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ONLINE PRESENTATIONS

CONFERENCE PROGRAM

7th INTERNATIONAL CONFERENCE ON COMPUTATIONAL MATHEMATICS AND ENGINEERING SCIENCES

20-21 May
2023, ELAZIĞ - TÜRKİYE

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THE SEVENTH INTERNATIONAL CONFERENCE ON COMPUTATIONAL MATHEMATICS AND ENGINEERING SCIENCES (CMES-2023), ELAZIĞ/TÜRKİYE, MAY 20-21, 2023

The Seventh International Conference on Computational Mathematics and Engineering Sciences (CMES-2023) will be held in Firat University from 20- to 21 May 2023 in Elazığ, Türkiye. It provides an ideal academic platform for researchers and professionals to discuss recent developments in both theoretical, applied mathematics and engineering sciences. This event also aims to initiate interactions among researchers in the field of computational mathematics and their applications in science and engineering, to present recent developments in these areas, and to share the computational experiences of our invited speakers and participants.

The Organizing Committee

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Hasan Bulut, Firat University, Elazığ, Türkiye

Zakia Hammouch, Ecole Normale Superierue de Meknes, Moulay Ismail University, Morocco

MESSAGE FROM THE GENERAL CHAIRS



Dear Conference Attendees,

We are honored to welcome you to the **Seventh International Conference on Computational Mathematics and Engineering Sciences (CMES-2023)** at Firat University from 20 to 21 May 2023 in Elazığ City, Türkiye.

CMES, founded in 2016 at Faculty of Science and Techniques Errachidia Moulay Ismail University Morocco is an annual international conference, which was very successful in the past years by providing opportunities to the participants in sharing their knowledge and informations and promoting excellent networking among different international universities. This year, the conference includes 200 extended abstracts, several submissions were received in response to the call for papers, selected by the Program Committee. The program features keynote talks by distinguished speakers such as: **Yusif Gasimov** from Azerbaijan University, Baku, Azerbaijan, **M. S. Osman** from Umm Al-Qura University, Makkah, Saudi Arabia, **Delfim F.M. Torres** from University of Aveiro, Portugal, **M.A. Aziz-Alaoui** from University of Le Havre, Normandy, France, **Rachid Yazami** from Nanyang Technological University Singapore, **Vatan Karakaya** from Ahi Evran University, Kırşehir, Türkiye, **Ömer Akın** from TOBB ETÜ University of Economics & Technology, Ankara, Türkiye, **Fernando León Saavedra** from University of Cádiz, Spain, **Bayram Şahin** from Ege University, Türkiye and **Zulqurnain Sabir** from United Arab Emirates University, UAE. The conference also comprises contributed sessions, posters sessions and various research highlights.

We would like to thank the Program Committee members and external reviewers for volunteering their time to review and discuss submitted abstracts. We would like to extend special thanks to the Honorary, Scientific and Organizing Committees for their efforts in making CMES-2023 a successful event. We would like to thank all the authors for presenting their research studies during our conference. We hope that you will find CMES-2023 interesting and intellectually stimulating, and that you will enjoy meeting and interacting with researchers around the world.

Hasan Bulut,

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TOPICS

Applied Mathematics,	Information technology
Financial Mathematics,	Electrical and Electronic Engineering
Control Theory,	Ordinary, Partial, Stochastic and Delay
Game Theory	Differential Equations
Modeling of Bio-systems for Optimization	Chaos and Dynamical Systems
and Control,	Numerical methods and scientific
Linear and Nonlinear programming and	programming
Dynamics,	Fractional Calculus and Applications,
Artificial Intelligence,	Cryptography and its applications
Geometry and Its Applications,	Computational Fluids mechanics, Heat and
Analysis and Its Applications,	Mass Transfers.
Statistics and Its Applications,	Economics and Econometric Studies
Mathematics Education and Its Applications,	Topology and Its Application
Algebra and Its Applications.	Education Sciences
Engineering Sciences	Economics and Econometric Studies
Computer Science	Topology and Its Application

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PLENARY & INVITED TALKS



Applications of the Nonlinear Evolution Equations: An Efficient Analytical Technique

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Abstract: Investigation of mathematical modeling and soliton concept relies mainly on the nonlinear evolution equations (NEEs) [1, 2]. Seeking exact solutions to the NEEs has emerged as one of the most intriguing and very active fields of research. The propagation of shallow-water waves, fluid dynamics, condensed matter physics, computational physics, and geophysics [3, 4] have all been extensively represented by a variety of well-known NEEs, including the nonlinear Ito integral differential equation, the nonlinear Schrödinger equation in higher dimensions, the modified KdV equation, and many others.

