COMMUNICATIONS

FACULTY OF SCIENCES UNIVERSITY OF ANKARA DE LA FACULTE DES SCIENCES DE L'UNIVERSITE D'ANKARA

Series A1: Mathematics and Statistics

VOLUME: 73

Number: 4

YEAR: 2024

Faculty of Sciences, Ankara University 06100 Beşevler, Ankara-Turkey

FACULTY OF SCIENCES **UNIVERSITY OF ANKARA**

DE LA FACULTE DES SCIENCES DE L'UNIVERSITE D'ANKARA

ISSN 1303-5991 e-ISSN 2618-6470

Series A1: Mathematics and Statistics

Volume: 73

Number: 4

Year: 2024

Owner (Sahibi)

Sait HALICIOĞLU, Dean of Faculty of Sciences

Editor in Chief (Yazı İşleri Müdürü) Fatma KARAKOÇ (Ankara University)

Associate Editor Arzu ÜNAL (Ankara University)

Mihaly PITUK

University of Pannonia, HUNGARY

Managing Editor Elif DEMİRCİ (Ankara University)

Area Editors

Applied Mathematics	Pure Mathematics	Algebra/Geometry	Statistics
Elif DEMİRCİ (Mathematical Modelling- Computational Mathematics)	İshak ALTUN (Topology)	Tuğce ÇALCI (Ring Theory)	Yılmaz AKDİ (Econometrics- Mathematical Statistics)
Songül KAYA MERDAN (Numerical Methods for PDEs and ODEs)	Gülen BAŞCANBAZ TUNCA (Analysis- Operator Theory)	İsmail GÖK (Geometry)	Olcay ARSLAN (Robust Statistics- Regression-Distribution Theory)
Nuri ÖZALP (Applied Mathematics)	Oktay DUMAN (Summability and Approximation Theory)	Elif TAN (Number Theory, Combinatorics)	Cemal ATAKAN (Multivariate Analysis)
Abdullah ÖZBEKLER (Differential Equations and Inequalities)	Murat OLGUN (Functional Analysis, Fuzzy Set Theory, Decision Making)	İbrahim ÜNAL (Differential Geometry, Differential Topology)	Halil AYDOGDU (Stochastic Process- Probability)
Gizem SEYHAN OZTEPE (Differential Equations and Difference Equations)	Sevda SAĞIROĞLU (Topology)	Burcu UNGOR (Module Theory)	Birdal SENOGLU (Theory of Statistics & Applied Statistics)
Arzu ÜNAL (Partial Differential Equations)	Mehmet UNVER (Analysis, Fuzzy Set Theory, Decision Making)		Mehmet YILMAZ (Computational Statistics)
	Edito	ors	
Praveen AGARWAL	Ravi P. AGARWAL	Marat AKHMET	Fouzi HATHOUT
Anand Int. College of Eng., INDIA	Florida Inst. of Tech. USA	METU, TURKEY	Université de Saïda, ALGERIA
Kazım İLARSLAN	Audrius KABASINSKAS	Sandi KLAVŽAR	Vishnu N. MISHRA
Kırıkkkale University, TURKEY	Kaunas Univ. of Tech. LITHUANIA	University of Ljubljana, SLOVENIA	Indira Gandhi National Tribal Univ

Cihan ORHAN TOBB University of Economics and Technology, TURKEY Şeyhmus YARDIMCI Ankara University, TURKEY

Salvador ROMAGUERA BONILLA Universitat Politècnica de València, SPAIN IA

l University, INDIA Ioannis STAVROULAKIS

Univ. of Ioannina, GREECE

This Journal is published four issues in a year by the Faculty of Sciences, University of Ankara. Articles and any other material published in this journal represent the opinions of the author(s) and should not be construed to reflect the opinions of the Editor(s) and the Publisher(s).

