of mathematics, University of Science and Technology USTHB, Algiers, Algeria
E-mail(s): laadjt@vt.edu, KMhamedMessaoud@gmail.com, arkessi@yahoo.com

In this presentation we consider the non linear Fuchs differential equation of order one and fourth degree with polynomial coefficients for the unknown and analytic in the variable. We give the sufficient conditions for Painleve property and we list some Fuchs differential equations with fixed critical points.

Keyword(s): Differential equations, Painleve property, Fuchs Theorem and Critical points.

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Fixed Point of Generalized Multivalued F- Contraction Mapping of Integral Type

Derya Sekman [1], Vatan Karakaya [2], Nour El Houda Bouzara [3]

[1]Mathematics, Ahi Evran University, Turkey
[2] Mathematical Engineering, Yildiz Technical University, Turkey
[3] Mathematics, University of Science and Technology Houari Boumediène, Algeria
E-mail(s): deryasekman@gmail.com, vkkaya@yildiz.edu.tr, bzr.nour@gmail.com

In this work, our main problem is to introduce a new concept of the generalized multivalued integral type mapping under F- contraction and also to investigate important properties. Moreover, we give some interesting examples about this problem.

Keyword(s): F-contraction, Multivalued Mapping, Integral Type Mapping, Hausdorff Metric

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Flocking Model in Metric Spaces of Financial Agents

Mehmet Ali Balcı[1], Ömer Akgüller[2], Sibel Paşalı Atmaca[3]

[1]Mathematics, Muğla Sıtkı Koçman University, Turkey
[2]Mathematics, Muğla Sıtkı Koçman University, Turkey
[3]Mathematics, Muğla Sıtkı Koçman University, Turkey
E-mail(s):mehmetalibalci@mu.edu.tr, oakguller@mu.edu.tr, sibela@mu.edu.tr

In the nature, various organisms form flocks and behave collectively as a single organism. This phenomenon attracted many researchers in different fields and pioneered them to make observations and research to investigate the flocks. The most dominant theory is that the collective behavior in the nature is a bottom up system based on simple interactions between individuals rather than a top-down system in which each individual follows a leader. Since Reynolds proposed the Boids model as a bottom-up theory, many researches have been done at various types of approaches. In the Boids model, the individuals in the flock are modeled to interact with other individuals in their environment. The distance regulating this interaction is one of the most important factors in the flock model. The definition of the distance is mainly two-fold: the metric distance defines the individuals in a constant range as well as the adjacent neighbors to interact with, while the topological distance selects a few individuals in order starting from the nearest.

In this study, we consider each individual as an actor of a financial network, and model their behavior in the terms of difference equations. For this purpose, we set the metric-topological distance as correlation distance of time series of each actor, then model the flocking behavior. Our analysis involves the periods of local and global economic crisis.

Keyword(s): Flocking Model, Stock Networks, Correlation Distance, Random Variables

Forced vibration of a prestressed bi-layered plate-strip which is imperfectly bonded and resting on a rigid foundation

Mustafa Eröz[1]

[1]Department of Mathematics, Faculty of Arts and Sciences, Sakarya University, 54187, Sakarya, Turkey
E-mail(s): mustafaeroz@gmail.com

A boundary-value problem corresponding to forced vibration of an imperfectly bonded bi-layered plate-strip resting on a rigid foundation is considered. The mathematical modelling of considered problem is given using three-dimensional linearized theory of elastic waves in initially stressed bodies. The variational formulation of the problem considered is obtained in the framework of the principles of calculus of variation. The problem considered differs from the previous studies in the view of imperfect boundary conditions between the layers of the plate-strip.

Keyword(s): Initial stress; Forced vibration; Finite element method.

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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Fractal Characteristics of Energy Commodities

Murat Gencer[1], Gazanfer Ünal[2],

[1]Financial Economics Doctorate (YeditepeUniversity, Turkey),
[2]Financial Economics Doctorate (YeditepeUniversity, Turkey),
E-mail(s): genmuratcer@gmail.com, gazanferunal@gmail.com

The purpose of this work is to study the fractal behavior energy commodities namely, crudeoil, naturalgas, heatingoil and gasoline. To analyze the monofractality of the seindicesweusedrescaled-rangeanalysis(Hurstexponent).It has been observed that only natural gas has a fractal property. In addition to this, by applying the Multi fractal Detrended Fluctuation Analysis (MFDFA) technique we have calculated the generalized Hurstexponents, multifractal scaling exponents and generalized multifractal dimensions for the presentindices. The result is that, all of the commodities have multifractal behavior but natural gas exhibits a richer multifractal feature compared to the others.

Keyword(s): Monofractality; HurstExponent; Multifractality; MultifractalDetrendedFluctuation Analysis.

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Free Vibration of Euler-Bernoulli Beam with 3D Tip Mass using Differential Transform Method

Hilal Doğanay Katı[1], Hakan Gökdağ[2]

[1]Mechanical Engineering, Bursa Technical University, Turkey
[2], Mechanical Engineering, Bursa Technical University, Turkey
E-mail(s):hilal.doganay@btu.edu.tr, hakan.gokdag@btu.edu.tr

Partial differential equations are widely used to describe engineering problems. In the relevant literature, these equations have been solved by a variety of analytical and/or numerical approaches. One of those is the Differential Transform Method (DTM). DTM is an effective method to solve boundary value problems, and gives accurate results provided sufficient number of terms in the series expansion is employed. In addition to its accurateness, DTM is easy to code in computer environment. In this study, DTM is applied to solve governing equations of an Euler-Bernoulli beam carrying a 3D rigid tip mass whose center of gravity is not coincident with beam end, and undergoes bending deformation in orthogonal planes plus torsional deformation. The natural frequencies and vibration mode shapes obtained using DTM are compared with the analytical and finite element (ANSYS) results. It is observed that numerical results by DTM are in good agreement with analytical and finite element results.

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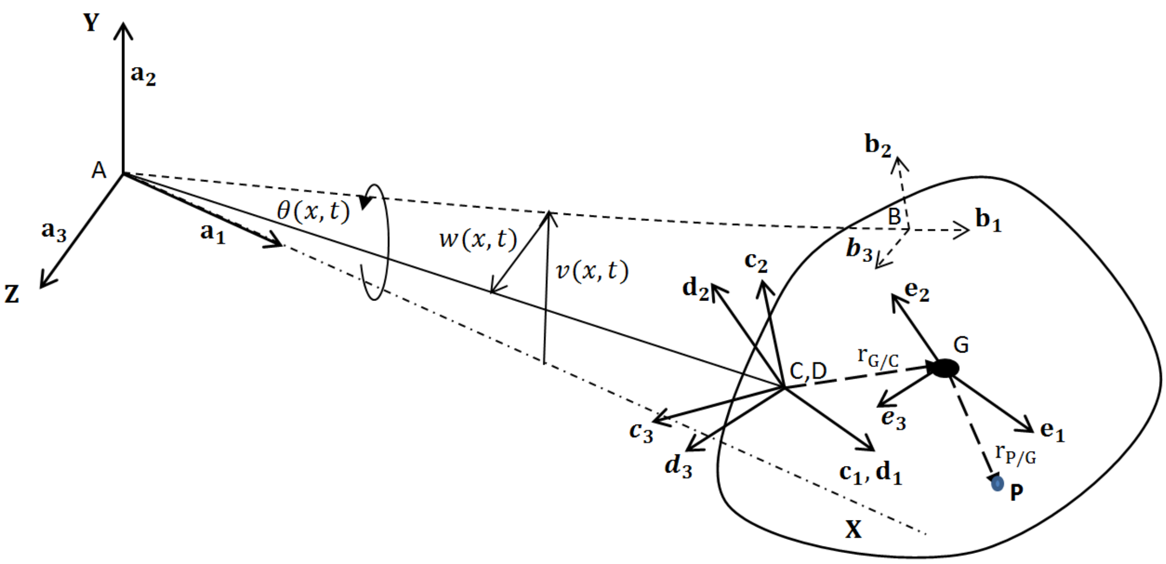

Keyword(s): Differential Transform Method (DTM), Bending and Torsional Vibration, Tip mass, beam.

Frenet Frame with Respect to Conformable Fractional Derivative

Uğur Gözütok[1], Hüsnü Anıl Çoban[1], Yasemin Sağıroğlu[1]

[1]Department of Mathematics, Karadeniz Technical University, Turkey
E-mail(s):ugurgozutok@ktu.edu.tr , hacoban@ktu.edu.tr, sagıroglu.yasemin@ktu.edu.tr

Conformable fractional derivative is introduced by the authors Khalil at al in 2014. In this study, we investigate the frenet frame with respect to conformable fractional derivative. Curvature and torsion of a conformable curve are defined and the geometric interpretation of these two functions is studied. Also, fundamental theorem of curves is expressed for the conformable curves and an example of the curve corresponding to a fractional differential equation is given.

Keyword(s): Frenet frame, conformable derivative, conformable curve.

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Fuzzy Invariants of Fuzzy Curves in the Three Dimensional Euclidean Space

Yasemin Sağıroğlu[1], Djavvat Khadjiev[2], Uğur Gözütok[3]

[1]Department of Mathematics, Karadeniz Technical University, Turkey
[2]Department of Mathematics, Karadeniz Technical University, Turkey
[3]Institute of Mathematics, National University of Uzbekistan, Uzbekistan
E-mail(s):sagiroglu.yasemin@gmail.com, khdjavvat@gmail.com, ugurgozutok@ktu.edu.tr

The present study is devoted to an investigation of metric properties of fuzzy paths and fuzzy curves in the three dimensional Euclidean space. In this study, definitions of a fuzzy path, a fuzzy curve and the fuzzy type of a fuzzy curve are given. The definition of an equivalence of fuzzy curves is introduced in the group of all Euclidean motions of the three dimensional Euclidean space. The problem of the equivalence of fuzzy curves is reduced to that of usual paths. Conditions of the equivalence of fuzzy curves in terms of the fuzzy type and the three differential invariants of a fuzzy curves. All correlations between these fuzzy invariants of a fuzzy curve are described.

Keyword(s): Fuzzy path, fuzzy curve, invariant.

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Generalized Star-Convex Functions and Some Star-Inequalities in terms of the Non-Newtonian Calculus

Erdal Ünlüyol[1], Seren Salaş[2], İmdat İşcan[3]

[1] Mathematics, Ordu University, Turkey
[2] Mathematics, Ordu University, Turkey
[3] Mathematics, Giresun University, Turkey
E-mail(s): eunluyol@yahoo.com, serensalas@gmail.com, imdati@yahoo.com

Differentiation and integration are basic operations of calculus and analysis. Indeed, they are the infinitesimal versions of the subtraction and addition operations on numbers, respectively. From 1967 till 1970 Michael Grossman and Robert Katz gave definitions of a new kind of derivative and integral, converting the roles of subtraction and addition into division and multiplication, and thus establish a new calculus, called Non-Newtonian Calculus. So, in this paper, it is investigated to the generalized star-convex functions and some star-inequalities in terms of Non-Newtonian Calculus.

Keyword(s): Non-Newtonian (N-N) calculus, N-N Convex functions, star-Convex functions, N-N Inequalities, star-Inequalities

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Generating functions for special polynomials: analysis of the p-adic Volkenborn integral

Yilmaz Simsek[1]

[1]Akdeniz University Faculty of Science Department of Mathematics Antalya, Turkey
E-mail(s):ysimsek@akdeniz.edu.tr

It is well-known that the p-adic Volkenborn integral have many applications in Mathematics and Mathematical Physics. In this talk, we give some properties of this integral. Our purpose of this paper, by using this integral, we study some families of special numbers and polynomials with their generating functions. Moreover, by applying the p-adic Volkenborn integral technique to the continuous derivative functions f, we give generating functions for some families of special numbers and polynomials. By using these generating functions, we investigate various properties of these numbers and polynomials. Finally, we give some special values of these numbers and polynomials which are related to the some well-known numbers and polynomials such as the Bernoulli numbers and polynomials, the Euler numbers and polynomials and the others.

Keyword(s): Generating functions, p-adic integrals, Bernoulli numbers and polynomials, Euler numbers and polynomials Special numbers and polynomials.

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Generating One Parameter Family of Surfaces in Terms of Inextensible Flows in De Sitter 3-Space

Selçuk Baş[1], Talat Körpınar[2], Muhammed T. Sarıaydın[3], Vedat Asil[4]

[1]Mathematics, Mus Alparslan University, Turkey,
[2]Mathematics, Mus Alparslan University, Turkey,
[3]Mathematics, Mus Alparslan University, Turkey,
[4] Mathematics, Fırat University, Turkey,
E-mail(s): slckbs@hotmail.com, talatkorpinar@gmail.com, talatsariaydin@gmail.com, vasil@firat.edu.tr

This paper presents an efficient parametric approach of determining the shape of the some ruled surfaces by inextensible flows in de Sitter 3-space. In this approach some characterizations are given as their curvature and torsion functions in de Sitter 3-space.

Keyword(s): inextensible flows of curves, ruled surfaces, de Sitter 3-space, timelike curve.

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Generating Sets of the Semigroup $\mathrm{ODP}_{n,r}$

Melek Yağcı

Affiliation of Author (Mathematics, Çukurova University, Turkey)
E-mail(s):msenol@cu.edu.tr

Let I_n be the semigroup of all partial one-to-one maps on $X_n = \{1, \dots, n\}$ under usual composition. Then the subset

$$\mathrm{ODP}_n = \{\alpha \in I_n | (\forall\, x, y \in \mathrm{dom}(\alpha))\ |x - y| = |x\alpha - y\alpha| \text{ and } x \leq y \Longrightarrow x\alpha \leq y\alpha\}$$

is semigroup of I_n. For $2 \leq r \leq n-1$, let

$$\mathrm{ODP}_{n,r} = \{\alpha \in \mathrm{ODP}_n \,||\mathrm{im}(\alpha)| \leq r\}$$

which is subsemigroup of ODP_n. In this talk, our main goals are find the rank and to find necessary and sufficient conditions for any subset of $\mathrm{ODP}_{n,r}$ to be generating set of $\mathrm{ODP}_{n,r}$ for $2 \leq r \leq n-1$.

The results presented in my talk have been obtained in collaboration with Hayrullah Ayık and Leyla Bugay.

Keyword(s): Partial isometries, order-preserving map, generating set, rank.

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Geometric Null Curve Flows and Integrable Systems in SO(n,1)/SO(n-1,1)

Zühal Küçükarslan Yüzbaşı[1] and Stephen C. Anco[2]

[1,2] Firat University, Faculty of Science, Department of Mathematics,Elazig/Turkey
E-mail(s): zuhal2387@yahoo.com.tr1 and mbektas@firat.edu.tr2

The main goal of this study is to give how to derive group-invariant soliton equations and their integrability structure from studying non-stretching flows of null curves in Lorentzian symmetric spaces SO(n,1)/SO(n-1,1) by using the Cartan structure equations. Then, we get multi-component systems of Burgers type are derived from inelastic flows of null curves in SO(n,1)/SO(n-1,1) by choosing transformation on this equations what we obtain from torsion and curvature equations.

Keyword(s): Curve flows, Null curve, Lorentzian Space.

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Gyroscopic Antigravity

Faruk Ünker[1], Olkan Çuvalcı[2]

[1] Mechanical Engineering, Gümüşhane University, Turkey,
[2] Mechanical Engineering, Karadeniz Technical University, Turkey
E-mail(s):farukunker@gumushane.edu.tr, ocuvalci@ktu.edu.tr

The objective of this study is to invent a gyroscopic apparatus which violates Newton's Third Law of Motion that states "for every action there is an equal and opposite reaction" because the gyro produces a force and can change the velocity and momentum without needing propellant (i.e. a "space drive"). As the axis of the gyroscope is rotated while the disks are spinning, the angular momentum provides a lift which could have many diverse applications. The mechanism does not require any other external source of energy, in which the rotor speed is produced by an electric motor in a rotating gimbal. In this way, it can function in space for a very long time. Maybe, the light-years spanning star systems can be travellable. In this paper, the minimum speeds of the rotors to levitate the system are analytically derived for a spacecraft . Correctness of the analytical results is verified by numerical simulations.

Keyword(s): Gyroscopic Thruster, Gyroscope, Antigravity, Inertial Drive, Reactionless Drive

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Gyroscopic Vibration Absorber For Flexible Structures

Faruk Ünker[1], Olkan Çuvalcı[2]

[1] Mechanical Engineering, Gümüşhane University, Turkey,
[2] Mechanical Engineering, Karadeniz Technical University, Turkey
E-mail(s):farukunker@gumushane.edu.tr, ocuvalci@ktu.edu.tr

The objective of this study is experimentally determining optimal frequency ratio between one store building and modified gyroscope, gyroscope's flywheel rotational speed and mass of gyroscope for modified gyroscopic vibration absorber under sinusoidal excitation. Experimental studies show that ratio of natural frequency of one story building (ω_k) to natural frequency of modified gyroscope (ω_s), gyroscope's flywheel rotational speed and mass of gyroscope very effective parameters for modified gyroscopic vibration absorber.

Keyword(s): Vibration Control, Gyroscope, Gyrostabilizer, Nonlinear Dynamics

Hermite-Hadamard Type Inequalities For Convex Functions Via Generalized Fractional Integral Operators

Erhan Set[1], Abdurrahman Gözpınar[1]

[1]Department of Mathematics, Faculty of Science and Arts, Ordu University, Turkey
E-mail(s):erhanset@yahoo.com, abdurrahmangozpinar79@gmail.com

In this present work, the authors establish a new integral identity involving generalized fractional integral operators and by this fractional-type integral identity, obtain some new Hermite-Hadamard type inequalities for functions whose first derivatives in absolute value are convex. Relevant connections of the results presented here with those earlier ones are also pointed out.

Keyword(s): Hermite-Hadamard inequality, Riemann-Liouville fractional integral, fractional integral operator.

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Hermite-Hadamard Type Inequalities for Functions whose second derivatives absolute values are operator quasi-convex

Erdal Ünlüyol[1], Yeter Erdaş[1]

[1] Mathematics, Ordu University, Turkey
E-mail(s): eunluyol@yahoo.com, yeterrerdass@gmail.com,

In this paper, firstly we will define operator quasi-convex function in a Hilbert space. Secondly we will give a special lemma, and then finally we will establish a new inequality of Hermite-Hadamard Type for functions whose second derivatives absolute values are operator quasi-convex.

Keyword(s): Hermite- Hadamard inequality, Hilbert space, operator quasi-convex function.

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Heuristic and Metaheuristic Solution Methods for Two-Dimensional Cutting Stock Problem

Banu İçmen[1], Refail Kasımbeyli[1]

[1]Department of Industrial Engineering, Anadolu University, Turkey),
E-mail(s):bicmen@anadolu.edu.tr, rkasimbeyli@anadolu.edu.tr

According to predefined demand list cutting smaller items from larger one or more dimensional stock materials, by minimizing the number of used stock or trim loss is described as a cutting stock problem. In this work we consider two-dimensional two-stage guillotine cutting stock problems. Different metaheuristic and heuristic solution methods are used to solve the problem. We use biased random key based genetic algorithm and simulated annealing method. Also a mathematical model based heuristic solution approach is proposed. The proposed method solves the two-dimensional cutting stock problem in two phases. In first phase, we determine the demand list for each stock then in second phase we place each item. Solutions that are obtained by using different solution methods are compared.

Keyword(s): Cutting Problem, Metaheuristic, Genetic Algorithm.

Highly Oscillatory Integrals Encountering in Electrical Engineering

Mehmet Kurtoğlu[1], Ali İhsan Hasçelik[2], Dilan Kılıç Kurtoğlu[3]

[1] Electrical-Electronics Engineering, Gaziantep University, Turkey
[2] Mathematics, Gaziantep University, Turkey
[3] Mathematics, Gaziantep University, Turkey
E-mail(s):mkurtoglu@gantep.edu.tr, aihascelik@yahoo.com, dilankilic_89@hotmail.com

This study is related with the decomposition of linear ordinary differential equations as given in the following form encountering in electrical engineering.

$$y' = Ay + E(t)g(t), \quad t \geq 0, \quad y(0) = y_0 \in \mathbf{R}^d \tag{1}$$

where A is a $d\ x\ d$ matrix, g is a d vector of functions while E is a $d\ x\ d$ matrix function, $E_{k,l}(t) = \chi_{k,l} e^{\tau_{k,l} \sin \omega_{k,l} t}$, $k,l = 1,....,d$. Equations mentioned above can be simplified with nonlinearites approximated by linear terms. After simplification, the below integral that has highly oscillation and is often occured when analyzing scattering and diffraction of electromagnetic waves is obtained.

$$I[f] = \int_{-1}^{1} f(x) e^{\tau \sin \omega(\alpha x + \beta)} dx \tag{2}$$

where $\alpha, \beta \in \mathbf{R}$, $\tau \in C \setminus \{0\}$ and $\omega \gg 1$. The scattering and diffraction of electromagnetic waves has a significant role in antenna theory, fiber optics, radars and radio frequency (RF) communication systems. Any scattering problem can be characteristically modeled with the help of a wave equation. There are several techniques to compute the highly oscillatory integrals that occur in this field. These are Levin method, Filon type approach, asymptotic and steepest descent method. In this study, steepest descent technique which presents effective and stable solution will be applied to the integrals of the form (2) arising in electrical engineering.

Keyword(s): Highly oscillatory integrals, electrical engineering, scattering and diffraction, electromagnetic waves.

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Homotopies of Crossed Complex Morphisms of R-algebroids

Osman Avcıoğlu[1], İbrahim İlker Akça[2]

[1] Department of Mathematics, Usak University, Turkey.
[2] Department of Mathematics and Computer Sciences, Eskisehir Osmangazi University, Turkey.
E-mail(s):osman.avcioglu@usak.edu.tr, iakca@ogu.edu.tr

In this study, given two crossed complexes $\mathcal{M}$ and $\mathcal{N}$ of R-algebroids and a crossed complex morphism f from $\mathcal{M}$ to $\mathcal{N}$ we introduce an f-derivation as a sequence H of maps from $\mathcal{M}$ to $\mathcal{N}$ satisfying certain properties and see that f and H determine a crossed complex morphism g from $\mathcal{M}$ to $\mathcal{N}$. Then we call the pair $(\mathbf{H},\mathbf{f})$ a homotopy from f to g and show that for fixed crossed complexes $\mathcal{M}$ and $\mathcal{N}$ of R-algebroids the family of all homotopies between crossed complex morphisms from $\mathcal{M}$ to $\mathcal{N}$ has a groupoid structure with objects as crossed complex morphisms and morphisms as homotopies.

Keyword(s): Algebroid, crossed complex, homotopy, homotopies of crossed complex morphisms.

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Hybrid Taylor-Lucas matrix method for solving a neutral functional differential equation with constant coefficients and proportional delays

[1] Nurcan Baykuş Savaşaneril [2] Mehmet Sezer

[1] Izmir Vocational School, Dokuz Eylül University, Izmir, Turkey
[2] Celal Bayar University, Faculty of Science, Department of Mathematics, 45040, Manisa, Turkey
E-mail(s):[1] nurcan.savasaneril@deu.edu.tr ,[2] mehmet.sezer@cbu.edu.tr

In this study, a practical matrix method called Taylor-Lucas is presented to find the approximate solution of higher order neutral functional- differential equations with constant coefficients and proportional delays which play an important role in the mathematical modelling of real world phenomena. The solutions of them under the mixed conditions are obtained in terms of Lucas polynomials by means of Taylor polynomials. For this purpose, the used method reduces the solution of the neutral differential equation to the solution of a matrix equation which corresponds to a system of algebraic equations with Lucas coefficients. Besides, illustrative examples together with error analysis are given to show the efficiency and performance of the method; the results are compared with results of other methods.

Keyword(s): Lucas and Taylor polynomials, Neutral functional differential equations, Matrix method, Proportional delay.

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Improving The Monıtoring And Diagnosis Of Electrical Defects At Arcelor Mital Level

Hamaidi Brahim [1], Omeiri Hanane [2], Zerouali Bilal [3]

[1] Faculty of Engineering Department of Electromechanical, Electromechanical engineering laboratory ,University BADJI Mokhtar of Annaba – Algéria.
[2,] Faculty of Engineering Department of Electromechanical, Electromechanical engineering laboratory ,University BADJI Mokhtar of Annaba – Algéria.
[3] Faculty of Engineering Department of Electromechanical, Electromechanical engineering laboratory ,University BADJI Mokhtar of Annaba – Algéria.
E-mail(s): ham5615@yahoo.fr; hananeomeiriahoo.fr ; zeroualibilal@yahoo.fr

This method provides a structured approach based on risk identification to establish security requirements for safety instrumented systems (SIS). It aims to design and operation of the SIS in a reliable trust that meets these requirements.

The purpose of this work is to apply IEC 61508 approaches for the evaluation of safety barriers against the intervening pressure implemented on an electrical installation at Arcelor Mittal. Specifically, the risk graph and protection analysis layer (FPAA) approaches suggested in the IEC 61508 standard for determining security requirements are illustrated. In addition, it is shown that the use of more sophisticated approaches to reliability,such as fault tree and graphical Markov, may be necessary for effective risk assessment process. In fact,theseapproaches allow considering configuration and actual operating conditions of the system studied.

Keyword(s): Evaluation , systems (SIS), identification, IEC 61508, graphical Markov.

Influence of the solicitation mode on the mechanical behavior of hot-rolled sheets

M. L Fares[1], Chahaoui[2], N. Brinis[2], B. Regaiguia[1]

[1] Metallurgy and Engineering Materials, Badji-Mokhtar University of Annaba, Annaba, Algeria
[2] Engineering and Advanced Materials Science Laboratory, Abbes-Laghrour University of khenchela, Algeria
E-mail(s): fareslamine@yahoo.fr

The goal of the present work was to investigate the plastic anisotropy of hot-rolled sheet (or cold) intended for stamping/drawing. For this purpose, two main criteria, namely Hills' quadratic criterion-1948 and Hill's non-quadratic criterion-1979, both formulated through three stress states, were used. A comparative study of these two criteria via four kinds of a logical characterization (i.e. uniaxial, orthogonal, equi-biaxial and plane tensile tests) was undertaken to determine the corresponding sensitivities with respect to the change of both the sample geometry and solicitation directions. The results relating to these tests formed the basis for predicting the overall mechanical anisotropy of the material that allows deriving the corresponding mechanical characteristics. Hill's criterion-1979 has showed the best agreement with the experimental testing.

Keyword(s): Plastic anisotropy, Quadratic and non-quadratic Hill's criterion, Mechanical modelling, Mechanical behaviour.

Initial Time Difference Boundedness Criteris of Fuzzy Systems Related to Unperturbed Systems

Coşkun Yakar

Faculty of Basic Sciences Department of Mathematics Gebze Technical University (Gebze, Kocaeli, Turkey)
E-mail(s):cyakar@gtu.edu.tr

We have investigated the boundedness criteria of a perturbed fuzzy differential system that differs in initial position and initial time with respect to the unperturbed fuzzy differential system. We present a comparison results which again gives the null solution a central role in the comparison fuzzy differential system when establishing initial time difference boundedness properties of the perturbed fuzzy differential system with respect to the unperturbed fuzzy system when initial datas are different in time and in positions.

Keyword(s): fuzzy systems, perturbed differential systems, initial time difference, boundedness.

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Initial Time Difference Stability of Fuzzy Systems Related to Unperturbed Systems

Coşkun Yakar

Faculty of Basic Sciences Department of Mathematics, Gebze Technical University, (Gebze, Kocaeli, Turkey)
E-mail(s):cyakar@gtu.edu.tr

We have investigated the stability criteria of a perturbed fuzzy differential system that differs in initial position and initial time with respect to the unperturbed fuzzy differential system. We present a comparison result which again gives the null solution a central role in the comparison fuzzy differential system when establishing initial time difference stability of the perturbed fuzzy differential system with respect to the unperturbed fuzzy system.

Keyword(s): fuzzy systems, perturbed differential systems, initial time difference, stability.

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Interpolation functions of the k-ary Lyndon words including Lerch-zeta type functions

Irem Kucukoglu[1], Yilmaz Simsek[2]

[1]Antalya AKEV University Faculty of Engineering&Architecture Department of Software Engineering Antalya, Turkey
[2]Akdeniz University Faculty of Science Department of Mathematics Antalya, Turkey
E-mail(s):i.kucukoglu@akev.edu.tr, ysimsek@akdeniz.edu.tr

In this talk, we investigate and introduce relations between the numbers of the k-ary Lyndon words and unified zeta-type functions which related to the Lerch-zeta type functions. We modify generating functions for the k-ary Lyndon words. We give numerical evaluations related to approximation of these modification. Moreover, we also give many applications with plots of these modification of generating funtions and zeta functions.

Keyword(s): Generating functions, Special numbers and functions, Lerch-zeta type functions.

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Intuitionistic Fuzzy Soft Γ- Semigroups

Serkan Onar[1]and Bayram Ali Ersoy[2]

[1]Department ofMathematics, Yildiz TechnicalUniversity,DavutpasaCampus, Istanbul, Turkey,
[2,]Department ofMathematics, Yildiz TechnicalUniversity,DavutpasaCampus, Istanbul, Turkey
E-mail(s):serkan10ar@gmail.com , ersoya@gmail.com

The aim of this work is to apply of intuitionistic fuzzy soft sets over a Γ-semigroup. The concept of intuitionistic fuzzy soft ideals of Γ-semigroup has been examined. Union, intersection and product of intutionistic fuzzy soft ideals over a Γ- semigroup have been given and proved that these a real so intuitionistic fuzzy soft ideals over a Γ-semigroup. Some lattice structures of the set of all intuitionistic fuzzy soft ideals of Γ-semi group are derived. Furthermore, intuitionistic fuzzy soft image and intuitionistic fuzzy soft inverse image of intuitionistic fuzzy soft Γ-semi groups are introduced and their basic properties are investigated.

Keyword(s): Γ- Semigroups, Soft Γ- Semigroups, FuzzySoft Γ- Semigroups.

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Investigation of Solitons in Optical Metamaterials with Quadratic-Cubic Nonlinearity

Mehmet Ekici [1]

[1] Department of Mathematics, Bozok University, Yozgat, Turkey
E-mail(s):ekici-m@hotmail.com

The dynamics of solitons in optical metamaterials with quadratic-cubic nonlinearity is studied in this paper. An integration algorithm that is extended Jacobi's elliptic function expansion scheme is applied to obtain solutions in terms of elliptic functions. When the modulus of ellipticity approach zero or unity, these solutions approach shock waves or singular solitary waves or singular periodic solutions.

Keyword(s): Solitons, Metamaterials, Extended Jacobi's elliptic function expansion scheme.

Iterated Crossed Product of Cyclic Groups

Esra Kırmızı Çetinalp[1], Eylem Güzel Karpuz[2]

1Affiliation of Author 1(Department of Mathematics,Karamanoğlu Mehmetbey University, Karaman, Turkey),
2Affiliation of Author 1(Department of Mathematics,Karamanoğlu Mehmetbey University, Karaman, Turkey),
E-mail(s):esrakirmizi@kmu.edu.tr, eylem.guzel@kmu.edu.tr

Crossed product construction appears in different areas of algebra such as Lie algebras, C*-algebras and group theory. This product has also many applications in other fields of mathematics like group representation theory and topology. In this work, by considering crossed product construction from view of Combinatorial Group Theory, we define a generalization of this product. We call this new generalization as iterated crossed product of groups. By considering this new product, firstly, we give some conditions for this new product to be a group. Then we obtain a presentation for iterated crossed product of cyclic groups. Additionally, by using this presentation, we find a complete rewriting system and thus obtain normal form of elements which gives solvability of the word problem for this product.

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Keyword(s): Crossed Product, Rewriting Systems, Normal Form

Iterative Scheme forApproximating Fixed Points of Multivalued Nonexpansive Mappings

Makbule Kaplan

Faculty of Education, Sinop University, Turkey
E-mail(s):mkaplan@sinop.edu.tr

We introduce a new three-step iterative scheme to approximate a common fixed point of multi valued 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.

Keyword(s): Multi valued nonexpansive mapping, strong and weak convergence

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Jacobi Elliptic Solutions of NLSE with Anti-Cubic Nonlinearity

Ebru Cavlak Aslan[1], Mustafa Inc[2]

[1,2] Department of Mathematics, Firat University, Turkey
E-mail(s): ebrucavlak@hotmail.com, minc@firat.edu.tr

In this presentation, we study the Nonlinear Schrödinger equation with anti-cubic nonlinearity. The Jacobi elliptic functions are used to obtain the soliton solutions of the governing equation. As a result, dark and bright optical solitons are obtained and the necessary conditions for solitons to exist are founded. Numerical simulations are also given in each of these cases.

Keyword(s): Optical Soliton, Nonlinear Schrödinger Equation, Soliton.

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Kite graph is determined by its adjacency spectrum

Hatice Topcu[1], Sezer Sorgun[1]

[1]Department of Mathematics, Science and Art Faculty, Nevşehir Hacı Bektaş Veli University, Turkey
E-mail(s): haticekamittopcu@gmail.com, srgnrzs@gmail.com

The kite graph is obtained by appending a complete graph with p vertices to a pendant vertex of the path graph with q vertices. Topcu and Sorgun have shown that kite graph is determined by its adjacency spectrum for all p, when q=2 (2016, On the spectral characterization of kite graphs, Journal of Algebra, Combin. Disc. Struct. and Appl.). Then for the case q=1 and p+q≥4, Das and Liu have shown that kite graph is determined by its signless Laplacian spectrum when p+q≠5 and also determined by its distance spectrum (2017, Kite graphs determined by their spectra, Applied Math. and Comp.). In here, we will talk about the fact that the kite graph is actually determined by its adjacency spectrum for all p and q.

Keyword(s): kite graph, adjacency spectrum.

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Klein-Gordon Particles Scattering in Generalized Symmetric Woods-Saxon Potential in One Dimension

Bekir Can Lütfüoğlu

Faculty of Science, Department of Physics, Akdeniz University, Turkey
E-mail(s):bclutfuoglu@akdeniz.edu.tr

In this work the scattering of spinless relativistic particles are studied under the generalized symmetric Woods-Saxon potential that is consisted by vector and scalar parts. The solutions are discussed for two cases. Initially, the magnitudes of the vector and scalar parts of the potential are equal and then negatively equal to each other.

Keyword(s): Generalized symmetric Woods-Saxon potential, Klein-Gordon equation, transmission and reflection coefficients, resonance condition.

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Abstract Korovkin Theorems via Relative Modular Convergence for Double Sequences

Sevda Orhan[1], Kamil Demirci[2]

[1]Department of Mathematics Sinop University Sinop, Turkey,
[2]Department of Mathematics Sinop University Sinop, Turkey,
E-mail(s):sevdaorhan@sinop.edu.tr, kamild@sinop.edu.tr

We obtain an abstract version of the Korovkin type approximation theorems with respect to the concept of statistical relative convergence in modular spaces for double sequences of positive linear operators. We give an application showing that our results are stronger than classical ones. We also study an extension to non-positive operators.

Keyword(s): Statistical relative modular convergence, double sequence, abstract Korovkin theorem.

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Lacunary Statistical Convergence In Fuzzy Normed Linear Spaces

Muhammed Recai Türkmen [1], Muhammed Çinar [2]

[1,2] Department of Mathematics, Muş Alparslan University, Muş, Turkey
E-mail(s):mrtmath@gmail.com, muhammedcinar23@hotmail.com

In this paper, we introduce the concept of lacunary statistical convergence with respect to a fuzzy norm by using lacunary statistical convergence of a sequence and statistical convergent of a sequence with respect to fuzzy norm. We also have studied the relation between these concepts.

Keyword(s): Lacunary Statistical Convergence, Fuzzy Normed Linear Space, Summability

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Matrix Representations of Gauss Balancing and Gauss Cobalancing Numbers

Mustafa Ascı

Department of Mathematics, Pamukkale University, Denizli, Turkey
E-mail(s):masci@pau.edu.tr

In this paper we defined and studied the Gauss Balancing and Gauss Cobalancing numbers. We also give the relations between these numbers and Balancing and Cobalancing numbers. We give the matrix representations, Binet formulas, Cassini identities and determinantal representations of these numbers.

Keyword(s): Balancing Numbers, Cobalancing Numbers, Gauss Fibonacci Numbers.