Our primary driving force behind this work is to look for various wave shapes for the NEEs' achieved solutions. To accomplish our objective, we use the unified method and its generalized form [5] to identify several analytical solutions, such as solitary, kink-soliton, anti-kink soliton, shock, dark-soliton, bright-soliton, elliptic wave solutions, multi-rational soliton solutions, and multi-wave solutions. Further, the diagrams of the results are additionally displayed. It's vital to note that this study is brand-new and has never been written about before, especially in relation to nonautonomous NEEs.

Keywords: Nonlinear Evolution Equations; Exact Solutions; The Unified Method; The Generalized Unified Method.

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The speed-in-action problem for the nonlinear hyperbolic equation with a nonlocal condition

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Abstract: As is known, the speed-in-action problem is one of the first problems of mathematical theory of the optimal control. As a generalization of a number of practical problems of designing optimal control systems, it has become one of the intensively studied problems. In the theory of optimal control for the processes described by ordinary differential equations, the speed-in-action problems are studied rather well [1,2,3]. But for the processes described by partial differential equations, these problems are relatively less studied. Therefore, the study of speed-in-action problem for the different non-stationary partial differential equations having different applications are actual. For the systems with distributed parameters, the study of such problems relates to number of principal difficulties, while the problem statement itself can be more diverse and contain features which are not in the case of systems given by ODEs. Note that in some papers optimal control problems with an integral boundary condition are considered [4, 5].

In the present work, we study the speed-in-action problem for the non-linear second order hyperbolic equation with a non-local condition and with a control in the coefficient of the equation for the first time. The prototype of this problem is the equation rising in relativistic quantum mechanics. A theorem on the existence of an optimal control is proved and necessary optimality condition in the form of a variational inequality is derived.

Keywords: speed-in-action problem, nonlinear hyperbolic equation, nonlocal condition, optimality condition.

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On modulated statistical and strong Cesàro convergences

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Abstract: The notions of modulated statistical convergence and modulated strong Cesàro convergences have appeared in the literature at different times and by different authors. Furthermore, there has been a great effort by different authors (for instance Et Mikail, Vinod K. Bhardwaj, Hacer Şengül,... and many others), to understand the existing structure between both notions. In lecture today we are going to see that there is a rich structure between both notions and that the concept of compatible module function is central to connect such structure. Finally, we will see that this circle of ideas continues to be efficient for double sequences, lacunary convergences, etc.

Keywords: Statistical convergence; Strong Cesàro convergence, modulus function, compatible modulus function.

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Comparing Some Plant Communities in a Region of Turkey via Fuzzy Similarity

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Abstract: In this talk, firstly we explain crisp similarity, fuzzy similarity and compare them. After that, we answer the question of “why we need to use fuzzy similarity?” Furthermore, we extend the results obtained with crisp logic of “the results obtained in forest vegetation in the research project on plant sociology conducted in Black Sea Region in Turkey)” with fuzzy similarity. To do this application, it has been evaluated with the fuzzy similarity measures approach, and the similarity relations between the plant communities (plant associations) and among the relevés (sampling areas) they cover has been investigated. Finally, we compare the results by giving tables.

Keywords: Fuzzy similarity; crisp logic; plant communities; the relevés.

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Note: This talk has been prepared By Bingöl M.Ü.(mumit1111@hotmail.com), ŞAFAK S.A.(ssafak@ankara.edu.tr, sanem.akdeniz@hotmail.com) , AKIN Ö.(omerakin@etu.edu.tr)



Spiral curves in computer aided geometric design

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Abstract: Bezier curves and surfaces are widely used in computer-aided geometric design because they have features that will provide convenience in a design. On the other hand, spiral curves are useful in the design of highway railway and satellite orbits. The reason for this is that the spiral curves behave with respect to its arc parameter. The most well-known of these are the Clothoids. However, since Clothoids are not easy to analyze mathematically, it creates difficulties in design. In this talk, the spiral conditions of Bezier curves and their transition curves, namely from a line to circle, from a circle to a circle with S-shaped, from a circle to circle with C-shaped, from a line to a line and circle to circle where one circle lies inside the other, to be used in the design of highway, railway and satellite orbits, are discussed. In addition, the case of spiral and transition curves of Bezier-like curves, which arise due to the deficiencies of Bezier curves in defining closed curves and the property of local variation on the curve, are discussed.