Correspondence Address: Correspondence Address: COMMUNICATIONS EDITORIAL OFFICE Ankara University, Faculty of Sciences, 06100 Tandoğan, ANKARA – TURKEY Tel: (90) 312-2126720 Fax: (90) 312-2235000 e-mail: commun@science.ankara.edu.tr http://communications.science.ankara.edu.tr/index.php?series=A1

Print: Ankara University Press İncitaş Sokak No:10 06510 Beşevler ANKARA – TURKEY Tel: (90) 312-2136655

COMMUNICATIONS

FACULTY OF SCIENCES UNIVERSITY OF ANKARA DE LA FACULTE DES SCIENCES DE L'UNIVERSITE D'ANKARA

Series A1: Mathematics and Statistics

VOLUME: 73

Number: 4

YEAR: 2024

Faculty of Sciences, Ankara University 06100 Beşevler, Ankara-Turkey

ISSN 1303-5991 e-ISSN 2618-6470

INSTRUCTIONS TO CONTRIBUTORS

Communications Faculty of Sciences University of Ankara Series A1 Mathematics and Statistics (Commun. Fac. Sci. Univ. Ank. Ser. A1 Math. Stat.) is a single-blind peer reviewed open access journal which has been published biannually since 1948 by Ankara University, accepts original research articles written in English in the fields of Mathematics and Statistics. It will be published four times a year from 2022. Review articles written by eminent scientists can also be invited by the Editor.

The publication costs for Communications Faculty of Sciences University of Ankara Series A1 Mathematics and Statistics are covered by the journal, so authors do not need to pay an article-processing and submission charges. The PDF copies of accepted papers are free of charges and can be downloaded from the website. Hard copies of the paper, if required, are due to be charged for the amount of which is determined by the administration each year.

All manuscripts should be submitted via our online submission system https://dergipark.org.tr/en/journal/2457/submission/step/manuscript/new. Note that only two submissions per author per year will be considered. Once a paper is submitted to our journal, all co-authors need to wait 6 months from the submission date before submitting another paper to Commun. Fac. Sci. Univ. Ank. Ser. Al Math. Stat. Manuscripts should be submitted in the PDF form used in the peer-review process together with the COVER LETTER and the TEX file (Source File). In the cover letter the authors should suggest the most appropriate Area Editor for the manuscript and potential four reviewers with full names, universities and institutional email addresses. Proposed reviewers must be experienced researchers in your area of research and at least two of them should be from different countries. In addition, proposed reviewers must not be co-authors, advisors, students, etc. of the authors. In the cover letter, the author may enter the name of anyone who he/she would prefer not to review the manuscript, with detailed explanation of the reason. Note that the editorial office may not use these nominations, but this may help to speed up the selection of appropriate reviewers.

Manuscripts should be typeset using the LATEX typesetting system. Authors should prepare the article using the Journal's templates (commun.cls and commun.cs). Manuscripts written in AMS LaTeX format are also acceptable. A template of manuscript can be downloaded in tex form from the link https://dergipark.org.tr/en/download/journal-file/22173(or can be reviewed in pdf form). The title page should contain the title of the paper, full names of the authors, affiliations addresses and e-mail addresses of all authors. Authors are also required to submit their Open Researcher and Contributor ID (ORCID)'s which can be obtained from http://orcid.org as their URL address in the format http://orcid.org/xxxx-xxxx. Please indicate the corresponding author. Each manuscript should be accompanied by classification numbers from the Mathematics Subject Classification 2020 scheme. The abstract should state briefly the purpose of the research. The length of the Abstract should be between 50 to 5000 characters. At least 3 keywords are required. Formulas should be mabered consecutively in the parentheses. All tables must have numbers (TABLE 1) consecutively in accordance with their appearance in the text and a caption (not on the figure itself) below the figure. Please submit figures as EPS, TIFF or JPEG format. Authors Contribution Statement, Declaration of Competing Interests and Acknowledgements should be given at the end of the article before the references. Authors are urged to use the communication.bst style in BiTeX automated bibliography. If manual entry is preferred for bibliography, then all citations must be listed in the references part and vice versa. Number of the reformales (nomes in squared brackets) in the list can be in alphabetical order or in the order in which they appear in the text. Use of the DOI is highly encouraged. Formal abbreviations of the journals can be used. The Editor may seek the advice of two, or three referees, depending on the researces forme reviewing process is conducted in strict confidence

Copyright on any open access article in Communications Faculty of Sciences University of Ankara Series A1-Mathematics and Statistics is licensed under a <u>Creative Commons Attribution 4.0 International License</u> (CC BY). Authors grant Faculty of Sciences of Ankara University a license to publish the article and identify itself as the original publisher. Authors also grant any third party the right to use the article freely as long as its integrity is maintained and its original authors, citation details and publisher are identified. It is a fundamental condition that articles submitted to COMMUNICATIONS have not been previously published and will not be simultaneously submitted or published elsewhere. After the manuscript has been accepted for publication, the author will not be permitted to make any new additions to the manuscript. Before publication the galley proof is always sent to the author for correction. Thus it is solely the author's responsibility for any typographical mistakes which occur in their article as it appears in the Journal. The contents of the manuscript published in the COMMUNICATIONS are the sole responsibility of the authors.