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Matrix Representations of Split Octonions and Their Applications

Özcan Bektaş[1], Salim Yüce[2]

[1] Department of Mathematics, Recep Tayyip Erdogan University, Rize, Turkey,
[2] Department of Mathematics, Yildiz Technical University, Istanbul, Turkey
E-mail(s):ozcan.bektas@erdogan.edu.tr, sayuce@yildiz.edu.tr

In this paper, we firstly give the left and right 2×2 real quaternion matrix representations for the split type octonions (real or countercomplex octonions) which are written in the form $A = q + \overline{p}e$ or $A = q + pe$ where q and p are the real quaternions and $e^2 = +1$. Afterwards, we compute the left and right real coefficient matrix representations of the split type octonions (real or countercomplex octonions) by the help of real matrix representations for real quaternions. Finally, by using the left and right 2×2 real quaternion matrix representations for the split type octonions, we calculate the square of the matrix representations of the split type octonion $A = a_0 e_0 + \sum_{j=1}^{7} a_j e_j$. Moreover, the significative examples about the concept of the matrix representations for split type octonions are given

Keyword(s): Matrix representations, real quaternion, real octonion, split type octonion.

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Maximum Likelihood Parameter Estimation Method for Tumor Growth

Tugcem Partal[1], Mustafa Bayram[2]

[1] Department of Mathematical Engineering, Yildiz Technical University, Istanbul, Turkey
[2] Department of Computer Engineering, University of Gelisim, Istanbul, Turkey
E-mail(s): tpartal@yildiz.edu.tr, mbayram@gelisim.edu.tr,

In this paper, a Gompertzian stochastic model is introduced to describe the human breast cancer growth. The parameters value of the mathematical model are estimated via maximum likelihood estimation method. We apply stochastic Runge-Kutta scheme for solving the stochastic model numerically. The efficiency of mathematical model is quantify by comparing the simulated result and the clinical data of breast cancer growth.

Keyword(s): Stochastic Runge-Kutta scheme, Maximum likelihood estimation, Breast cancer,Tumour growth

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Convergence of the hybridizable discontinuous Galerkin method for two-point fractional boundary value problems

Mehmet Fatih Karaaslan[1]

Statistics, Yildiz Technical University, Turkey,
E-mail(s):mfatih@yildiz.edu.tr,

In this work, we examine the convergence of the hybridizable discontinuous Galerkin method (HDG) for two-point fractional boundary value problems. The reason why this method is used because it has a linear system with only unknown values at the boundary of the element interfaces and reduce computation cost unlike discontinuous Galerkin methods. The HDG methods characterize the exact solution in terms of solutions of local problems with transmission conditions. The local solvers are defined by a Galerkin method to weakly enforce the equations on each element. It is a key point to choose a suitable parameter to find an efficient approximation of the FBVPs. Some examples are given to illustrate the convergence of the HDG method for two--point FBVP with respect to L^2 - norm and Caputo fractional derivative.

Keyword(s): Hybridizable discontinuous Galerkin methods, fractional boundary value problem, stability parameter, Caputo derivative.

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Model Describing Biological Species Living Together on Financial Networks

Mehmet Ali Balcı[1], Ömer Akgüller[2], Sibel Paşalı Atmaca[3]

[1]Mathematics, Muğla Sıtkı Koçman University, Turkey
[2]Mathematics, Muğla Sıtkı Koçman University, Turkey
[3]Mathematics, Muğla Sıtkı Koçman University, Turkey
E-mail(s):mehmetalibalci@mu.edu.tr, oakguller@mu.edu.tr, sibela@mu.edu.tr

In real world problems, complex networks are one of the most efficient tool to represent agents in interaction. Recent studies show that models emerge from the mathematical biology or finance is also can be expressed in term of complex network concepts. One of those concepts is the graph theory. In this study, we first represent a financial network of companies interacting in Borsa Istanbul Stock Exchange as a simple undirected graph. Then, we analogously represent the model of biological species living together by considering the well-known a system of integro-differential equation. The model is expressed via the consistent graph theoretical concepts. Finally, we analyze the numerical solution of the model on the financial network.

Keyword(s): Complex Networks, Integro-Differential Equatios, Graph Theory, Financial Mathematics

Multiple soliton solutions of (3+1) dimensional Jimbo-Miwa equations

Emrullah Yaşar [1], Yakup Yıldırım[1]

[1] Department of Mathematics, Faculty of Arts and Sciences, Uludag University, 16059, Bursa, Turkey.
E-mail(s): eyasar@uludag.edu.tr, yakupyildirim110@gmail.com

In this work, we consider (3+1)-dimensional Jimbo-Miwa equations. We yield one-, two-, and three-wave solutions using multiple exp-function method for each models. We determine dispersion relation and phase shift for each case. The obtained solutions can be used as benchmark for numerical solutions and describe the physical phenomenas of the model.
Keyword(s): (3+1)-dimensional Jimbo--Miwa equations, Multiple exp-function method, Multiple wave solutions.

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Multiplication Difference Operators of Some Sequence Spaces

Ramazan Kama[1], Bilal Altay[2]

[1]Deparment of Mathematics, Siirt University, Turkey,
[2], Faculty of Education, İnönü University, Turkey.
E-mail(s):ra.kama12@gmail.com.tr, bilal.altay@inonu.edu.tr

In this study, we define multiplication difference operators between sequence spaces c and c_0. Also, we examine their properties such as boundedness, weakly compactness, completely continuousness and strictly singularities.

Keyword(s): Difference sequence spaces, weakly compactness, multiplication operators, boundedness.

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Multiplication Operators Between l_p Spaces

Ramazan Kama[1], Bilal Altay[2]

[1]Deparment of Mathematics, Siirt University, Turkey,
[2], Faculty of Education, İnönü University, Turkey.
E-mail(s):ra.kama12@gmail.com.tr, bilal.altay@inonu.edu.tr

In this paper, we study multiplication operators $M_\lambda(x) = (\lambda_n - \lambda_{n-1})x_n$ between spaces l_p $(1 \leq p < \infty)$ and furthermore, the sufficient and necessary condition that they are compact.

Keyword(s): Sequence spaces, compact operators, multiplication operators.

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Multiplicative Euler Methods for Multiplicative Heat Equation

Muhammet Yazıcı[1], Harun Selvitopi[2]

[1] Department of Mathematics, Karadeniz Technical University, Trabzon Turkey,
[2], Department of Mathematics, Erzurum Technical University, Erzurum Turkey,
E-mail(s): m.yazici@ktu.edu.tr, hselvitopi@gmail.com

In this contribution, we consider multiplicative calculus, defined by Grossman and Katz [1]. The multiplicative derivative of a function f at x

$$f^{*} = \lim_{h \to 0} \left(\frac{f(x+h)}{f(x)} \right)^{\frac{1}{h}}$$

is defined in [1]. We propose the explicit and implicit Euler methods in the multiplicative case for the numerical solution of the the multiplicative heat equation,

$$u_x^{*} = \Delta^{*} u$$

where $\Delta^{*} = \exp \circ \Delta \circ \ln$ represents the multiplicative Laplacian. We also show the truncation error estimation and the stability for these numerical methods.

Keyword(s): Finite differences, multiplicative calculus, partial differential equation.

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Multiplicative Crank-Nicolson Method for Multiplicative Heat Equation

Muhammet Yazıcı[1], Harun Selvitopi[2]

[1] Department of Mathematics, Karadeniz Technical University, Trabzon Turkey,
[2,] Department of Mathematics, Erzurum Technical University, Erzurum Turkey,
E-mail(s): m.yazici@ktu.edu.tr, hselvitopi@gmail.com

We use multiplicative calculus, defined by Grossman and Katz [1]. The basic operation for so-called the multiplicative derivative of a function f at x

$$\mathrm{f}^* = \lim_{\mathrm{h}\to 0}\left(\frac{\mathrm{f}(\mathrm{x}+\mathrm{h})}{\mathrm{f}(\mathrm{x})}\right)^{\frac{1}{\mathrm{h}}}$$

is defined in [1]. We propose the mutiplicative Crank-Nicolson method for the numerical solution of the the multiplicative heat equation,

$$\mathrm{u}_\mathrm{x}^* = \Delta^*\mathrm{u}$$

where the multiplicative Laplacian is defined as $\Delta^* = \exp\ \circ \Delta \circ \ln$. We show the truncation error estimation and stability of the method.

Keyword(s): Finite differences, multiplicative calculus, partial differential equation.

Reference(s):

1. M. Grossmann, R. Katz , Non-Newtonian calculus, Lee Press, Massachusetts, 1972 .
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Multiplicity Results for Four Point Fractional Value Problems

Şerife Müge Ege[1], Fatma Serap Topal[2]

[1,2] Department of Mathematics, Faculty of Science, EgeUniversity, Turkey,
E-mail(s):serife.muge.ege@ege.edu.tr, f.serap.topal@ege.edu.tr

In this study, the multiplicity results of positive solutions for the four point boundary value problems of nonlinear fractional differential equations are given. Our results extend some recent works in the literature.

Keywords: Fractional boundary value problem, positive solutions, fixed point theorems.

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Multi-Vague Sets And It's Some Properties

A. Arzu Arı[1], Halis Aygün[2]

[1] Kocaeli University Education Faculty
[2] Kocaeli University Faculty of Science and Literature
E-mail(s): abural@kocaeli.edu.tr, halis@kocaeli.edu.tr

Zadeh proposed fuzzy theory in 1965. Then, there have been a great amount of research and applications concerning some special sets like L-fuzzy sets, type-2 fuzzy sets, rough set theory, intuitionistic fuzzy set theory, grey sets, vague set theory, interval valued fuzzy sets and multi-fuzzy sets etc. in the literature.

A fuzzy set is a class of objects that satisfy a certain property. Each object has a membership degree of a fuzzy set. Gau and Buehrer proposed the concept of vague set in 1993, by replacing the value of an element in a set with a sub-interval of [0,1]. The vague set theory improves description of the objective real world, becoming a promising tool to deal with inexact, uncertain or vague knowledge. Many researchers have applies this theory to many situations and the tool has presented more challenging than that with fuzzy sets theory in applications.

A complete account of the development of multi-set theory has been seen in 1989. As a generalization of multi-set, Yager introduced the concept of multi-fuzzy set. An element of a multi-fuzzy set can occur more than once with possibly the same or different membership values. Multi-fuzzy set theory is an extension of theories of fuzzy sets, L-fuzzy sets and intuitionistic fuzzy sets.

In this paper we discuss the concept of multi-vague sets and its properties. The purpose of this paper is introduce the concept of multi-vague set by combining the multi-fuzzy sets and vague sets and we study on it's some operations.

Keyword(s): Fuzzy Sets, Vague Sets, Multi-fuzzy Sets, Multi-Vague Sets

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Multi-Vague Sets' Application to Multi-Criteria Decision Making Problems

A. Arzu Arı[1], Halis Aygün[2]

[1] Kocaeli University Education Faculty
[2] Kocaeli University Faculty of Science and Literature
E-mail(s): abural@kocaeli.edu.tr, halis@kocaeli.edu.tr

Decision-making is the process of finding the best option from all of the feasible alternatives. Sometimes, decision-making problems considering several criteria are called multi-criteria decision-making problems. The multi-criteria decision-making problems may be divided into two kinds. One is the classical multi-criteria decision-making problems, among which the ratings and the weights of criteria are measured in crisp numbers. Another is the fuzzy multiple criteria decision-making problems, among which the ratings and the weights of criteria evaluated on imprecision and vagueness are usually expressed by linguistic terms, fuzzy numbers or intuition fuzzy numbers. The theory of fuzzy sets, proposed by Zadeh in 1965, has been used for handling fuzzy decision-making problems. Kickert has discussed the field of fuzzy multicriteria decision making. Zimmermann illustrated a fuzzy set approach to multi-objective decision making, comparing it with other approaches to solve multi-attributive decision making problems based on fuzzy set theory. Vague sets, proposed by Gau and Buehrer in 1993, are a generalized form of fuzzy sets. The vague sets have been successfully applied into edge detection, image segmentation, fuzzy decision making, fault-tree analysis, pattern recognition, and so on. In 1986, Yager introduced the concept of multi-fuzzy set. An element of a multi-fuzzy set can occur more than once with possibly the same or different membership values. Multi-fuzzy set theory is an extension of theories of fuzzy sets, L-fuzzy sets and intuitionistic fuzzy sets.

The purpose of this paper is to give an algorithm using multi-vague sets to analyzed multi-criteria decision making problem. Furthermore we give a numerical illustration to explain the proposed algorithm.

Keyword(s): Vague Sets, Multi-fuzzy Sets, Multi-Vague Sets, Multicriteria Decision Making.

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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Multiple Wavelet Coherence (MWC) of Energy Commodities and Vector Autoregressive Moving Average (VARMA) Forecasting

Murat Gencer[1], Gazanfer Ünal[2],

[1]Financial EconomicsDoctorate (YeditepeUniversity, Turkey),
[2]Financial EconomicsDoctorate (YeditepeUniversity, Turkey),
E-mail(s): genmuratcer@gmail.com, gazanferunal@gmail.com

The assessment of co-movement among energy commodities is crucial to better understand the behaviors of their prices and the interactions with others. This paper mainly investigates a Multiple WaveletCoherence (MWC) Analysis and obtains the mostsuitable time interval and scales for crudeoil, heatingoil, gasoline and natural gas. Then, based on the MWC findings, Vector ARMA model sare utilized in order to show if its forecasting capability is better than the univariate ARMA modelsor not. It is shown that dynamic co-movement detection via four variables' wavelet coherency analysis in the determination of VARMA time interval enables to improve forecasting power of ARMA for the petroleum products but not for the natural gas.

Keyword(s): Waveletcoherence; AutoregressiveMovingAverage (ARMA); VectorAutoregressiveMovingAverage (VARMA); MultipleWaveletCoherence (MWC)

New Results on Discontinuity at Fixed Point

Nihal Taş[1], Nihal Yılmaz Özgür[2]

[1]Mathematics, Balıkesir University, Turkey
[2]Mathematics, Balıkesir University, Turkey
E-mail(s):nihaltas@balikesir.edu.tr, nihal@balikesir.edu.tr

Real-valued neural Networks with discontinuous activation functions have been a great importance in practice and extensively studied using different aspects. In this talk, we give some results for discontinuity at fixed point on a metric space. Also we study an application of obtained results to discontinuous activation functions.

Keyword(s): Discontinuity, activationfunction, metric space.

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Non-Existence Of Doubly Warped Semi-Invariant Submanifolds Of A Locally Product Riemannian Manifold

Hakan Mete Taştan[1], Sibel Gerdan[2]

[1] Mathematics, İstanbul University, Turkey
[2,] Mathematics, İstanbul University, Turkey
E-mails: hakmete@istanbul.edu.tr, sibel.gerdan@istanbul.edu.tr

We prove that there are no doubly warped and doubly twisted product semi-invariant submanifolds of locally product Riemannian manifolds.

Keyword(s): Doubly warped product, Doubly twisted product, semi-invariant submanifold, locally product Riemannian manifold

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Numerical analysis of prey and predator problems of fractional order

Cemil Tunç[1], Amjad Ali[2], Kamal Shah[2] and Rahmat Ali Khan[2]

[1]Mathematics, Yuzuncu Yil University, Van – Turkey
[2]Mathematics, University of Malakand, Pakistan
E-mail(s):cemtunc@yahoo.com, amjadalimna@yahoo.com, kamalshah408@gmail.com, rahmat_alipk@yahoo.com

In this article, we study nonlinear fractional order Lotka-Voltera prey predator model. We use Laplace transform coupled with Adomian decomposition method and develop a suitable technique for solutions of the proposed model. We compare our results with the results obtained via other available techniques such as variation iteration method (VIM) and homotopy perturbation method (HPM) and (RK4) method. For numerical results, we use Maple-16.

Keyword(s): Numerical analysis; prey model; predator model; fractional order

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Numerical Approximation for an Axisymmetric Brinkman Exterior Problem

R.H. Bellout

Faculté des Mathématiques, Universitè des Sciences et Technologie Houari Boumediène, Algéria
E-mail(s):rbellout@usthb.dz

The Brinkman equations describe the flow of a viscous fluid in cavity and porous media. It was initially proposed as a homogenization technique for the Navier-Stokes equations. Typical applications of this model are in underground water hydrology, petroleum industry, automotive industry, biomedical, engineering, and heat pipes modeling.

This study is concerned with the numerical approximation of the axisymmetric Brinkman problem flow in three dimensional exterior domains with the infinite element method for the numerical approximation instead of the usual boundary element methods which have been extensively used for the exterior problems. Most approaches for the interior problems can not be applied to the exterior problems directly. There are two kinds of approaches to deal with the exterior problems: to truncate the domain, or to solve the problem directly on the infinite domain. The former ones are: the introducing of artificial boundary conditions, and the introducing of perfectly matched layers. The later ones are: the infinite element method, and the spectral method. While in the boundary element method both approaches are applied, depending on the degree of complexity of the domains.

The aim of this communication is to expose an infinite element method proposed by Ying [1], based on transfer matrices which does not require hypothesis on the exact solution behavior and to apply it to a Brinkman flow problem. We have confirmed the numerical results obtained by Fang and Liao [2] in the case of the Stokes problem and observed that the infinite element method works also well for the Brinkman problem.

Keyword(s): Brinkman problem, Infinite Element, Exterior problems.

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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Numerical Simulation of Advection-Dispersion Equation Using Localized Differential Quadrature Method

Gurhan Gurarslan[1], Yasin Yılmaz[2], Ersin Bahar[1]

[1]Department of Civil Engineering, Pamukkale University, Turkey
[2]Department of Mechanical Engineering, Pamukkale University, Turkey
E-mail(s): gurarslan@pau.edu.tr, yyilmaz@pau.edu.tr, ebahar@pau.edu.tr

Although being simultaneous processes, advection and dispersion processes do mass transportation in quite different ways. While advection process takes place in the flow direction, dispersion process takes place both in the flow direction and opposite to flow direction. The existence of hyperbolic (advection) and parabolic (dispersion) terms in the advection-dispersion equation brings some difficulties in the numerical solution of the problem. In the case classical finite difference and finite element methods are used in the numerical solution of the advection-dispersion equation, one encounters two important disadvantages called numerical dispersion and artificial oscillation. In the concept of the present study, the effectiveness of Localized Differential Quadrature Method is investigated to overcome the aforementioned difficulties in the numerical solution of the problem. The results obtained using the proposed method is compared to the analytical and numerical results available in the literature.

Keyword(s): Advection-Dispersion Equation, Crank-Nicolson Scheme, Differential Quadrature Method.

Numerical Solutions for Nonlinear Advection Problems by Chebyshev Differential Quadrature

Gülsemay Yiğit

Department of Basic Sciences, Istanbul Kemerburgaz University, Turkey
E-mail(s):gulsemay.yigit@kemerburgaz.edu.tr

In this study nonlinear advection problems are examined by a numerical approach, the differential quadrature. Here, the main idea is using Chebyshev polynomials to acquire the weighting coefficient matrix which is necessary to get numerical results. All results are shown in tables and also comparison between numerical and the solutions already existed in literature, shows the accuracy and efficiency of the presented method.

Keyword(s): Advection problems, The differential quadrature, Chebyshev polynomials.

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Numerical Solutions of the Gardner Equation via Quintic Trigonometric B-Spline Collocation Method

Ozlem Ersoy Hepson[1]

[1]Mathematics & Computer, Eskişehir Osmangazi University, Turkey
E-mail(s):ozersoy@ogu.edu.tr

The main purpose of this paper is to get the numerical solutions of the Gardner equation which are widely used in various disciplines. For this purpose, the time integration of the system is achieved by the classical Crank-Nicolson method owing to its large stability region. Space discretization is done by using the trigonometric quintic B-spline functions. Thus the Gardner equation turns into a penta diagonoal matrix equation and the Thomas algorithm is applied.

Keyword(s): Trigonometric quintic B-spline, collocation, solitary wave.

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On A Construction Of Codes Over Term Rank Metric Spaces

Sümeyra Bedir[1], Bayram Ali Ersoy[2]

[1]Mathematics, Yıldız Technical University, Turkey
[2]Assoc. Prof., Mathematics, Yıldız Technical University, Turkey
E-mail(s):sbedir@yildiz.edu.tr, ersoya@yildiz.edu.tr

The vector space of mxn matrices over a fixed finite field F, become a metric space with the term rank metric. The term rank weight of a given mxn matrix is the minimum size of a set of rows/columns which contains all nonzero entries. The term rank distance of two mxn matrices A and B is the term rank weight of A-B.

Codes over term rank metric spaces are considered as vector subspaces. These codes have applications in information transmission via memoryless matrix channels which appear in data storage systems, memory cards and some wireless communication systems. This study introduces a pseudo-cyclic construction for codes over term rank metric spaces which will serve as an analogue to the usual vectoral construction of generalized cyclic codes over vector spaces. We also reveal a method to compute the term rank distance of a code using some packages within the computer programming language Python.

Keyword(s): Linear Codes, Term Rank Metric

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On A Generalization of Prime Ideals

Ortaç Öneş[1], Mustafa Alkan[2]

[1] Mathematics, Akdeniz University, Turkey,
[2] Mathematics, Akdeniz University, Turkey.
E-mail(s):ortacns@gmail.com, alkan@akdeniz.edu.tr

In this study, we focus on a generalization of prime ideal in a noncommutative ring, which is called a one-sided prime ideal. We also point out the differences between one-sided prime ideals and their commutative counterparts. We prove that any one-sided ideal in a ring R satisfying ascending chain condition on one-sided radical ideals is the intersection of a finite number of the one-sided prime ideals.

Keyword(s): Prime Ideal, One-Sided Prime Ideal, Strongly Nilpotent Element.

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On A Generalization of Prime Submodules

Ortaç Öneş[1], Mustafa Alkan[2]

[1] Mathematics, Akdeniz University, Turkey,
[2] Mathematics, Akdeniz University, Turkey.
E-mail(s):ortacns@gmail.com, alkan@akdeniz.edu.tr

This study is mainly devoted to one-sided prime submodules, which are not only the module version of one-sided prime ideals but also a generalization of prime submodules. The property that when a submodule P becomes prime in case (P:M) is prime ideal, which is known not to hold in general, is of central importance in the prime module theory, but it is proved that there is a direct connection between one-sided prime ideals and one-sided prime submodules. We also investigate the relationships between the intersection of all one-sided prime submodules and strongly nilpotent elements of a module.

Keyword(s): Strongly Nilpotent Element, Prime Submodule, One-Sided Prime Submodule.

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On a special open map

Erdal Ekici [1], Ozan Beycan [2]

[1]Department of Mathematics, Canakkale Onsekiz Mart University, Terzioglu Campus, Canakkale, Turkey
[2]Department of Mathematics, Canakkale Onsekiz Mart University, Terzioglu Campus, Canakkale, Turkey
E-mail(s): eekici@comu.edu.tr (prof.dr.erdalekici@gmail.com)

The problems of inverse image and image of the sets in topological structures by a map were observed in many topological papers. So, open maps and the maps like open are included in these observations. The goal of this paper is to study a special open map. The relations of this special open maps are observed.

Keyword(s): open map, special map, topology.

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On Anti-Invariant Submersions Whose Total Manifolds Are Cosymplectic

Hakan Mete Taştan[1], Sibel Gerdan[2]

1. Mathematics, İstanbul University, Turkey
[2,] Mathematics, İstanbul University, Turkey
E-mail(s):hakmete@istanbul.edu.tr, sibel.gerdan@istanbul.edu.tr

We consider anti-invariant submersions from cosymplectic manifolds onto Riemannian manifolds in case of Reeb vector field is horizontal. We investigate new Clairaut conditions for such submersions. We also give a charecterization for this kind of submersions.

Keyword(s): Riemannian submersion, Anti-invariant submersion, Clairaut submersion, Cosymplectic manifold.

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On applications of the double L22 -transform

Neşe Dernek[1], Fatih Aylıkcı[2]

[1,] Mathematics, Marmara University, Turkey),
[2,] Mathematical Engineering, Yildiz Technical University, Turkey
E-mail(s):ndernek@marmara.edu.tr, faylikci@yildiz.edu.tr

In the present paper, several main theorems dealing with properties of the L22–integral transform are proved. The authors aim to expand the applicability of the generalized L22–transform to partial differential equations with non-constant coefficients. Following the main theorems, some descriptive examples are given.

Keyword(s): Laplace transform, Double Laplace transform, Convolution, Partial differential equations

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On approximation to complex matrix valued functions by utilizing generalized Q holomorphic functions

Yeşim Sağlam Özkan [1], Sezayi Hızlıyel[2]

[1] Department of Mathematics,Uludag University, Turkey
[2] Department of Mathematics,Uludag University, Turkey
E-mail(s): ysaglam@uludag.edu.tr, hizliyel@uludag.edu.tr

The aim of this study is to show that there exist linear generalized Q-holomorphic functions such that using this functions, one can approximate to complex matrix valued continuous function as application of Weierstrass-Stone approximations.

Keyword(s): Beltrami systems, Generalized Q-holomorphic functions.

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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On boundedness and stability of solutions of nonlinear fourth order certain differential equations with bounded delay

Erdal Korkmaz

Department of Mathematics, Mus Alparslan University, Turkey
E-mail(s): korkmazerdal36@hotmail.com

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.

Keyword(s): Stability, boundedness, Lyapunov functional, delay differential equations.

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On complex quaternion and complex split quaternion matrices

Gözde Özyurt[1], Yasemin Alagöz[2]

[1]Mathematics, Yildiz Technical University, Turkey,
[2] Mathematics, Yildiz Technical University, Turkey
E-mail(s):gozdeozyurt1@gmail.com, ygulluk@yildiz.edu.tr

In this study, we express complex split quaternions in the form of 2x2 complex matrix by using basis elements in complex matrix form. Moreover, we give some properties of 2x2 matrix form of complex quaternions and complex split quaternions. In addition, we present a method to find the determinant of the quaternions above.

Keyword(s): Complex quaternion matrix, complex split quaternion matrix.

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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On computerized bone age estimation studies

Harun Çelik[1]

[1]Department of Aircraft Electrics and Electronics, Erciyes University, 38039, Kayseri, Turkey.
E-mail(s):haruncelik@erciyes.edu.tr

Bone age estimation has been studied for around sixty years, especially in forensic sciences and pediatric radiology. In addition, with emerging technologies, particularly during the last quarter century, computerized methods have been also examined by researchers such as biomedical engineers. These researchers have investigated various computerized methods instead of classical methods to estimate bone age. Since classical methods are based on view of an expert whose opinion may reduce the accuracy of estimation, computerized methods becomes very common due to their guarantee of accuracy. In this proceeding, computerized bone age estimation methods in literature are reviewed, and each one is compared with the others. Finally, computerized methods are categorized into five groups based on applied techniques and interests of region in hand-wrist radiographs.

Keyword(s): Bone age, computerized methods, estimation.

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On congruences involving special numbers

Sibel Koparal[1], Neşe Ömür[2]

[1,2] Mathematics, Kocaeli University, Turkey,
E-mail(s):sibel.koparal@kocaeli.edu.tr, neseomur@ kocaeli.edu.tr

In this study, using some special numbers and combinatorial identities, we show some interesting congruences: for a prime $p>3$,

$$\sum_{k=0}^{(p-1)/2} \frac{C_k}{9^k(k+1)} \equiv \frac{2^{p-1}}{p}\left(\frac{L_{2p}}{3^{p-2}}-9\right)-5\left(\frac{5}{p}\right)+9 \pmod{p}$$

and

$$\sum_{k=0}^{(p-1)/2} \binom{2k}{k} \frac{F_k}{4^k(2k+1)} \equiv \frac{1}{2p}\left(F_{(1-3p)/2}-F_{(1+3p)/2}\right) \pmod{p^2},$$

where C_n, F_n and L_n are the nth Catalan number, the nth Fibonacci number and the nth Lucas number, respectively. $\left(\frac{\cdot}{p}\right)$ denotes the Legendre symbol.

Keyword(s): Central binomial coefficients, congruences, Fibonacci numbers, Pell numbers.

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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On Conharmonic Curvature Tensor of Lorentzian α-Sasakian Manifolds

Nesrin Caliskan[1], Ayşe Funda Sağlamer[2]

[1]Department of Science and Mathematics Education, Faculty of Education, Usak University, 64200, Usak-TURKEY
[2]Department of Mathematics, Faculty of Art and Sciences, Dumlupinar University, 43100, Kutahya-TURKEY
E-mail(s): nesrin.caliskan@usak.edu.tr, aysefunda.yaliniz@dpu.edu.tr

In this study, conharmonic curvature tensor of Lorentzian α-Sasakian manifolds is characterized and some structure theorems are discussed.

Keyword(s): Conharmonic curvature tensor, conharmonically flatness.

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On Continued Fractions Arising From the Normalizer

Nazlı Yazıcı Gözütok[1], Bahadır Özgür Güler[2]

[1]Department of Mathematics, Karadeniz Technical University, Turkey
[2]Department of Mathematics, Karadeniz Technical University, Turkey
E-mail(s):nazliyazici@ktu.edu.tr, boguler@ktu.edu.tr

The search for the distribution of prime numbers is one of the most dynamic topics of the number theory. An important paper concerning this topic was Riemann's "On the Number of Primes Less Than a Given Magnitude". Riemann introduced new ideas into the subject, the main idea is that the distribution of prime numbers is intimately connected with the zeros of the analytically extended Riemann zeta function of a complex variable. In particular, it is in this paper of Riemann that the idea to apply methods of complex analysis to the study of the real function. Therefore, the Riemann-zeta function has become an important research topic both at the intersection of complex analysis, the theory of functions and the theory of numbers. Another important complex function of such importance is the modular form. A modular form is a (complex) analytic function on the upper half-plane satisfying a certain kind of functional equation with respect to the group action of the modular group, and also satisfying a growth condition. The theory of modular forms therefore belongs to complex analysis but the main importance of the theory has traditionally been in its connections with number theory. From this point of view, to collect new results about on properties of the group action of modular groups it is aimed to examine the relation between the paths in graphs arising from the imprimitive action of the normalizer and the continued fractions in this study.

Keyword(s): Modular groups, continued fractions, graph.

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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On Convergence and Continuity in Fuzzy Metric Spaces

Ebru Aydoğdu [1], Abdulkadir Aygünoğlu [1], Halis Aygün [1]

[1] Mathematics, Kocaeli University, Turkey,
E-mail(s):ebru.diyarbakirli@kocaeli.edu.tr, abdulkadir.aygunoglu@kocaeli.edu.tr, halis@kocaeli.edu.tr

The notion of s-convergent sequence was recently introduced by V.Gregori, J. J. Minana and S.Morillas (Iranian Journal of Fuzzy Systems, 2014) in order to caracterize fuzzy metric spaces in which convergent sequences are s-convergent.

In this study we discuss several properties of s-convergence. We give definitions of s-uniformly convergence and s-continious mapping. Then we show that every s-uniformly convergent function sequence is convergent to a function which is s-continious. Further we define s-sequential continuity and prove that s-sequential continious congruent to s-continious.

We define ε-convergent sequence and we give relation between convergent sequence and ε-convergent sequence. Then we define the notions of ε-continuity of mapping and we introduce and study some concepts related to ε-continious mapping

Keyword(s): fuzzy metric space, s-continious, ε-continious, ε-convergence.

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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On Discontinuous Fractional Sturm-Liouville Problems

Zülfigar Akdoğan[1] ,Ali Yakar[1]

[1] Department of Mathematics, Gaziosmanpasa University, Turkey,
E-mail(s):ali.yakar@gop.edu.tr, zulfigar.akdogan@gop.edu.tr

The main aim of this study is to extend some results of the fractional Sturm- Liouville problems to the case of discontinuous fractional Sturm-Liouville problems. Namely, we shall investigate the discontinuous fractional Sturm-Liouville problem with the transmition conditions. The fractional derivates are taken both in Rieman-Liouville and Caputo Sense.

Keyword(s): Sturm-Liouville Theory, Fractional Boundary Conditions, Fractional Transmission Conditions.

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On Distribution Of A Boundary Functional Of Semi-Markov Random Walk Process With Two Delaying Barriers

Selahattin Maden[1], Bahar G. Shamilova[2]

[1] Department of Mathematics, Faculty of Arts and Sciences, Ordu University, 52200, Ordu, Turkey.
[2] Department of Applied Mathematics and Cybernetics, Baku State University, AZ1148, Baku, Azerbaijan.
E-mail(s):maden55@mynet.com, bahar-shamilova@rambler.ru

In this study, a step process of semi-Markov random walk with delaying barriers at $0-$ and $\beta-$ levels ($\beta > 0$) and first falling moment of the process into the delaying barrier at zero-level, (γ), are mathematically constructed, in this case when the random walk happens according to the Laplace distribution $L(1^{-};1^{+})$. It is given a simple form of the Laplace transformation of the distribution of random variable γ. Also the simple formulas for expectation and variance of random variable γ are obtained by the means of this Laplace transformation.

Keyword(s): Semi-Markov random walk process, Laplace distribution, delaying barrier, expected value, variance.

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On Fibonacci bicomplex numbers with Fibonacci and Lucas Number Components

Faik Babadağ

Kırıkkale University, Art & Science Faculty,Turkey
E-mail(s): faik.babadag@kku.edu.tr

In this present paper, by using the well-known identities related to the Fibonacci and Lucas numbers to obtain the relations between a new generation of the Fibonacci bicomplex number we present a detailed study of the Fibonacci bicomplex number with Fibonacci and Lucas number components. We define new vector which are called Fibonacci bicomplex vector with vectorial part of the Fibonacci bicomplex number Xn and by using Fibonacci bicomplex vector, we give some applications on Fibonacci bicomplex number and Fibonacci bicomplex vector.

We give some formulas, facts and properties about Fibonacci and Lucas bicomplex numbers and variety of geometric and algebraic properties that are obtained with Fibonacci bicomplex numbers with Fibonacci and Lucas number components, which are not generally known.

Keyword(s): Fibonacci bicomplex numbers, Fibonacci numbers and Lucas numbers, Fibonacci vector.

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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On Flat Covers of Modules

Yılmaz Mehmet Demirci

Department of Mathematics, Sinop University, Sinop/TURKEY
E-mail(s):ymdemirci@sinop.edu.tr

We introduce a flat strong cover (a flat strong δ-cover resp.) of a module as a flat cover which is also a flat B-cover (a flat δ-cover). It turns out that flat strong covers and flat strong δ-covers of modules are of use in characterizing right A-perfect rings, right B-perfect rings and right perfect rings in which certain classes of flat modules are projective.

Keyword(s): flat strong cover, flat strong δ-cover, perfect ring.

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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On Fuzzy Subspaces of Fuzzy n-Dimensional Projective Space

Ziya Akça [1], Süheyla Ekmekçi [2], Ayşe Bayar [3]

[1]Department of Mathematics-Computer, Eskişehir Osmangazi University, Turkey,
[2]Department of Mathematics-Computer, Eskişehir Osmangazi University, Turkey
[3] Department of Mathematics-Computer, Eskişehir Osmangazi University, Turkey
E-mail(s):zakca@ogu.edu.tr, sekmekci @ ogu.edu.tr, akorkmaz @ ogu.edu.tr

In this paper, we construct fuzzy subgeometries in a fuzzy vector space as defined in [5]. We give classifications of fuzzy vector planes of fuzzy (n + 1)-dimensional vector space and fuzzy projective lines of fuzzy n-dimensional projective space from fuzzy (n+1)-dimensional vector space.

Keyword(s): Fuzzy Vector Space, Fuzzy Projective Space

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On Generalizations Related To The Left Side Of Fejer's Inequality Via Fractional Integral Operator

Erhan Set[1], Barış Çelik[1]

[1]Department of Mathematics, Faculty of Science and Arts, Ordu University, Turkey
E-mail(s):erhanset@yahoo.com, bariscelik15@hotmail.com

In the paper, firstly, a new fractional integral identity is obtained. Then, some new results related to the left side of Fejér's inequality for differentiable mappings whose derivatives in absolute value are convex via fractional integral operator, using this identity with fundamental inequalities such as Hölder's integral inequality, power-mean inequality and triangle inequality for integral, are presented. The results presented here would provide extensions of those proved in [12].

Keyword(s): Hermite-Hadamard-Fejér inequality, convex function, Hölder inequality, fractional integral operator.

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On Generalized Fibonacci and Lucas Polynomials

Sümeyra Uçar[1]

[1]Mathematics, Balikesir University, Turkey
E-mail(s):sumeyraucar@balikesir.edu.tr

We give some properties of generalized Fibonacci and Lucas polynomials using matrices and Laplace expansion. Additionally, we generalize the family of tridiagonal matrices to a subsequence of generalized Fibonacci and Lucas polynomials which is a family of tridiagonal matrices whose successive determinants are given by that polynomials.