Keywords: CAGD, Bezier curve, Bezier surface, Spiral, transition curves;

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Designing computational frameworks for the nonlinear singular differential models

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Abstract: The present work shows the solutions of the singular models based on the stochastic computing schemes. These investigations not only presented for the numerical results of the singular models, but the prediction, delayed, and pantograph singular models can also be handled through these stochastic paradigms. The design of the Gudermannian function is presented using the neural networks optimized with the global/local search schemes. The obtained results have been performed using the hybridization of these schemes. The exactness is approved through the comparison of the proposed and exact solutions. Moreover, the neuron analysis has been provided to authenticate the efficiency and complexity of the designed approach. For the effectiveness of the proposed approach, the absolute error performances have been performed to the singular models. For the stability of the stochastic method, the statistical performances including Theil inequality Coefficient, Variance Account For and Mean Absolute Deviation have been provided for multiple executions to solve the singular differential models. This contribution of this work is categorized in two phases as:

The Gudermannian function is designed as a neural network under the optimization of global/local search methods for the nonlinear singular differential models. In the second phase, the nonlinear higher order singular models have been solved through the global/local search techniques. The applicability and dependability of such schemes have been monitored to solve these singular models, which arises in engineering and science as well.

Keywords: Singular models, Gudermannian neural networks, Global and local search methods, Numerical solutions; Neurons analysis.

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09:00-09:45

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A MACHINE LEARNING ASSISTED MONITORING SYSTEM FOR EARLY DETECTION OF MELANOMA

Merve Andaç, Şerife Gengeç Benli

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Hakan Şahin, Necmi Cemal Özdemir	ANALYSIS OF HALF WAVE RECTIFIER CIRCUIT BY MODIFIED NODAL EQUATIONS
Anass El karkri, Imane El mhamdi, Zakaria El malki, Mohamed bouachrine	THEORETICAL STUDY OF NEW CANDIDATE ORGANIC MATERIALS FOR PHOTOVOLTAIC APPLICATIONS
Mehmet Çağrı Yilmazer, Emrah Yılmaz, Ayşe Çiğdem Yar, Ayşe Buğateki	A NEW METHOD OF CRYPTOGRAPHY USING MELLIN TRANSFORM OF HYPERGEOMETRIC FUNCTIONS
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Birkan Aksan, Sümeyye Gür Mazlum	ON THE DARBOUX FRAME OF THE POLE INDICATRIX CURVE OF THE SPACELIKE SALKOWSKI CURVE WITH SPACELIKE BINORMAL IN LORENTZIAN 3-SPACE
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Kadriye Nur Erman, Ahmet Cevahir Çınar	ENSURING DATA SECURITY IN THE BLOCKCHAIN BASED SMART HOME NETWORK
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Kader Özen, Anıl Utku	DEEP LEARNING BASED BRAIN TUMOR DETECTION
Güven Onur, Derya Ahmet Kocabaş	INVESTIGATION OF THE SPACE HARMONIC EFFECTS OF DIFFERENT NUMBERS OF ROTOR SLOTS FOR A 2-POLE INDUCTION MOTOR HAVING 72 STATOR SLOTS
Yunus Emre Coşan	FOR NATURAL HERITAGE AREAS AUGMENTED REALITY DESIGN EXAMPLE
Yener Altun	NEW ESTIMATES ON THE SOLUTIONS OF NONLINEAR NEUTRAL SYSTEMS WITH VARIABLE DELAY COMPONENTS BASED ON LYAPUNOVKRASOVSKII FUNCTIONALS

