

VOLUME | ISSUE | YEAR  
47 | 4 | 2023

ISSN 1300-0098 • E-ISSN 1303-6149

TURKISH JOURNAL OF  
MATHEMATICS

<http://journals.tubitak.gov.tr/math/>



Published by the Scientific and  
Technological Research Council of Turkey

**TÜBİTAK**

# TURKISH JOURNAL OF MATHEMATICS

Editor-in-Chief

Adnan **TERCAN**, Hacettepe University, Turkey

Assistant Editor-in-Chief

Aydın **GEZER**, Atatürk University, Turkey

**VOLUME 47 • ISSUE 4 • 2023**

ISSN 1300-0098 • E-ISSN 1303-6149

## SCOPE

- The Turkish Journal of Mathematics is published electronically 6 times a year by the Scientific and Technological Research Council of Turkey (TÜBİTAK).
- Accepts English-language original research manuscripts in the field of mathematics. Review articles are only considered for publication in exceptional circumstances.
- Contribution is open to researchers of all nationalities.

## EDITORIAL BOARD

- Alexander **DEGTYAREV**, Bilkent University, Turkey
- Ali Sinan **SERTÖZ**, Bilkent University, Turkey
- Anar **DOSI**, Middle East Technical University, Turkey
- Bayram **ŞAHİN**, Ege University, Turkey
- Cornelia-Livia **BEJAN**, University of "Al. I. Cuza", Romania
- Eduard **EMELYANOV**, Sobolev Institute of Mathematics, Russia
- Enrique **ZUAZUA**, Friedrich-Alexander Universitat, Germany
- Elena **BRAVERMAN**, University of Calgary, Canada
- Esther **GARCIA**, Universidad Rey Juan Carlos, Spain
- Hüseyin **DEMİR**, Ondokuz Mayıs University, Turkey
- İlham A. **ALIEV**, Akdeniz University, Turkey
- Jacek **DZIOK**, University of Rzeszow, Poland
- Janusz **SOKOL**, University of Rzeszow, Poland
- Kazım İlhan **İKEDA**, Boğaziçi University, Turkey
- Louis H. **ROWEN**, Bar-Ilan University, Israel
- Marat **AKHMET**, Middle East Technical University, Turkey
- Mario **KRNIC**, University of Zagreb, Croatia
- Martin **BOHNER**, Missouri University of Science and Technology, U.S.A.
- Maria Alessandra **RAGUSA**, University of Catania, Italy
- Pedro A. Guil **ASENSIO**, University of Murcia, Spain
- Peter **DANCHEV**, Bulgarian Academy of Sciences, Bulgaria
- Salvador **ROMAGUERA**, València Polytechnic University, Spain
- Sang-Eon **HAN**, Jeonbuk National University, South Korea
- Seher Melike **AYDOĞAN**, İstanbul Technical University, Turkey
- Selma **ÖZÇAĞ**, Hacettepe University, Türkiye
- Shahram **REZAPOUR**, Azarbaijan Shahid Madani University
- Snezhana **HRISTOVA**, University of Plovdiv, Bulgaria
- Tamar **DATUASHVILI**, Ivane Javakhishvili Tbilisi State University, Georgia
- Toma **ALBU**, Institute of Mathematics of the Romanian Academy, Romania
- Varga K. **KALANTAROV**, Koç University, Turkey
- W. A. **ZUNIGA-GALINDO**, University of Texas Rio Grande Valley, USA, Centro de Investigación y de Estudios Avanzados del I. P. N, Mexico
- William **WEISS**, University of Toronto at Mississauga, Canada
- Zekeriya **ARVASI**, Osmangazi University, Turkey

## ABSTRACTED

- Science Citation Index Expanded
- Scopus
- Academic Search Complete
- Zentralblatt MATH
- MathSciNet
- Current Index to Statistics

# CONTENTS

Nilary group rings and algebras .....	1051
<b>Omar AL-MALLAH, Gary BIRKENMEIER, Hafedh ALNOGHASHI</b>	
Polynomials taking integer values on primes in a function field .....	1073
<b>Tuangrat CHAICHANA, Vichian LAOHAKOSOL, Rattiya MEESA, Boonrod YUTTANAN</b>	
On $\Gamma$ -hypersemigroups .....	1087
<b>Niovi KEHAYOPULU</b>	
On Bell based Appell polynomials .....	1099
<b>Zeynep ÖZAT, Mehmet Ali ÖZARSLAN, Bayram ÇEKİM</b>	
On $k$ -generalized Lucas sequence with its triangle .....	1129
<b>Abdullah AÇIKEL, Said AMROUCHE, Hacène BELBACHIR, Nurettin IRMAK</b>	
On the geometry of nearly trans-Sasakian manifolds .....	1144
<b>Aligadzhi R. RUSTANOV, Tatiana L. MELEKHINA, Svetlana V. KHARITONOVA</b>	
A generalization of the notion of helix .....	1158
<b>Pascual LUCAS, José-Antonio ORTEGA-YAGÜES</b>	
Szabó's algorithm and applications .....	1169
<b>Michel Bertrand DJIADEU NGAHA, Salomon Joseph MBATAKOU, Romain NIMPA PEFOUKEU</b>	
On the rank of generalized order-preserving transformation semigroups .....	1182
<b>Haytham Darweesh Mustafa ABUSARRIS, Gonca AYIK</b>	
Struwe compactness results for a critical $p$ -Laplacian equation involving critical and subcritical Hardy potential on compact Riemannian manifolds .....	1191
<b>Tewfik GHOMARI, Youssef MALIKI</b>	
Spin structures on generalized real Bott manifolds .....	1220
<b>Aslı GÜÇLÜKAN İLHAN, Sabri Kaan GÜRBÜZER, Semra PAMUK</b>	
Perfect fluid spacetimes and $k$ -almost Yamabe solitons .....	1236
<b>Krishnendu DE, Uday Chand DE, Aydin GEZER</b>	
Three-dimensional homogeneous contact metric manifolds with weakly $\eta$ -Einstein structures .....	1247
<b>Sun Hyang CHUN, Yunhee EUH</b>	
On orthogonally additive band operators and orthogonally additive disjointness preserving operators .....	1258
<b>Bahri TURAN, Demet TÜLÜ</b>	

Spectral and topological properties of linear operators on a Hilbert space On $(M, k)$ -quasi- paranormal operators .....	1267
<b>Salah MECHERI, Aissa Nasli BAKIR</b>	
Left-definite Hamiltonian systems and corresponding nested circles .....	1276
<b>Ekin UĞURLU</b>	
Energy decay and blow-up of solutions for a class of system of generalized nonlinear Klein-Gordon equations with source and damping terms .....	1288
<b>Zeynep Sümeyye ÇELİK, Şevket GÜR, Erhan PİŞKİN</b>	
A study on conformable fractional version of Bullen-type inequalities .....	1306
<b>Fatih HEZENCİ, Hüseyin BUDAK, Hasan KARA</b>	