Keyword(s): Generalized Fibonacci polynomials, generalized Lucas polynomials.

INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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On generators of Peiffer ideal of a pre-R-algebroid in a precrossed module and applications

Osman Avcıoğlu[1], İbrahim İlker Akça[2]

[1] Department of Mathematics, Usak University, Turkey.
[2] Department of Mathematics and Computer Sciences, Eskisehir Osmangazi University, Turkey.
E-mail(s):osman.avcioglu@usak.edu.tr, iakca@ogu.edu.tr

In this study, firstly we analyse the generators of the Peiffer ideal $[[\mathrm{M},\mathrm{M}]]$ of a pre-R-algebroid M in a precrossed module $\mathcal{M}=(\mu:\mathrm{M}\to\mathrm{A})$ in terms of the generators of M, for further using. Then we use the outcomes in order to find the generators of the Peiffer ideals of the free product pre-R-algebroid and the semidirect product pre-R-algebroid of the related precrossed modules obtained in the coproduct constructions of two crossed A-modules of R-algebroids.

Keyword(s): Algebroid, crossed module, Peiffer ideal, coproduct.

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On global asymptotic stability of variable coeffficient integro-differential systems modeling neural networks with delays

Erdal Korkmaz[1], Cemil Tunç[2]

[1]Department of Mathematics, Mus Alparslan University, Mus-Turkey
[2]Department of Mathematics, Yuzuncu Yil University, Van-Turkey
E-mail(s): korkmazerdal36@hotmail.com, cemtunc@yahoo.com

In this work, sufficient conditions are obtained for global asymptotic stability of variable coeffficient integro-differential systems modeling neural networks with delays by constructing Lyapunov functionals. Also, an example is given to support the results.

Keyword(s): Lyapunov functionals, Global asymptotic stability, Delayed neural Networks.

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On Homology Groups of 2D-Digital MA-Spaces

Emel Ünver Demir[1]

[1]Department of Mathematics, Manisa Celal Bayar University, Turkey.
E-mail(s):emel.unver@cbu.edu.tr

The concept of digital topology deals with the topological properties (that involves adjacency or connectivity) of digital objects in two or more dimensions. In order to digitize subspaces of n-dimensional Euclidean spaces into some n-dimensional Euclidean spaces with integer coordinates, locally finite topological structures are used such as Marcus-Wyse topology and Khalimsky topology [1, 5]. In particular, it has been shown by S.E. Han et al. [2] that Marcus-Wyse continuous maps on 2D digital spaces have some limitations, and in order to overcome these, they introduced a new map, called MA-map, by using the notion of Marcus-Wyse adjacency [3]. The aim of this talk is to introduce the digital singular homology groups of the MA-spaces and the homology functor between MAC and Ab categories. Moreover, we will also determine singular homology groups of some basic 2D MA-spaces.

Keyword(s): Marcus-Wyse topology, Marcus-Wyse adjacency, MA-map, singular homology.

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On Hyperbolic Lucas Quaternions

Ahmet Daşdemir

Department of Mathematics, Faculty of Arts and Sciences, Kastamonu University, Turkey.
E-mail(s): ahmetdasdemir37@gmail.com

Many quaternions such as Fibonacci, Lucas, Pell and Jacobsthal quaternions have been investigated in different forms before. Moreover, their fundamental identities have been presented. In this presentation, we introduce new classes of quaternions associated with the hyperbolic Lucas functions. In addition, we present the Binet formula and certain generating matrix representations of symmetrical hyperbolic Lucas quaternions. In particular, we derive the Cassini's formulae and d'Ocagne's identities for these quaternions.

Keyword(s): Hyperbolic Lucas function; Quaternion; Binet formula; Generating Matrix; Cassini identity

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On identities for sequences of some binomial sums

Cemile Duygu Şener[1], Neşe Ömür[2]

[1,2] Mathematics, Kocaeli University, Turkey,
E-mail(s): cemileduygusener@hotmail.com, neseomur@ kocaeli.edu.tr

In this study, considering a technique used in $[3]$, and the sequences $\{u_{kn}\}$ and $\{v_{kn}\}$, we derive the sequences $\{g_{kn}\}$ and $\{h_{kn}\}$. Also with the aid of generating matrix for the terms of these sequences for a positive integer k, we derive some conbinatorial identities for the sequence $\{g_{kn}\}$.

Keyword(s): Binomial sums, generalized Fibonacci numbers, recurrence relation.

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
10-12 May, 2017, Istanbul, Turkey

On Incomplete Trivariate Generalized Fibonacci Polynomials

Sümeyra Uçar[1]

[1]Mathematics, Balikesir University, Turkey
E-mail(s):sumeyraucar@balikesir.edu.tr

In recent years, trivarite Fibonacci and Lucas polynomials have been defined and extensively studied. We define incomplete trivariate generalized Fibonacci polynomials and give some equalites for them.

Keyword(s): Trivariate generalized Fibonacci polynomials, incomplete trivariate generalized Fibonacci polynomials.

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On Matrix Rings with The SA Property

Figen Takıl Mutlu

Department of Mathematics, Anadolu University, Turkey,
E-mail(s): figent@anadolu.edu.tr

In this paper, matrix rings with the SIP and the ads (briefly, SA) are studied. A ring R has the right summand intersection property (SIP) if the intersection of two direct summands of R is also a direct summand. A right R-module M has the absolute direct summand property (ads) if for every decomposition $M = A \oplus B$ of M and every complement C of A in M, we have $M = A \oplus C$. The ring R has the right ads provided that the right R-module R has the ads. It is given the necessary and sufficient conditions for matrix rings to have the SA. It is also shown with an example that the SA is not the Morita invariant property.

Keyword(s): Ads property, summand intersection property, trivial extension.

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On MDS Neagacyclic LCD Codes

Mustafa Sarı[1], M. Emin Köroğlu[2]

[1]Mathematics, Yıldız Technical University, Turkey
[2]Mathematics, Yıldız Technical University, Turkey
E-mail(s): musari@yildiz.edu.tr, mkoroglu@yildiz.edu.tr

A linear code with complementary-dual (LCD) is a linear code whose intersection with its dual is only zero. LCD codes have much importance because of usage in cryptography and communication systems. Maximum-distance separable (MDS) codes are a significant class among linear codes. In this study, by using negacyclic codes, we construct two families of MDS LCD codes and a family of LCD codes which do not have to be MDS.

Keyword(s): Linear codes, mds codes, negacyclic codes, lcd codes.

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On Multivalent Harmonic Meromorphic Functions Defined by Convolution

F. Müge Sakar[1], H. Özlem Güney[2]

[1]Faculty of Management and Economics, Department of Business Administration, Batman University, Batman, Turkey
[2]Faculty of Science, Department of Mathematics, Dicle University , Diyarbakır, Turkey,
E-mail(s):1mugesakar@hotmail.com, 2ozlemg@dicle.edu.tr

In the present investigation, we have introduced a new subclass of multivalent harmonic meromorphic functions in the exterior of the unit disk by using convolution properties. We derived sufficient coefficient conditions and shown to be also necessary for this subclass by putting certain restrictions on the coefficients. Some other interesting results for the functions belonging to this class are also investigated.

Keyword(s): Multivalent functions, meromorphic functions, harmonic functions, convolution

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On New Generalized Inequalities For Products Of Different Convex Functions Via Fractional Integral Operator

Erhan Set[1], Barış Çelik[1]
[1]Department of Mathematics, Faculty of Science and Arts, Ordu University, Turkey
E-mail(s):erhanset@yahoo.com, bariscelik15@hotmail.com

This paper is organized as follows: In Section 1, some mathematical preliminaries will be used in this paper are given. In Section 2, some new fractional Hermite-Hadamard type inequalities for product of functions of different classes as convex and s-convex are established. An interesting feature of our results is that they would provide extensions of those given in earlier works.

Keyword(s): Convex function, s-convex function, Hermite-Hadamard inequality, fractional integral operator.

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On Null Quaternionic Bertrand Partner Curves

Tanju Kahraman

ManisaCelal Bayar University, Faculty of Arts and Sciences, Department of Mathematics, 45140, Şehit Prof. Dr. İlhanVarank Campus, Muradiye / Manisa, Turkey.
E-mail(s):tanju.kahraman@cbu.edu.tr

Inthispaper, we study nullquaternionic Bertrand curves in the semi-Euclideanspace E_1^3. WeobtainsomecharacterizationsfornullquaternionicBertrand partner curves. Moreover, weobtainsomecharacterizationsforthesecurvessuchthatone of thecurvatures of α_1 is a constantfornullquaternionicBertrand partner curves α_1, α_2 andshowthatthedistancefunction is independentfromthefirstcurvatures of thecurves but is dependenttosecondcurvatures of thecurves in E_1^3.

Keyword(s): NullQuaternionicCurve; Bertrand partner curves;Serret-Frenetformulae.

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On q-Extension of p-Adic Diamond-Euler log Gamma Functions

Özge Çolakoğlu Havare[1], Hamza Menken[2]

[1]Mathematics, Mersin University, Turkey,
[2]Mathematics, Mersin University, Turkey
E-mail(s): ozgecolakoglu@mersin.edu.tr , hmenken@mersin.edu.tr

Recently, the fermionic p-adic q-integral has been studied by many scientists. Using the fermionic p-adic q-integral, special numbers and polynomials was redefined and obtained new ones. It is introduced the q-analogue of p-adic Log Gamma functions using the fermionic p-adic q-integral, which are the corresponding p-adic Log Gamma functions in this study. It is proven the q-analogue of Euler numbers occur in the coefficients of some stirling type series for the p-adic q-Log Gamma functions and functional equation. Moreover, it is given several results for these p-adic q-Log Gamma function.

Keyword(s): p-adic numbers; p-adic log gamma functions; q-Euler numbers; fermionic p-adic q-integral.

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On self-p-injective modules

Yeliz Kara

Department of Mathematics, Uludag University, Turkey
E-mail(s):yelizkara@uludag.edu.tr

Recall that a submodule N of M is called projection invariant provided that N is invariant under all idempotent endomorphisms of M. In this study, we focus on modules M such that every homomorphism from a projection invariant submodule of M to M can be lifted to M. Moreover our results contain direct sums and direct summands properties of the former class of modules.
This is a joint work with Adnan Tercan.

Keyword(s): extending modules, injective modules, projection invariant submodules.

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On Soft I-Extremally Disconnected Spaces

Yunus Yumak[1], Aynur Keskin Kaymakcı[2]

[1]Mathematics, Selcuk University, Turkey,
[2]Mathematics, Selcuk University, Turkey,
E-mail(s):yunusyumak@selcuk.edu.tr, akeskin@ selcuk.edu.tr

Firstly, we give two definitions called soft extremally disconnected space (briefly, S.E.D.S) and soft I-extremally disconnected space (briefly, S.I.E.D.S). Secondly, to obtain some characterizations of S.I.E.D.S we introduce the notion of soft weak regular-I-closed set. Then, we obtain property of S.I.E.D.S is hereditary for soft open sets. Besides, we give some properties of S.I.E.D.S. Finally, we give to coincidence some soft sets types in which is S.I.E.D.S.

Keyword(s): Soft extremally disconnected space, Soft I-extremally disconnected space, Soft strong beta-I-open set, Soft almost strong I-open set.

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On Some Multipliers of Vector-Valued Amalgam Spaces

İsmail Aydın

Department of Mathematics, Sinop University, Sinop, Turkey
E-mail(s):iaydin@sinop.edu.tr

We recall the vector-valued classical amalgam space $(L^p(G,A),l^q)$ and give several basic properties of this space. Also we discuss some multipliers space from $L^1(G,A)\cap(L^p(G,A),l^q)$ to $L^1(G,A)$ and $L^1(G,A)\cap(L^p(G,A),l^q)$.

Keyword(s): Vector-valued amalgam space, multipliers.

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On some saturated numerical semigroups

Sedat İlhan[1], Ahmet Çelik[2]

[1] Mathematics, Dicle University, Turkey,
[2] Mathematics, Dicle University, Turkey,
E-mail(s):sedati@dicle.edu.tr , c_elkahmet@hotmail.com

In this study, we will give some results in some saturated numerical semigroups wich fixed frobenius number and multiplicity 7 or less then 7.

Keyword(s): Saturated numerical semigroups, Gaps, Frobenius number.

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On Strongly Prime Submodules and Strongly 0-dimensional Modules

Neslihan Ayşen Özkirişci[1], Zehra Bilgin[2], Suat Koç[3]

[1] Mathematics, Yıldız Technical University, Turkey
[2,] Mathematics, Yıldız Technical University, Turkey
[3] Mathematics, Marmara University, Turkey
E-mail(s):aozk@yildiz.edu.tr, zbilgin@yildiz.edu.tr, suat.koc@marmara.edu.tr

In this work, we examine strongly prime submodules of multiplication modules over commutative rings with identity. A prime submodule P of a multiplication module M is called strongly prime if whenever the intersection of a family of submodules of M is contained in P, then one of the submodules of the family is contained in P. If every prime submodule of a multiplication module M is strongly prime, then M is called a strongly 0-dimensional module. After stating some properties of strongly prime submodules, we give equivalent conditions for being strongly 0-dimensional module in terms of the property DCC on principal powers. Besides, we prove that if M is Noetherian and satisfies DCC on principal powers then M is zero-dimensional. We show that a strongly 0-dimensional module is a top module and the quasi-Zariski topology of M is an Alexandrov topology.

Keyword(s): Strongly prime submodule, strongly 0-dimensional module, multiplication module, Alexandrov topology

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On Suborbital Graphs and Related Fibonacci Numbers

Ummugulsun Akbaba[1], Ali Hikmet Deger[2]

[1]Mathematics, Karadeniz Technical University,Turkey
[2] Mathematics, Karadeniz Technical University,Turkey
E-mail(s): ummugulsun.akbaba@ktu.edu.tr, ahikmetd@ktu.edu.tr

In [1] authors examined the suborbital graphs which are formed by the imprimitive action of the Modular group Γ on the rational projective line $\mathbb{Q} := \widehat{\mathbb{Q}} \cup \{\infty\}$. They extend the results of $G_{1,1}$ Farey graph to suborbital graphs of $F_{u,N}$, where $(u,N) = 1$ and $N > 1$.

In [2] authors investigated the trees which are subgraphs of the suborbital graphs examined in [1]. They showed that vertices of the paths of minimal length on these trees are related to some regular continued fractions and this gives the farthest vertices on the suborbital graphs of $F_{u,N}$.

In this work we showed the relation of these type of vertices and Fibonacci numbers in special cases and obtained some results.

Keyword(s): Suborbital graphs, Fibonacci numbers, Continued fractions

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On Tauberian Conditions for the Logarithmic Summability Methods of Integrals

Muhammet Ali Okur[1], Ümit Totur[2]

[1]Mathematics, Adnan Menderes University, Turkey,
[2]Mathematics, Adnan Menderes University, Turkey
E-mail(s): mali.okur@adu.edu.tr, utotur@adu.edu.tr

Our goal in this study is to obtain some Tauberian theorems for the logarithmic summability method of integrals by some new Tauberian conditions. We also introduce the iterations of logarithmic summability method of integrals and give some Tauberian theorems for this method.

Keyword(s): Tauberian theorem, Tauberian condition, logarithmic summability method, Logarithmic Control Modulo.

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On the Efficiency of an Almost Unbiased Ridge Logistic Estimator

Yasin Asar[1], Jibo Wu[2]

[1] Mathematics-Computer Sciences, Necmettin Erbakan University, Turkey,
[2] School of Mathematics and Finances, Chongqing University of Arts and Sciences, Chongqing, China
E-mail(s):yasar@konya.edu.tr, linfen52@126.com

The well-known ridge estimator was proposed by Hoerl and Kennard [1] to overcome the multicollinearity in the linear models. A ridge estimator was also proposed by Schaefer et al. [2] to solve the problem of multicollinearty in the binary logistic regression model. In this study, the efficiency of the almost unbiased ridge logistic estimator proposed by Wu and Asar [3] is compared to the ridge logistic estimator and the maximum likelihood estimator in the logistic regression model. A Monte Carlo simulation is designed to compare the performances in the sense of mean squared error criterion. Moreover, the applicability of the estimators are illustrated in a real data application. According to the results, the almost unbiased ridge logistic estimator performs better than the others.

Keyword(s): Ridge estimator, logistic regression, almost unbiasedness, mean squared error.

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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On the Green Correspondence of 'Group Modules'

Mehmet Uc

Mathematics, Mehmet Akif Ersoy University, Turkey.
E-mail(s):mehmetuc@mehmetakif.edu.tr

For a group and a module over a ring a group module is the set of all formal finite linear combinations of the form having the elements of group as the basis and the coefficients from the module. If the ring of the group ring is a field, the modules for the group modules are vector spaces. In this case, we easily show that the Green correspondence between the isomorphism classes of indecomposable modules, that are the one dimensional vector spaces, turns to a correspondence between subgroups. The main aim of this study is to investigate the Green correspondence between two special isomorphism classes of indecomposable group modules with vertex in fixed some collections of p-groups of the group when the group ring is defined over a commutative ring by the method used for the Green correspondence of group algebras.

Keyword(s): Green correspondence, Group module, Projective module, Indecomposable module.

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On The Harmonic Index of C60+12n Fullerenes

Özge Çolakoğlu Havare[1]

[1]Mathematics, Mersin University, Turkey
E-mail(s):ozgecolakoglu@mersin.edu.tr

Topological indices are the molecular descriptors that describe the structures of chemical compounds. They are used in the isomer discrimination, structure property relationship, structure activity relations. Also, they hold us to predict certain physico–chemical properties such as boiling point, enthalpy of vaporization, stability, and so on. Molecules and molecular compounds are often modeled by molecular graph which is a representation of the structural formula of a chemical compound in terms of graph theory. Recently, the harmonic index (H) which is vertex–degree-based topological index has attracted attention and gained popularity. A fullerene graph is a cubic biconnected planar graph whose faces are pentagons and hexagons. In this study, the harmonic index of C60+12n fullerenes is computed.

Keyword(s): Harmonic index, topological index, C60+12n fullerenes .

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On the integrability properties of extended (3+1) dimensional Jimbo-Miwa equation

Emrullah Yaşar [1], Yakup Yıldırım[1]

[1] Department of Mathematics, Faculty of Arts and Sciences, Uludag University, 16059, Bursa, Turkey .
E-mail(s): eyasar@uludag.edu.tr, yakupyildirim110@gmail.com

In this work, we consider (3+1) dimensional extended Jimbo-Miwa equation which is used to describe certain interesting (3+1)-dimensional waves in physics. The key ingredient of the under invesitigated paper is binary Bell polynomials. Having obtained these polynomials, we construct the Hirota bilinear form. Bilinear Backlund transformations, Lax system and infinite conservation laws are also deduced. Lastly, we get multisoliton solutions by novel test function approach. Some graphical simulations are also depicted.

Keyword(s): Extended Jimbo-Miwa equation, Bell polynomials, Soliton solutions.

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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On the Intuitionistic Fuzzy Projective Geometry

Ayşe Bayar [1], Ziya Akça [2], Süheyla Ekmekçi [3]

[1]Department of Mathematics-Computer, Eskişehir Osmangazi University, Turkey,
[2]Department of Mathematics-Computer, Eskişehir Osmangazi University, Turkey
[3] Department of Mathematics-Computer, Eskişehir Osmangazi University, Turkey
E-mail(s):akorkmaz @ogu.edu.tr, zakca @ ogu.edu.tr, sekmekci @ ogu.edu.tr

The new model of intuitionistic fuzzy projective geometry is introduced by Ghassan E. Arif . In this work, we introduce that intuitionistic fuzzy versions of some classical configurations in projective plane are valid in intuitionistic fuzzy projective plane.

Keyword(s): Intuitionistic Fuzzy Set, Intuitionistic Fuzzy Projective Space

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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On the New Polar Form of a Dual Quaternion

Ali Atasoy[1], Yusuf Yaylı[2]

[1]Keskin Vocational School, Kırıkkale University, Turkey
[2]Department of Mathematics, Ankara University, Turkey
E-mail(s): aliatasoy@gmail.com, yayli@science.ankara.edu.tr

In this paper, we obtain the new polar form of a dual quaternion. For this, we use the product of a dual complex number and a dual triplet.

Keyword(s): dual triplet, dual quaternion, polar form.

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On the Partition of Fuzzy Projective 3-space

Ayşe Bayar [1], Süheyla Ekmekçi [2], Ziya Akça [3]

[1]Department of Mathematics-Computer, Eskişehir Osmangazi University, Turkey,
[2]Department of Mathematics-Computer, Eskişehir Osmangazi University, Turkey
[3] Department of Mathematics-Computer, Eskişehir Osmangazi University, Turkey
E-mail(s): akorkmaz @ogu.edu.tr, sekmekci @ ogu.edu.tr, zakca @ ogu.edu.tr

In this work, the classifications of fuzzy 3−dimensional vector spaces of fuzzy 4−dimensional vector space and fuzzy projective planes of fuzzy 3−dimensional projective space from fuzzy 4−dimensional vector space are given.

Keyword(s): Fuzzy projective space, Fuzzy vector plane, Fuzzy projective plane**.**

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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On The Rate of Convergence of Non-convolution Integral Operators For Nonintegrable Funxctions

Sevgi Esen Almalı

Mathematics,Kirikkale University, Turkey
E-mail(s): sevgi_esen@hotmail.com

In this paper, we obtain the rate of convergence and pointwise of convergence of non-convolutiın type of integral operators family at Lebesgue point L_p,(a,b),(p≥1) and L_p, $(-\infty,\infty)$. Where f doesn’ t belong to the functions space L_p,(a,b).

Keyword(s):. The rate of convergence, non-convolution type, nonitegrable functions

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On The Semi Ellipsoid Surface and Real Projective Plane

Süheyla Ekmekçi[1], Ayşe Bayar[2], Ziya Akça[3]

[1] Department of Mathematics-Computer, Eskişehir Osmangazi University, Turkey,
[2]Department of Mathematics-Computer, Eskişehir Osmangazi University, Turkey
[3] Department of Mathematics-Computer, Eskişehir Osmangazi University, Turkey
E-mail(s): sekmekci@ogu.edu.tr, akorkmaz@ ogu.edu.tr, zakca@ ogu.edu.tr

In this work, it is shown that the geometrical structure defined on semi ellipsoid surface is a real projective plane.

Keyword(s): Projective plane, Desargues theorem, Pappus theorem, Fano axiom

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On The Semisimplicity and The Submodule Characterizations of G-Set Modules

Mehmet Uc[1], Mustafa Alkan[2]

[1] Mathematics, Mehmet Akif Ersoy University, Turkey.
[2] Mathematics, Akdeniz University, Turkey.
E-mail(s): mehmetuc@mehmetakif.edu.tr, alkan@akdeniz.edu.tr

In this study, we define a G-set module which is the set of all formal finite linear combinations of the form having the elements of a G-set of a finite group as the basis and the coefficients from a module over a commutative ring. These elements are analogue to the elements of a group ring over a finite group. So, a G-set module is a module over the group ring under the addition and the scalar multiplication similar to the group module. Furthermore, the G-set module is an extension and a generalization of the group ring and the group module.

We firstly give some significant submodule characterizations of the G-set module. We define the induction and the restriction of the G-set module to establish some properties about them. We also decompose the G-set modules to its submodules by some special idempotents in the endomorphism ring of the G-set module. Moreover, we define a submodule of the G-set module called augmentation module to mainly prove that a G-set module is semisimple over the group ring if and only if the concerning module over the commutative ring is semisimple, the group is finite and the order of the group is invertible in the endomorphism ring of the concerning module.

Keyword(s): Group ring, G-set module, Semisimple module.

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On the spectral characterization of the pineapple graph

Hatice Topcu[1], Sezer Sorgun[1]

[1]Department of Mathematics, Sciences and Art Faculty, Nevşehir Hacı Bektaş Veli University, Turkey
E-mail(s): haticekamittopcu@gmail.com, srgnrzs@gmail.com

The pineapple graph Kp,q is obtained by appending q pendant edges to a vertex of a complete graph Kp (where q is greater than or equal to 1 and p is greater than or equal to 3). Zhang and Zhang (2009, Some graphs are determined by their spectra, Lin. Alg. and its Appl.) have shown that pineapple graph is determined by its adjacency spectrum. After 7 years later, we have shown that their proof is actually not true (2016, Topcu, Sorgun, Haemers, Lin. Alg. and its Appl.). Here, we will talk about this fact and we represent some new graph examples which are non-isomorphic but cospectral with the pineapple graph.

Keyword(s): pineapple graph, adjacency spectrum.

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On the stability and uniform stability in retarded integro-differential equations

Cemil Tunç

Department of MathematicsFaculty of SciencesYuzuncu Yil University (65080, Van – Turkey)
E-mail(s):cemtunc@yahoo.com

In this article, we find sufficient conditions guaranteeing stability and uniform stability of solutions of some retarded Volterra integro-differential equations of the first order. The proofs of the results to be given depend on the construction of suitable Lyapunov functionals. An example is given to explain the outcomes are correct and applicable. We use MATLAB-Simulink to the example given to show the behaviors of solutions of the equations considered in a particular case.

Keyword(s): Non-linear, (VIDE), first order, stability, uniformly stability, Lyapunov functional.

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On the Fundamental Solutions of a Discontinuous Fractional Boundary Value Problem

Ali Yakar[1], Zülfigar Akdoğan[1]

[1] Department of Mathematics, Gaziosmanpasa University, Turkey,
E-mail(s):ali.yakar@gop.edu.tr, zulfigar.akdogan@gop.edu.tr

In this work, we study a fractional boundary value problem with some fractional transmission condition at an inner point. We shall consider a fractional boundary value problem involving an operator with two parts. It is shown that the eigenvalues and corresponding eigenfunctions of the main problem coincide with the eigenvalues and corresponding eigenfunctions of the constructed operator in Hilbert spaces.

Keyword(s): Fractional Differential Equations, Fractional Boundary Conditions, Fractional Transmission Conditions.

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On Weighted Variable Exponent Sobolev Spaces

İsmail Aydın

Department of Mathematics, Sinop University, Sinop, Turkey
E-mail(s):iaydin@sinop.edu.tr

In this study, we define weighted variable exponent Sobolev spaces with respect to two different weight functions. We investigate the basic properties of this spaces. Also, we discuss the existence of weak solutions of weighted Dirichlet problem of p(x)-Laplacian equation under some conditions of compact embedding involving the double weighted Sobolev spaces.

Keyword(s): Weighted Variable Exponent Sobolev Space, Compact Embeddings, Dirichlet Problem.

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On fuzzy soft (pre)proximity structure

Vildan Çetkin[1], Halis Aygün[2]

[1,2]Affiliation of Author 1(Department of Mathematics, Kocaeli University, Turkey),
E-mail(s):vcetkin@gmail.com, halis@kocaeli.edu.tr

The goal of this paper is to focus on the softification of the notion of fuzzy (pre)proximity, and also to describe the nearness relation between fuzzy soft sets by means of fuzzy soft (pre)proximity structure. For this reason, we define fuzzy soft (pre)proximity structure and consider the connections between fuzzy soft proximity, fuzzy soft topology, fuzzy soft interior operator and fuzzy soft topogenous order in the view point of categorical aspect.

Keyword(s): Fuzzy soft set, topology, interior operator, proximity.

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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Optimization of Complete Social Networks

Araniyos Terefe Weldegebriel[1], Burak Yıldıran Stodolsky[2]

[1]Department of Mathematical Engineering, Istanbul Technical University, Maslak, Istanbul, Turkey.
[2]Department of Mathematical Engineering, Istanbul Technical University, Maslak, Istanbul, Turkey.
E-mail(s):weldegebriel@itu.edu.tr, burakstodolsky@gmail.com

Heider observed that a social network in which the relationship between any two members is like or dislike, has a tendency to transform in time, to a social network where, for any member of the social network, the following two statements are true; a friend of my friend is my friend and an enemy of my enemy is my friend. Such social networks are called balanced social networks. Since most social networks are initially unbalanced, there has been extensive research in trying to quantify the degree of imbalance in a given social network and understand how it would transform to a balanced network. Recently, numerous dynamical methods have been proposed which balance social networks. In this paper we demonstrate a discrete polynomial time greedy algorithm that balances any complete social network with n members by changing less than half initial relationships between the members of the network.

Keyword(s): Optimization, Social networks, Balance.

Oscillatory Behavior of Third Order Neutral Dynamic Equations with Distributed Deviating Arguments

Orhan Özdemir[1], Ercan Tunç[2]

[1] Gaziosmanpaşa University, Faculty of Arts and Science, Department of Mathematics, Tokat, Turkey.
[2,] Gaziosmanpaşa University, Faculty of Arts and Science, Department of Mathematics, Tokat, Turkey.
E-mail(s):orhanozdemir37@yahoo.com, ercantunc72@yahoo.com

The authors consider a class of third-order nonlinear neutral dynamic equations with distributed deviating arguments on an arbitrary time scale T. Using a Riccati-type transformation, they establish some new sufficient conditions to ensure that any solution of the considered equation either oscillates or tends to zero. Some examples are provided to illustrate the applicability of the results.

Keyword(s): Oscillation, asymptotic behavior, third-order, neutral dynamic equations.

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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Lattice constellations and codes from Lipschitz Integers

Murat Güzeltepe[1], Alev Altinel[2]

[1,2]Mathematics, Sakarya University, Turkey,
E-mail(s):mguzeltepe@sakarya.edu.tr, alevaltinell@gmail.com

The first linear codes over Lipschitz integers were presented in [1-3]. After a short time, many coding theorists were fascinated by Lipschit integers. So, Lipschitz integers were considered in many papers. In [3] a survey of perfect codes was given. Perfect codes in Lipschitz metric was presented in [4,5]. The performance of Lipschitz integer constellations for transmission over the AWGN channel by means of the constellation figure of merit and a construction of sets of Lipschitz integers that leads to a better constellation figure of merit compared to ordinary Lipschitz integer constellations were examined in [6]. A partition of the ring into multiplicative cosets of a subgroup of a group of units was used to construct check matrices for 1-perfect codes over Lipschitz integers in [3]. A similar paper to the paper published in [3] was presented in [7].

In this paper, we obtain constacyclic codes over Lipschitz integers with respect to Lipschitz metric. Also, we give a decoding procedure of these codes. We show that some of these codes are perfect. These codes can be used in coded modulation schemes based on quadrature amplitude modulation (shortly QAM)- type constellations. For QAM, Lipschitz metric is more suitable than Hamming metric and Lee metric.

The work was supported by TÜBİTAK (The Scientific and Technical Research Council of TURKEY) with project number 116F318.

Keyword(s): Block codes, Hurwitz distance, perfect code.

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Perfect 1-error-correcting Hurwitz weight codes

Murat Güzeltepe[1], Alev Altinel[2]

[1,2]Mathematics, Sakarya University, Turkey,
E-mail(s):mguzeltepe@sakarya.edu.tr, alevaltinell@gmail.com

Since perfect codes play an important role in coding theory, both for theoretical and practical reasons, many authors have focused on these codes for many years. The first perfect codes which are binary codes were defined by Hamming in [1].These perfect codes were null-spaces of matrices H and subspaces of vector spaces z_2^n. Vasil'ev constructed the first non-linear perfect 1-error correcting binary code in [2]. Lindström, 1969, and independently Schönheim, 1968, generalized Vasil'ev's construction to $q-$ary case in [3,4]. In 1977, mixed perfect codes were given by Heden in [5]. These codes were not equal to any linear code. As for more recent perfect codes, a generalization of perfect Lee-error-correcting codes, and perfect 1-error-correcting Lipschitz weight codes were presented by Heden and Güzeltepe [6,7].

Let π be a Hurwitz prime and $p = \pi\pi^{\text{å}}$. In this paper, we construct perfect $1-$ error-correcting codes in H_π^n for every prime number $p > 3$, where H denotes the set of Hurwitz integers.

The work was supported by TÜBİTAK (The Scientific and Technical Research Council of TURKEY) with project number 116F318.

Keyword(s): Block codes, Hurwitz distance, perfect code.

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Plane Acoustic Waves Scattering by an Aperture of Infinite Duct

Hülya Öztürk

[1]Department of Mathematics, Gebze Technical University, Turkey
E-mail(s):h.ozturkı@gtu.edu.tr

In this study, scattering of sound along the circular waveguide consisting the finite gap on the outer wall is investigated by using Wiener-Hopf approach. The problem is solved analytically by applying direct Fourier transform method. The solution involves an infinite system of algebraic equations. This system is solved numerically and some graphical results are presented to show the influence of the gap on the fields.

Keyword(s): Scattering, Acoustics, Wiener-Hopf Technique, Finite Gap.

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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Polycyclic Codes Over A Non-Commutative Ring

Seda Akbıyık[1], Bayram Ali Ersoy[2]

[1,2] Department of Mathematics, Yıldız Technical University, İstanbul, Turkey.
E-mail(s):akbiyiks@yildiz.edu.tr

Polycyclic codes have the most general structure of the cyclic codes over a ring. In this study, we construct the polycyclic codes over a special finite non-commutative and non-chain ring. To achieve this, we firstly decompose the ring to commutative parts by using central orthogonal idempotent pairs of the ring. Also, we give the parameters for the codes.

Keyword(s): Linear codes, noncommutative ring, polycyclic code.

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δ-Primary Hyperideals of Commutative Hyperrings

Ashraf Abumghaiseeb[1], Bayram Ali Ersoy[2]

[1]PhD Student (Mathematics department , Yildiz Technical University, Turkey),
[2,] Associate professor (Mathematics department , Yildiz Technical University, Turkey).
E-mail(s):ashrafgaza@gmail.com , ersoya@yildiz.edu.tr

In this paper we study the commutative hyperring, in particular the hyperideals of commutative hyperrings as a generalization of the ideals of the ordinary algebra. The main idea is to apply the expansion of ideals in the commutative rings and semirings to the hyperideals in the commutative hyperrings. We introduce and study the expansion of hyperideals and investigate the properties of this expansion and give some examples.

Keyword(s): Hyperring, Hyperideal, Hyperideal Expansion, δ-Primary ideal

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Quadripotency of Linear Combinations of Two Quadripotent Matrices

Emre Kişi[1], Halim Özdemir[2]

[1,2]Mathematics, Sakarya University, Turkey
E-mail(s):ekisi@sakarya.edu, hozdemir@ sakarya.edu

The problem of when a linear combination $c_1Q_1 + c_2Q_2$ of two quadripotent matrices, i.e. $Q_i^4 = Q_i$, $i = 1, 2$, is also a quadripotent matrix is considered. The results obtained cover those established in the references [1-4].

Keyword(s): Projectors, Generalized Projectors, Hypergeneralized Projectors. Quadripotent Matrices

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Quantum codes from cyclic codes over the ring R

Murat Güzeltepe[1], Alev Altınel[2]

[1,2] Mathematics, Sakarya University, Turkey,
E-mail(s): mguzeltepe@sakarya.edu.tr, alevaltinell@gmail.com

Quantum computing and quantum information are two of the fastest growing and most exciting research fields in physics. History of these areas begins at the turn of the twentieth century. Quantum error correcting codes play an important role in these areas in terms of protecting quantum information. Up to now, many quantum error correcting codes have been constructed from cyclic codes over the rings [1-5]. The ring $F_2 + vF_2$, where $v^2 = v$ was introduced by Bachoc in [6]. Besides, quantum codes via cyclic codes of arbitrary length n over finite commutative ring $F_2 + vF_2$ was constructed in [3]. A new method to obtain self-orthogonal codes over F_2 as images of codes over the ring $F_2 + vF_2$ was presented in [3].

In this contribution, quantum codes via cyclic codes over the ring R are established. To establish these quantum codes, self-orthogonal codes over the ring R are defined. It is well known that classical self-orthogonal or classical self-dual codes are used to obtain quantum codes. Therefore, a necessary and sufficient condition for cyclic codes over the ring R are given to obtain classical self-orthogonal codes over the ring R.