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	Abdullah Jinah, Mesut Çevik	ENHANCING SECURITY WITH TWO-FACTOR AUTHENTICATION USING BOTH PIN AND IOT DEVICE INTERACTION
	Akbar Barati Chiyaneh, Fevzi Erdoğan, Hamit Mirtagioğlu	A NOVEL APPROACH TO STABILIZING NONLINEAR CONTROL SYSTEMS USING NEURAL NETWORKS AND OPTIMIZATION
	Muhammad Kashif Shaikh, Jawad Rasheed	ENHANCING WEB ACCESSIBILITY USING DEEP CONVOLUTIONAL NETWORKS AND NATURAL LANGUAGE PROCESSING TECHNIQUES
	Taha Ali, Jawad Rasheed	IMPROVING VIDEO INTERACTION FOR IMPAIRED PEOPLE USING CNN
	Emin Asım Yılmaz, Ahmet Faruk Bakan	OPTIMIZING SIC MOSFET TURN-OFF SWITCHING LOSSES WITH ACTIVE GATE DRIVER
	Serdar Kaan Hortoğlu, Onur Özbek, Sedat Tarakçı, Efe Işık	VERIFICATION OF ADHESIVE APPLICATION IN COMPOSITE DRIVESHAFTS BY USING FINITE ELEMENT METHOD

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	Usman Younas, Naila Nasreen	DYNAMICS OF SOLITARY WAVE SOLUTIONS TO THE (3+1)-DIMENSIONAL GENERALIZED SHALLOW WATER WAVE EQUATION
	Abd Essamed Guettouche, Chaabane Djamel	A METHOD FOR SOLVING THE SET-COVERING PROBLEM OVER THE SET OF STOCHASTIC EFFICIENT SOLUTIONS
	Déthié Dionea, Teubé Cyrille Mbainaissem, Bakary Koné, Paul Python Ndeckou	AN ALGEBRAIC OPTIMIZATION MODEL TO CONSERVE WATER ENVIRONMENT BY DISTRIBUTING MANURE FOR HARVESTING
	Fares Yazid, Fatima Siham Djeradi	ASYMPTOTIC STABILITY RESULT FOR A THERMOELASTIC TIMOSHENKO SYSTEM WITH DISTRIBUTED DELAY TERM
	Derya Arslan	NUMERICAL SOLUTION OF INTEGRODIFFERENTIAL EQUATION
	Madeha Mohammed, Fatma Hira	SOLUTION OF Q-INTEGRO-DIFFERENTIAL EQUATIONS USING Q-DIFFERENTIAL TRANSFORM METHOD

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Hazal Yüksekaya	THE KIRCHHOFF-TYPE EQUATION WITH TIME DELAY: EXISTENCE, DECAY AND BLOW UP
Hazal Yüksekaya	THE P(X)-LAPLACIAN EQUATION WITH DELAY TERM: BLOW UP AND DECAY
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Sadullah Bulut, Muhammed Yiğider	INVESTIGATION OF β -CONFORMABLE DERIVATIVE MODIFIED WITH k -GAMMA FUNCTION BY SUB-EQUATION METHOD
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Yüksel Yalçinkaya	A LIMIT-CIRCLE CRITERION FOR THE BETA-STURM-LIOUVILLE OPERATOR
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Nooriza Mirzabekova, Ercan Çelik	THE SOLUTION OF NONLINEAR CHEMICAL AKZO NOBEL PROBLEM MODELED AS DIFFERENTIAL-ALGEBRAIC EQUATIONS(DAES) WITH LAPLACE-PADÉ SERIES METHOD

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Duygu Durdağı, Afet Yüksel, Bayram Çekim	PARAMETRIC KINDS OF THE HERMITE BASED APPELL POLYNOMIALS
Zeynep Özat, Mehmet Ali Özarslan, Bayram Çekim	ON THE GENERALIZATION OF DEGENERATE BELL TYPE POLYNOMIALS
Gizem Güngören, Bayram Çekim	GENERALIZATION OF HERMITE-BASED APPELL POLYNOMIALS AND SOME PROPERTIES
Numan Yalçın, Sinem Kaymak	BIGEOMETRIC LAPLACE TRANSFORM AND ITS APPLICATIONS
Aslı Öner, Sertaç Göktaş	MULTIPARAMETER EIGENVALUE PROBLEMS ON TIME SCALES

