HACETTEPE JOURNAL OF MATHEMATICS AND STATISTICS

Volume 50 Issue 2 (2021)

E-ISSN: 2651-477X

Honorary Editor
Lawrence Michael Brown

Editor in Chief
Mathematics
Ayşe Çiğdem Özcan (Hacettepe University, Mathematics - hjms@hacettepe.edu.tr)
Statistics
Nursel Koyuncu (Hacettepe University, Statistics - statisticshjms@gmail.com)

Associate Editors
Bülent Saraç (Hacettepe University, Mathematics - bsarac@hacettepe.edu.tr)
Aslı Yıldız (Hacettepe University, Mathematics - aslipekcan@hacettepe.edu.tr)
Derya Ersel (Hacettepe University, Statistics - dtektas@hacettepe.edu.tr)
Yasemin Kayhan Atılgan (Hacettepe University, Statistics - ykayhan@hacettepe.edu.tr)

Production Editors
Gülbanu Tekbulut (Hacettepe University - dergilerhacettepe@gmail.com)
O. Oğulcan Tuncer (Hacettepe University, Mathematics - otuncer@hacettepe.edu.tr)
Talha Arıkan (Hacettepe University, Mathematics - tarikan@hacettepe.edu.tr)
Nurbanu Bursa (Hacettepe University, Statistics - nurbanubursa@hacettepe.edu.tr)
Ayfer Ezgi Yılmaz (Hacettepe University, Statistics - ezgiyilmaz@hacettepe.edu.tr)
Özge Karadağ Ataş (Hacettepe University, Statistics - ozgekaradag@hacettepe.edu.tr)

Area Editors
Mathematics
Evrim Akalan (Associative Rings and Algebras - eakalan@hacettepe.edu.tr)
Okay Çelebi (Partial Differential Equations - acelebi@yeditepe.edu.tr)
Olgür Çelikbaş (Commutative Rings and Algebras - olgur.celikbas@math.wvu.edu)
Angel Del Rio (Algebra, Group Theory - adelrio@um.es)
Gülin Ercan (Algebra, Group Theory - ercan@metu.edu.tr)
Sergio Estrada (Homological Algebra - sestrada@um.es)
Mehmet Onur Fen (ODEs, Dynamical Systems and Ergodic Theory - onur.fen@tedu.edu.tr)
Rodrigo Hernandez Gutierrez (General Topology - rod@xanum.uam.mx)
Varga Kalantarov (Partial Differential Equations - vkalantarov@ku.edu.tr)
Shiping Liu (Combinatorics and Differantial Geometry - spliu@ustc.edu.cn)
Emre Mengi (Numerical Analysis - emengi@ku.edu.tr)
Cihan Orhan (Analysis, Summability - orhan@science.ankara.edu.tr)
Murad Özaydın (Differential Geometry, Global Analysis - mozaydin@math.ou.edu)
Abdullah Özbekler (Ordinary Differential Equations - aozbekler@gmail.com)
Ekin Özman (Number Theory, Algebraic Geometry - ekin.ozman@boun.edu.tr)
Serap Öztop Kaptanoğlu (Abstract Harmonic Analysis - oztops@istanbul.edu.tr)
Mehmetçik Pamuk (Topology, Manifolds and Cell Complexes - mpamuk@metu.edu.tr)
Bülent Ünal (Differential Geometry - bulent@fen.bilkent.edu.tr)
Yunus E. Zeytuncu (Functions of Several Complex Variables - zeytuncu@umich.edu)