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Keyword(s): Cyclic codes, quantum codes, self-orthogonal codes

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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Rational approximation for estimation of the nonparametric regression function

Ersin Yılmaz[1], Dursun Aydın[2]

[1]Department of Statistics, Mugla Sitki Kocman Universtiy, Mugla, Turkey
[2,]Department of Statistics, Mugla Sitki Kocman Universtiy, Mugla, Turkey
E-mail(s):duaydin@mu.edu.tr, ersinyilmaz@mu.edu.tr

Censored data is a common concept which arises in many areas such as biology, industrial data and especially clinical trials in health. There are some kinds of censored data but in here only right-censored data is inspected. Cox (1972) developed the Cox regression model, Miller (1976) proposed the weighted least squares method and Orbe (2003) illustrated the partially linear model based on smoothing splines for estimating the right-censored data. As known, in order to get a sufficient results in smoothing spline method, smoothing parameter has to be selected in optimal way. In this paper, smoothing spline method is used for estimation and four selection methods are used for selection of smoothing parameter such as improved Akaike information criterion (AICc), generalized cross validation method (GCV), Bayesian information criterion (BIC) and restricted maximum likelihood criterion (REML). Performances of mentioned selection methods are represented and it is supported by a simulation study..

Keyword(s): Rational approximation, Pade approximation, Nonparametric regression

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Rayleigh-Ritz Method For Free Transverse Vibration Of Elastically Restrained Nonhomogeneous Orthotropic Rectangular Plate

Yajuvindra Kumar

Mathematics, M.K. Government Degree College Ninowa, Farrukhabad, Uttar Pradesh, India
E-mail(s):yaju_saini@yahoo.com

In this paper, author works on a boundary value problem which deals with free transverse vibration of a thin elastic simply supported nonhomogeneous orthotropic rectangular plate. The plate is elastically restrained against rotation and thickness of the plate is varying in both directions. Rayleigh-Ritz method with orthogonal polynomials is used to study the dynamical behaviour. The related orthogonal polynomials are generated using Gram-Schmidt process. The effects of nonhomogeneity parameters, thickness parameters, aspect ratio and flexibility parameters have been studied on first three frequencies of the plate. Convergence of the results is established by increasing the number of orthogonal polynomials. Three dimensional mode shapes of vibrating plate have been plotted. A comparison of results in particular cases has also been made.

Keyword(s): Rayleigh-Ritz, nonhomogeneous, orthotropic, restrained.

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RD-MODULES and RS-MODULES

Ergül Türkmen

Amasya University, Turkey
E-mail(s):ergulturkmen@hotmail.com

A left module M over an arbitrary ring is called a RD-module (respectively, a RS-module)if every submodule N of M with Rad(M)$\subseteq$N is a direct summand(respectively, a supplement in) of M. In this talk, we investigate the various properties of RD-modules and RS-modules. We prove that M is a RD-module if and only if M=Rad(M)$\oplus$X, where X is semisimple. We show that a finitely generated RS-module is semisimple. This gives us the characterization of semisimple rings in terms of RS-modules. We completely determine the structure of these modules over dedekind domains.

Keyword(s): radical, supplement.

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Regularized Trace Formula for a Differential Equation with Retarded Argument

Erdoğan Şen

Department of Mathematics, Namık Kemal University, Tekirdağ, Turkey
E-mail(s):erdogan.math@gmail.com

We consider the boundary value problem for the differential equation

$$p(x)y''(x)+q(x)y(x-\Delta(x))+\lambda^2 y(x)=0,$$

on $\left[0,\frac{\pi}{2}\right)\cup\left(\frac{\pi}{2},\pi\right]$, with boundary conditions

$$a_1 y(0)+a_2 y'(0)=0,$$
$$y'(\pi)+dy(\pi)=0$$

and transmission conditions

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

where the real-valued function $q(x)$ is continuous in $\left[0,\frac{\pi}{2}\right)\cup\left(\frac{\pi}{2},\pi\right]$ and has finite limits $q\left(\frac{\pi}{2}\pm 0\right)=\lim_{x\to\frac{\pi}{2}\pm 0} q(x)$, the real-valued function $\Delta(x)\geq 0$ is continuous in $\left[0,\frac{\pi}{2}\right)\cup\left(\frac{\pi}{2},\pi\right]$ has finite limits $\Delta\left(\frac{\pi}{2}\pm 0\right)=\lim_{x\to\frac{\pi}{2}\pm 0}\Delta(x)$, if $x\in\left[0,\frac{\pi}{2}\right)$ then $x-\Delta(x)\geq 0$; if $x\in\left(\frac{\pi}{2},\pi\right]$ then $x-\Delta(x)\geq\frac{\pi}{2}$; λ is a spectral parameter; $a_i, d, \gamma_i, \delta_i\ (i=1,2)$ are arbitrary real numbers such that $a_i d\neq 0\ (i=1,2)$.

In this study, a formula for regularized sums of eigenvalues of the above-mentioned boundary value problem is obtained.

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Keyword(s): Trace formula, differential equation with retarded argument.

Relative injectivity on projection invariant submodules

Yeliz Kara

Department of Mathematics, Uludag University, Turkey
E-mail(s):yelizkara@uludag.edu.tr

A module M is called extending if every submodule of M is essential in a direct summand of M. There have been many generalizations of extending modules with respect to the different sets of submodules including projection invariant submodules. In this note, we deal with relative injectivity on projection invariant submodules. To this end, we obtain a generalization of relative injective modules and provide some results related to the extending modules and the former class of modules.

Keyword(s): extending module, injective module, projection invariant submodule.

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Rewriting System for the Schützenberger Product of n Groups

Esra Kırmızı Çetinalp[1], Eylem Güzel Karpuz[2], Ahmet Sinan Çevik[3]

[1] (Department of Mathematics,Karamanoğlu Mehmetbey University, Karaman, Turkey),
[2] (Department of Mathematics,Karamanoğlu Mehmetbey University, Karaman, Turkey),
[3] (Department of Mathematics, Faculty of Science, Selcuk University, Konya, Turkey)
E-mail(s):author1esrakirmizi@kmu.edu.tr, author2eylem.guzel@kmu.edu.tr, author3 sinan.cevik@selcuk.edu.tr

Presentations arise in various areas of mathematics such as knot theory, topology, and geometry. Another motivation for studying presentations is the advent of softwares for symbolic computations like GAP. Providing algorithms to compute presentations of given monoids is a great help for the developers of these softwares. So, in this work, we consider monoid presentation which obtained by matrix theory of the Schützenberger product of n groups. By using Knuth-Bendix algorithm, we find a complete rewriting system for this monoid presentation. Thus, by this complete rewriting system we characterize the structure of elements of this product. Therefore, we obtain solvability of the word problem.

Keyword(s): Schützenberger Product, Rewriting Systems, Normal Form

Risk Averse and Risk Taker Newsvendor Solutions via Expectile-based Value at Risk (EVaR) Minimization

Hande Günay Akdemir [1]

[1]Department of Mathematics, Giresun University, Giresun, Turkey
E-mail(s):hande.akdemir@giresun.edu.tr

In this study, EVaR measure is considered as an objective function of the well-known newsvendor context to determine the ordering policies of a risk averse (and a risk taker) newsvendor facing a random demand. As a family of generalized quantiles, expectiles have appealing risk measurement properties, such as coherency, sensitivity to size of extreme losses, suitability for forecasting, backtesting and Bayesian decision making. The model allows the newsvendor to trade-off between his expected profit and his capital requirement that can be seen as an insurance for risky situations, and to adjust the gain-loss ratio according to his level of risk preference. To illustrate the proposed model, we present simulation studies based on the optimal solutions for different levels of risk considerations.

Keyword(s): Newsvendor model, risk preferences, risk measures, expectile-based value at risk.

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Second Hankel Determinant of functions related to k-Fibonacci Numbers

H.Özlem Güney[1], Sedat İlhan[2], Janusz Sokol[3]

[1] Mathematics, Dicle University, Turkey,
[2] Mathematics, Dicle University, Turkey,
[3] Mathematics, Rzeszow University, Poland,
E-mail(s):ozlemg@dicle.edu.tr, sedati@dicle.edu.tr, jsokol@ur.edu.pl

One of the important subjects of complex analysis is Hankel determinant. Hankel determinant is frequently used in many areas. The Hankel determinant problem is focused on finding upper bound of second Hankel determinant and third Hankel determinant.

In this presentation, we use the k-Fibonacci number sequence for any positive real number k and consider some special subclasses of analytic function class related to k-Fibonacci numbers. Also, we obtain the upper bounds for second Hankel determinant of functions in some special subclasses.

Keyword(s): Second Hankel determinant, analytic function, k-Fibonacci numbers.

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Second Order Stochastic Differential Equations in Finance

Gülşen Orucova Büyüköz[1], Mustafa Bayram[2]

[1] Department of Mathematics, Yildiz Technical University, İstanbul, Turkey
[2] Department of Computer Engineering, University of Gelisim, İstanbul, Turkey
E-mail(s): gbuyukoz@yildiz.edu, mbayram@gelisim.edu

In this study we consider second order stochastic differenial equation in finance. Using numerical methods we obtain numerical simulations of our model. We compare our results with graphs and error tables.

Keyword(s): Second order stochastic differential equations, numerical simulation**.**

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Second Submodules And A Sheaf Of Modules

Secil Ceken [1], Mustafa Alkan[2]

[1]Departmenty of Mathematics, Trakya University, Turkey,
[2], Departmenty of Mathematics, Akdeniz University, Turkey
E-mail(s): cekensecil@gmail.com, alkan@akdeniz.edu.tr

In this presentation, we introduce a sheaf of modules on the set of second submodules of a module and investigate some properties of this sheaf. We present some interrelations between the sections of this sheaf and the ideal transform module. We also define some morphisms of sheaves by using ring and module homomorphisms.

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Similarity Geometry of 3-D Space Curves

Hakan Şimşek[1], Mustafa Özdemir[2]

[1]Department of Industrial Engineering, Antalya International University, Turkey
[2,] Department of Mathematics, Akdeniz University, Turkey
E-mail(s):hakan.simsek@antalya.edu.tr, mozdemir@akdeniz.edu.tr

In this paper, we investigate the differential geometric invariants, called p-shape curvatures, of 3D curves under similarity transformations and give some results about similar curves by means of the spherical curves . We introduce the concepts of similar helix and similar slant helix for 3D-space curves. Besides, we study self-similar curves by using the pseudo-spherical curves in Lorentzian 3-Space.

Keyword(s): p-shape curvature, similarity, helix

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Soft Metric Spaces and Fixed Point Theorems on Soft Metric Spaces

Ebru Aydoğdu [1], Abdulkadir Aygünoğlu [1], Halis Aygün [1]

[1] Mathematics, Kocaeli University, Turkey,
E-mail(s):ebru.diyarbakirli@kocaeli.edu.tr, abdulkadir.aygunoglu@kocaeli.edu.tr, halis@kocaeli.edu.tr

The aim of this study is define soft metric spaces and show that a soft metric induces a compatible fuzzy metric on the collection of all soft points of the absolute soft set, when the set of parameters is a finite set. We then show that soft metric extensions of several important fixed point theorems for fuzzy metric spaces.We define ε-convergent sequence and we give relation between convergent sequence and ε-convergent sequence. Then we define the notions of ε-continuity of mapping and we introduce and study some concepts related to ε-continious mapping.

Keyword(s): Soft metric space, soft contraction, soft fixed point, Soft Kanan type fixed point

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Solitary wave simulations of Complex Modified Korteweg–de Vries(CMKdV) Equation using Quintic Trigonometric B-Spline

Ozlem Ersoy Hepson[1]

[1]Mathematics & Computer, Eskişehir Osmangazi University, Turkey
E-mail(s):ozersoy@ogu.edu.tr

Complex Modified Korteweg-de Vries(CMKdV) Equaion is solved numerically using collocation method based on trigonometric quintic B-Spline. A Crank Nicolson rule is used to discretize in time. The well-known examples, motion of single solitary wave, interaction of solitary waves and wave generation are simulated using Matlab programme language. Computational experiments examine the accuracy of the method in terms of maximum error norm and the three conservation laws I1, I2 and I3. Because the absolute changes of the lowest three laws are also good indicators of valid results even when the analytical solutions do not exist. A comparison with some earlier works is given.

Keyword(s): Trigonometric quintic B-spline, collocation, solitary wave, wave generation.

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Soliton Solutions for Cascased System

Ebru Cavlak Aslan[1], Mustafa Inc[2]

[1,2] Department of Mathematics, Firat University, Turkey
E-mail(s): ebrucavlak@hotmail.com, minc@firat.edu.tr

In this work, the coupled NLSE is studied that appears in a cascased system (CS). Exact solutions of this coupled system were obtained using Jacobi elliptic functions. The presented system will be studied with Kerr law nonlinearity. Dark and bright soliton solutions will be acquired by Jacobi elliptic solutions. We will acquire constraint conditions for the existence of obtained solitons. Our acquired solutions will be controlled by changing the diffraction coefficients.

Keyword(s): Optical Soliton, Nonlinear Schrödinger Equation, Casecased System, Soliton.

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Solution of the Maximum of Difference Equations

$$x_{n+1} = \max\left\{\frac{1}{x_{n-2}}, \frac{y_{n-2}}{x_{n-2}}\right\}; y_{n+1} = \min\left\{\frac{1}{y_{n-2}}, \frac{x_{n-2}}{y_{n-2}}\right\}$$

Dağıstan Şimşek[1], BurakOğul[2], Fahreddin Abdullayev[3]

[1]Department of Applied Mathematics and Informatics, Kyrgyz–Turkish Manas University, Bishkek,Kyrgyzstan, Endustrial Engineering, Selcuk University, Turkey.
[2]Mathematics, Kyrgyz – Turkish ManasUniversity,Bishkek,Kyrgyzstan,
[3]Department of Applied Mathematics and Informatics , Kyrgyz – Turkish Manas University, Bishkek,Kyrgyzstan, Department of Mathematics, Mersin University, Turkey.
E-mail(s):dagistan.simsek@manas.edu.kg, burak.ogul@manas.edu.kg, fahreddin.abdullayev@manas.edu.kg

The solutions of the following system of difference equations is examined.

$$x_{n+1} = \max\left\{\frac{1}{x_{n-2}}, \frac{y_{n-2}}{x_{n-2}}\right\}; y_{n+1} = \min\left\{\frac{1}{y_{n-2}}, \frac{x_{n-2}}{y_{n-2}}\right\} \quad (1)$$

where the initial conditions are positive real numbers.

Keyword(s): Difference Equations, Maximum Operations, Semicycle

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Solutions of fourth order three point BVPs on a half line

Erbil Çetin[1], Şerife Müge Ege[2]

[1,2] Faculty of Science, Department of Mathematics, Ege University, Izmir, 35100, Turkey
E-mail(s): erbil.cetin@ege.edu.tr, serife.muge.ege @ege.edu.tr

In this study, a fourth-order three-point nonlinear differential equation on a half line is cosidered. By using Shauder's fixed point theorem, sufficient conditions for the existence of a solution between a pair of lower and upper solutions are presented. An example is given to illustrate our results.

Keyword(s): fourth order differential equation, lower and upper solution, half line.

This research is supported by Ege University, Scientific Research Project (BAP), Project Number: 2015 FEN 070.

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Solutions of The Rational Difference Equations

$$x_{n+1} = \frac{x_{n-7}}{1 + x_{n-1}x_{n-3}x_{n-5}}$$

Dağıstan Şimşek[1], BurakOğul[2], Fahreddin Abdullayev[3]

[1]Department of Applied Mathematics and Informatics, Kyrgyz–Turkish Manas University, Bishkek, Kyrgyzstan, Endustrial Engineering, Selcuk University, Turkey.
[2] Mathematics, Kyrgyz – Turkish ManasUniversity,Bishkek,Kyrgyzstan,
[3]Department of Applied Mathematics and Informatics , Kyrgyz – Turkish Manas University, Bishkek, Kyrgyzstan, Department of Mathematics, Mersin University, Turkey.
E-mail(s): dagistan.simsek@manas.edu.kg, burak.ogul@manas.edu.kg, fahreddin.abdullayev@manas.edu.kg

In this paper the solutions of the following difference equation is examined,

$$x_{n+1} = \frac{x_{n-7}}{1 + x_{n-1}x_{n-3}x_{n-5}}, \quad n=0,1,2,... \qquad (1)$$

where the initial conditions are positive real numbers.

Keyword(s): Difference equation, Period Eight Solution

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Some applications to generalized hyperharmonic numbers of order r and matrices

Gizem Bilgin[1],Neşe Ömür[2]

[1]Institute of science department of Mathematics, Kocaeli university İzmit, Kocaeli,Turkey
[2]Faculty of arts and sciences department of Mathematics, Kocaeli university,İzmit,Kocaeli, Turkey
E-mail(s):g_z_m_blgn@hotmail.com, neseomur@kocaeli.edu.tr

In this study, considering matrices with generalized hyperharmonic numbers of order r, we give some applications to these matrices.

Keyword(s): hyperharmonic,matrices,binomial coefficints

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Some Combinatorial Properties of Split k-Fibonacci and Split k-Lucas Quaternions

Emrah Polatlı[1] and Can Kızılateş[2]

[1,2] Mathematics, Bülent EcevitUniversity, Turkey,
E-mail(s): emrah.polatli@beun.edu.tr, can.kizilates@beun.edu.tr

In this study, we define the split k-Fibonacci and split k-Lucas quaternions and obtain some combinatorial properties for these quaternions.

Keyword(s): Splitk-Fibonacciquaternions, splitk-Lucasquaternions, Binetformula, generatingfunction.

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Some Fixed Point Theorems In Terms of Quasi-Contractions

Hakan Şimşek

Department of Mathematics, Faculty of Science and Arts, Kırıkkale University, Turkey
E-mail(s):hsimsek@kku.edu.tr

This speech is devoted to some new fixed point theorems via quasi-contractions of type (A) and of type (B) in a quasi metric spaces. To do this, we modify the quasi-contractions. The results allow us to present the fact that although the Hausdorfness condition of quasi metric space is needed for the mapping of quasi contraction of type (A), it is not necessary to guarantee the existence of fixed point for the mapping of quasi contraction of type (B).

Keyword(s): Quasi metric space, fixed point, quasi-contraction.

Some New Inequalities On Generalization Of Hermite-Hadamard And Bullen Type Inequalities

İmdat İşcan[1], Tekin Toplu[2], Fatih Yetgin[3]

[1]Department of Mathematics Faculty of Secience and Arts, Giresun University, Turkey
[2]Institute of Science, Giresun University, Giresun University, Turkey
[3]Department of Mathematics Faculty of Basic Sciences, Gebze Technical University, Turkey
E-mail(s):imdati@yahoo.com, tekintoplu@gmail.com, fyetgin@gtu.edu.tr

In this paper, we give a new general identity for differentiable functions. A consequence of the identity is that we obtain some new general inequalities containing all of the Hermite-Hadamard and Bullen type for functions whose derivatives in absolute value at certain power are convex. Some applications for special means of real numbers are also given.

Keyword(s): convex functions, Hermite-Hadamard type inequalities, Bullen type inequalities

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Some New Properties on Monogenic Semigroup Graphs

Nihat Akgüneş[1]

[11]Department of Mathematics-Computer Sciences, Faculty of Science, Necmettin Erbakan University, Turkey,
E-mail(s):nakgunes@konya.edu..tr

In this study, by considering monogenic semigroup graphs, it will be investigated some special parameters and some special graph numbers. Furthermore it will be investigated some Eigenvalue and Charasterictic Polynomial for monogenic semigroup graphs.

Keyword(s): Graphs, Zero-Divisor Graphs, Monogenic Semigroup Graph.

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Some Properties of Fine Topology with an Alternative Capacity in Weighted Variable Exponent Case

Cihan Ünal[1], Ismail Aydın[2]

[1,2] Department of Mathematics, Sinop University, Turkey
E-mail(s):cihanunal88@gmail.com, iaydin@sinop.edu.tr

In this study, we present the fine topology in the weighted variable exponent condition. We, also, consider fine continuity with respect to an alternative relative capacity in the weighted variable exponent Sobolev space. Moreover, we study energy estimates for supersolutions of the p(.)- Laplace equation.

Keyword(s): Weighted variable exponent Sobolev spaces, Sobolev capacity, Thinness.

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Some Properties of Solution and Finite Difference Scheme for Integro-Differential Model with Source Terms Based on Maxwell System

Temur Jangveladze[1, 2], Zurab Kiguradze[1, 2], Maia Kratsashvili[3, 4]

[1]I.Vekua Institute of Applied Mathematics of Iv. Javakhishvili Tbilisi State University (Department of Mathematical Modelling and Numerical Mathematics, Tbilisi, Georgia)
[2]Georgian Technical University (Department of Mathematics, Tbilisi, Georgia)
[3]Sokhumi State University (Faculty of Mathematics and Computer Sciences, Tbilisi, Georgia)
[4]St. George's British Georgian School (Department of Mathematics, Tbilisi, Georgia)
E-mail(s): tjangv@yahoo.com, zkigur@yahoo.com, maiakratsashvili@gmail.com

Construction, investigation, and computer realization of algorithms for approximate solution of problems describing applied processes represent the actual sphere of modern mathematics. Mathematical models of diffusive processes lead to initial-boundary value problems for nonstationary partial differential and integro-differential equations and systems of those equations. Most of those problems, as a rule are nonlinear. This fact significantly complicates the investigation of such models.One of such nonlinear system appears, for example, at mathematical modeling of electromagnetic field propagation into a medium. The main peculiarity of such systems is strong interconnection of the equations. These circumstances require tailoring methods of investigation for each particular model, since somewhat general theory even for similar linear systems is not yet developed enough. Naturally, there arises the necessity of solving those problems numerically which itself requires to overcome significant difficulties.While propagating in the medium, variable magnetic field induces a variable electrical field that generates a current. The current causes increase the medium temperature. It is necessary to take into account that fact for large amplitudes of temperatures. In the quasi-stationary case the corresponding system of Maxwell equations can be reduced to the integro-differential form - D.G. Gordeziani, T.A. Jangveladze (Dzhangveladze), T.K. Korshia, Existence and uniqueness of the solution of a class of nonlinear parabolic problems. Differ. Uravn., 19 (1983), 1197-1207 (Russian). English transl.: Differ. Equ., 19 (1984), 887-895.Our goal is the investigation and numerical resolution of system of nonlinear integro-differential equations above with source terms. Well-posedness, large time behavior of solution of the corresponding initial-boundary value problem and finite-difference scheme for that model are investigated. Many scientific works are devoted to the study of problems considered in the presented work. Mainly the investigations are made for special cases for the diffusion coefficient. For citations see, for example, monograph - T. Jangveladze, Z. Kiguradze, B. Neta, Numerical Solution of Three Classes of Nonlinear Parabolic Integro-Differential Equations. Elsevier, ACADEMIC PRESS, 2016.

In the present work investigation is extended and the classes of nonlinearities are widened. Various numerical experiments are fulfilled and several graphical illustrations are presented as well. Obtained numerical results to the theoretical findings are compared.

Keyword(s): Nonlinear integro-differential system, large time behavior, discrete analogs, convergence.

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Some Recent Results on Convolution Type Multidimensional Singular Integral Operators

Gümrah Uysal[1] and Sevgi Esen Almalı[2]

[1]Department of Computer Technologies, Karabük University, Turkey
[2] Department of Mathematics, Kırıkkale University, Turkey
E-mail(s): [1]guysal@karabuk.edu.tr, [2]sevgi_esen@hotmail.com

In this work, we prove some weighted convergence results for convolution type multidimensional nonlinear singular integral operators. First, we show the existence of the operators. Then, we give a theorem concerning pointwise convergence. Finally, we obtain the rate of convergence.

Keyword(s): generalized Lebesgue point, Lipschitz condition, weighted convergence.

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Some Results on a Class of Projective Klingenberg Planes

Atilla Akpinar[1], Abdurrahman Dayioglu [2]

[1] A.A. (Mathematics, Uludag University, Turkey),
[2] A.D. (Mathematics, Uludag University, Turkey)
E-mail(s): aakpinar@uludag.edu.tr, dayioglu@uludag.edu.tr

In this presentation, we study on a class of projective Klingenberg planes coordinatized by a plural algebra of order m. So, addition and multiplication of any non-neighbour two points on the certain line of the plane are given. Moreover, some combinatorial results on the class of planes are obtained. Also, the incidence matrix for the special case of the class is given. Finally, a collineation of the class of the planes is obtained.

Keyword(s): Projective Klingenberg Plane, Addition, Multiplication, Collineation.

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Some Results on Neutrosophic Matrix

Banu Pazar Varol [1], Vildan Çetkin [2], Halis Aygün[3]

[1, 2, 3] Kocaeli University, Department of Mathematics, Umuttepe Campus, Kocaeli, Türkiye

E-mail(s):banupazar@kocaeli.edu.tr, vcetkin@gmail.com , halis@kocaeli.edu.tr

The goal of this talk is to introduce single valued neutrosophic (for short, neutrosophic) matrix as a generalization of fuzzy matrix, intuitionistic fruzzy matrix etc. Then we investigate some of its algebraic operations such as addition, subtraction, product, transpose and so on. Then, we prove that the neutrosophic matrix forms a vector space under component wise addition, multiplication and scalar multiplication.

Keyword(s): Neutrosophic set, single valued neutrosophic set, neutrosophic matrix.

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Some Results on Telescopic Numerical Semigroups

Meral Süer[1], Sedat İlhan[3]

[1] Faculty of Science and Literature, Department of Mathematics, Batnan University, Turkey,
[2] Faculty of Science, Department of Mathematics, Dicle University, Turkey.
E-mail(s): meral.suer@batman.edu.tr, sedati@dicle.edu.tr

We will obtain the telescopic numerical semigroups families generated triply and fixed multiplicity. We will give some information about some specific invariants of these obtained families.

Keyword(s): Numerical semigroups, Telecopic numerical semigroups, Frobenius number.

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Some coupled coincidence point results for contractions on cone b-metric spaces over Banach algebras

Hatice Çay[1],Muttalip Özavşar[2]

[1]Affiliation of Author 1(IMU Vocational School, Istanbul Medipol University, Turkey),
[2], Affiliation of Author 2 (Mathematics, Yildiz Technical University, Turkey)
E-mail(s):hcay@medipol.edu.tr, mozavsar@yildiz.edu.tr

In this work we extend some coupled coincidence point result for contractions on cone b-metric spaces over Banach algebras. Our result is a generalization of Theorem 3.1 in [1].

Keyword(s): coupled coincidence point, cone b-metric space, Banach algebras.

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Some Fixed Point Results in Quasi-Metric Spaces

Hakan Şimşek[1], Tuğba Yalçın[2]

[1]Department of Mathematics, Faculty of Science and Arts, Kırıkkale University, Turkey
[2]Department of Mathematics, Faculty of Science and Arts, Kırıkkale University,
E-mail(s):hsimsek@kku.edu.tr, tuubaa@hotmail.com

This speech is mainly related to the simulation function is defined by Kojasteh et al. in 2015 such that Khojasteh introduced the notion of Z-contraction which is a new type of nonlinear contractions defined by using a specific simulation function. Then, they proved existence and uniqueness of fixed points for Z-contraction mappings. After this work, studies involving simulation functions were performed by various authors. In this paper, we continue to study generalized simulation function in a quasi metric space and we present a new fixed point theorem.

Keyword(s): Quasi metric space, simulation functions, fixed point, quasi-contraction.

Some Integral Inequalities for Operator (h,m)-Convex Functions in Hilbert Space

Dilan Yardimciel[1], Erdal Ünlüyol[1]

[1] Mathematics, Ordu University, Turkey
E-mail(s): dilanyardimciel@gmail.com, eunluyol@yahoo.com

In this paper, It is investigated some new new integral inequalities and properties for a new class of operatör convex functions, which so-called operatör (h,m)-convex function in Hilbert space.

Keyword(s): Hilbert space, operator-convex function, operator (h,m)-convex functions

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Some Properties of Jackson Type Generalization of Nonlinear Integral Operators

Başar Yılmaz

Art & Science Faculty, Department of Mathematics KırıkkaleUniversity (Kırıkkale, Turkey)
E-mail(s): basaryilmaz77@yahoo.com

In this presentation, we first describe the Jackson-Type generalization of the nonlinear convolution operator defined by Angeloni and Vinti in [3].Then we prove a global smoothness preservation result of this operators. We also study on convergence in variation

Keyword(s): Nonlinear, Integral operators, Jackson type-generalization

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Some Properties of Special Vertices of the Suborbital Graphs

Ali Hikmet Deger [1], Ummugulsun Akbaba [2]

[1]Mathematics, Karadeniz Technical University,Turkey
[2] Mathematics, Karadeniz Technical University,Turkey
E-mail(s): ahikmetd@ktu.edu.tr, ummugulsun.akbaba@ktu.edu.tr

Using general ideas in the study of (Sims, 1967), suborbital graphs produced by imprimitive action on rational projective line of the modular group Γ were examined. Properties of Farey graph $G_{1,1}$ were extended to suborbital graphs $G_{u,N}$, where $(u, N) = 1$ and $N > 1$ (Jones et al., 1991). In our previous study, trees which are subgraphs of the suborbital graphs $F_{u,N}$ consisting of the orbits in $[\infty]$ block of $G_{u,N}$ were examined. Relationships of continued fractions with vertices of paths of minimal length on the subgraphs were established and value of the farthest vertex which an vertex can be bound on this path of the suborbital graph $F_{u,N}$ was found (Deger et al., 2011). In the present study, using structure of continued fractions,

Keyword(s): Suborbital Graphs, Minimal Length, Continued Fractions

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Some Properties Over Zero-Divisor Graphs of Some Finite Commutative Rings

Nihat Akgüneş[1]

[1]Department of Mathematics-Computer Sciences, Faculty of Science, Necmettin Erbakan University, Turkey,
E-mail(s): nakgunes@konya.edu..tr

In this study, we prove some graph parameters over the well known zero-divisor graph of some finite commutative rings. In additionally, we find some graph indices and some graph numbers of the zero-divisor graph over some commutative rings.

Keyword(s): Graphs, Zero-Divisor Graphs, Graph Parameters.

Some results for multivalued maps on metric space endowed with a graph

Özlem Acar[1], İshak Altun[2]

[1]Mersin University, Faculty of Science and Arts, Department of Mathematics, Mersin, Turkey,
[2], Kırıkkale University, Faculty of Science and Arts, Department of Mathematics, Kırıkkale, Turkey
E-mail(s):ozlemacar@mersin.edu.tr, ishakaltun@yahoo.com

The main aim of this talk is to introduce a new type contraction, that is, multivalued F-G-contraction, on a metric space with a graph. We establish some fixed point results using this new type contraction. At the end, we give an illustrative example which shows that our result is more general than the known.

Keyword(s): Fixed point, multivalued maps, directed graph, F-contraction, complete metric space.

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Spacelike Factorable Surfaces in 4-Dimensional Minkowski Space

Sezgin Büyükkütük[1], Günay Öztürk[1]

[1]Mathematics, Kocaeli University, Turkey,
E-mail(s): sezginbuyukkutuk@kocaeli.edu.tr, ogunay@kocaeli.edu.tr

In this study, we consider the spacelike factorable surfaces in Minkowski 4-space. We characterize such surfaces in terms of their Gaussian curvature and mean curvature. We classify flat and minimal spacelike factorable surfaces.

Keyword(s): Factorable surface, Minkowski 4-space, Gaussian curvature, mean curvature.

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Stability of an integro-differential equation

İrem Akbulut[1], Cemil Tunç[2]

[1]Mathematics, Siirt University, Turkey
[2]Mathematics, Yuzuncu Yil University, Turkey
E-mail(s)::iremmmatematik@gmail.com ,cemtunc@yahoo.com

In this work, we discussstability of solutions of a Volterra integro-differential equation by using fixed point theory. By this work, we aim to improve some works found in the literature and to do a contribution to the literature.

Keyword(s): Fixed points, stability, integro-differential equation,contraction.

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Stability and Hopf Bifurcation Analysis of a Mathematical Model in Tumor Angiogenesis

İrem Çay[1], Serdal Pamuk[2]

[1]Mathematics, Kocaeli University, Turkey
[2]Mathematics, Kocaeli University, Turkey
E-mail(s): irem.atac@kocaeli.edu, spamuk@kocaeli.edu

In this paper we introduce a reaction diffusion system which models the interaction between tumor cell and the inhibitor. We obtain some conditions on the positive equilibrium solutions. Then, we investigate the stability of them under these conditions. We also show the existence of Hopf bifurcation. Finally we provide some figures to show that the equilibrium solutions are indeed asymptotically stable.

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Keyword(s): Reaction-diffusion system, Hopf bifurcation.

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Δ^m -Statistical Convergence of Order $\tilde{\alpha}$ forDouble Sequences of Functions

Muhammed Çınar [1], Mikail Et[2],Harun Polat[3]

[1]Mathematics, MuşAlparslanUniversity, Turkey
[2]Mathematics, Fırat University, Turkey
[3]Mathematics, MuşAlparslanUniversity, Turkey
E-mail(s):muhammedcinar23@gmail.com , mikailet68@gmail.com, hpolat_25@hotmail.com

In this study, we introduce and examine the concepts of Δ^m-pointwise and $\Delta^m -$ uniform statistical convergence of order $\tilde{\alpha}$ for double sequences of real valued functions. Also we give the concept of $\Delta^m -$ statistically Cauchy sequence for double sequences of real valued $\tilde{\alpha}$ functions and prove that it is equivalent to $\Delta^m -$ pointwise statistical convergence of order for double sequences of real valued functions. Also some relations between $S^2_{\tilde{\alpha}}(\Delta^m, f)$-statistical convergence and strong$\left[w^2_p\right]_{\tilde{\alpha}}(\Delta^m, f)$ summability are given.

Keyword(s): Statistical convergence, Sequences of function, Cesàrosummability.

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(λ, μ)Statistical Convergence on a Product Time Scale

Muhammed Çınar[1], Yavuz Altın[2],Emrah Yılmaz[3],Mikail Et[4]

[1]Mathematics, Muş Alparslan University, Turkey,
[2,]Mathematics, FıratUniversity, Turkey,
[3]Mathematics, FıratUniversity, Turkey,
[4]Mathematics, FıratUniversity, Turkey,
E-mail(s):muhammedcinar23@gmail.com, yaltin23@yahoo.com, emrah231983@gmail.com, mikailet@yahoo.com

We give definition of (λ, μ)-statistical convergence (stat-convergence) on a product time scale. Furthermore, we generalize de la Vallée Poussin mean and define strongly (V, λ, μ)-summable functions, stat-limit superior and inferior on that time scale. Then, we Express some inclusion relations.

Keyword(s): Statistical convergence, Time scale, Cesàrosummability.

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Suborbital Graphs of Some Modular Groups

Nazlı Yazıcı Gözütok[1], Bahadır Özgür Güler[2]

[1]Department of Mathematics, Karadeniz Technical University, Turkey
[2]Department of Mathematics, Karadeniz Technical University, Turkey
E-mail(s): nazliyazici@ktu.edu.tr, boguler@ktu.edu.tr

It's well known that each group can be defined in terms of generators and relations and that corresponding to such a presentation there is a unique graph. A "drawing" of this graph gives a "picture" of the group, from which can be determined certain properties of the group. In such a way, Sims introduced the idea of the suborbital graphs of a permutation group G acting on a set Ω. Then, Jones, Singerman and Wicks examined suborbital graphs of the modular group by Sims theory. These are Γ-invariant directed graphs with vertex set $\mathbb{Q}$, their edge-sets being the orbits of Γ on the cartesian square $\mathbb{Q} \times \mathbb{Q}$. Apart from the trivial case, corresponding to the diagonal orbit,there is one suborbital graph. After this, similar studies were done for related finitely generated groups. In this study we examine the connection between modular group and picard group with this idea. Given a permutation group G on a finite set, some natural questions arise as follows: Orbit problem: What are the orbits of G? Block problem: Is G primitive? If not, find a nontrivial block for G. Actually, it is more important to find the minimal nontrivial blocks for G because many computations dealing with permutation groups work better with it. In this meaning, the choice of decomposition is substantial. Hence, our aim is to see how graphs are affected by these decomposition.

Keyword(s): Picard group, modular group, congruence subgroups.

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Sums of Balancing and Cobalancing Numbers

Mustafa Ascı

Department of Mathematics, Pamukkale University, Denizli,Turkey
E-mail(s): masci@pau.edu.tr

In this paper we study the Balancing and Cobalancing numbers and the relations between these numbers. We give the sums of these numbers by matrix methods. By these method we define matrices and take powers of these matrices so the elements of these matrices give the sums of the balancing and cobalancing numbers.

Keyword(s): Balancing Numbers, Cobalancing Numbers, Sums, Matrix Methods.