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Arzu Akbulut	THE IMPLEMENTATION OF THE CRE METHOD TO NONLINEAR DIFFERENTIAL EQUATIONS
Arif Engin, Yeşim Akbulut	THE VARIATIONAL FORMULATION OF AN OPTIMAL BOUNDARY CONTROL FOR A PARABOLIC EQUATION
Mehdi Rezaei, Hajar Rezaei, Yener Altun	BETA REGRESSION MODEL FOR PREDICTING FUNDAMENTAL CHARACTERISTICS OF LIGHTWEIGHT AGGREGATE CONCRETE
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Zozik Sabah Rasool, Şakir İşleyen	FORECASTING OF CLIMATE CHANGE BY USING BIG DATA AND MACHINE LEARNING WITH PYTHON PROGRAM
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	Authors	Titles
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	Feriha Gurman, Musa Cakir	THE HOMOGENEOUS SECOND-ORDER NUMERICAL SCHEME FOR A SINGULARLY PERTURBE MIXED INTEGRO-DIFFERENTIAL EQUATIONS WITH INTEGRAL BOUNDARY CONDITION
	Musa Çakır, Baransel Güneş	A COMPUTATIONAL TECHNIQUE FOR THE SINGULARLY PERTURBED PARABOLIC INTEGRO-DIFFERENTIAL EQUATIONS
	Musa Çakır, Baransel Güneş, Mutlu Demirbaş	A UNIFORM DISCRETIZATION FOR SINGULARLY PERTURBED NONLINEAR VOLTERRA INTEGRO-DIFFERENTIAL EQUATIONS ON PIECEWISE-EQUIDISTANT MESH
	Erdal Baş, Merve Üşen	THE UNIQUENESS SOLUTION OF M-STURMLIOUVILLE PROBLEM WITH COULOMB POTENTIAL
	Erdal Baş, Ali Selçuk	MALTHUSIAN GROWTH MATHEMATICAL MODEL WITH M-DERIVATIVE
	Abdulhamit Şap, Tanfer Tanriverdi	AN APPLICATION OF THE SINE-GORDON METHOD

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	H. Bentarki, A. Makhoute, K. Tőkési	COUPLINGS MECHANISMS IN SIMULTANEOUS BAND GAPS
	Murad Khalil, Hammad Khalil	APPROXIMATE SOLUTION OF COUPLED SYSTEM OF FRACTIONAL ORDER PARTIAL DIFFERENTIAL EQUATIONS WITH VARIABLE COEFFICIENTS
	Fouzia Birem	PARTIAL DIFFERENTIAL EQUATIONS WITH VARIABLE COEFFICIENTS SOLVED BY COLLOCATION METHOD
	H.Laib, S.Dahmani, H.Bouzeraieb A.Boulmerka	TAYLOR COLLOCATION METHOD FOR SOLVING DOUBLE DELAY INTEGRAL EQUATIONS
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	Muhammet Nasif Kuru	EXPERIMENTAL AND NUMERICAL ANALYSIS OF PLATE FIN HEAT SINKS IN A SQUARE CHANNEL UNDER FORCED CONVECTION

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	Artion Kashuri, Rozana Liko	SOME NEW TEMPERED FRACTIONAL HERMITEHADAMARD TYPE INEQUALITIES VIA UNIFORMLY CONVEX FUNCTIONS
	Dilara Altan Koç, Mohamed S. Osman, Hasan Bulut	A VARIETY OF ANALYTICAL SOLUTIONS FOR VARIOUS CATEGORIES OF NPDES IN OPTICAL FIBERS AND THEIR APPLICATIONS
	Dilara Altan Koç, Yusif S. Gasimov, Hasan Bulut	ANALYSIS OF THE TRAVELLING WAVE SOLUTIONS OF BURGERS-FISHER EQUATION
	Sinan Aslan	SOME NOVEL FRACTIONAL INTEGRAL INEQUALITIES FOR DIFFERENT KINDS OF CONVEX FUNCTIONS
	Sinan Aslan	SOME NEW INTEGRAL INEQUALITIES VIA CAPUTO-FABRIZIO FRACTIONAL INTEGRAL OPERATOR
	Tolga Aktürk, Sedanur Akkaya	INVESTIGATION OF WAVE SOLUTIONS OF NONLINEAR MATHEMATICAL MODEL