Statistics
Ali Allahverdi (Operational Research & Statistics - ali.allahverdi@ku.edu.kw)
Olcay Arslan (Robust Statistics - oarslan@ankara.edu.tr)
Narayanaswany Balakrishnan (Applied Statistics, Theory of Statistics - bala@mcmaster.ca)
Adil Baykasoğlu (Operational Research - adil.baykasoglu@deu.edu.tr)
Haydar Demirhan (Categorical Data Analysis, Monte Carlo Simulation - haydar.demirhan@rmit.edu.au)
Sat Gupta (Sampling, Time Series - sngupta@uncg.edu)
Tahir Hanalioğlu (Stochastic Processes Theory, Probability Theory - tahirkhaniyev@etu.edu.tr)
Burcu Hüdaverdi (Time Series Analysis, Multivariate Statistics - burcu.hudaverdi@deu.edu.tr)
Zeynep Işıl Kalaylıoğlu (Bayesian Inference, Model Selection - kzeynep@metu.edu.tr)
Hasan Örkcü (Data Envelopment Analysis, Operation Research - hhorkcu@gazi.edu.tr)
Birdal Şenoğlu (Experimental Design, Statistical Distributions - senoglu@science.ankara.edu.tr)

Contents

Mathematics

Research Articles

1 Existence of three solutions for Kirchhoff-type three-point boundary value problems
by Shapour Heidarkhani and Amjad Salari 304

2 Oscillation criteria for first-order dynamic equations with nonmonotone delays
by Nurten Kılıç and Özkan Öcalan 318

3 On the class of k-quasi-(n,m)-power normal operators
by Naeem Ahmad and Sid Ahmed Ould Ahmed Mahmoud 326

4 Late-order terms of second order ODEs in terms of pre-factors
by Fatih Say 342

5 Null Cartan curve variations in 3D semi-Riemannian manifol
by Zehra Özdemir 351

6 Two problems in the theory of disjointness preserving operators
by Bahri Turan and Kazım Özcan 361

7 Rotational surfaces with Cheng-Yau operator in Galilean 3-spaces
by Alev Kelleci 365

8 The sharper form of a Brunn-Minkowski type inequality for boxes
by Gültekin Tınaztepe, Serap Kemali, Sevda Sezer and Zeynep Eken 377

9 Zero-divisor graphs of Catalan monoid
by Kemal Toker 387

10 Qualitative analysis of solutions for a Kirchhoff-type parabolic equation with multiple nonlinearities
by Erhan Pişkin and Fatma Ekinci 397

11 Starlikeness for certain close-to-star functions
by R. Kanaga and V. Ravichandran 414

12 S-spectra and S-essential pseudospectra of the diagonal block operator matrices
by Pembe Ipek Al and Zameddin I. Ismailov 433

13 A generalization for surfaces using a line of curvature in Lie group
by Dae Won Yoon and Zühal Küçükarslan Yüzbaşı 444

14 The singular ideal and the socle of incidence rings
by Müge Kanuni and Özkay Özkan 453

15 On MF-projective modules
by Yusuf Alagöz 471

16 Hypercyclic operators for iterated function systems
by Mohammad Salman and Ruchi Das 483

17 Existence of random attractors for strongly damped wave equations with multiplicative noise unbounded domain
by Abdelmajid Ali Dafallah, Qiaozhen Ma and Ahmed Eshag Mohamed 492

18 A lexicographical order induced by Schauder bases
by Neşet Özkan Tan 511

19 Semisimple-direct-injective modules
by Adel Abyzov, Tamer Koşan, Truong Cong Quynh and Dan Tapkin 516

20 On some generalized integral transforms and Parseval-Goldstein type relations
by Durmuş Albayrak and Neşe Dernek 526

21 Blow up for non-Newtonian equations with two nonlinear sources
by Burhan Selcuk 541

22 Linear algebra of the Lucas matrix
by Nurettin Irmak and Cahit Köme 549

Statistics

Research Articles

23 The Cos-Poisson model with a novel count regression analysis
by Hassan S. Bakouch, Christophe Chesneau, Kadir Karakaya and Coşkun Kuş 559

24 Heteroscedastic additive models - Estimating the fixed effects and covariance matrix parameters
by Adilson Silva and Miguel Fonseca 579

25 The r-k class estimator in generalized linear models applicable with simulation and empirical study using a Poisson and Gamma responses
by Atif Abbasi and M. Revan Özkale 594