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Surfaces using an Asymptotic Curve in Lie Group

Zühal Küçükarslan Yüzbaşı[1], Dae Won Yoon[2], Mehmet Bektaş[3]

[1,3] Firat University, Faculty of Science, Department of Mathematics,Elazig/Turkey
E-mail(s): zuhal2387@yahoo.com.tr1 and mbektas@firat.edu.tr3
[2] Department of Mathematics Education and RINS Gyeongsang National University Jinju 52828, Republic of Korean
E-mail(s): dwyoon@gnu.ac.kr2

In this paper, we study the problem of constructing surfaces using an asymptotic curve in the three dimensional Lie group G. We give a parametric representation of the surface as a linear combination of the Frenet frame in G. We get the conditions when the given curve is an isoasymptotic which is both an asymptotic and an isoparametric curve on the parametric surface in G. Also, we illustrate some examples for support of our method.

Keyword(s): Parametric surfaces, Lie group, Asymptotic curve.

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Convergence Theorems for a Faster Iteration Process for Suzuki's Generalized Nonexpansive Mapping With Numerical Examples

Osman Alagöz[1], Birol Gündüz[2], Sezgin Akbulut[3]

[1]Mathematics, Bilecik Şeyh Edebali University, Turkey.
[2]Mathematics, Erzincan University, Turkey.
[3]Mathematics, Ataturk University, Turkey.
E-mail(s): osman.alagoz@bilecik.edu.tr, birolgndz@gmail.com, sezginakbulut@atauni.edu.tr

In this paper, we compared rates of convergences of some iteration processes which converge faster than Picard, Mann, Ishikawa and S iteration processes. Then we proved strong and weak convergence theorems for the fastest iteration process including a Suzuki's generalized nonexpansive mapping in Banach spaces. We also supported our theoretical findings via numerical examples.

Keyword(s): faster iteration, rate of convergence, Suzuki's nonexpansive mapping, fixed point theory

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Synthesis And Characterisation Of Phthalocyanine Which Containing Acidic Moiety

Nebahat Şahin, Ahmet Lütfi Uğur

Material Science and Engineering, Canakkale Onsekiz Mart University, Turkey
E-mail(s): nebahatozcan17@gmail.com , alugur@comu.edu.tr

The name of phthalocyanine was first used by Linstead. Pcs are synthetic macrocycles structurally similar to naturally available porphyrins such as hemoglobin, chlorophyll, and vitamin B12. Phthalocyanines properties have interesting potential technical applications such as molecular electronics, semiconductor and electrochromic display devices, photovoltaic and solar cells, gas sensors, synthetic metals, liquid crystals, optical disks, photodynamic therapy of cancer, electrophotography, and nonlinear optics.

In the present study, Phthalonitrile compounds containing a acidic group were synthesized. This was accomplished by reacting the appropriate solvent, potassium carbonate, and the starting materials at the appropriate temperature. Synthesized phthalocyanine compounds were synthesized by determining the optimum conditions with the template effect of different metal salts. Initially, all synthesized new compounds were characterized via FTIR, UV–Vis, MS. Secondly Its dye and antibacterial features examined on respectively cotton fabric and 5 species (9 sub-strains) of bacteria.

Keyword(s): phthalocyanine, cotton fabric, metallophthalocyanine

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Synthesis and Characterisation of Phthalocyanine Which Containing SO3 Moiety

Kübra Bilgiç[1], Ahmet Lütfi Uğur[1]

[1]Department of Material Science and Engineering, Canakkale Onsekiz Mart University, Canakkale, Turkey
E-mail(s): kubrabilgic16@gmail.com, alugur@comu.edu.tr

Phthalocyanines synthesized by coincidence in 1907 as a by-product which consists of four symmetric imino isoindole units and depends on molecule size metals can be localized in the center of phthalocyanines. As a consequence of its attractive physical, electrochemical, optical properties last three decades PCs has been investigated quite popular. Due to remarkable thermal stability and chemical inertness metal phthalocyanines derivatives (MPcs) are used in technological and therapeutic areas included catalysts, commercial dyes, semiconductor materials, photoconductive agents, photosensitizers for photodynamic therapy, optical and electrical materials, chemicals sensors, liquid crystals.

In the present study metal phthalocyanine is synthesized with bromine and SO3 substitute groups which make MPc asymmetrical. In one hand SO3 group enhances MPc solubility, on the other hand Br subtitute groups as a halogen gives the compound antibacterial properties. Besides MPcs are commonly used as a textile dye for that purpose synthesized compound’s colouring quality evaluated on cotton fabric. Initially the new compounds were characterized via FTIR, UV–Vis, MS. Secondly Its dye and antibacterial features examined on respectively cotton fabric and 5 species with their 9 sub-strains of bacteria. Lastly, the aim of photodynamic therapy effectiveness, zinc phthalocyanine is synthesized in the same reaction conditions and analyzed in-vitro following characterization.

This research was supported by COMU-BAP committee, FBA-2016-806 project.

Keyword(s): Phthalocyanine, Zinc, Bromine, Photodynamic therapy.

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Tauberian Remainder Theorems for the Iterations of Logarithmic Method of Summability

Muhammet Ali Okur[1], Ümit Totur[2]

[1]Mathematics, Adnan Menderes University, Turkey,
[2]Mathematics, Adnan Menderes University, Turkey
E-mail(s):mali.okur@adu.edu, utotur@adu.edu.tr

In this study, we prove some Tauberian remainder theorems for the iterations of logarithmic method of summability.

Keyword(s): Tauberian remainder theorem, logarithmic summability method, λ-bounded sequence.

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Text Classifcation Based on Polyhedral Conic Functions (PCFs)

Nur Uylaş Satı

Bodrum Vocational School of Maritime, Muğla Sıtkı Koçman University, Turkey
E-mail(s): nursati@mu.edu.tr

With the rapid growth of online information, text classification has become one of the key techniques for handling and organizing text data. Text classification, namely text categorization aims to classify the documents into a fixed number of predefined categories(labels). Recently various methods in data mining have been experienced for text classification in literature. In this paper Polyhedral Conic Functions (PCFs) are used to classify the documents. The mathematical model of the method is expressed and numerical experiments on a real-world dataset is presented.

Keyword(s): Text Classification; Polyhedral Conic Functions; Mathematical Programming.

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The Adjacency-Pell Sequence in Groups

Ömür Deveci[1], Yeşim Aküzüm[2], Yasemin Taşyurdu[3]

[1,2]Department of Mathematics, Faculty of Science and Letters,
Kafkas University, Kars 36100, Turkey
[3]Department of Mathematics, Faculty of Sciences and Art,
University of Erzincan, Erzincan 24000,Turkey
E-mail(s): odeveci36@hotmail.com, yesim_036@hotmail.com, ytasyurdu@erzincan.edu.tr

The adjacency-Pell sequence was defined by Karaduman and Deveci (see [3]). In this work, we study the adjacency-Pell sequence in groupsand then we define the adjacency-Pell-orbit of 2-generator groups. Finally, we examine the adjacency-Pell-orbits of the finite groups as applications of the results obtained.

Keyword(s): The adjacency-Pell sequence, Group, Orbit, Period.

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The AG_3(4,4) design from 2-(64,16,5) designs

Mustafa Gezek

Michigan Technological Univeristy, Houghton MI USA
E-mail(s): mgezek@mtu.edu

A geometric design is defined to be a design having as points and blocks the points and d-subspaces of PG(n,q) or AG(n,q), and is denoted by PG_d(n,q) or AG_d(n,q), respectively. Harada, Lam and Tonchev, found two non-isomorphic designs with 2-rank 16 having same parameters as AG_2(3,4). In 2016, using linear embeddability of these designs, Tonchev provided some techniques to get one design from another. The number of non-isomorphic 2-(256,64,21) designs is > 10^{72}, but the only known 2-(256,64,21) design with 2-rank 25 is the geometric design AG_3(4,4). Applying the techniques Tonchev provided to AG_3(4,4) design for a search for non-geometric design with these parameters look like computationally not possible to apply. In this talk, we restrict the search to the linear embeddings which are invariant under a sufficiently large subgroup of the automorphism group of the residual designs of AG_3(4,4).

Keyword(s): Affine resolvable designs, p-rank, geometric designs and codes.

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The Design of Advanced Continuous Passive Motion (CPM) Device for Knee Rehabilitation Process

Hilal Yıldırım[1], Kübra Dere[1], Durmuş Karayel[1], S. Serdar Özkan[1], Gökhan Atalı[2]

[1]Mechatronics Engineering, Sakarya University, Turkey
[2]Electronics and Automation, Sakarya University, Turkey
E-mail(s): hilal.yildirim4@ogr.sakarya.edu.tr, kubra.dere1@ogr.sakarya.edu.tr, dkarayel@sakarya.edu.tr, sozkan@sakarya.edu.tr, gatali@sakarya.edu.tr

Usually, movement disorders are seen at various forms in many patients who have had surgery or suffered a trauma. Patients need to be rehabilitation after surgical operation in order to regain their move ability. Further, such patients must not be forced for certain movements unless they can recover normal level of motion. Nowadays, some devices commonly called CPM (Knee Continuous Passive Motion) are used in physical therapy rehabilitation and so there are many existing CPM machines in use currently. However, patients have to go physiotherapy and rehabilitation centers so that they can exercise with the CPM devices. These devices, which are used for knee joint improvement, have been widely produced in order to be used at home in recently, but they are quite expensive.

In this study, an innovative device has been developed that will be an alternative to existing CPM devices. The device which can be used by the patients themselves has active and passive rehabilitation. A kinematic model of an exoskeleton mechanism that compatible with knee orthosis has been established for patients who have had surgery on their legs or weak leg muscles. It has been ensured that the patient can exercise by the model using its own mobility without any external influence. And also real time collection of data from the device is transferred simultaneously to the relevant physician via internet based system. In this way, the patient can be instantly followed by the doctor without going to the hospital. In addition to, these data are recorded in real time and so past reports can be obtained when requested.

This new CPM device will be more functional according to available devices and it will have significantly a low-cost. Therefore, it will be expected that the developed device will have a wide usage area in hospitals and at homes.

Keyword(s): CPM, knee rehabilitation, knee joint improvement, physiotherapy

The Jacobsthal-Padovan p-Orbits of Finite Groups

Yeşim Aküzüm[1], Ömür Deveci[2]

[1,2]Department of Mathematics, Faculty of Science and Letters Kafkas University, (Kars-Turkey)
E-mail(s): yesim_036@hotmail.com, odeveci36@hotmail.com

The Jacobsthal-padovan p-sequence was defined by Deveci (see [10]). In this work, we redefine the Jacobsthal-padovan p-sequence by means of the elements of the groups which have two generators and then we examine this sequence in the finite groups in detail. Also, we obtain the periods of the Jacobsthal-padovan p-sequence in the Fox group $G_{1,l}$ for every $l \geq 3$ as applications of the results obtained.

Keyword(s): Jacobsthal-padovan p-orbit, Group, Period.

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10-12 May, 2017, Istanbul, Turkey

The Structure of $\mathbf{Z}_2\mathbf{Z}_4\mathbf{Z}_8$-Codes

İsmail Aydoğdu[1], Fatmanur Gürsoy[2]

[1]Mathematics, Yildiz Technic University, Turkey,
[2,]Mathematics, Yildiz Technic University, Turkey.
E-mail(s):iaydogdu@yildiz.edu.tr, fnurgursoy@hotmail.com

This study is related to the codes over $\mathbf{Z}_2^\alpha \times \mathbf{Z}_4^\beta \times \mathbf{Z}_8^\theta$ with α, β and θ are all odd positive integers. We define first $\mathbf{Z}_2\mathbf{Z}_4\mathbf{Z}_8$-additive codes which are actually extensions of recently introduced $\mathbf{Z}_2\mathbf{Z}_4$-additive codes. We determine the standard forms of both generator and parity-check matrices of a $\mathbf{Z}_2\mathbf{Z}_4\mathbf{Z}_8$-additive code C. Further, we investigate $\mathbf{Z}_2\mathbf{Z}_4\mathbf{Z}_8$-cyclic codes and give their generator polynomials and minimal spanning sets. We also present some examples of $\mathbf{Z}_2\mathbf{Z}_4\mathbf{Z}_8$-additive and cyclic codes.

Keyword(s): Generator Matrix, Parity-check Matrix, Cyclic Codes, $\mathbf{Z}_2\mathbf{Z}_4\mathbf{Z}_8$-additive Codes.

The action of the decomposition on the generating functions for the generalized Bernoulli polynomials

Mustafa Alkan

Departmenty of Mathematics, Akdeniz University, Turkey
E-mail(s): alkan@akdeniz.edu.tr

In this talk, we derive some group homomorphisms on a finite cyclic group by using the conductor of a fixed group homomorphism. Then we obtain generating functions for the generalized Bernoulli numbers and polynomials attached to new homomorphism and then achieve multiplication formulas for the generalized Bernoulli polynomials attached to the homomorphism and the other polynomials.

Keyword(s): Generalized Bernoulli numbers; Generalized Bernoulli polynomials.

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The Binomial m-th Order Difference Sequence Spaces

Mustafa Cemil Bişgin

Mathematics, Recep Tayyip Erdoğan University, Turkey
E-mail(s):mustafa.bisgin@erdogan.edu.tr

In this study, we construct the Binomial m-th Order Sequence Spaces by using the domains of Binomial Matrix and m-th Order Difference Matrix. Also, we investigate some inclusion relations and characterize some matrix classes related to those spaces. Lastly, we give Schauder basis and alpha-, beta- and gamma-duals of those spaces.

Keyword(s): Sequence Spaces, Matrix Transformations, Schauder Basis, α-, β- And γ-Duals.

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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The Bound State Solutions of Klein-Gordon Particles in Generalized Symmetric Woods-Saxon Potential with Vector and Scalar parts

Bekir Can Lütfüoğlu

Faculty of Science, Department of Physics, Akdeniz University, Turkey
E-mail(s):bclutfuoglu@akdeniz.edu.tr

In this work we investigate the bound state solutions of the one dimensional Klein-Gordon equation with scalar and vector GSWS potentials of equal and negatively equal magnitudes.

Keyword(s): Generalized symmetric Woods-Saxon potential, Klein-Gordon equation, transmission and reflection coefficients, resonance condition.

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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The Derivative of Spectral Function of Sturm-Liouville Problem with Eigenvalue Parameter in the Boundary Condition

Elif Başkaya[1], Haskız Coşkun[2]

[1] Mathematics, Karadeniz Technical University, Turkey,
[2] Mathematics, Karadeniz Technical University, Turkey.
E-mail(s): elifbekar@ktu.edu.tr, haskiz@ktu.edu.tr

In this paper, we find the derivative of the spectral function of Sturm-Liouville problem with eigenvalue parameter in the boundary condition on half line $[a,\infty)$.

Keyword(s): Sturm-Liouville equation, boundary condition with eigenvalue, spectral function, asymptotics.

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The Fixed Point Theorems On Complex Valued Modular Metric Spaces

Kübra Özkan[1], Ali Mutlu[2], Utku Gürdal[3]

[1,2,3] Department of Mathematics, Manisa Celal Bayar University, Turkey,
E-mail(s): kubra.ozkan@cbu.edu.tr, ali.mutlu@cbu.edu.tr, utku.gurdal@cbu.edu.tr

In this paper, we give an introduction of the concept of complex valued modular metric spaces. We express some statement and results related to this concept and prove some extensions of known fixed point theorems as Banach's and Caristi's.

Keyword(s): complex valued modular metric; fixed point; complete complex valued modular metric.

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The Relations between P-Contractive Mapping and Categorized The Metrical Fixed Point Theorems

Gonca Durmaz[1], İshak Altun[2], Gülhan Mınak[3]

[1]Science Faculty, Department of Mathematics, Çankiri Karatekin University, Çankırı, Turkey,
[2,3]Art & Science Faculty, Department of Mathematics, Kirikkale Univertsity, Kirikkale, Turkey
E-mail(s): gncmatematik@hotmail.com,, ishakaltun@yahoo.com, g.minak.28@gmail.com

The aim of this talk is to introduce a new concept of P-contractive mapping on metric space and then explain relations between this mapping and Suzuki categorized the metrical fixed point theorems into four type class. We also claim that every contractive mapping is P-contractive but the converse may not be true in general. We show some examples illustrating this fact and provide some examples showing that nonexpensive mappings and P-contractive mappings are independent on metric spaces. We also compare the P-contractive mappings and Suzuki type contractive mappings on metric spaces.Finally, we present a fixed point theorem which belongs to Unnamed type class including the famous Edelstein fixed point theorem as properly.

Keyword(s): Fixed Point, P-contractive, Metric Space.

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Third Hankel determinant for some function classes related to k-Fibonacci Numbers

Sedat İlhan[1], Janusz Sokol[2], H.Özlem Güney[3]

[1] Mathematics, Dicle University, Turkey,
[2] Mathematics, Rzeszow University, Poland,
[3] Mathematics, Dicle University, Turkey,
E-mail(s):sedati@dicle.edu.tr, jsokol@ur.edu.pl, ozlemg@dicle.edu.tr,

The Fibonacci numbers are the numbers in the integer sequence 1, 1, 2, 3, 5, 8, 13, 21,…, called the Fibonacci sequence, and characterized by the fact that every number after the first two is the sum of the two preceding ones.

In this presentation, we use the k-Fibonacci number sequence for any positive real number k. Also, we obtain the upper bounds for third Hankel determinant for analytic functions in some special subclasses.

Keyword(s): Third Hankel determinant, starlike function, convex function, k-Fibonacci numbers.

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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Topological Equivalence Between a Metric and an S-Metric

Nihal Taş[1], Nihal Yılmaz Özgür[2]

[1]Mathematics, Balıkesir University, Turkey
[2]Mathematics, Balıkesir University, Turkey
E-mail(s):nihaltas@balikesir.edu.tr, nihal@balikesir.edu.tr

Recently, S-metric spaces have been introduced as a generalization of metric spaces. In this talk, we give some relationships between a metric and an S-metric with necessary examples. Also we introduce the topological equivalence between a metric and an S-metric.

Keyword(s): Metricspace, S-metricspace, topologicalequivalence.

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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Transmission Conditions for Plates System Composed of Elastic Plates with Differing Properties

Zahir Muradoğlu, Vildan Yazıcı

Mathematics, Kocaeli University, Turkey,
E-mail(s):zahir@kocaeli.edu.tr, vildan.yazici@kocaeli.edu.tr

The mathematical model of bending problem for the plate system which is composed of inhomogeneous elastic plates with differing elastic properties is presented by boundary value problems for the fourth order partial differential equations with discontinuous coefficients. Determination of transmission conditions at the common borders to ensure continuity at the common borders of the plates and the development of methods of appropriate numerical solution for the problem are current topic of applied mathematics.

In this study, numerical solution of a mechanical problem related to the bending of an elastic plate is analyzed. Here it is considered that no force is applied at boundaries and thin elastic plates system, whose lower surface is free, with differing elastic properties is bended by the force which is directed vertically to the mid-surface of the system and the weight is ignored.

The equilibrium equation for small bending of thin homogeneous plates can be written mathematically as following biharmonic equation:

$$\frac{\partial^2}{x_1^2}\left[D\left(\frac{\partial^2\omega}{\partial x_1^2}+\nu\frac{\partial^2\omega}{\partial x_2^2}\right)\right]+2\frac{\partial^2}{\partial x_1\partial x_2}\left[D(1-\nu)\frac{\partial^2\omega}{\partial x_1\partial x_2}\right]+\frac{\partial^2}{x_2^2}\left[D\left(\frac{\partial^2\omega}{\partial x_2^2}+\nu\frac{\partial^2\omega}{\partial x_1^2}\right)\right]=q(x), x\in G\subset R^2$$

Here, ω is the bending of mid-plane of plates, $D=Eh^3/12(1-\nu^2)$ is the cylindrical stiffness coefficient of plates, $E>0$ is Young's modulus, $\nu>0$ is Poisson's constant, $q(x)$ is the force function. Let suppose that, two thin plates whose cylindrical stiffness coefficients are $D^{\pm}$ occupying the rectangular region $\overline{G}=\left\{(x_1,x_2)\in R^2; -l_1\le x_1\le \ell_1, 0\le x_2\le \ell_2\right\}$ are connected tough with a beam whose bending stiffness coefficients are $B^{\pm}$ and torsional stiffness coefficient are $C^{\pm}$ at the common borders $x_1=0$.

Considering the mechanical properties of the beam supporting on the common borders of two thin rectangular plates with different properties, the transmission conditions and their finite difference approaches are obtained. The geometrical and mechanical interpretations of the numerical results obtained are given.

Keyword(s): Biharmonic equation, finite difference method, transmission condition.

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Tripotency of Linear Combinations of Three Tripotent Matrices That Mutually Commute

Emre Kişi[1], Halim Özdemir[2]

[1,2]Mathematics, Sakarya University, Turkey,
E-mail(s):ekisi@sakarya.edu, hozdemir@ sakarya.edu

The purpose of this note is to characterize all situations in which a linear combination of three commuting tripotent matrices is also a tripotent matrix. The main result obtained

could be viewed as a generalization of [C. Xu and R. Xu, Tripotency of a linear combination of two involutory matrices and a tripotent matrix that mutually commute, Linear Algebra Appl. 437 (2012), pp. 2091-2109]. The method used is more important than the generalization carried out, since its systematic structure makes it possible to solve other similar problems easily.

Keyword(s): Tripotent Matrix, Commutativity, Diagonalization, System of Linear Equations.

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Two-dimensional Inverse Quasilinear Parabolic Problem with Periodic Boundary Condition

İrem Bağlan [1] , Fatma Kanca [2]

[1] Mathematics, Kocaeli University,Turkey,
[2] Mathematics, Kadir Has University,Turkey
E-mail(s):isakinc@kocaeli.edu.tr, fatma.kanca@khas.edu.tr

In this study, we consider a coefficient problem of a quasilinear two-dimensional parabolic inverse problem with periodic boundary and integral over determination conditions.We prove the existence, uniqueness and continuously dependence upon the data of the solution by iteration method. Also we consider numerical solution for this inverse problem by using linearization and implicit finite difference schemes for solving the two-dimensional parabolic inverse problem are considered.

Keyword(s): Finite-differences; inverse problem; parabolic equations; temperature overspecification;two-dimensional diffusion.

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Uncountable Bessel System in Non-Separable Hilbert Spaces

Yunus Saçlı[1], Yusuf Zeren[2]

[1] Mathematics, Yıldız Technical University, Istanbul, Turkey,
[2] Mathematics, Yıldız Technical University, Istanbul, Turkey,
E-mail(s): yunussacli@gmail.com, yzeren@yildiz.edu.tr

In this work, Bessel families in non-separable Hilbert spaces are defined, and Besselianness criterion for a family is found. More details related to these results can be found in [1-8].

Keyword(s): Uncountable Bessel system, non-separable Hilbert spaces.

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Weighted Harmonic Bloch and Little Bloch Spaces on the Unit Ball of $\mathbb{R}^n$

Ömer Faruk Doğan

Department of Mathematics, Faculty of Arts and Sciences, Namık Kemal University, Turkey
E-mail(s):ofdogan@nku.edu.tr

We study one-parameter family of weighted harmonic Bloch spaces $b_\alpha, \alpha \in \mathbb{R}$ and little Bloch spaces $b_{\alpha 0}, \alpha \in \mathbb{R}$ on the unit ball of $\mathbb{R}^n$. We provide characterizations in terms of partial and radial derivatives and certain radial differential operators that are more compatible with reproducing kernels of harmonic Bergman-Besov spaces. We consider a class of integral operators and determine precisely when they are bounded on L^∞_α. We obtained the fundamental properties (completeness, seperability, etc.) of the spaces. We find non-trivial and non-polynomial harmonic function examples and as a consequence we show that all weighted harmonic Bloch and little Bloch spaces are distinct.

Keyword(s): Harmonic Bloch and Little Bloch space, Bergman space, Reproducing kernel, Radial fractional derivative

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Weighted Pseudo Almost Periodic Solutions for Nonlinear Duffing System

Ramazan Yazgan[1], Cemil Tunç[2]

[1,2] Mathematics, Yuzuncu Yil University, Turkey
E-mail(s):ramazanyazgan@yyu.edu.tr, cemtunc@yahoo.com

This paper investigates a class of nonlinear Duffing system with a delays argument. By using fixed point theorem, theory of weighted pseudo almost periodic functions and differential inequality techniques, new criteria for existence and uniqueness of weighted pseudo almost periodic solutions are established. Moreover, an example is given to demonstrate the effectiveness and improvements of the proposed results.

Keyword(s): Weighted pseudo almost periodic solution, Duffing system, Dichotomy, Fixed point theorem.

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Weighted Variable Exponent Sobolev Spaces with Zero Boundary Values

Cihan Ünal[1], Ismail Aydın[2]

[1,2] Department of Mathematics, Sinop University, Turkey
E-mail(s):cihanunal88@gmail.com, iaydin@sinop.edu.tr

In this study, we define weighted variable exponent Sobolev spaces with zero boundary values and investigate some properties of this spaces with weighted variable Sobolev capacity. We obtain Poincare inequality with respect to zero boundary values. Also, we consider the Dirichlet energy integral in regarding to this space.

Keyword(s): Weighted variable exponent Sobolev spaces; Sobolev capacity; Energy integral.

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The Bilinear Hardy-Littlewood Maximal and Littlewood-Paley Square Function on Weighted Variable Exponent Lorentz Space

Öznur Kulak[1]

[1]Banking and Finance, Giresun University, Turkey
E-mail(s):oznur.kulak@giresun.edu.tr

In this paper, using measure wdm instead of Haar measure m, weighted variable exponent Lorentz space is defined. Some properties of this space is discussed. Then boundedness of the bilinear Hardy-Littlewood maximal function and Littlewood-Paley Square Function is considered on weighted variable exponent Lorentz space.

Keyword(s): Variable exponent Lorentz space, Hardy-Littlewood maximal function, Littlewood-Paley Square Function

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The Bilinear Hardy-Littlewood Maximal and Littlewood-Paley Square Function on Weighted Variable Exponent Wiener Amalgam Space

Öznur Kulak[1]

[1]Banking and Finance, Giresun University, Turkey
E-mail(s):oznur.kulak@giresun.edu.tr

A new weighted variable exponent Wiener amalgam space is defined. This space's local component is variable exponent Lorentz space and its the global component is weighted Lebesgue space. Then boundedness of the bilinear Hardy-Littlewood maximal function and Littlewood-Paley Square Function is discussed on this new space.

Keyword(s): The Bilinear Hardy-Littlewood maximal function, The Bilinear Littlewood-Paley Square Function, Wiener amalgam space, Variable exponent Lorentz space.

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Zero-Dimensional Filter Convergence Spaces

Mehmet Baran[1], Ayhan Erciyes [2]

[1] Department of Mathematics / Erciyes University, Turkey
[2], Department of Mathematics and Science / Aksaray University, Turkey
E-mail(s):baran@erciyes.edu.tr , ayhanerciyes@aksaray.edu.tr

By generalizing the notion of convergent sequences, in 1937, Henri Cartan introduced a notion of filters which have applications in completions and compactifications, in Boolean algebra and in mathematical logic. In 1964, Kent introduced a filter convergence space, which is a generalization of a topological space based on the concept of convergence of filters (there it is called convergence function) by further weakening of the convergence axioms.

Zero-dimensional spaces were defined by Sierpinski in 1921, where a topological space is zero-dimensional if it has a base consisting of both open and closed sets.

In this paper, we characterize zero-dimensional filter convergence spaces and give some invariance properties of these spaces. Furthermore, in the realm of each of zero-dimensional filter convergence spaces we investigate the relationships among each of T_0, T_1 and T_2 filter convergence spaces.

Keyword(s): Topological category, filters, zero-dimensional space, filter convergence space.

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Zero-Dimensional and Pre-Hausdorff Family Spaces

Mehmet Baran[1], Tunçar Şahan[2], Ayhan Erciyes [3]

[1] Department of Mathematics / Erciyes University, Turkey
[2], Department of Mathematics / Aksaray University, Turkey
[3] Department of Mathematics and Science / Aksaray University, Turkey
E-mail(s):baran@erciyes.edu.tr , tuncarsahan@aksaray.edu.tr, ayhanerciyes@aksaray.edu.tr

In 1991, Baran introduced pre-Hausdorff objects in a set-based topological category which both are equivalent to the classical pre-Hausdorff axiom in the category of topological spaces, where a topological space is called pre-Hausdorff for any point x distinct from y, if there is a neighbourhood of x missing y or there is a neighbourhood of y missing x, then the two points have disjoint neighbourhoods. Pre-Hausdorff objects play a role in the general theory of geometric realizations, their associated interval and corresponding homotopy structures. Moreover, if X is a finite set, then the distinct pre-Hausdorff topologies on X are in one-to-one correspondence with the distinct partitions on X. Another use of pre-Hausdorff objects is to define various forms of each of Hausdorff objects, regular objects, and normal objects in arbitrary topological categories.

In this paper, we characterize zero-dimensional and pre-Hausdorff family spaces and give some invariance properties of these spaces. Furthermore, we investigate the relationships among each of these spaces.

Keyword(s): Topological category, pre-Hausdorff objects, zero-dimensional spaces, family spaces.

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Clustering Based on Vibrational Potential: Evidence from the Global Metal Market

Veysel Fuat Hatipoglu[1], Semra Hatipoglu[2]

[1] Department of Business Administration, Fethiye Faculty of Management, Mugla Sitki Kocman University, Turkey
[2] MA student at the Department of International Management and Trade, Social Sciences Institute, Mugla Sitki Kocman University, Turkey
E-mail(s):veyselfuat.hatipoglu@mu.edu.tr, semrakocayusuf@hotmail.com

It is deeply studied that many time series exhibit irregular behavior and this irregular behavior is due to the existence of nonlinear dependence as suggested by the economic theory. Hence, economic time series are governed by nonlinear dynamics. As the economic agents nonlinearly related they consist a complex system. Many methods based on time series analysis and complex systems are used for the analysis of economic phenomenon. In this study, we present and analyze the complex system of Global Metal Market. For this purpose, we first construct the network of 10 different metals expressed with the time series of trading values in the time scale of from November 2006 to November 2016 by using the distance based on dynamic time warping. Afterwards, we classify how each metal is connected to the core of the network and cluster each metal respect to their vibrational potential. Our results suggest that Nickel, Lead, and Tin are the most vulnerable agents to the economic crisis.

Keyword(s): Clustering, Vibrational Force, Global Metal Market, Time Series Analysis

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Numerical Scheme for Solving Fractional Differential Equations in the Beta-Derivative Sense

Veysel Fuat Hatipoglu[1]

1 Business Administration, Fethiye Faculty of Management, Mugla Sitki Kocman University, Turkey
E-mail(s):veyselfuat.hatipoglu@mu.edu.tr

This paper investigates the sinc collocation method to obtain the solution of the fractional differential equations based on the relatively new defined fractional beta-derivative. For this purpose a theorem is proved for the approximate solution obtained from the sinc collocation method. To show efficiency and simplicity proposed method, some examples are solved and the obtained solutions are compared with the exact solutions of the considered equations.

Keyword(s): Fractional differential equations, Boundary value problems, Sinc-collocation method, Beta-derivative.

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Efficiency of Three-dimensional Second Order Difference Plot and Deep Learning on Respiratory Sounds

Gokhan ALTAN[1], Yakup KUTLU[2], Yusuf GARBİ[3], Adnan PEKMEZCİ[4], Serkan NURAL[5]

[1] Department of Informatics, Mustafa Kemal University, Turkey
[2,3] Computer Engineering Dept., Iskenderun Technical University
[4,5]Antakya State Hospital
E-mail(s):gokhan_altan@hotmail.com, yakupkutlu@gmail.com

The second order difference plot (SODP) is a data visualization method of two consecutive wave points that is inspired by the Chaos Theory for many erratic nonlinear biomedical signals. The proposed method plots three consecutive wave points in 3D space. The obtained 3D-SODP space is segmented into 3-10 sections plane sections using spheres and cuboid polyhedrons of which centroids are at the origin.

Respiratory sounds are the auscultated sounds which are inducing by breathing with a stethoscope and are indispensable tool for respiratory ailments. One of the most deadliest and widespread respiratory ailments is Chronic Obstructive Pulmonary Disease (COPD). The COPD occurs as a result of becoming thick and inflamed airways by decreasing rates of smoking. The smokers for a few years are qualified as the potential COPD (COPD-0) patients. The same points from left and right lung are auscultated synchronously using two digital stethoscopes by a pulmonologist clinician in Antakya State Hospital. 12 channels of lung sounds from left and right chest sections are recorded for 15 seconds while patients have deep breathing through mouth at 4000 samples per seconds. The database contains the lung sound records from five of the interior level COPD patients and five of COPD-0 patients aged 38 to 68.

Deep Belief Networks (DBN) classifier consists of Restricted Boltzmann Machines to calculate the weights in unsupervised network stage and optimization of the calculated weights in supervised stage. The proposed DBN model has 2 hidden layers with 270 and 580 neurons. The classifier separated the COPD lung sounds and smokers' lung sounds with high rates of 95.84%, 93.34% and 93.65% for accuracy, sensitivity and selectivity, respectively.

The results indicate that, it is possible to diagnose the levels of the COPD using the proposed nonlinear feature extraction method and deep learning model together on respiratory sounds. This study was supported under the TUBITAK project (Project No: 116E190).

Keyword(s): respiratory sounds, deep learning, COPD, SODP

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Delegate Vector Machines

Huseyin Atasoy, Yakup Kutlu

Department of Computer Engineering, Iskenderun Technical University, Turkey
E-mail(s):huseyin.atasoy@iste.edu.tr, yakup.kutlu@iste.edu.tr

The kernel trick [1] is widely used in methods that consider nonlinear interactions between samples, especially in machine learning. This study aims to propose a novel classification method based on the kernel trick. First, vectors that represent samples are projected into an infinite dimensional space using Gaussian kernel. Then means of vectors of each class are calculated in the kernel space. Numbers of vectors in each class are reduced using a greedy approach that is based on selecting the nearest vectors to the mean vector iteratively one by one. The middle point between starting and ending points of the mean vector in the kernel space is considered as the starting point of the normal vector of the separator hyperplane. The separator hyperplane can be moved by moving starting point of the normal vector up or down. The method can also be used as a multi-class classifier assuming that there exist one hyperplane between each couple of classes considering all 2-conbinations of classes. Test results show that the classification accuracies are similar with results obtained using similar methods and higher in some cases.

Keyword(s): kernel trick, vector spaces, classification

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A New Approach on the Energy in Dynamical and Electro dynamical Force Fields for Timelike Particle

Talat Körpınar[1], Rıdvan C. Demirkol[2],Vedat Asil[3], Selçuk Baş[4]

[1]Mathematics, Mus Alparslan University, Turkey,
[2]Mathematics, Mus Alparslan University, Turkey,
[3]Mathematics, Fırat University, Turkey,
[4] Mathematics, Mus Alparslan University, Turkey,

E-mail(s):talatkorpinar@gmail.com, rcdemirkol@gmail.com, vasil@firat.edu.tr, slcbs@hotmail.com,

In this study, we firstly state equations of motion based on traditional Newtonian mechanics in terms of the Frenet frame adapted to the trajectory of the time like moving particle in Minkowski space. Then, we compute energy on the particle in resultant force field using geometrical description. Then, we also give the energy on the particle in distinct force fields on the particular dynamical and electro dynamical systems. Finally, we investigate the relation between energy on the particle in different force fields and energy on the particle in the Frenet vector field.

Keyword(s): Energy, Force Fields, Minkowski Space, Timelike Particle

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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A New Characterization on the Energy of Elastica in Lie Groups

Rıdvan C. Demirkol[1], Talat Körpınar[2], Muhammed T. Sarıaydın[3], Selçuk Baş[4]

[1]Mathematics, Mus Alparslan University, Turkey,
[2]Mathematics, Mus Alparslan University, Turkey,
[3] Mathematics, Mus Alparslan University, Turkey
[4] Mathematics, Mus Alparslan University, Turkey,

E-mail(s):rcdemirkol@gmail.com, talatkorpinar@gmail.com, talatsariaydin@gmail.com, slcbs@hotmail.com,

In this study, we firstly compute energy on the particle in the Frenet vector field lying on Lie group by using geometric descriptions. Then, we also investigate the relation between the energy of particle in different vector fields and bending energy functional of the same particle assuming that it has a elastic feature in Lie group.

Keyword(s): Energy, Elastica, LieGroup

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A New Study on 2-Absorbing Gamma Ideals of Gamma Rings

Deniz Sönmez[1],Gürsel Yeşilot[1],Serkan Onar[1], Bayram Ali Ersoy[1]

[1]Yildiz Technical University, Department of Mathematics, Istanbul, Turkey,
E-mail(s):dnzguel@hotmail.com, gyesilot@yildiz.edu.tr, serkan10ar@gmail.com, ersoya@gmail.com.