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	Kübra Bağcı	ANALYZING THE AIR POLLUTION DATA FROM HATAY, TÜRKİYE BY USING THE STATISTICAL DISTRIBUTIONS
	Sevda Ozdemir Calikusu, Fevzi Erdogan	HYBRID STOCHASTIC DIFFERENTIAL MODELING CONSIDERING CHANGE POINT ANALYSIS FOR CUSHING, OKLAHOMA WTI FOB CRUDE OIL DATA
	Hayatem Hamal	WEIGHTED APPROXIMATION FOR (P, Q)-GENERALIZATION OF BERNSTEIN OPERATORS IN KANTOROVICH TYPE
	Merve Görgülü, Nimet Çoşkun	SPECTRAL SINGULARITIES OF THE VECTORVALUED STURM-LIOUVILLE OPERATORS WITH NON-STANDARD WEIGHT FUNCTION AND DIAGONAL POTENTIAL
	Ayşe Çiğdem Yar, Emrah Yılmaz	EIGENFUNCTIONS EXPANSIONS OF DISCRETE DIRAC SYSTEM BY LAPLACE AND PUTZER'S TECHNIQUE
	Mustafa Fahri Aktaş, Başak Ecem Bingül	LYAPUNOV-TYPE INEQUALITIES FOR A CERTAIN NONLINEAR SYSTEM INCLUDING OPERATORS

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	Mithat Kasap, Hıfısı Altınok	ON LACUNARY STATISTICAL CONVERGENCE IN FUZZY SEQUENCES
	Mehmet Yıldırım, Hıfısı Altınok	Δ_m - STATISTICAL BOUNDEDNESS
	İbrahim Gökcan, Ali Hikmet Değer	THE SUBORBITAL GRAPHS OBTAINED BY SUBMODULAR GROUP $\Gamma_0(N)$
	Abdulkadir Karakaş, Yavuz Altın	SOME NEW STATISTICALLY CONVERGENT SEQUENCES
	Enver Tas, Ayşe Bugatekin	CUSTOMER VALUE SEGMENTATION OF THE AGRICULTURAL WATERING SUBSCRIBER GROUP
	Süleyman Sarıkaya, Yavuz Altın	f -STATISTICAL CONVERGENCE IN TOPOLOGICAL GROUPS

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	Gökhan Mumcu, Ahmet Ocak Akdemir, Yasin Çınar	SOME NOVEL TOPOLOGICAL SEQUENCE SPACES AND FURTHER PROPERTIES
	Kazım Zengin, Aydın Yeşildirek	A NOVEL DoA ESTIMATION METHOD BASED ON MULTILATERATION EQUATIONS
	Ajit Barman, İnan Ünal	A PARALLEL VECTOR FIELD ON RIEMANNIAN MANIFOLDS ADMITTING SEMI-SYMMETRIC NONMETRIC CONNECTION
	Ramazan Sarı, İnan Ünal	SOME CURVATURES RELATIONS ON LORENTZIAN PARA SASAKIAN MANIFOLDS
	Süheyla Elmas	GEOMETRY AND FRACTALS
	Muhammad Ammar Khan, Ali Okatan	DIABETIC RETINOPATHY DETECTION USING META LEARNING AND DEEP LEARNING TECHNIQUES

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	Derya Avcı, Aylin Yetim	OPTIMAL PSYCHOTHERAPEUTIC TREATMENT TO PREVENT ONLINE GAMING ADDICTION AMONG A GROUP OF UNIVERSITY STUDENTS
	Derya Avcı	A COMPARATIVE ANALYSIS ON OPTIMAL CONTROL OF A SPACE-TIME DIFFUSION PHENOMENON
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	Gülay Kaya, Gökalp Çınarer	GRAPE LEAF DETECTION AND RECOGNITION USING DATA AUGMENTATION WITH CNN-BASED MODELS
	Halil Eroğlu, Fikriye Ataman	NOVEL GOODNESS FUNCTIONS FOR FORWARD-FORWARD ALGORITHM
	Hasan Bulut, Aslı Alkan, Tolga Aktürk, Öznur Engin, Nesrin Güllüoğlu	ANALYSIS OF NONLINEAR PARTIAL DIFFERENTIAL EQUATION OF TRAVELING WAVE SOLUTIONS WITH AN EFFECTIVE METHOD

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