Declarations/Ethics:

With the submission of the manuscript authors declare that:

- · All authors of the submitted research paper have directly participated in the planning, execution, or analysis of study;
- All authors of the paper have read and approved the final version submitted;
- The contents of the manuscript have not been submitted, copyrighted or published elsewhere and the visual-graphical materials such as photograph, drawing, picture, and document within the article do not have any copyright issue;
- The contents of the manuscript will not be copyrighted, submitted, or published elsewhere, while acceptance by the Journal is under consideration.
- The article is clean in terms of plagiarism, and the legal and ethical responsibility of the article belongs to the author(s). Author(s) also accept that the manuscript may go through plagiarism check using iThenticate software;
- The objectivity and transparency in research, and the principles of ethical and professional conduct have been followed. Authors have also declared that they have no potential conflict of interest (financial or non-financial), and their research does not involve any human participants and/or animals.

Research papers published in **Communications Faculty of Sciences University of Ankara** are archived in the Library of Ankara <u>University</u> and in <u>Dergipark</u> immediately following publication with no embargo.

Editor in Chief

http://communications.science.ankara.edu.tr Ankara University, Faculty of Sciences 06100, Besevler - ANKARA TURKEY

COMMUNICATIONS

FACULTY OF SCIENCES UNIVERSITY OF ANKARA DE LA FACULTE DES SCIENCES DE L'UNIVERSITE D'ANKARA

Series A1: Mathematics and Statistics

Volume: 73

Number: 4

Year:2024

Research Articles

M. Siva PRADEEP, T. Nandha GOPAL, M. SIVABALAN, N. P. DEEPAK, M. MAGUDEESWARAN, Dynamical	075
Noreddine REZOUG, Abdelkrim SALIM, Mouffak BENCHOHRA, Nonlinear semilinear integro-differential evolution equations with impulsive effects	873
Lavinia Florina PRELUCA, Georgia Irina OROS, New applications in third-order strong differential subordination theory	918
M. Emre KAVGACI, On a class of fourth-order neutral differential equation with piecewise constant arguments İsmail AYDIN, Existence and uniqueness of a weak solution for singular weighted Robin problem involving p(.)-	929
biharmonic operator	941
Minkowski space	957
Nil MANSUROĞLU, Mücahit ÖZKAYA, Almost inner derivations of Leibniz algebras	969
Ramazan SARI, Semi-slant lightlike submersions İbrahim Tunii AWOLERE, Abiodun Tinuove OLADIPO, Sahsene ALTINKAYA, Application of neutrosophic	982
Poisson distribution series on harmonic classes of analytic functions defined by q- derivative operator and sigmoid function.	997
Çağatay ALTUNTAŞ, On the finiteness of some p-divisible sets	101
Meltem SERTBAŞ, On second-order q-difference operators	104
Hasan Hüseyin GUL, Fatma Zehra DOGRU, Bias corrected maximum likelihood estimators for the parameters of	105
Mehmet Ali ÖZTÜRK, Ravikumar BANDARU, Young Bae JUN, GE-filters, ordering filters and left mappings in GE-algebras	105
Burcu FEDAKAR, İlhame AMİRALİ, Stability analysis of neutral Volterra integro-differential equation	108
Fahimeh MOHAMMADI, Bijan DAVVAZ, Ideal theory of (m,n)-near rings	109
Siti Nurlaili KARIM, Nur Zatul Akmar HAMZAH, On dynamics of quadratic stochastic operators generated by 3-	
partition on countable state space	111
Ismail ASLAN, Nonlinear approximation by N-dimensional sampling type discrete operators with applications Nezihe TURHAN TURAN, Zeynep ÖDEMİŞ ÖZGER, An analysis on the shape-preserving characteristics of λ- Schurer operators	113
Akbala YERNAZAR, Erman ASLAN, İrem BAĞLAN, The dependency of the analytical and numerical solution on the a parameter in hyperbolic and pseudo-hyperbolic problems with inverse coefficients	117
Fatemeh MOHAMMADI, Ahmad MOTAMEDNEZHAD, On the polar derivative of lacunary type polynomials	119