In this study, we introduce the notion of 2-absorbing (primary) gamma ideal of gamma rings. A nonzero proper gamma ideal I of Γ ring R is called a 2-absorbing (primary) gamma ideal if whenever $x, y, z \in R$, $\alpha, \beta \in \Gamma$ and $x\alpha y\beta z \in I$ then $x\alpha y \in I$ or $x\beta z \in I$ ($x\beta z \in \sqrt{I}$) or $y\beta z \in \sqrt{I}$. Also, it is shown that a proper ideal I is a 2-absorbing (primary) Γ- ideal if and only if whenever $A\Gamma B\Gamma C \subseteq I$ for some A, B, C gamma ideals then $A\Gamma B \subseteq I$ or $B\Gamma C \subseteq I$ ($B\Gamma C \subseteq \sqrt{I}$) or $A\Gamma C \subseteq I$ ($A\Gamma C \subseteq \sqrt{I}$). A number of results concerning 2-absorbing (primary) gamma ideals and some examples are given.

Keyword(s): 2-absorbing gamma ideal, 2-absorbing primary gamma ideal.

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A Note On Associated Pell Sequences

Gül Karadeniz Gözeri[1]

[1]Department of Mathematics, Istanbul University, Turkey
E-mail(s):gulkaradeniz@istanbul.edu.tr

The topic of integer sequences is one of the important areas in number theory. In this study, we deal with one of the specific integer sequences named associated Pell sequence. Our work based on the investigation of some new results related with this integer sequence.

Keyword(s): Pell numbers, associated Pell numbers, recurrence relation.

A note on the existence of periodic and bounded solutions of Liénard equation

Sultan Erdur[1] and Cemil Tunc[2]

[1,2]Mathematics, Yuzuncu Yil University, 65080, Van – Turkey
E-mail(s):serdur82@gmail.com, cemtunc@yahoo.com

In this work, we investigate the existence of periodic and bounded solutions for a modified Liénard equation. We construct a new Lyapunov function to prove the results of this paper. By this work, we generalize and improve the results found in the literature. We also give an example for illustrations.

Keyword(s): Liénard equation; boundedness; periodicity; Lyapunov function.

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A Practical Approach For Thermal Stress Of Functionally Graded Annular Fin

Durmuş Yarımpabuç[1], Ali Yıldırım[2],Kerimcan Celebi[3]

[1]Mathematics, OsmaniyeKorkut Ata University, Turkey,
[2]Department of Mechanical Engineering, OsmaniyeKorkut Ata University, Turkey,
[3]Department of Mechanical Engineering, Adana Science and TechnologyUniversity, Turkey,
E-mail(s):durmusyarimpabuc@osmaniye.edu.tr, aliyildirim@osmaniye.edu.tr, kcancelebi@adanabtu.edu.tr

A practical approach is implemented for thermal stresses in axisymmetric thin annular fin, made of a functionally graded material. The material properties, thermal conductivity-modulus of elasticity - linear thermal expansion coefficient, of the fin are assumed to be graded along the fin radius as a power-law function. The governing equation is derived as a differential equation with variable coefficient. Analytical solution of such equations cannot be obtained except for simple grading functions. The governing equations are solved Complementary functions method (CFM) that will be infused into the analysis to convert the problem to an initial value problem, which can be easily solved by, for instance, Runge-Kuttamethods with great accuracy. The technique is validated for the fin that is isotropic and homogeneous, and all the thermal properties are constant.

Keyword(s): Functionally Graded Annular Fin, Complementary Function Method, Thermal Stress Analysis.

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A Schouten-Van Kampen Connection On The (1,1)-Tensor Bundle

Murat Altunbaş[1], Aydın Gezer[2]

[1]Mathematics, Erzincan University, Turkey,
[2]Mathematics, Atatürk University, Turkey
E-mail(s): maltunbas@erzincan.edu.tr, agezer@atauni.edu.tr

In the present study, we define a Schouten-Van Kampen connection on the (1,1)-tensor bundle which is obtained from Levi-Civita connection of the Cheeger-Gromoll type metric. Besides classical differential geometrical properties of the tensor bundle, some harmonic problems are investigated with respect to this connection.

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Keyword(s): Tensor bundle, Schouten-Van Kampen connection, Cheeger-Gromoll type metric.

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A Solution Approach to the Problem of Optimal Placement and Integration of Oiland Gas Platforms

Elnur Nuri[1], Elvin Nasibov[2]

[1,2] Department of Mathematics, Faculty of Science, Ege University, TURKEY
E-mail(s): nurielnur@gmail.com, elvin.nasibov755@gmail.com

Inthisstudy, the problem of theplacamentandintegration of oilandgasplatformsfordirectionaldrilling is discussed. Mathetmaticalmodels of the problem analyzedandconsideringlackingparts of themodels, a newextensive model is submittedbythefirstauthor. The problem is modelled as 0-1 CombinatiralOptimization Problem. The Problem is combination model of the 2 optimization problem: Minimum SpanningTreeand Simple Locaiton. Since secondone is a NP-hard problem, thebelowapproximatesolutionmethod is suggested.

Afterdetermininigthenumberandlocation of thewellsto be drilled, optimumnumber of theplatformsshould be constructed in ordertolowerthe total cost. Therefore, platformsshould be placedsothatallwellsarecontained. Allwellsshould be clusteredproperly as a solutiontothe problem. K-Meansalgorithm is usedforclusteringprocess. Inordertodetermine optimum number of clustersalgorithm is runiterativefrom k = 2 upto a numberthatdecision-makerdecidedandsome (decision-makerdeterminethenumber) of thebestsolutionsarerecorded. Finally, themostappropriatesolutionwhichdecision-makerdetermine is accepted.

Afterallaboveprocesses, selectedplatformsshould be integratedwitheachotherandlandwith minimum cost. Inordertosolvethis problem, Kruskalalgorithmwhich is usedtodeterminethe Minimum SpanningTreeproblem isapplied.

Keyword(s): Oilandgasplatforms, optimalplacementandintegration of platforms,K-MeansAlgorithm, KruskalAlgorithm

Reference(s):

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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Alternate Matrix Approximation in Latent Semantic Analysis

Fahrettin Horasan[1], Hasan Erbay[1], Fatih Varçın[1*], Emre Deniz[1]

[1]ComputerEngineeringDepartment, EngineeringFaculty, Kırıkkale University, Turkey
E-mail(s):fhorasan@kku.edu.tr, hasan_erbay@yahoo.com, fatihvarcin@kku.edu.tr, emredeniz18@hotmail.com
*Corresponding Author

With the rapid development of computer and network technologies over time, an excessive stack of documents has formed on the internet. The requested information access difficulty has also increased in proportion to the amount of this document. Many information retrieval systems currently in use do not guarantee that the user will receive the correct documentation. Latent Semantic Analysis (LSA) method is used to solve this problem.The LSA is a mathematical method that uses the latent semantic structure of terms and documents to solve the lexical matching problem. The relationship between terms and documents is revealed by using matrix decomposition called Singular Value Decomposition (SVD). However, the cost of the SVD has opened up alternative methods that can be used for latent semantic analysis. In this study, the latent semantic structure in a collection of documents was discovered by truncated ULV decomposition that is a low-rank approximation and it's performance was compared with the SVD. This study shows that the truncated ULV decomposition is a good alternative in the LSA.

Keyword(s): Text mining, indexing, latent semantic analysis, matrix decompositions

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An Inverse problem for the heat equation

Amin Boumenir

University of West Georgia, Carrollton, GA 30118, USA,
E-mail(s):boumenir@westga.edu

Wesolve an inverse problem fortheonedimensionalheatequationu_t=u_xx+q(x)u frommeasurements of thesolution on theboundary at x=0 and x=1. Weshowthat a finitenumber is enoughtoreconstructthecoefficient q bytheGelfand-Levitan-Gasymovmethod. Infactwe can showthattwomeasurementsareenoughif an apriori bound onthe size of q is known.

Keyword(s): Boundaryinversion, Inversespectraltheory, Gelfand-Levitantheory,

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An Investigation of Awareness About Electromagnetic Pollution for Employees Using Data Mining Techniques

Feyza Çerezci[1], Osman Çerezci [2],Caner Erden [3]

[1] Computer Engineering, Sakarya University, Turkey
[2,] Electrical and Electronic Engineering, Sakarya University, Turkey
[3] Industrial Engineering, Sakarya University, Turkey
E-mail(s): feyzacerezci@sakarya.edu.tr, cerezci@sakarya.edu.tr, cerden@sakarya.edu.tr

Electromagnetic pollution is rapidly spreading as a new environmental pollution due to the rapid development of communication technology and leads to some health problems mentioned in the literature. Hence, electromagnetic pollution is considered to be a new environmental problem, which can be in the form of danger and risk dimension according to the degree of exposure to electromagnetic radiation.In order to reduce the environmental risks of electromagnetic radiation,Risk perception is an important step in determining community awareness. This study conducted a questionnaire consisting of 21 question packages over 107 people working in Bursa Nilufer Municipality. In this survey study, the level of electromagnetic radiation risk perception from base station and the factors related to this level were determined.In this study, the rules of association were obtained by applying the apriori algorithm to the questionnaire. The study was analyzed in terms of educational status, age, gender and occupation of the participants.

Keyword(s): Apriori algorithm, electromagnetic pollution , data mining ,risk perception,radiation

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An Investigation of Awareness About Electromagnetic Pollution for Employees Using Data Mining Techniques

Feyza Çerezci[1], Osman Çerezci [2],Caner Erden [3]

[1] Computer Engineering, Sakarya University, Turkey
[2,] Electrical and Electronic Engineering, Sakarya University, Turkey
[3] Industrial Engineering, Sakarya University, Turkey
E-mail(s): feyzacerezci@sakarya.edu.tr, cerezci@sakarya.edu.tr, cerden@sakarya.edu.tr

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Keyword(s): Apriori algorithm, electromagnetic pollution, data mining ,risk perception,radiation

INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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Analysis Of Steep Behavior In The Burgers Equation

Murat Sari[1], Huseyin Tunc[2]

[1] Mathematics , Yildiz Technical University, Istanbul,Turkey
[2] Mathematical Engineering, Yildiz Technical University, Istanbul,Turkey
E-mail(s):sarim@yildiz.edu.tr

This paper investigates thesteep behaviour of the advection-diffusion processrepresented by the Burgers equation. To achieve this, the Galerkin and Taylor-Galerkin finite element methodsbased on the B-splines are considered. These methods are applied for the spatial derivatives and an optimization technique is proposed for the time integration. The proposed methods have been shown to be unconditionally stable. Two examples have been considered to illustrate steep behaviour in detail. The obtained results are seen to be highly accurate and be oscillation free. It has shown that the Taylor-Galerkin method is more capable of capturing the steep behaviour comparison to the Galerkin method.

Keyword(s): Advection-diffusion process; Burgers equation;Galerkin method;Taylor-Galerkin method; B-splines; Mathematical modelling

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Analyzing the Moments of the Classical Epidemic Model under Random Effects

Mehmet Merdan[1], Zafer Bekiryazici[2,*],Tulay Kesemen[3]

[1]Department of Mathematical Engineering, GumushaneUniversity, 29100 Gumushane, Turkey,
[2]Department of Mathematics, Recep Tayyip Erdogan University, 53100 Rize, Turkey,
[3]Department of Mathematics, Karadeniz Technical University, 61080, Trabzon, Turkey
E-mail(s):mmerdan@gumushane.edu.tr, zafer.bekiryazici@erdogan.edu.tr, tkesemen@gmail.com

Most of the mathematical modeling studies in various fields of science are carried out on a deterministic level. However, it is well known that statistical analyses are used to determine the values of some of these parameters. A deterministic analysis of these models which contain statistically estimated component signore the randomness of the event. Therefore, random effect term sare placed into the models. We transform the deterministic parameters of the ordinary random equation systems into random variables, obtaining systems of random differential equations. There sulting random model is simulated to observe the random behavior of the model components via its characteristics like the expected values, variances, higher moments and etc. Approximate analytical formulas of some moments are also analyzed using the tools of mean square analysis. The study is concluded by comparing the moment formulas with the simulation results and also comparing the random results with the deterministic results to comment on the randomness of the event.

Keyword(s): RandomEffect, RandomDifferentialEquations, Compartmental Model, Normal Distribution.

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Approximation Methods In Post Quantum Calculus

Tuncer Acar

Departmentof Mathematics, Faculty of Science and Arts, Kirikkale University, Turkey
E-mail(s):tunceracar@ymail.com

This speech is devoted to (p,q)-analogues of well-known linear positive operators acting on unbounded intervals. We consider modifications of (p,q)-Szasz-Mirakyan and (p,q)-Baskakov operators and we investigate the iruniform convergence, rate of convergence via weighted modulus of continuity, pointwise convergence. The advantages of (p,q)-calculus in approximation theory are also presented.

Keyword(s): (p,q)-calculus, (p,q)-Szasz-Mirakyanoperators, (p,q)-Baskakovoperators.

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Association of Kırklartepe Dam Axle Axis Lithology and Permeability with Electrical Resistivity Method

Mahmut Sarı[1], Aysel Şeren[2]

[1]Department of Geophysics, Gümüşhane University, Turkey
[2]Department of Geophysics, Karadeniz Technical University, Turkey
E-mail(s):msari@gumushane.edu.tr, seren@ktu.edu.tr

Preliminary geotechnical studies conducted in order to determine engineering parameters and ground conditions, which are required for the planning stage before the construction of engineering structures like tunnels and dams, are one of the most important stages of construction projects (Chinedu and Ogah, 2013; Sintuboon et al., 2015). Identifying the rock soil conditions are of great importance in terms of determination of water resources, various engineering problems and selection of engineering structures of the dams. In this context, Kırklartepe dam, which is located in the city center district of Bayburt province in northeast of Turkey and planned as an irrigation dam, has been selected as the study field. In this study, information of 6 boreholes having total depth of 250 m and measurements of electrical resistivity for 9 lines that are perpendicular to dam axle were taken. This measurement is associated with lithology and permeability maps created by using borehole information on the dam axle axis and the harmony between these has been presented. As a result, electrical resistivity data obtained through inversion analysis are used to acquire 2-dimensional vertical section by utilizing RESDIN2V software. 3-Dimensional sections are acquired by using MapInfo software. When these sections are evaluated, zones close to the surface represented permeable clayey zones having alluvium and talus characteristics with low resistivity. As the depth increased, resistivity values scaled up and such zones are considered to be impermeable weathered volcanic and pulur metamorphic rocks. In addition, it was observed that permeability and lithology association of the dam supported each other by creating maps for every 10 meters for acquired 3-Dimensional underground sections and relating these with borehole information present in the study field. Moreover, electrical resistivity measurements were applied in 3 different arrangements (Wenner, Schlumberger and Dipole-dipole). These arrangements were observed to have results similar to lithology and permeability.

Keyword(s): Kırklartepe Dam, Electrical resistivity, Borehole, Underground section

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Contribution to the reduction of edge cracks which occur in steel slabs in continuous casting

A.Lemmoui[1] and K.Hamlaoui[2]

[1.2.] LMF2M /Laboratory of Shaping of Metallic Materials / University BADJI Mokhtar / 23000/ Annaba, Algeria.
E-mail(s):abysms55@yahoo.fr

Continuous casting, product quality and productivity of the plant are highly dependent on the setting of secondary cooling adopted.

The research problem concerns the ACO1 (oxygen steel plant number 1) located at Arcelor-Mittal / Annaba. It covers the slabs with defects of edge cracks.

The melt fracture, or hot crack is a major flaw in solidification, which leads to disposal of many parts in various industrial processes such as the solidification in the mold, the continuous casting of slabs.

The opening of these cracks leads either to segregated nets, by calling highly charged with alloy elements liquid or downright cracks in the solidified product when the interstitial fluid pressure is insufficient to compensate for their opening.

The most common defects in continuous casting level Arcelor Mittal / Annaba are the banks of creeks: They are small and thin, on the corners, length 50 mm, 1-2 mm depth. They are riding on the face and on the shore.

The development of a thermomechanical model to predict the temperature profiles on the various faces of the slab as a function of the passage of a cooling zone to another of the continuous casting machine and particularly those near (it'is in these places that edge cracks appear) under the conditions of Arcelor Mitral-Annaba (ACO1).

From the results we propose:

A casting speed equal to: 1.3 m / min for a casting temperature equal to 1525 ° C.

Keyword(s): Shore creek; Smear; Continuous casting; Thermomechanical model.

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Convective Heat Transfer of TiO2–H2O Nanofluid in Cylindrical Annulus with discrete Heat Source

Mebarek-Oudina Fateh[1]

[1]Département de Physique, Faculté des Sciences, Université 20 août 1955 - Skikda, (Skikda university) B.P 26 Route El-Hadaiek, Skikda 21000, Algeria.
E-mail(s): oudina2003@yahoo.fr , f.mebarek_oudina@univ-skikda.dz

In this work, the hydrodynamic and thermal characteristics of Titania–Water nanofluid, filling a cylindrical annulus are numerically investigated. The Maxwell model for convective heat transfer in nanofluids is used to account for the effects of nanoparticle volume fraction distribution on the continuity, momentum and energy equations. The effects of the inner to outer diameter ratio, length of discrete heat source on the fully developed Nusselt number have been investigated. In which, a developed computer code based on the finite volume method coupled with the SIMPLER algorithm is used. Numerical results for the heat transfer are presented by means of streamlines and isotherms profiles for a different value of Rayleigh number and nanoparticle volume fraction. The effects of these parameters on the local Nusselt number is analyzed.

Keyword(s): Numerical modeling, Heat transfer, TiO_2–Water nanofluid, Cylindrical annulus.

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Determination of an unknown spacewise dependent coefficient for the time-fractional heat equation

Mine Aylin Bayrak [1], Ali Demir[2],

[1]Mathematics, Kocaeli University, Turkey,
[2, 1]Mathematics, Kocaeli University, Turkey
E-mail(s): aylin@kocaeli.edu.tr, ademir@kocaeli.edu.tr

The main concern of this article has been to apply the residual power series method (RPSM) effectively to determine of the unknown spacewise dependent coefficient in the time fractional heat equation in the Caputo sense with over measured data. We first introduce a residual power series technique for the fractional power series solution of inverse problem of unknown spacewise dependent coefficient. Numerical examples are included to demonstrate the efficiency, accuracy, and applicability of the present technique. The results reveal that the technique is very effective, straightforward, and powerful.

Keyword(s): Residual power series method, time fractional heat equation, Caputo derivative.

Estimation of the Right-Censored Data withPartiallyLinear Model based on SmoothingSplines

Ersin Yılmaz[1], Dursun Aydın[2]

[1]Department of Statistics, MuglaSitkiKocmanUniverstiy, Mugla, Turkey
[2,]Department of Statistics, MuglaSitkiKocmanUniverstiy, Mugla, Turkey
E-mail(s):duaydin@mu.edu.tr, ersinyilmaz@mu.edu.tr

Censored data is a common concept which arises in many areas such as biology, industrial data and especially clinical trials in health. There are some kinds of censored data but in here only right-censored data is inspected. Cox (1972) developed the Cox regression model, Miller (1976) proposed the weighted least squares method and Orbe (2003) illustrated the partially linear model based on smoothing splines for estimating the right-censored data. As known, in order to get a sufficient results in smoothing spline method, smoothing parameter has to be selected in optimal way. In this paper, smoothing spline method is used for estimation and four selection methods are used for selection of smoothing parameter such as improved Akaike information criterion (AICc), generalized cross validation method (GCV), Bayesianin formation criterion (BIC) and restricted maximum likelihood criterion (REML). Performances of mentioned selection methods are represented and it is supported by a simulation study.

Keyword(s): Rationalapproximation, Padeapproximation, Nonparametricregression

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Generalizing Asymmetric Convergence and Cauchy Conditions Using Asymptotic Density

Emrah Evren Kara[1], Merve İlkhan[2]

[1]Mathematics, Düzce University, Turkey,
[2]Mathematics, Düzce University, Turkey
E-mail(s): eevrenkara@duzce.edu.tr, merveilkhan@duzce.edu.tr

As an extension of usual convergence, the concept of statistical convergence for real-valued sequences is defined based on the notion of the asymptotic density of a subset of natural numbers. Later, this notion is generalized to sequences in some other spaces and studied on these spaces such as metric spaces, cone metric spaces, topological and uniform spaces and topological groups. Also, it is investigated and linked with the summability theory, measure theory, optimization theory, approximation theory, probability theory etc.

An asymmetric metric is a positive real valued function satisfying all the axioms of a metric excepting symmetry. The lack of symmetry causes some complications, especially concerning completeness, compactness and totally boundedness in such spaces.

The aim of this presentation is to give some summability type theorems after defining some basic concepts and obtaining some basic results related to statistical convergence on an asymmetric metric space.

Keyword(s): Statistical convergence, statistical Cauchy sequence, asymetric metric space.

Geodesics on the Lightlike Cone

Nemat Abazari[1], Alireza sedaghatdoost[2]

[1,2] Department of Mathematics and Applications, University of Mohaghegh Ardabili, Ardabil, Iran.
E-mail(s): abazari@uma.ac.ir, sedagatmath@gmail.com

Let Q^{n} be n-dimensional lightlike cone in Minkowski space $\mathrm{E}_1^{\mathrm{n}+1}$. In this paper, we study a radical distribution $\mathrm{Rad}(\mathrm{TQ}^{\mathrm{n}})$ and a lightlike transversal vector bundle $\mathrm{ltr}(\mathrm{TQ}^{\mathrm{n}})$ in Minkowski space $\mathrm{E}_1^{\mathrm{n}+1}$. Also, we obtain some properties of geodesics of the lightlike cone Q^{n} in Minkowski space $\mathrm{E}_1^{\mathrm{n}+1}$, and we compare these with geodesics of cone Q^{n} with respect to induced metric of euclidean space $\mathrm{E}_1^{\mathrm{n}+1}$.

Keyword(s): Minkowski space, geodesic, lightlike cone, spacelike curve.

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Invariant Filtering Results For Wide Band Noise Signal System

Kanda Abuassba

Mathematics, Eastern Mediterranean University,Cyprus,
E-mail(s):kinda.joudeh@gmail.com

Kalman filtering is one of the most essential results of filtering theory. It is a method for estimating linear systems disturbed by white noise process, but in reality the noises are not exactly white even in the ideal cases. It was proposed that the real noises are wide band and the limit of the wide band noise is white noise. Filtering of wide band noise driven systems accounts the following problem: Given an autocovariance function, there are many wide band noise processes, which have this autocovariance function. Each of these wide band noises produces its own best estimate. The problem is a selection of the best one of these best estimates. In this presentation we investigate this problem for a wide class of wide band noises, which have a representation in the integral form and we obtain results in terms of autocovariance function not relaxing function. Such results called invariant results and it is more applicable than other results.

Keyword(s): Wide band noise, white noise, Wiener process, Kalman filtering.

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Kan Fibrations in Digital Images

Simge Öztunç

Manisa Celal Bayar University, Facultyof Artsand Science, Department of Mathematics, Manisa/TURKEY
E-mail(s):simge.oztunc@cbu.edu.tr

In this paper we defined the Kan fibrations by using Kan complexes in digital images. We investigated some properties of Kan complexes and Kan fibrations due to adjacency relations. We cocluded that if a digital simplicial map is a Kan fibration, then the fibre over the complex genereted by a vertex of a digital simplicial set is a Kan complex. Also we gave some relations between Kan complexes and Kan fibrations.

Keyword(s): Digital Image, AdjacencyRelation, Kan Complexes, Kan Fibrations.

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Laplacian Spectral Properties of Nilpotent Graphs Over Ring $\mathbb{Z}_n$

Hatice Pınar Cantekin[1], Sezer Sorgun[1], Hatice Topcu[1]

[1]Department of Mathematics, Science and Art Faculty, Nevşehir Hacı Bektaş Veli University, Turkey
E-mail(s): pinarcantekin007@gmail.com, srgnrzs@gmail.com, haticekamittopcu@gmail.com.

Let R be a ring with unity. The nilpotent graph of R is a graph with vertex set $V_N(R)^* = \{0 \neq x \in R: xy \in N(R) \text{ for some } 0 \neq y \in R\}$; and two distinct vertices x and y are adjacent iff $xy \in N(R)$, where $N(R)$ is the set of all nilpotent elements of R and it is denoted by $\Gamma_N(R)$. In here we will talk about Laplacian spectral properties of the nilpotent graph over the ring $\mathbb{Z}_n$.

Keyword(s): Nilpotent Graph, Laplacian matrix, Spectrum.

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Mathematical Analysis of a Nonlinear Cross Diffusion Model

Hassan Al Salman[1], Ahmed Al Ghafli[2]

[1]Department of Mathematics, Faculty of Sciences, King Faisal University, Saudi Arabia
[2]Department of Mathematics, Faculty of Sciences, King Faisal University, Saudi Arabia
E-mail(s):hjhalsalman@kfu.edu.sa, aamgkafli@kfu.edu.sa

We consider a nonlinear cross-diffusion system arising in applied mathematics. We study the existence of a non-negative global-in-time weak solution of the system. We improve on the existence results shown in previous mathematical studies of the system. We relax the existence condition on the diffusion constants and we obtain more regular solutions of the system. This is achieved by introducing and analyzing a truncated alternative system to our model. We use entropy-type inequalities and sequential compactness arguments to study a finite element approximate problem of the truncated system and hence we obtain existence of a global weak solution.

Keyword(s): cross-diffusion system, entropy inequality, finite element approximation.

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Maximal Accretive Singular Quasi-Differential Operators For First Order

Pembe Ipek[1], Zameddin I. Ismaılov[2]

[1]Mathematics, Karadeniz TechnicalUniversity, Turkey,
[2]Mathematics, Karadeniz Technical University, Turkey
E-mail(s):ipekpembe@gmail.com, zameddin.ismailov@gmail.com

Inthispaperfirstlyallmaximalaccretiveextensions of the minimal operatorgeneratedbyfirstorderlinearsingularquasi-differentialexpression in theweightedHilbertspace of vector-functions on right semi-axisaredescribed. Later on, structure of spectrum set of theseextensions has beenresearched.

Keyword(s): accretiveoperator, spectrum.

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Maximal Dissipative Singular Differential Operators For First Order

Pembe Ipek[1], Zameddin I. Ismaılov[2]

[1]Mathematics, Karadeniz Technical University, Turkey,
[2] Mathematics, Karadeniz Technical University, Turkey
E-mail(s):ipekpembe@gmail.com, zameddin.ismailov@gmail.com

Based on Calkin-Gorbachuk method description of all maximal dissipative extensions of the minimal operator generated by first order linear multipoint symmetric singular differential-operator expression in the direct sum of Hilbert space of vector-functions is given. Lastly, structure of spectrum of these extensions is researched.

Keyword(s): dissipative operator, spectrum.

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Modelıng Of Phenol Adsorption Onto Granular Activated Carbon Using Batch And Column Experiment Methodology

Fatiha Benmahdi[1], Mounira Kolli[2], Safia Semra[2], Mohammed Bouhelassa[2]

[1] University of Batna 1, Faculty of Matter Sciences, rue of Biskara, Batna, 05000, Algeria
[2] Laboratory of Innovation in Environmental Processes, Faculty of Engineering Sciences, University of Constantine 3, 25000, Algeria.
E-mail(s):Corresponding author, fatiha.benmahdi@univ-batna.dz

This paper aims at investigating the modeling of phenol adsorption onto granular activated carbon in the batch equilibrium and fixed-bed column experiments. The kinetic and equilibrium of adsorption in batch mode were studied. In the isotherm studies, Langmuir, Freundlich, and Temkin isotherm models were applied. The equilibrium adsorption was effectively described by Langmuir adsorption isotherm. The kinetic process was better described by second degree and intra-particulaire diffusion kinetic models. In fixed-bed column adsorption, the effects of inlet phenol concentration, feed flow rate and bed height, and particle size on the breakthrough characteristics of the adsorption system were investigated. The column data were fitted by Thomas and Yoon–Nelson models, were applied to predict the breakthrough curves and to determine the characteristic parameters. The Yoon–Nelson model was best to fit the breakthrough curves at experimental conditions.

Keyword(s): adsorption, modeling, fixed-bed column, breakthrough curve, phenol.

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Modeling the thermal behavior of panels containing micro-encapsulated PCM in the building

Boudali errebai Farid[1, 2], Chikh Salah[2], Derradji Lotfi[1], Amara Mohamed[1]

[1] Building Physics and Environment Devision (DPBE), National Centre for Building Integrated Studies and Research (CNERIB), Algiers, Algeria.
[2] Faculty of Mechanical Engineering & Process Engineering, University of Science and Technology Bab Ezzouar Houari Boumediene (USTHB), Algiers, Algeria.
E-mail(s):b-farid@hotmail.com

The building sector in Algeria is the largest consumer of energy among the economic sectors. The use of energy efficiency measures in buildings has become necessary to reduce the energy needs of the residential sector.

The storage of energy is a preferred means for an optimal management of thermal energy. It makes it possible to adapt production to the needs and create the most favorable conditions for this management by achieving a constant relationship between the energy demand and the supplied energy.

The passive use of Phase Change Materials (PCM) in the building can help improve thermal comfort through increasing the thermal inertia of the building's walls. Indeed, PCM are capable of absorbing, storing and releasing large amounts of energy as latent heat in a relatively small temperature range following a phase change.

In this paper, numerical simulations were performed to study the thermal behavior of several wall types as a percentage of PCM (10 and 50%) mixed with plaster, thickness (10, 30 and 50 mm) and the type of PCM (Micronal DS-5001 with a melting temperature of 26°C and a latent heat capacity of 110 kJ/kg and Micronal DS-5008 with a melting temperature of 23°C and a latent heat capacity of 100 kJ/kg).

The results showed that the increase of percentage of PCM in the plaster as well as the thickness of the wall led to a strong decrease in the amplitude of the variation of temperature as well as an increase in the phase shift for the temperature peaks between the two faces of the wall. In the case of PCM whose Tf = 26°C, 50% of PCM in plaster and a wall of 50 mm, the amplitude reaches 1.6 °C against an amplitude of 6.3°C for the case of a plasterboard of the same thickness.

Keyword(s): Thermal comfort, Numerical simulation, PCM.

Moments of Epidemic Models with Random Initial Data

Zafer Bekiryazici[1,*], Mehmet Merdan[2], Tulay Kesemen[3]

[1]Department of Mathematics, Recep Tayyip Erdogan University, 53100 Rize, Turkey,
[2]Department of Mathematical Engineering, Gumushane University, 29100 Gumushane, Turkey
[3]Department of Mathematics, Karadeniz Technical University, 61080, Trabzon, Turkey
E-mail(s): zafer.bekiryazici@erdogan.edu.tr, mmerdan@gumushane.edu.tr, tkesemen@gmail.com

Compartmental Models play an important role in the mathematical modeling of most diseases, reactions, medicine studies and etc. The SIR model is the most classical compartmental model and it has been used extensively for many cases in various fields of science. We use random initial conditions for the Classical Epidemic SIR model to investigate how our random initial data assumption affects the results of the analyses. Random initial values are used in an existing deterministic equation system to obtain a system of nonlinear random differential equations. These random equations are used to study the moments of the behavior of the random model. Approximate analytical formulas for the moments are compared with the results of the numerical simulations and thus the accuracy of the formulas is verified. We conclude the analysis by making comments on the random behavior of the model components.

Keyword(s): Random Initial Value Problem, Moment, Compartmental Model, Normal Distribution.

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Multi-objective Optimization for Multisession Exam-Building Assignment

Zeliha Ergul[1], Zehra Kamisli Ozturk [2]

[1,2]Industrial Engineering, Anadolu University, Turkey,
E-mail(s):zergul@anadolu.edu.tr, zkamisli@anadolu.edu.tr

Multi-objective optimization is the simultaneous optimization of more than one conflicting objective function. In general, real life optimization problems such as vehicle routing, scheduling, portfolio selection and exam-room assignment have multi objective structure. In this study, we were inspired by a real-life problem which is the problem of assigning Anadolu University Open and Distance Education System's exams to examination buildings and proposed a multi-objective mixed integer nonlinear programming model for multisession exam-building assignment problem. This model's conflicting objective functions are minimizing distance between student's consecutive session's building, maximizing fill rate of buildings in every session and minimizing variety of booklets for building in every session. Weighted sum scalarization, conic scalarization and Benson's method were used to obtain efficient solutions for this multi-objective problem.

Keyword(s): multi-objective optimization, timetabling, scalarization

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Negacyclic Hermitian LCD Codes

Mehmet E. Koroglu[1] and Mustafa Sarı[1]

[1]Yildiz Technical University, Istanbul, Turkey
E-mail(s): mkoroglu@yildiz.edu.tr, msari@yildiz.edu.tr

Linear codes with complementary duals (abbreviated LCD) are linear codes which intersect with their duals trivially (for details see [1]). LCD codes have been studied quite a lot for their applications in data storage, communications systems, consumer electronics and cryptograph [2]. In this work, by examining q^2-cyclotomic classes of negacyclic codes we drive some parameters of Hermitian negacyclic LCD codes of length $n = q-1$ and $n = q^2+1$ over $\mathbb{F}_{q^2}$, where q is an odd prime power.

Keyword(s): Linear codes, negacyclic codes, LCD codes, Hermitian inner product.

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Numerical solution of the generalized Rosenau-Kawahara-RLW equation using radial basis functions

Bahar Karaman[1], Yılmaz Dereli[2]

[1]Mathematics, Anadolu University, Turkey,
[2,]Mathematics, Anadolu University, Turkey
E-mail(s): bahar_korkmaz@anadolu.edu.tr, ydereli@anadolu.edu.tr

In the present study, radial basis functions method is being considered to find the numerical solution of the generalized Rosenau-Kawahara-RLW equation. The solitary wave solution of the mentioned equation is discussed in this scheme. First, we use Crank-Nicolson method and forward difference method to discretize the unknown function and its time derivative, respectively. In calculations, Gaussian radial basis function is used. In order to examine the fundamental conservative property of this equation, we compute the numerical values of invariant of the motions. Also, the error norms are calculated to determine the accuracy of the proposed method. Moreover, the obtained results for all test problems are presented by tables. Figures of the motions are shown.

Keyword(s): Rosenau-Kawahara-RLW equation, Radial basis functions.

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NumericalStudy on theDynamic of Gross-PitaevskiiEquation

Eren Tosyali[1], Fatma Aydogmus[2]

[1]Vocational School of Health Services, Istanbul Bilgi University, Turkey
[2]Department of Physics, IstanbulUniversity, Turkey,
E-mail(s):eren.tosyali@bilgi.edu.tr, fatmaa@istanbul.edu.tr

It is well known that Bose Einstein condensation is described by Gross-Pitaveskii Equation (GPE). In this study, we investigate regular and chaotic numerical solutions of GPE with a bichromatic optical lattice potential. We construct 1D time-independent GPE with tiltedbi-chromatic potential. The solutions of GPE are classified by constructing phase space displays whether chaotic or not according to control parameters. We show that the system exhibit schaotic shock-wave Dynamics for some value of parameters in phase space.

Keyword(s): BEC, GPE, Chaos, Nonlinear Dynamics

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On Asymmetric Cone Normed Spaces

Merve İlkhan [1], Emrah Evren Kara [2]

[1]Mathematics, Düzce University, Turkey,
[2]Mathematics, Düzce University, Turkey
E-mail(s):merveilkhan@duzce.edu.tr, eevrenkara@duzce.edu.tr

As a generalization of a norm, a cone norm is defined by replacing the set of real numbers with an ordered real Banach space. A real vector space with a cone norm is called cone normed space. Cone normed spaces play an important role in fixed point theory, computer science and some other research areas of functional analysis.

An asymmetric norm is a positive definite sublinear functional on a real vector space. The main difference with a norm is the fact that the asymmetric norm does not generate a vector topology since the multiplication by scalars is not continuous. An asymmetric norm defines an asymmetric metric also named as quasi metric which satisfies all the axioms of a metric except the symmetry condition. Hence, one can obtain a topology induced by the asymmetric norm which is not necessarily Hausdorff. This innocent modification changes the whole theory, mainly related to completeness, compactness and totally boundedness. For instance, sequentially compactness and compactness are not the same notions contrary to the symmetric case.

The main purpose of this study is to define asymmetric cone normed spaces as a generalization of asymmetric normed spaces and to present some basic results on asymmetric cone normed spaces.

Keyword(s): Cone normed spaces, asymmetric normed spaces, completeness, compactness.

On Graded 2-Absorbing Quasi Primary Ideals

Rabia Nagehan Uregen[1], Suat Koc[2] and Unsal Tekir[2]

[1]Mathematics, Yildiz Technical University, Turkey
[2] Mathematics, Marmara University, Turkey
E-mail(s): rnuregen@yildiz.edu.tr, skoc@marmara.edu.tr, utekir@marmara.edu.tr

In this study, we introduce graded 2-absorbing quasi primary ideals which is a generalization of graded prime ideals of graded rings. The relations between graded 2-absorbing quasi primary ideals and other graded ideals are considered. We also give some characterization of this notion and obtain some results in special graded rings.

Keyword(s): Graded ring , graded prime ideal.

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On Graded Weakly Classical Prime Submodules

Rabia Nagehan Uregen[1] and Bayram Ali Ersoy[1]

[1]Mathematics, Yildiz Technical University, Turkey
E-mail(s):rnuregen@yildiz.edu.tr, ersoya@yildiz.edu.tr

Let G be a group with identity e, R a G-graded ring and M an R-module. In this paper, we define graded weakly classical prime submodules and give the examples related to graded weakly prime and graded classical prime submodules. And also we get various results concerning graded weakly classical prime submodules.

Keyword(s): Graded submodule, graded prime submodule.

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On Imprimitive Action of Atkin-Lehner Group

Zeynep Şanlı[1], Tuncay Köroğlu[2], Bahadır Özgür Güler[3]

[1] Mathematics, Karadeniz Technical University, Turkey,
[2], Mathematics, Karadeniz Technical University, Turkey,
[3] Mathematics, Karadeniz Technical University, Turkey
E-mail(s):zeynep.sanli@ktu.edu.tr, tkor@ktu.edu.tr, boguler@ktu.edu.tr

For every hyperbolic Riemann surface, the fundamental group is isomorphic to a Fuchsian group, and thus the surface can be modelled by a Fuchsian model H/Γ where H is the upper half-plane and Γ is the Fuchsian group. Jones et al. studied graphs arising from the action of the modular group which is a most well-known finitely generated Fuchsian group and show that the well-known Farey graph is an example of a suborbital graph. Then similar studies were done for related finitely generated groups.The reader is referred to the literature for some relevant previous work on suborbital graphs. Firstly, it was proved that the elliptic elements in the group correspond to circuits in the graphs of the same order and vice versa. This fact is important because it means that suborbital graphs might have a potential to clarify signature problems taking into account the order of elliptic elements are one of the invariants of signature. Note that it was seen that this relation is just provided unilaterally. Elliptic elements do not necessarily correspond to circuits of the same order. On the other hand, it is worth noting that these graphs give some number theoretical results about continued fractions and Fibonacci numbers. In the present study, we will continue to investigate the combinatorial properties of these graphs for the Atkin-Lehner group as an important object that is studied concerning Monster groups extensively. We state that main graph is not a disjoint union of isomorphic copies of subgraphs.

Keyword(s): Normalizer, Atkin-Lehner group, group action.

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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On L-Fuzzy Soft Modules

Yıldıray Çelik[1]

[1]Department of Mathematics, Ordu University, Turkey
E-mail(s): yildiraycelik@odu.edu.tr

In this paper, we introduce concepts of L-fuzzy soft module and L-fuzzy soft submodule. Also, we study some algebraic properties of L-fuzzy soft modules and give some related examples of them. Moreover, we define notions of L-fuzzy soft module homomorphism and L-fuzzy soft module isomorphism and derive their basic properties.

Keyword(s): L-fuzzy subset, Soft module, L-fuzzy soft module.

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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On L-Fuzzy Soft Modules

Yıldıray Çelik[1]

[1]Department of Mathematics, Ordu University, Turkey
E-mail(s): yildiraycelik@odu.edu.tr

In this paper, we introduce concepts of L-fuzzy soft module and L-fuzzy soft submodule. Also, we study some algebraic properties of L-fuzzy soft modules and give some related examples of them. Moreover, we define notions of L-fuzzy soft module homomorphism and L-fuzzy soft module isomorphism and derive their basic properties.

Keyword(s): L-fuzzy subset, Soft module, L-fuzzy soft module.

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On N1 and N2 Magnetic Curves in 3d Riemannian Manifolds

Talat Körpınar[1], Muhammed T. Sarıaydın[2], Vedat Asil[3], Selçuk Baş[4]

[1]Mathematics, Mus Alparslan University, Turkey,
[2]Mathematics, Mus Alparslan University, Turkey,
[3]Mathematics, Fırat University, Turkey,
[4] Mathematics, Mus Alparslan University, Turkey,

E-mail(s):talatkorpinar@gmail.com, talatsariaydin@gmail.com, vasil@firat.edu.tr, slckbs@hotmail.com,

In this paper, it is investigated Lorentz force equations for N1 and N2-magnetic curves in 3D oriented Riemannian space. We give the Lorentz force in the Bishop frame in (M3,g). Then, we obtain a new characterization for a magnetic field V. Finally, we show that N1 and N2-magnetic curves are curves in the Euclidean 3-space. We also give examples for each curve.
Keyword(s): Magnetic curves, Riemannian space, Bishop Frame.

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On New General Integral Inequalities For Strongly s-Convex Functions

Fatih Yetgin[1], İmdat İşcan[2], Mehmet Korkmaz[3]

[1]Department of Mathematics Faculty of Basic Sciences, Gebze Technical University, Turkey
[2]Department of Mathematics Faculty of Secience and Arts, Giresun University, Turkey
[3]Department of Mathematics Faculty of Secience and Arts, Ordu University, Turkey
E-mail(s): fyetgin@gtu.edu.tr , imdati@yahoo.com, mkorkmaz52@yahoo.com

In this paper, firstly we give a general integral identity for twice differentiable functions. Then we establish general integral inequalities for functions whose second derivatives in absolute value at certain powers are strongly s-convex. The significance of this general inequalities is that these ineqaualities reduce to trapezoid, Bullen type and Simpson-like type inequalities for different values of n. Also it is seen that some of our results correspond to some of known inequalities in the literature.

Keyword(s): strongly s-convex function, general integral inequalities

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On Null Quaternionic Bertrand Partner Curves

Tanju Kahraman

Manisa Celal Bayar University, Faculty of Arts and Sciences, Department of Mathematics, 45140, Şehit Prof. Dr. İlhan Varank Campus, Muradiye / Manisa, Turkey.
E-mail(s): tanju.kahraman@cbu.edu.tr

In this paper, we study null quaternionic Bertrand curves in the semi-Euclidean space E_1^3. We obtain some characterizations for null quaternionic Bertrand partner curves. Moreover, we obtain some characterizations for these curves such that one of the curvatures of α_1 is a constant for null quaternionic Bertrand partner curves α_1, α_2 and show that the distance function is independent from the first curvatures of the curves but is dependent to second curvatures of the curves in E_1^3.

Keyword(s): Null Quaternionic Curve; Bertrand partner curves; Serret-Frenet formulae.

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ON SOLUTIONS OF INTEGRO QUASI-DIFFERENTIAL EQUATIONS IN L^p −SPACES

Sobhy El-sayed Ibrahim

Public Authority of Applied Education and Training (PAAET & KFAS)
Faculty of Basic Education, Department of Mathematics,
E-mail(s): Sobhyelsayed_55@hotmail.com

A general quasi-differential expression τ of order n with complex coefficients and its formal adjoint τ^+ are considered in the space $L^p_w(a,b)$. In the case of one singular end-point and under suitable conditions on the function $F(t,y)$, we show that all solutions of a general integro quasi-differential equation $[\tau-\lambda I]y(t)=wF(t,y)$ $(\lambda \in \mathbb{C})$ are in $L^p_w(a,b)\cap L^\infty(a,b)$ for all $\lambda\in\mathbb{C}$ provided that all solutions of the homogeneous differential equations $(\tau-\lambda I)u=0$ and $(\tau^+-\bar{\lambda}I)v=0$ are in $L^p_w(a,b)\cap L^\infty(a,b)$.

2010 AMS Subj. Classification: 34B05, 34B24, 47A10, 47E05.
Keyword(s): Quasi-differential expressions, Shin-Zettl matrix, L^p −spaces, Quasi-derivatives and their adjoints, Regular and singular end-points, Integro quasi-differential equations, Boundedness of L^p −solutions.

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
10-12 May, 2017, Istanbul, Turkey

On Some Properties of Balancing Numbers

Gül Karadeniz Gözeri[1]

[1]Department of Mathematics, Istanbul University, Turkey
E-mail(s): gulkaradeniz@istanbul.edu.tr

In this work, we recall firstly some definitions and known identities on balancing numbers. Then we emphasize some interesting relationships among balancing numbers. The purpose of this work is to survey some properties and results on balancing numbers.

Keyword(s): Balancing numbers, triangular numbers, recurrence relation.

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On Some Annuli Containing all the Zeros of a Polynomial

Nihal Yılmaz Özgür[1], Nihal Taş[2]

[1]Mathematics, Balıkesir University, Turkey
[2]Mathematics, Balıkesir University, Turkey
E-mail(s): nihal@balikesir.edu.tr, nihaltas@balikesir.edu.tr

It is known that polynomials are important in many scientific areas. In this talk, we recall some known annuli containing all the zeros of a polynomial. Using a new identity involving generalized Fibonacci numbers, we present a new annulus containing all the zeros of a polynomial. We verify that this new annulus is more certain than the known annuli by some examples.

Keyword(s): Complexpolynomial, location of thezeros, generalizedFibonaccinumbers.

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On the Laplacian spectra of the kite graph

Hatice Pınar Cantekin[1], Sezer Sorgun[1], Hatice Topcu[1]

[1]Department of Mathematics, Science and Art Faculty, Nevşehir Hacı Bektaş Veli University, Turkey
E-mail(s): pinarcantekin007@gmail.com, srgnrzs@gmail.com, haticekamittopcu@gmail.com.

In this talk, we present some spectral properties of Laplacian matrix of the kite graph. First we give the Laplacian characteristic polynomial of the kite graph, then we restrict its largest Laplacian eigenvalue depending on the clique number. Also we say that any connected graph which has the same clique number with the kite graph is isomorphic to it under some conditions.

Keyword(s): kite graph, Laplacian spectrum.

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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On The Cesàro Polynomials Of Three Variables

Nejla Özmen(1) , Esra Erkuş Duman(2)

[1]Mathematics, Düzce University, Turkey,
[2] Mathematics, Gazi University, Turkey
E-mail(s): nejlaozmen06@gmail.com , eerkusduman@gmail.com

The present study deals with some new properties for the Cesàro polynomials of three variables. The results obtained here include various families of multilinear and multilateral generating functions, miscellaneous properties and also some special cases for these polynomials. In addition, we derive a theorem giving certain families of bilateral generating functions for the Cesàro polynomials of three variables and the generalized Lauricella functions. Finally, we get several interesting results of this theorem.

Keyword(s): Cesàro polynomials , multilinear and multilateral generating function, recurrence relation, hypergeometric function.

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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On the coefficient bounds for a certain subclass of analytic and bi-univalent functions

Arzu Akgül

Department of Mathematics, Kocaeli University, Kocaeli, Turkey
E-mail(s):akgul@kocaeli.edu.tr

In this study, we introduce and investigate an interesting subclass of analytic bi-univalent functions in theopenunitdisc. For functions belonging to this new class we obtain estimates on the first two Taylor-Maclaurin coefficients. Also several related classes are considered and interesting connections to earlier known results are made.

Keyword(s): Analyticfunctions, Univalentfunctions, Biunivalentfunctions, Taylor-Maclaurinseriesexpansion, Coefficientboundsandcoefficientestimates, Taylor-Maclaurincoefficiients

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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On the coefficient estimates of analytic and bi-univalent m-fold symmetric functions

Arzu Akgül

Department of Mathematics, Kocaeli University, Kocaeli, Turkey,
E-mail(s):akgul@kocaeli.edu.tr

In this paper, we consider two new subclasses consisting of analytic and m-fold symmetric bi-univalent functions in the open unit disk. Also, we establish bounds for the coefficients for these subclasses and several related classes are considered and connections to earlier known results are made.

Keyword(s): Analyticfunctions,bi-univalentfunctions, m-foldsymmetricbi-univalentfunctions, coefficientbounds.

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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On Trees of the Group Gamma Square

Zeynep Şanlı[1], Tuncay Köroğlu[2], Bahadır Özgür Güler[3]

[1] Mathematics, Karadeniz Technical University, Turkey,
[2,] Mathematics, Karadeniz Technical University, Turkey,
[3] Mathematics, Karadeniz Technical University, Turkey
E-mail(s):zeynep.sanli@ktu.edu.tr, tkor@ktu.edu.tr, boguler@ktu.edu.tr

Maps on surfaces have been studied for two main reasons: geometers have been interested in symmetry properties of maps, and this has led to the investigation of regular maps; combinatorialists, on the other hand, have concentrated on map colourings and graph imbeddings a dessin d'enfant is a type of graph embedding used to study Riemann surfaces and to provide combinatorial invariants for the action of the absolute Galois group of the rational numbers. A dessin d'enfant is a graph, with its vertices colored alternately black and white, embedded in an oriented surface that, in many cases, is simply a plane. For the coloring to exist, the graph must be bipartite. In his Esquisse d'un Programme , Grothendieck proposed that one should study the algebraic object G through its actions on topological, geometric, and combinatorial structures. There are many levels at which this can be done, but at the simplest and most explicit level is maps (or dessins d'enfants). An important general principle says that in its action on dessins, G preserves most of their obvious numerical, topological and algebraic features; these include the genus, the numbers of vertices, edges and faces, their colours, valencies and face-sizes. When using permutations to describe maps, one is not restricted to embeddings of bipartite graphs. In this study, we take only bipartite graphs. Perhaps the simplest class of bipartite maps are the plane trees, the maps of genus 0 with a single face. There are several advantages to working with these: they are easy to draw, their Belyi functions are polynomials, which makes computation a little easier, and they all lie on the same Riemann surface. In this study, we examine the plane trees of the modular group and the group Γ^2.

Keyword(s): Power subgroup, modular group, trees.

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On F-Contraction of Multivalued α-Admissible Mappings

Necip Şimşek

Department of Mathematics, Istanbul Commerce University
E-mail(s):necsimsek@yahoo.com

In this paper, our purpose is to introduce a new definition which is F-contraction of multivalued α-admissible mappings, and to investigate some properties of set valued α-admissible mappings.

Keyword(s): Multivalued mappings, α-admissible mappings, F-contraction, fixed point.

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On Some Fixed Point Theorems In Soft Metric Spaces

Vildan Çetkin[1], Elif Güner[2]and Halis Aygün[3]

[1,2,3] Kocaeli University, Department of Mathematics, UmuttepeCampus, Kocaeli, Türkiye
E-mail(s): vcetkin@gmail.com, elif.guner@kocaeli.edu.tr, halis@kocaeli.edu.tr

The aim of this talk is to study some fixed point theorems and also common fixed point theorems in soft metric spaces. We first define a family of special kind of mappings and we define the notion of a soft $\widetilde{A}$-contraction mappings in soft metric spaces. Finally, we prove some (common) fixed point theorems in soft metric spaces by using soft points and soft $\widetilde{A}$-contraction mappings.

Keyword(s): softmetric, softcontractionmapping, fixedpoint, commonfixedpoint

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Parallel Curves according to The Modified Orthogonal Frame with Curvature and Torsion in Minkowski 3-Space

Muhammed T. Sarıaydın[1], Talat Körpınar[2], Selçuk Baş [3], Vedat Asil[4]

[1]Mathematics, Mus Alparslan University, Turkey,
[2]Mathematics, Mus Alparslan University, Turkey,
[3] Mathematics, Mus Alparslan University, Turkey
[4] Mathematics, Firat University,, Turkey,
E-mail(s): talatsariaydin@gmail.com, talatkorpinar@gmail.com, slckbs@hotmail.com, vasil@firat.edu.tr

In this paper, it is investigated parallel curves via modified frame with curvature and torsion in E31. We give parallel curves of a given curve via modified frame with curvature in Minkowski 3-space. We also give parallel curves of a given curve via modified frame with torsion in Minkowski 3-space. Then, it is given the relationship between these parallel curves and examples for each curve.

Keyword(s): Parallel curves, Minkowski space, Modified frame.

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Rational approximation for estimation of the non parametricregression function.

Dursun Aydın[1], Ersin Yılmaz[2]

[1]Department of Statistics, MuglaSitkiKocmanUniverstiy, Mugla, Turkey
[2,]Department of Statistics, MuglaSitkiKocmanUniverstiy, Mugla, Turkey
E-mail(s):duaydin@mu.edu.tr, ersinyilmaz@mu.edu.tr

The focus of this study is fitting of constrained least squares approximations to data using rational functions. A common problem that arises in a non parametric regression is required to model the functional relationship between variables x and y, that is represented by a set of n pairs of data points $\{(x_i, y_i), i=1,2,...,n\}$. For given these data set, we present the relationship between these variables mathematically as $y_i = f(x_i)+\varepsilon_i$ where $f(x)$ represents an unknown function that explains the true functional relationship, and ε_i is a component of error associated with the measurement y_i called as response. The key idea is to estimate the unknown function. In this context, the Pade approximation of the function is derived from a constrained least squares minimization problem with regularization. For this purpose, a numerical example is made to illustrate how therational (Pade) approximation works in practice.

Keyword(s): Rationalapproximation, Padeapproximation, Nonparametricregression

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Regular and Chaotic Solutions in the 4D Spinor Wave Equation

Fatma Aydogmus[1], Eren Tosyali[2]

[1]Department of Physics, IstanbulUniversity, Turkey
[2,]Vocational School of Health Services, Istanbul Bilgi University, Turkey
E-mail(s):fatmaa@istanbul.edu.tr, eren.tosyali@bilgi.edu.tr

4D Gursey spinor wave equation system is the only possible conformally invariant pure fermionic system with a nonlinear self-coupled spinor term. This system admits particle-like solutions for the derived classical field equations and these solutions are instantonic in character. In this paper, the dynamical nature of 4D nonlinear conformally invariant spinor Gursey wave equation system is studied by constructing phase space displays depending on the excitation amplitude of the external forcing and its frequency to understand how the regular behaviours of Gursey instant on solutions could be affected by forcing.

Keyword(s): Instantons, Chaos, Nonlinear Dynamics

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Relative Ranks of Some Partial Transformation Semigroups

Ebru Yiğit

Faculty of Art and Sciences, Department of Mathematics, Çukurova University, Adana, Turkey
E-mail(s):eyigit@cu.edu.tr

Let P_n be a partial transformation semigroup on a finite set $X_n = \{1, ..., n\}$ and $PA_{n,r} = A_n \cup PK_{n,r}$ where A_n is the alternating group on X_n and $PK_{n,r} = \{\alpha \in P_n : |im(\alpha)| \leq r\}$ is the subsemigroup of P_n. In this talk we find the necessary and sufficient conditions for any subset of $PK_{n,r}$ to be a relative generating set of the subsemigroup $PA_{n,r}$ modulo A_n. Then, for each $1 \leq r \leq n-1$, we show that the relative rank of the subsemigroup $PA_{n,r}a$ modulo A_n.

Keyword(s): Partial transformation semigroup; alternating group; generating set; relative rank.

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Soft Simplicial Homotopy for Digital Images

Simge ÖZTUNÇ

Manisa Celal Bayar University, Facultyof Arts and Science, Department of Mathematics, Manisa/TURKEY
E-mail(s):simge.oztunc@cbu.edu.tr

In this paper we constructed a new notion by using soft sets. We gave the definition of soft simplicial sets for digital images and examined their properties. Then we defined the degenerate and face maps for soft sets in digital images. Also we stated some relations amoung the degenerate and face maps. After the construction of soft simplicial sets and mappings in digital images we defined soft simplicial homotopy in digital images and finally we proved some properties of soft simplicial homotopy for digital images.

Keyword(s): Digital Image, Adjacency Relation, Simplicial Map, Soft Simplicial Homotopy.

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Some Remarks on Complex-ValuedNeural Networks

Nihal Yılmaz Özgür[1], Nihal Taş[2]

[1]Mathematics, Balıkesir University, Turkey
[2]Mathematics, Balıkesir University, Turkey
E-mail(s): nihal@balikesir.edu.tr, nihaltas@balikesir.edu.tr

Recently, complex-valued neural Networks have been used in various fields such as optoelectronics, imaging, signal processing, quantum neural devices and artificial neural information processing. In this talk, we consider new types of activation functions for a complex-valued neural network and investigate some properties of themsuch as fixed point, fixed circle and fixed ellipse.

Keyword(s): Möbiustransformation, complex valuedneural network, activationfunction, fixed point.

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Spline Interpolations Besides Orskov Model Widely Used in in vitro Gas Production

Mehmet Korkmaz

Mathematics, Ordu University, Turkey
E-mail(s):mkorkmaz52@yahoo.com

In this study, for the curve of in vitro gas production, three spline interpolations, which are alternative models passing through exactly all data points, with compare to widely used Orskov model applied to the data of in vitro gas production, were discussed. These models are linear spline, quadratic spline and cubic spline. The curves of in vitro gas production of spline interpolations and widely used Orskov model were shown on the same graph. Thus, the differences have been observed. The estimates for some intermediate values were done by using spline interpolations and Oskov model. By using spline interpolations, the estimates of intermediate values could be made more precise. By using spline interpolations, new ideas and interpretations in addition to the information of the well-known classical analysis were shown to the investigators.

Keyword(s): Spline Models, Gas Production, Orskov Model.

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Synthesis and Characterisation of Symmetric and/or Asymmetric Phthalocyanine Which Containing Carboxylic Acid Moiety

Gökçe Eser[1], Ahmet Lütfi Uğur[1]

[1]Department of Material Science and Engineering, Canakkale Onsekiz Mart University, Turkey,
E-mail(s): gokce.dmrl@gmail.com, alugur@comu.edu.tr

Phthalocyanines (Pcs) are important class of aromatic macrocycles with high chemical and thermal stability that possess unique physical and chemical properties. Synthesis of phthalocyanine derivatives gives many opportunities to develop their applications for various fields such as chemical sensors, liquid crystals, second generation photosensitizers for photodynamic therapy, and optical limiting devices. On the other hand, the solubility of Pcs has a significant property for moderating their physical and chemical properties. Optimizing their performance for their applications in many fields is significant; especially increasing its water solubility, is important to be used as a photosensitizer for photodynamic therapy (PDT) of cancer. It has been found that zinc derivatives are particularly suitable for such treatments.

Phthalocynanines are usually synthesized starting from the appropriate phthalonitriles and their derivatives (ex.:phthalimide, phthalicacid, etc.) or the irsubstitution yield as metal-free phthalociyanine and metallophthalocyanines which obtained especially in high temperatures with the presence of a suitable anhydrous metal salt. It has been found that suitable functional groups in the peripheral position of the phthalocyanine structure can improve the solubility in protic or nonprotic solvents. Asymmetric or low symmetric phthalocyanines are so named because of the different substituents in the peripheral positions.

In this study, it was aimed to synthesize and characterization. Symmetric and Asymmetric Zinc phthalocyanine containing Carboxylic Acid group. These groups have attempted to obtain water-soluble phthalocyanines for photodynamic therapy of cancer. The new compounds were characterized using FTIR, UV–Vis, fluorescence and mass spectroscopies. Also photochemical and photophysical properties have been examined via fluorescence spectroscopy singlet oxygen photodegradation and fluorescence quantum yields and fluorescence behavior.

This research was supported by COMU-BAP committee, FLY-2017-1095 project.

Keyword(s): Phthalocyanine, Zinc, Carboxylic Acid, Photodynamic therapy.

T_0 Approach Spaces

Mehmet Baran[1], Muhammad Qasim[2]

[1] Department of Mathematics, Erciyes University, Kayseri, Turkey
[2]Department of Mathematics, Erciyes University, Kayseri, Turkey
E-mail(s):baran@erciyes.edu.tr, qasim99956@gmail.com

It is well-known that the category of topological spaces and continuous maps is well behaved with respect to subspaces, products, quotients, coproducts. On the other hand, the category of metric spaces and non-expansive maps behaves badly with respect to the formation of initial structures or in particular, of infinite products. As a remedy to this defect, in 1989, Robert Lowen [1] introduced approach spaces which are based on a distance function between points and subsets. Approach spaces are useful in many areas such as probability theory, convergence spaces, functional analysis, function spaces, hyperspaces, group theory, and computer science [2].

There are several ways to generalize the usual T_0-axiom of topology to topological categories [3] and the relationships among these various forms of generalized T_0-axiom in topological categories have been investigated [4].

In this paper, we characterize T_0 approach spaces as well as to investigate the relationships between these T_0 approach spaces and the usual T_0 approach spaces.

This research was supported by Erciyes University Scientific Research Center (BAP) under Grant No: 7174.

Keyword(s): Topological category, distance-approach spaces, gauge-approach spaces, limit-approach spaces, T_0 spaces

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T_1 Approach Spaces

Mehmet Baran[1], Muhammad Qasim[2]

[1] Department of Mathematics, Erciyes University, Kayseri, Turkey
[2]Department of Mathematics, Erciyes University, Kayseri, Turkey
E-mail(s):baran@erciyes.edu.tr, qasim99956@gmail.com

In 1989, Robert Lowen [2] introduced theory of approach spaces which is based upon point-to-set distances rather than point-to-point distances. The main motivation to introduce approach spaces was to resolve the problem of infinite product and coproduct of metrizable topological spaces. There is another motivation for introducing approach spaces is to unify the theories of convergence, metric, uniformity and topological properties [1].

In 1991, Mehmet Baran [3] gave a generalizeation of the usual T_1-axiom of topology to topological category by using initial lifts and discrete objects. One of the uses of T_1 separation property is to define the notion of closedness in set-based topological categories which are used in the notions of Hausdorff , regular, completely regular, and normal objects. One of the other uses of T_1 objects is to define various forms of regular and normal objects in arbitrary topological categories.

The aim of this paper is to characterize T_1 approach spaces and compare with the usual T_1 approach spaces.

This research was supported by Erciyes University Scientific Research Center (BAP) under Grant No: 7174.

Keyword(s): Topological category, initial lift, distance-approach spaces, gauge-approach spaces, limit-approach spaces, T_1 spaces

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Tauberian Theorems for Statistical Convergence

Erdal Gül[1], Mehmet Albayrak[2]

[1]Mathematics, YildizTecnicalUniversity, Turkey,
[2]Mathematics, YildizTecnicalUniversity, Turkey),
E-mail(s):egul34@gmail.com, mehmetalbayrak12@gmail.com

TheTauberiantheoremsforstatisticallimitablemethodareprovedbybothFridyandKhan [2] andM´oricz [10]. Here wegeneralizethesetheoremsto (C; i) statisticallimitablemethod.

Keyword(s): Statistical convergence, Tauberiantheorems, Slowlyoscillating.

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Text Classification with Latent Semantic Analysis

Emre Deniz[1], Hasan Erbay[1], Fahrettin Horasan[1*],Fatih Varçın[1]

[1]Computer Engineering Department, Engineering Faculty, Kırıkkale University, Turkey
E-mail(s):emredeniz18@hotmail.com, hasan_erbay@yahoo.com, fhorasan@kku.edu.tr, fatihvarcin@kku.edu.tr
*Corresponding Author

Today, information can be obtained from many data sources, most of which are textual data. In a specific matter, it is not possible to examine all the documents in order to obtain the information we seek. Classifying the data automatically provides an important advantage in reaching the data we want. Latent Semantic Analysis (LSA) is one of the methods that reveals the latent structure between documents and terms in a vector space using Singular Value Decomposition (SVD). The LSA used in studies such as indexing of documents, automatic summarization and determination of key words documents, can also be used in text classification field by structure. In this study, text classification with LSA was performed using textual data from Reuters-21578 text collection. The term-class matrix of the textual data of the five classes taken from the Reuters-21578 was constructed. The semantic space is obtained according to rank-k approximation by applying SVD to the obtained term-class matrix. Based on the positions of the classes to which the terms and terms in this semantic space belong, the classes to which the previously known documents belong can be classified according to cosine similarity. When the findings obtained from the tests conducted are examined, it is observed that the proposed classification method has resulted in correct results.

Keyword(s): Text Mining, Text Classification, Latent Semantic Analysis, Singular Value Decomposition

The Jacobsthal Sequence in The Ring Structure

Yasemin Taşyurdu [1], Devran Çifçi[2]

[1]Department of Mathematics, Faculty of Sciences and Art, The University of Erzincan, Erzincan 24000, Turkey
[2] Master Student Department of Mathematics, Faculty of Science and Art, Erzincan University, Erzincan 24000, Turkey
E-mail(s):Devran_cotkar@hotmail.com, ytasyurdu@erzincan.edu.tr

In this study, the Jacobsthal sequence was defined over an ring. We investigated the its some identities. We obtain the Binet formula given n-th general term of these sequences. İt is found a generating function in Binet formula. The terms of these sequences are derivated by the matrix.

Keyword(s): Fibonacci number, Fibonacci sequence Ring, Binet, Jacobsthal sequence

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The volume of the trajectory surface in 3-Dimensional Galilean Space

Mücahit Akbıyık[1], Salim Yüce[2]

[1,2,]Mathematics, Yıldız Technical University, Turkey
E-mail(s):makbiyik@yildiz.edu.tr, sayuce@yildiz.edu.tr

Inthiswork, Galilean space motions in 3-Dimensional Galilean Space are studied. Also, the volumes of the trajectory surfaces which are traced by fixed points during 3-parameter Galilean space motions are worked.

Keyword(s): volume of thetrajectorysurface, Galileanspacemotion.

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Univalent Harmonic Mappings and Minimal Surfaces A Complex Analytic

Daoud Bshouty

Mathematics, Technion, Haifa

A sense preserving harmonic mapping f of second dilatation ω from the unit disk D onto a simply connected domain Ω is a solution of the linear partial differential equation

$$\overline{f_{\bar{z}}(z)} = \omega(z) f_z(z)$$

where ω is an analytic function bounded by one in D. Univalent harmonic functions whose dilatations are squares of analytic functions are closely related to nonparametric minimal surfaces. The study of Minimal surfaces for a while was via nonlinear PDE and a new approach that started in 1984 was via harmonic mappings. I shall present a study of one-to-one bounded harmonic functions with _nite Blaschke dilatations and present examples of nonparametric minimal surfaces of this type.

Weighted approximation by a sequence of generalized linear positive operators

Tuncer Acar[1], Gülsüm Ulusoy[2]

[1]Department of Mathematics, Faculty of Science and Arts, Kirikkale University, Turkey
[2]Departmentof Mathematics, Faculty of Science, Çankırı Karatekin University, Turkey
E-mail(s):tunceracar@ymail.com, ulusoygulsum@hotmail.com

Inthepresent talk, we present a new construction of linear positive operators acting on unbounded intervals. We investigate uniform convergence of the operators and rate of convergence by means of weighted modulus of continuity and Peetre's K functional. A pointwise convergence theorem, comparison of new operators with exising one and the advantages of the opertars are presented with graphical and numerical examples as well.

Keyword(s): weightedapproximation, rate of convergence, modulus of continuity.

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A Numerical Approach To Find The Solution Of One Dimensional Differential Equations

Hakan Pekel

Mechanical Engineering, Omer Halisdemir University, Nigde, Turkey, 51240,
E-mail(s):hpekel@ohu.edu.tr

This study gives an approach solution of one-dimensional differential equations such as steady and transient heat equation problems in Laplace domain. The first step is to determine the temperature distribution in high accuracy especially for the transient types where the analytical results cannot be always obtained. That's why the numerical methods the Durbin Inverse, Stehfest and, Papoulis, respectively are employed for time domain responses. It consists of the comparisons the methods mentioned here. A test function is used to verify the numerical results of the current algorithms. In scope of finding temperature distribution, the governing equation considered is a function of the radial coordinate for different thermal relaxation time values are demonstrated in non-dimensional form. The results aim for selection of the most useful algorithm depending on problem types.

Keyword(s): Laplace Transform, Durbin Inverse method, Stehfest Method, Papoulis Method, One-Dimensional Heat Problem

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Topological Based Measures for Decisions in Information Systems

M. Kamel EL-Sayed
Department of Basic Science, Higher Institute of Engineering and Technology, Kafr El-Sheikh, Egypt.
E-mail(s):dr.mkamel123@gmail.com.

Topological methods for data analysis are new approaches that have many applications in several areas of science and engineering. Where topological models are applied to uncertain or complex data without any coding or assumptions from the researcher, and it is described by methods which lead data speak. One of the best achievements of topological approaches is NOBEL prize in physics 2016 is gifted for theoretical discovery of topological phase of matter and topological phase transitions. In this paper, we introduce the topological measurements based tools arising from the similarity relationship derived from engineering data. We generate a general topological structure from real life information; the suggested structure is applied for constructing accurate approximations for uncertain concepts and decisions. We give examples to illustrate the topological method based on symmetry and compare it with approximations from based on equivalence relation and also introduce a diagram that can help in applying algebraic properties in decision making.

Keyword(s): Information systems, Topological structures, Approximations accuracy.

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
10-12 May, 2017, Istanbul, Turkey

An Efficient Heuristic for Subset Sum Problem

Emrullah SONUC[1]

[1] Computer Engineering, Karabuk University, Turkey
E-mail(s):esonuc@karabuk.edu.tr

Subset Sum Problem (SSP) is a special case of the knapsack problem and is known NP-complete. This study presents an effective heuristic method based on Simulated Annealing (SA) algorithm for solving the SSP. The aim of the SSP is to find a subset in a given array that contains n positive integers $W = [\, w_1, w_2$Z $_n \,]$. Sum of the elements in a subset must be equal to a given sum S which is an objective value. SSP can be formulated as follows:

$$max \sum_{i=1}^{n} w_i x_i \,,\; x_i \in \{0,1\}$$

$$s.t. \sum_{i=1}^{n} w_i x_i \leq S$$

Before starting the method, one element in a given array is chosen randomly. The proposed method uses two techniques for each iteration of the method. One of these techniques is a classical swapping operator which exchanges two elements. The other technique is randomly selecting one element and adding this element into subset. The proposed method uses the SA algorithm for the acceptance probability after implementation of swapping operator. A set of seven SSP datasets are used to test the usefulness of the proposed method. In term of quality solutions, the proposed method is capable of delivering good quality results for the SSP datasets.

Keyword(s):subset sum problem, heuristic, simulated annealing.

INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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Asymptotics of Eigenvalues of Sturm-Liouville Problems with Eigenvalue in the Boundary Condition for Differentiable Potential

Elif Başkaya[1]

[1]Mathematics, Karadeniz Technical University, Turkey
E-mail(s):elifbekar@ktu.edu.tr

In this paper, we consider the boundary value problem

$$
\begin{gathered}
y''(t)+\{\lambda-q(t)\}y(t)=0,\ t\in[a,b]\},\\
a_1y(a)-a_2y'(a)=\lambda[a_1'y(a)-a_2'y'(a)],\\
y(b)\cos\beta+y'(b)\sin\beta=0,\ \beta\in[0,\pi),
\end{gathered}
$$

where λ is a real parameter; q(t) is a real-valued function;a_1, a_2, a_1', a_2' $\mathbb{R}$. Also we assume that q(t) is continuous, its differentiation exists and is integrable. The purpose of this paper is to obtain asymptotic approximations for the eigenvalues of the problem contains eigenparameter in the boundary condition.

Keyword(s): Sturm-Liouville Problems; DifferentiablePotential; Eigenvalues; Asymptotics.

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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Boundary Immobilization Method with Compact Finite Difference for Hydration Model with Constant Diffusivity

Seda Gülen[1,2] and Turgut Öziş[2]

[1,]Mathematics, Namık Kemal University, Turkey
[2,] Mathematics, Ege University, Turkey
E-mail(s): sgulen@nku.edu, turgut.ozis@ege.edu

Diffusion problems occur in a wide variety of natural and industrial processes. Soybean hydration is one of diffusion process which can be expressed by Stefan problem mathematically. In hydration problems, sweelling occur and boundary moves when the water enters the system. In this system Stefan problem is expressed by one moving boundary that expresses movement of radius or two moving boundaries that express movement of radius and water inside the grain simultaneously. In this work, the model which has one moving boundary and constant diffusivity coefficient is obtained numerical solution by using boundary immobilization with sixth order compact finite difference scheme (BIMCFD6). The results are compared with results in the literature and the present method has minimal computational effort with higher accuracy.

Keyword(s): Moving boundary problem, Compact scheme, Hydration model.

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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Dynamic Thermal Modelling of a Passive House

Lotfi Derradji[1,2], Farid Boudali Errebai[1], Mohamed Amara[1]

[1]National Center of Studies and Integrated Research on Building Engineering (CNERIB), Cité Nouvelle El Mokrani, Souidania, Algiers, Algeria.
[2]Department of Mechanical Engineering, University of Blida, BP 270 route de soumma, Blida, Algeria.
E-mail(s): lotfi.derradji @yahoo.fr

The remarkable increase in energy consumption of buildings in Algeria, makes this sector the largest energy consumer among economic sectors, with 41% of the consumed energy on the national level. This explains the interest to introduce energy efficiency solutions for the improvement of thermal comfort and reduce energy consumption on heating and air conditioning. The thermal simulation is realised on a rural house with low energy consumption, using simulation software (TRNSYS 17). The rural house (Figure 1) was built in the premises of the CNERIB research center (which is situated in the suburb of Algiers in Algeria) through the MED-ENEC project. The simulation results showed that the use of a local material (stabilised earth blocks) associated with a good thermal insulation improves the thermal comfort in the winter and in the summer periods and achieving 65% energy saving on heating and air conditioning.

Keyword(s): Thermal simulation, energy consumption, thermal comfort.

INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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Finding and Analyzing the Reproduction Number R_0 of the Established System Considering the Constant Vaccination Situation of Tuberculosis in Turkey

Yasin Ucakan[1], Kevser Koklu[1], Emre Eroglu[2]

[1] Mathematics Engineering, Yildiz Technical University, Turkey
2 Mathematics, Kırklareli University, Turkey.
E-mail(s):f2614014@std.yildiz.edu.tr, ozkoklu@yildiz.edu.tr

Tuberculosis, or TB, is an infectious bacterial disease created by My cobacterium tuberculosis, which most ordinarily affects the lungs. It is transmitted from person to person via drop lets from the throat and lungs of people with the active respiratory disease. It is an antiquate dailment, and the fight against TB never stops. A stand out amongst the most critical worries about any infectious disease is its ability to invade a population. Many epidemiological model shave a disease free equilibrium (DFE) at which the population remains in the absence of disease. These models usually have a thre shold parameter, known as the basic reproduction number, R_0, such that if $R_0 < 1$, then the DFE is locally asymptotically stable, and the disease can not invade the population, but if $R_0 > 1$, then the DFE is unstable and invasion is always possible.

In this study, we have used epidemiological models to explore the transmission dynamics of TB and control technique. To improve a comprehend of the TB transmission these days, we first formulate the model with partial immunity and it is inspected by the detailed information in Turkey. After, we obtained Reproduction number which is 'the expected number of secondary cases produced, in a completely susceptible population, by a typical infective individual'.

Keyword(s): Tuberculosis, Modelling, Epidemiology, Turkey.

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Highly Oscillatory Integrals Encountering in Electrical Engineering

Mehmet Kurtoğlu[1], Ali İhsan Hasçelik[2],Dilan Kılıç Kurtoğlu[3]

[1] Electrical-Electronics Engineering, Gaziantep University, Turkey
[2]Mathematics, Gaziantep University, Turkey
[3]Mathematics, Gaziantep University, Turkey
E-mail(s):mkurtoglu@gantep.edu.tr, aihascelik@yahoo.com, dilankilic_89@hotmail.com

This study is related with the decomposition of linear ordinarydifferentialequations as given in the following form encountering in electricalengineering.

$$y' = Ay + E(t)g(t), \quad t \geq 0, \quad y(0) = y_0 \in \mathbf{R}^d \tag{1}$$

where A is a $d\ x\ d$ matrix, g is a d vector of functions while E is a $d\ x\ d$ matrix function, $E_{k,l}(t) = \chi_{k,l} e^{\tau_{k,l} \sin \omega_{k,l} t}$, $k, l = 1, ..., d$. Equationsmentioned above can be simplified with nonlinearitesapproximated by linear terms. After simplification, the below integral that has highlyoscillation and is often occured when analyzing scattering and diffraction of electromagneticwaves is obtained.

$$I[f] = \int_{-1}^{1} f(x) e^{\tau \sin \omega(\alpha x + \beta)} dx \tag{2}$$

where $\alpha, \beta \in \mathbf{R}$, $\tau \in C \setminus \{0\}$ and $\omega \gg 1$. The scattering and diffraction of electromagneticwaves has a significant role in antennatheory, fiber optics, radars and radio frequency (RF) communication systems. Any scattering problem can be characteristicallymodeled with the help of a wave equation. There are severaltechniques to compute the highlyoscillatoryintegrals that occur in this field. These are Levinmethod, Filon type approach, asymptotic and steepestdescentmethod. In this study, steepestdescenttechnique which presentseffective and stable solution will be applied to the integrals of the form (2) arising in electricalengineering.

Keyword(s): Highlyoscillatoryintegrals, electricalengineering, scattering and diffraction, electromagneticwaves.

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Linear Static Analysis of the Plane Elasticity Problems by the Isogeometric Finite Element

Kazım Ahmet Haşim[1], Yavuz Çetin Cuma[2]

[1]Civil Engineering Department, Adana Science and Technology University, Adana.
[2,]Civil Engineering Department, Adana Science and Technology University, Adana.
E-mail(s):kahasim@adanabtu.edu.tr, cumayc@adanabtu.edu.tr

Circular voids in the plates are often encountered, especially in the steel structures, as it is necessary for attachment of bolts and rivets. Stress in the plane concentrates around these openings. Therefore, the determination of the stress concentrations becomes important for the design. In this study, long plates with circular voids are considered, and the linear static analysis of the plates subjected to in-plane tensile forces, are investigated by using partly genuine isogeometric finite element code, written in Wolfram Mathematica. Automation of the meshing and analysis without manual data transfer is aimed and achieved. Displacement and stress values obtained are compared with the analytical results in the literature.

Keyword(s): Isogeometric, finite element, elasticity, circular voids

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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Numerical Solution of Natural Convective Heat Transfer Under Magnetic Field Effect

Serpil Şahin[1], Hüseyin Demir[2]

[1]Mathematics, Amasya University, Turkey,
[2,]Mathematics, Ondokuz Mayıs University, Turkey,
E-mail(s):serpil.sahin@amasya.edu.tr, hdemir@omu.edu.tr

In this study, non- Newtonian pseudoplastic fluid flow equations for 2-D steady, incompressible, the natural convective heat transfer are solved numerically by pseudo time derivative. The stability properties of natural convective heat transfer in an enclosed cavity region heated from below under magnetic field effect are investigated depending on Rayleigh and Chandrasekhar numbers. Stability properties are studied, in particular, for Rayleigh number from 104 to 106 and for Chandrasekhar number 3, 5 and 10. As a result, when Rayleigh number is bigger than 106 and Chandrasekhar number is bigger than 10, the instability occurs in the flow domain.

Keywords: Natural convective heat transfer, Rayleigh number, Chandrasekhar number, Pseudo time derivative.

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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On Relation Between Analytic And Univalent Function Which Defined Close-To P Class With The Function Belong to S Class

İsmet Yıldız[1] , Hilal Albayrak[2], Hilal Ay[3]

[1]Mathematics, DuzceUniversity, Duzce, Turkey
E-mail(s):ismetyildiz@duzce.edu.tr , hilalalbayrak.h0@gmail.com, h.hilalay92@gmail.com

A relation was established between S class with unction Weierstrass $\xi(z)$ which is meromorphic Close-to- P class in unit disk.

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On Some Scalarizations for Set Optimizations

Emrah Karaman[1], Mustafa Soyertem[2],İlknur Atasever Güvenç[3]

[1]Mathematics, AnadoluUniversity, Turkey,
[2]Mathematics, UşakUniversity, Turkey,
[3]Mathematics, AnadoluUniversity, Turkey,
E-mails:e.karaman42@gmail.com, mustafa.soyertem@usak.edu.tr, iatasever@anadolu.edu.tr

Scalarization plays a fundamental role in vector and set optimization to obtain optimality conditions [1,2,3]. In this work, two scalarization functions are defined to reduce a set-valued optimization problem with respect to $\preccurlyeq_C^{m_1}$and $\preccurlyeq_C^{m_2}$order relations [4] which are a partial order relation on the family of nonempty, bounded sets, to a scalar optimization problem. Some properties of these functions are studied. Relationships between set-valued optimization problems and scalar optimization problems obtained by scalarizations are examined. Moreover, necessary and sufficient optimality conditions are presented for set-valued optimization problems.

Keyword(s): scalarization, optimalitycondition, set optimization.

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On The Approximating Auxiliary Soft Set Relation

Gözde Yaylalı[1], Nazan Çakmak Polat[2], Bekir Tanay [3]

[1, 2, 3] Department of Mathematics, Faculty of Science, Muğla Sıtkı Koçman University, Muğla-TURKEY
E-mail(s):gozdeyaylali@mu.edu.tr

Soft Set Theory was introduced by Molodtsov to deal with uncertainties. Also, there are increasingly many studies about the soft set theory. After defining the Auxiliary soft set relation, which is a generalization of the way-below soft set relation, we introduce the Approximating auxiliary soft set relation by the help of the monotone soft set function, mapping an element to its lower soft set. Moreover, we obtain some results of it and illustrated some examples.

Keyword(s): Soft Set Theory, Soft Set Relation, Way-Below Soft Set Relation

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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Reduction of Attributes Using Granules Based on Covering

M.Kamel EL-Sayed

Department of Basic Science, Higher Institute of Engineering and Technology, Kafr El-Sheikh, Egypt.
E-mail(s):dr.mkamel123@gmail.com.

The original model for rough set depends on the classes that resulting from equivalence relation. The condition of equivalence is a strong restriction which limits the extent of the application of theory to information systems. So we use the classes resulting from a general relation whose classes form a using these covers through we find the granules for each element, and used it to find the indiscernibility matrix and then we applied the Boolean reasonias to find the reduction for completely information system for every element. However our contribution is a generalization for Pawlak model and open the way for applying this method in multi information systems.

Keyword(s): Indiscernibility matrix, Covering granules, Reduction.

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Some Fixed Point Results in Hyperbolic Spaces

Yunus Atalan[1], Vatan Karakaya[2], Faik Gürsoy[3]

[1]Department of Mathematics, Yıldız Technical University, İstanbul, Turkey
[2]Department of Mathematical Engineering,Yıldız Technical University,İstanbul, Turkey
[3]Department of Mathematics, Adıyaman University,Adıyaman, Turkey
E-mail(s):yunus_atalan@hotmail.com, vkkaya@yahoo.com, faikgursoy02@hotmail.com

In this presentation, we study convergence and data dependenceof new iterative scheme in hyperbolic space. Also, we show the new iteration hasbetter rate of convergence.

Keyword(s): Fixed point, New iteration, Hyperbolic space.

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Some Relations on the Finite Laplace Transform and Applications

Neşe Dernek[1], Selcan Kocabaş[2]

[1]Mathematics, Marmara University, Turkey,
[2]Mathematics, Marmara University, Turkey
E-mail(s): ndernek@marmara.edu.tr, selcan.kocabas@gmail.com

In the present paper, a Parseval- type theorem and some lemmas involving the finite Laplace transform, the complementary incomplete gamma function and the exponential integrals are given. Some results relating to the finite Laplace transform and some simple tecniques for evaluating integrals are obtained. Illustrative examples are also given.

Keyword(s): Finite Laplace transform, Laplace transform, Parseval-Goldstein type theorem.

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SomeResults on the Subgroups of Soft-Semi Topological Groups

Nazan Çakmak Polat[1], Gözde Yaylalı[2],Bekir Tanay[3]

[1,2,3]Department of Mathematics, Faculty of Science,Muğla Sıtkı Koçman University, Muğla-TURKEY
E-mail(s): ncakmak@mu.edu.tr, gozdeyaylali@ mu.edu.tr,btanay@ mu.edu.tr

Soft Set Theory, which is introduced by Molodtsov in 1999, has been admitted as an effective tool for dealing with uncertainty. To contribute this research area, in this paper we introduce subgroups of soft semi-topological groups and normal subgroups of soft semi-topological groups with some examples. Also we study some theoretical results related to subgroups of soft semi topological groups.

Keyword(s): Soft set, Semi-topologicalgroup, Soft semi-topologicalgroup, Subgroups of soft semi-topological groups.

Acknowledgement
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Some Vectorizations for Set Relations on Totally Ordered Spaces

Mustafa Soyertem[1], İlknur Atasever Güvenç[2]

[1]Mathematics, Uşak University, Turkey,
[2]Mathematics, Uşak University, Turkey,
E-mail(s):mustafa.soyertem@usak.edu.tr,iatasever@anadolu.edu.tr

Total orders supply useful tools additionally to partial orders. In [1] properties of total orders were examined for $\mathbb{R}^n$. In this study, two types of vectorizations are presented for cone-closed and cone-bounded sets in a totally ordered space. Some characterizations for set relations, given by Kuroiwa et al. [2], are obtained via these vectorizations.

Keyword(s): Vectorization, total order, set orders.

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Some Fixed Point Results in Hyperbolic Spaces

Yunus Atalan[1], Vatan Karakaya[2],Faik Gürsoy[3]

[1]Department of Mathematics, Yıldız Technical University, Turkey,
[2]Department of Mathematical Engineering, Yıldız Technical University
[3]Department of Mathematics, Adıyaman University
E-mail(s):yunus_atalan@hotmail.com, vkkaya@yahoo.com,faikgursoy02@hotmail.com

In the present work, we analyze convergence and data dependence of new iterative scheme for the class of quasi-contractive mappings in hyperbolic space by simplifying the iterative scheme given by Khan et al. (J. Appl. Math. Comput. 35 (2011) 607-616). Also, we show the new iteration has better rate of convergence. Finally, we prove a data dependence result for quasi-contractive mappings using the new iterative scheme.

Keyword(s): Fixed point, New iteration, Hyperbolic space.

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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Spin Structure on Almost Contact B-Metric Manifolds

Şenay Bulut

Anadolu University, Department of Mathematics, Eskişehir, TURKEY
E-mail(s):skarapazar@anadolu.edu.tr

In this study, we describe spinors on almost complex manifolds with Norden metric by using the natural connection. Moreover, we construct the spinors on almost contact B-metric manifolds.

Keyword(s): Spinor bundle; Almost contact B-metric manifolds; Dirac operator.

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The Auxiliary Soft Set Relation

Gözde Yaylalı[1], Nazan Çakmak Polat[2], Bekir Tanay [3]

[1, 2, 3] Department of Mathematics, Faculty of Science,Muğla Sıtkı Koçman University, Muğla-TURKEY
E-mail(s):gozdeyaylali@mu.edu.tr

Classical mathematical tools are inadequate to deal with uncertainties of the complicated problems in economics, engineerings and environmental areas. Molodtsov introduced the Soft Set Theory to deal with these uncertainties. In recent years, the soft set theory has been developed increasingly, such as soft topology, orderings on soft set were introduced. Since, way-below soft set relation has a very important role in the soft Scott topology, in this study we take a closer look at the way-below soft set relation and we obtain a general form for the way-below soft set relation, which is called the Auxiliary soft set relation.

Keyword(s): Soft Set Theory, Soft Set Relation, Way-Below Soft Set Relation

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The Soft Topological Groups Based on the Soft Element

Nazan Çakmak Polat[1], Gözde Yaylalı[2],Bekir Tanay[3]

[1,2,3]Department of Mathematics, Faculty of Science,Muğla Sıtkı Koçman University, Muğla-TURKEY
E-mail(s): ncakmak@mu.edu.tr, gozdeyaylali@ mu.edu.tr,btanay@ mu.edu.tr

Wardowskire defined the notions of soft element and soft mapping in [3]. After this definition Ghosh et. al.,defined a binary operation on the set of all nonempty soft elements of a given soft set to introduce Soft algebraic structures in [5]. Following to the these studies we introduce the structure of soft topological based on soft element with some examples. Also we studied the relation between soft topological groups and soft semi-topological groups.

Keyword(s): Soft set, Topological group, Soft topological group, Soft semi-topological group.

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TheDerivative of Spectral Function of Sturm-Liouville Problem with Eigenvalue Parameter in the Boundary Condition

Elif Başkaya[1], Haskız Coşkun[2]

[1]Mathematics, Karadeniz Technical University, Turkey,
[2]Mathematics, Karadeniz Technical University, Turkey.
E-mail(s): elifbekar@ktu.edu.tr, haskiz@ktu.edu.tr

In this paper, we find the derivative of the spectral function of Sturm-Liouville problem with eigenvalue parameter in the boundary condition on half line $[a,\infty)$.

Keyword(s): Sturm-Liouville equation, boundaryconditionwitheigenvalue, spectralfunction, asymptotics.

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μ-statistical convergence and μ stat fundemantality

Cemil Karaçam [1], Yusuf Zeren [2], Bilal Bilalov [3]

[1](Mathematics, Yildiz Technical University, Turkey),
[2,(](Mathematics, Yildiz Technical University, Turkey),
[3](Mathematics, Instutiteof Mathematicsand Mechanics of NAS of Azerbajian)
E-mail(s):cemil-karacam@hotmail.com.tr., yzeren@yildiz.edu.tr

In the present work the concept a point μ –statistical density is defined and based on this concept the concept of μ –statistical limit generated by some Borel measure μ(.) is defined at a point, inconstrast to similiar concept (1). We also introduce the concept of μ –statistical fundemantality at a point and, its equilavence the concept of μ –sta convergence is proved .

Keyword(s): μ –statistical convergence , μ –stat fundemantality

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A New Application of Exp-Function Method

Mehmet Ekici [1]

[1] Department of Mathematics, Bozok University, Yozgat, Turkey
E-mail(s):ekici-m@hotmail.com

This paper presents exp-function approach for soliton dynamics in optical metamaterials with quadratic-cubic nonlinearity. Singular soliton solutions along with other solutions are obtained by using this approach.

Keyword(s): Solitons, Metamaterials, Quadratic-cubic nonlinearity.

Associated curve with a timelike Frenet curve in Minkowski 3-space

Bahar UYAR DÜLDÜL

MathematicsandScienceEducation, Yildiz Technical University, Turkey
E-mail(s):buduldul@yildiz.edu.tr

In this study, we give some relations related with a principal-direction curve and a binormal-direction curve of a timelike Frenet curve. The Darboux-direction curve and the Darboux-rectifying curve of a timelike Frenetcurve in Minkowski 3-space are introduced and some characterizations related with thee associated curves are given. Laterwe define the V-direction curve which is associated with a timelike curvelying on a timelike oriented surface in Minkowski 3-space and present some results together with the relationships between the curvatures of this associated curves.

Keyword(s): TimelikeFrenetcurve, associated curve, integral curve, rectifyingcurve.

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Common Tripled Fixed Point Theorems for Mappings Satisfying CLRg Property in Cone b-Metric Spaces

Sahar Abusalim[1], Zaid Fatail[2]

[1]Mathematices, Faculty of sciences and Arts in Quarayyat,Aljouf University, Saudi Arabia,
[2], Mathematices, Faculty of sciences and Arts in Qilwah,Albaha University, Saudi Arabia
E-mail(s): sabosalem@ju.edu.sa, zaid_fatail@yahoo.com

The concept of cone b-metric spaces has been introduced recently asa generalization of cone metric spaces and b-metric spaces. The aim of this paper is to establish some common tripled fixed point theorems for mappings $F: X^3 \to X$and $g: X \to X$using the common limit in the range and (E-A) properties on cone b-metric spaces. The present theorems expand and generalize several well-known comparable results in literature.An interesting example is presented to support our results.

Keyword(s): Tripled coincidence points, Common tripled fixed points, CLRg property, (E-A) property, cone b-metric spaces.

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Comparison of Neighborhood Search Techniques for Solving Weapon-Target Assignment Problem using Simulated Annealing Algorithm

Emrullah SONUC[1], Baha SEN[2], Safak BAYIR[3]

[1] Computer Engineering, Karabuk University, Turkey
[2] Computer Engineering, Yildirim Beyazit University, Turkey
[3] Computer Engineering, Karabuk University, Turkey
E-mail(s):esonuc@karabuk.edu.tr, bsen@ybu.edu.tr, safakbayir@karabuk.edu.tr

Neighborhood search technique is a method that searches new candidate solutions to obtain better results on heuristic algorithms. The Weapon-Target Assignment (WTA) problem is an NP-complete combinatorial optimization problem. The WTA problem aims to find best assignment of weapons to targets, to minimize the expected damage of the defended area in order to increase chances of survival. The WTA problem can be defined as follows:

$$f(\pi) = \sum_{i=1}^{n} v_i \prod_{j=1}^{m} \left(1 - p_{ij}\right)^{x_{ij}}$$

where n the number of the targets, m the number of the weapons, vi the value of the target i, pij the probability of destroying by assigning the jth weapon to the ith target, x = [xij] the decision variable that is nxm matrix. There are many methods in literature to solve the WTA problem using heuristic methods. One of them is Simulated Annealing algorithm. In this study, the usefulness of neighborhood search techniques for the WTA problem using Simulated Annealing algorithm is explored. As a neighborhood search technique, 2-opt, swapping and insertion techniques are used to improve the current solution. This study concentrates on these neighborhood search techniques using Simulated Annealing algorithm in order to compare the quality of the results. A set of 12 WTA problem instances are used to test the effectiveness of neighborhood search techniques. Computational experiments show that swapping technique obtains better solutions than other techniques for solving WTA problem using Simulated Annealing algorithm.

Keyword(s): neighborhood search techniques, swapping, 2-opt, insertion, weapon-target assignment, simulated annealing.

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On Faintly B-I-Continuous Functions

Ahu Açıkgöz, Neelamegarajan Rajesh And Ferhat Esenbel

[1,]Mathematics, Balikesir University, Turkey,
[2,] Rajah Serfoji Government College, TamilNadu, India,
[3,]Mathematics, Balikesir University, Turkey,
E-mail(s): ahuacikgoz@gmail.com, nrajesh_topology@yahoo.co.ini, fesenbel@gmail.com

The aim of this paper is to introduce and characterize a new class of functions called almost b-I-continuous functions in ideal topological spaces by using b-I-open sets.

Keyword(s): Ideal topological spaces, b-I-open sets, faint b-I-continuity.

On The Positive Integer Solutions Of Some Exponential Diophantine Equations

Murat Alan

Yildiz Technical University, Department of Mathematics, Istanbul. Turkey.
E-mail(s):alan@yildiz.edu.tr

Let a, b, c be fixed relatively prime positive integers greater than one. The exponential Diophantine equation $a^x + b^y = c^z$ in positive integers x, y, z has been actively studied by a number of authors and it is known that the number of solutions (x, y, z) is always finite. Jesmanowicz (1956) conjectured that if a, b, c are Pythagore antriples, i.e.,positive integers satisfying $a^2 + b^2 = c^2$ then the equation $a^x + b^y = c^z$ has only the positive integer solution (x, y, z) = (2, 2, 2). As an analogue of Jesmanowicz's conjecture, Terai (1995) proposed that if a, b, c, p, q, r are fixed positive integers satisfying $a^p + b^q = c^r$ with a, b, c, p, q, r >1 and gcd(a, b)=1, then, apart from a handful of exceptions, $a^x + b^y = c^z$ has only the solution (x, y, z) = (p, q, r). We present some positive results on Terai's conjecture for some special cases.

Keyword(s): Diophantine equations

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Properties Of Faintly B-I-Continuous Functions in Fuzzy Ideal Topological Spaces

Ahu Açıkgöz, Neelamegarajan Rajesh, Sellappan Shanthi And Akın Çakır

[1,]Mathematics, Balikesir University, Turkey,
[2,] Rajah Serfoji Government College, TamilNadu, India,
[3], Arignar Anna Goverment Arts College, TamilNadu, India,
[4,]Mathematics, Balikesir University, Turkey,
E-mail(s): ahuacikgoz@gmail.com, nrajesh_topology@yahoo.co.ini, shanthiwini2005@yahoo.co.in, akinncakir@gmail.com

In this paper, we introduce and study the concept of fuzzy faintly b-I-continuous functions on fuzzy ideal topological space.

Keyword(s): fuzzy b-I-open set, fuzzy faintly b-I-continuous functions.

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Properties Of Slightly B-I-Continuous Functions in Fuzzy Ideal Topological Spaces

Ahu Açıkgöz, Neelamegarajan Rajesh, Sellappan Shanthi And Ferhat Esenbel

[1,]Mathematics, Balikesir University, Turkey,
[2,] Rajah Serfoji Government College, TamilNadu, India,
[3,] Arignar Anna Goverment Arts College, TamilNadu, India,
[4,]Mathematics, Balikesir University, Turkey,
E-mail(s): ahuacikgoz@gmail.com, nrajesh_topology@yahoo.co.ini, shanthiwini2005@yahoo.co.in, fesenbel@gmail.com

In this paper, we introduce and study the concept of fuzzy slightly b-I-continuous functions on fuzzy ideal topological space.

Keyword(s): fuzzy b-I-open set, fuzzy slightly b-I-continuous functions.

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Some Applications Of B-I-Open Sets

Ahu Açıkgöz, Neelamegarajan Rajesh And Kübra Cengiz

[1,]Mathematics, Balikesir University, Turkey,
[2,] Rajah Serfoji Government College, TamilNadu, India,
[3,]Mathematics, Balikesir University, Turkey,
E-mail(s): ahuacikgoz@gmail.com, nrajesh_topology@yahoo.co.ini, kubracengizzz@icloud.com

In this paper, b-I-open sets are used to define b-I-US spaces and b-I-Urysohn spaces in ideal topological spaces and study some of their basic properties.

Keyword(s): Ideal topological spaces, b-I-open sets, b-I-US spaces, b-I-Urysohn spaces.

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Stability and instability of functional Volterra integro-differential equations of first order

Sizar Abid Mohammed[1] and Cemil Tunç[2]
[1] Department of Mathematics, College of Basic Education, University of Duhok,
Zakho Street 38, 1006 AJ, Duhok- Iraq
[2]Mathematics, Yuzuncu Yil University, Van – Turkey
E-mail(s):sizar@uod.ac, cemtunc@yahoo.com

This paper is concerned with certain non-linear Volterra integro-differential equations with constant time-lag. Via Lyapunov functionals and basic inequalities, sufficient conditions are given for the exponential stability and instability of the trivial solution of the Volterra integro-differential equations considered. We introduce two new results for the above topics. Our conditions involve the nonlinear generalization and extensions of the results can be found in the literature. The results to be obtained are new and complements that in the literature.

Keyword(s): Non-linear, (VIDE), first order, stability, instability, Lyapunov functional.

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INTERNATIONAL CONFERENCE ON MATHEMATICS AND ENGINEERING
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Uniformly 2-Absorbing PrimaryIdeal of Commutative Rings

Gulsen Ulucak[1], Hojjat Mostafanasab[2], Unsal Tekir[3]

[1,]Mathematics, Gebze Technical University,Turkey,
[2,]Mathematics, University of Mohaghegh Ardabili, Iran
[3]Mathematics, Marmara University,Turkey,
E-mail(s):gulsenulucak@gtu.edu.tr, h.mostafanasab@uma.ac.ir, utekir@marmara.edu.tr

Through out this paper, we assume that all rings are commutative with $1\neq 0$. In this study, we introduce the concept of "uniformly 2-absorbing primary ideals" of commutative rings, which imposes a certain boundedness condition on the usual notion of 2-absorbing primary ideals of commutative rings. Then we investigate some properties of uniformly 2-absorbing primary ideals of commutative rings with examples.

Keyword(s): Uniformly 2-absorbing primary ideal.

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Methods Used in Parameter Tuning

Rabia Korkmaz Tan[1], Şebnem Bora[1]
[1]ComputerEngineering, EgeUniversity, Turkey
E-mail(s): rabia.korkmaz.tan@ege.edu.tr, sebnem.bora@ege.edu.tr

Many modeling studies have large parameter space and the actual system reflectance depends on these parameters. Optimizing these parameter values is a problem and is beyond the limits of human problem solving. In this study, an analysis of parameter tuning methods has been carried out and it is aimed to evaluate the related methodological issues and to create a framework for parameter tuning methods. From the work done, different classifications were developed to categorize the methods of parameter adjustment and to evaluate the existing work. The evaluation of the existing algorithms has been obtained by a detailed examination of the inferences and existing algorithm analyzes in the studies.

Keyword(s): Parameter, Parameter Tuning, Optimization Algorithms

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Some Relationships between for the 2-Variable Unified Apostol-type Polynomials

Seçil Bilgiç[1,2], Burak Kurt[3]

[1] Department of Computer Programming (Distance Education), Anadolu Bil Vocational School, Istanbul Aydin University TR-34295 Istanbul-Turkey
[2] Department of Matematics, Institute of Science, Akdeniz University TR-07058 Antalya –Turkey
[3] Department of Mathematics, Faculty of Education, Akdeniz University TR-07058 Antalya -Turkey
E-mail(s): secilbilgic@aydin.edu.tr, burakkurt@akdeniz.edu.tr

In this paper, we introduce and investigate 2-variable unified Apostol-type polynomials. We obtain some symmetry identities between this polynomial and the generalized sum of integer powers. We give explicit relation for this unified family.

Keyword(s): Apostol-Bernoulli numbers and polynomials, Apostol-Genocchi numbers and polynomials, The Stirling numbers of the second kind, multiple power-sums.

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Electric Dipole Resonance In Exotic Nuclei^{172,174}hf

Demirci N.[1], Ertuğral F.[1], Quliyev H.[1], E. Gulıyev[2], A. A. Kulıev[3]

[1]Sakarya University, Department of Physics, Faculty of Scienceand Art, Sakarya, Turkey
[2]State Agency on Nuclear and Radiological Activity Regulation, Ministry of Emergency Situations, Baku, Azerbaijan
[3]The NationalAviation Academy of Azerbaijan, Baku, Azerbaijan

The dependence of the Pygmy and Giant dipole response in exotic ^{172,174}Hf isotopes are studied the framework of the Quasiparticle Random Phase Approximation (QRPA).Analysis of the numerical calculations indicates that both K=1 and K=0 branches of excitations plays significant role in formation of low and high energy electric dipole response.

Keywords: Pygmy Dipole Resonance, Giant Dipole Resonance, QRPA, electric dipole, ^{172,174}Hf, exotic

The Investigation of Dipole Electric Radiation And Photon Scattering Cross Section In^{178,180}hf

Demirci N.[1], Ertuğral F.[1], Quliyev H.[1],E. Gulıyev[2], A. A. Kulıev[3]

[1]Sakarya University, Department of Physics, Faculty of Scienceand Art, Sakarya, Turkey
[2]State Agency on Nuclear and Radiological Activity Regulation, Ministry of Emergency Situations, Baku, Azerbaijan
[3]The NationalAviation Academy of Azerbaijan, Baku, Azerbaijan

In this study, in the theoretical investigation of the electric dipole (E1) level, the possibility of B (E1) reduced transition as well as photon scattering cross sections and radiation thicknesses have been investigated theoretically for the first time. Numerical calculations have been performed for well deformed ^{178,180}Hf in the framework of Rotational Invariant (RI-) Invariant Quasiparticle Random Phase Approximation (QRPA). ω energies, σ photon scattering cross sections and Γγ radiation width of 1^- excitations (K = 1) have been calculated in pygmy and giant resonance region.

Keywords: Pygmy Dipole Resonance, Giant Dipole Resonance, QRPA, electric dipole, ^{178,180}Hf

Color Band Tracking Vehicle Design

Kazım Yıldız[1], Veysel Gökhan Böcekçi[2]

[1]Marmara University, Department of Computer Engineering, Technology Faculty, İstanbul, Turkey
[2] Marmara University, Department of Electric and Electronics Engineering, Technology Faculty, Istanbul, Turkey
E-mails:kazim.yildiz@marmara.edu.tr, vgbocekci@marmara.edu.tr

Nowadays, control modules gain features such as compact, functional, easy to program, low cost and effects facilitating the design and implementation of control systems There are various controllers which is produced by companies that vary and increase in features according to the applications. in the market that vary and increase in features according to the applications produced by various companies. In our work, it is aimed to realize a vehicle that can controlled via direction and speed with colors using a low cost controller. Color tone information codes are transmitted to the controller by the color sensor. The car is processed by an integrated controller module. Then, the forward, backward and angle positions of the dc engines that control the vehicle wheels are controlled. With the created scenario, controls such as vehicle direction, speed and desired color direction can be provided.

Keywords: Vehicle control, Arduino, Color sensor

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Kalman Filter Based Application on Denim Fabric Inspection

Kazım Yıldız[1], Veysel Gökhan Böcekçi[2]

[1] MarmaraUniversity,Department of ComputerEngineeringMathematics, İstanbul, Turkey
[2]MarmaraUniversity, Department of ElectricelectroniEngineering, İstanbul, Turkey
E-mails:kazim.yildiz@marmara.edu.tr, vgbocekci@marmara.edu.tr

Defect detection is an importantprocess for the textile industry. It was done by specialists. Nowadays some automatic vision systems are used for this process. Many of them are used different kinds of camera. This paper presents a method about image processing with thermal application on denim fabric. In this study, we have used thermal camera for the heat difference on fabric and acquired image frames with it. Andweproposed Kalman filterbasedalgorithm for the defect detection process. We implement and test the algorithm on different kinds of defects are composed on fabric. These faults are hole, machine oil, and nope. Experimental results have shown, our application gives promising results.

Keywords: Imaging, Computervision, Kalman Filter.

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On Convergence of Multidimensional Opinion Dynamics in Continuous Time

Serap Tay Stamoulas[1], Muruhan Rathinam[2]

[1]Mathematics, DicleUniversity, Turkey,
[2,]MathematicsandStatistics, University of Maryland Baltimore County, USA
E-mail(s): serap.taystamoulas@dicle.edu.tr, muruhan@umbc.edu

Opinion dynamics is the study of the evolution of opinion sthrough interactions among a group of people referred to as agents. Interaction functions depend on the opinions of interacting agents and their confidence bounds. We analyze a continuous time multidimensional opinion model where agent shave heterogeneous but symmetric and compactly supported interaction functions. In this bounded confidence opinion dynamics model, the opinion of each agent is only affected by other agents whose opinionslie within a confidence bound. Considering Filippov solutions, we characterize the equilibria and their Lyapunov stability. For the case of C^1 interaction functions, we provide a proof that all trajectories approach an equilibrium as time t approaches infinity.

Keyword(s): Opinion dynamics, multidimensional opinions, bounded confidence

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WGC Based PID Tuning Method for Integrating Processes with Dead-time and Inverse Response

Cem Onat[1], Abdullah Turan[1], Mahmut Daşkın[1]

[1]Mechanical Engineering, Inonu University, Malatya, Turkey

cem.onat@inonu.edu.tr, abdullah.turan@inonu.edu.tr, mahmut.daskin@inonu.edu.tr

This paper represents a simple numerical PID tuning method for integrating processes with time delay and inverse response. The method is based on the weighted geometrical center (WGC) concept which can be used as a PI design method. The main characterization of the method is first to obtain the stability region in the PI controller parameters (proportional gain, integral gain) plane according to derivative gain by using the stability boundary locus method and then to find the weighted geometrical center point of this region through its stability boundary points. Obtained WGC controllers by using of the different values of *derivative gain* are studied. Simulation results have demonstrated that PID controller designed by using of the proposed method performs better for set point changes than other available numerical PID design methods in the literature.

Keyword(s): PID control, WGC method, Time delay, Integrating system.

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Generation of Fractal Vessel Structure Functions by Using the Lindenmayer System

Sevcan Emek[1], Şebnem Bora[1]
[1]Ege University, Department of Computer Engineering, 35100, Bornova/Izmir,Turkey
sevcan.emek@ege.edu.tr, sebnem.bora@ege.edu.tr

The aim of this study is to develop a modelable real vessel structure by defining the basic principles of the Lindenmayer system. A real vessel structure has a complicated geometry that is difficult to define. The Lindenmayer system, also known as L-system presents an iterative formula to produce a limited number of rules for fractal structures requiring complicated and versatile rules. In this study, we have developed several example fractals generated using L-system. The geometry of vessel structure is created by using the string rewriting technique. The alphabet symbol codes produced according to the rules of the L-system are visualized by using the turtle graphics algorithm. At the end of this study, examples of deterministic and stochastic vessel model are presented.

Keywords: Fractal, L-system, Turtle graphics algorithm, Vessel model.

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