



# MATHEMATICA

Founded in 1929

 $\begin{array}{c} V\,O\,L\,U\,M\,E \ \ 66 \ \ (89) \\ N^{\,\rm o} \ \ 2, \ December \ \ 2024 \end{array}$ 



EDITURA ACADEMIEI ROMÂNE

#### EDITORIAL BOARD

Editor-in-Chief CONSTANTIN NĂSTĂSESCU Romanian Academy Bucharest, Romania

 $Deputy \ Editors{-}in{-}Chief$ 

SEPTIMIU CRIVEI Babeș-Bolyai University Cluj-Napoca, Romania ANDREI MARCUS Babeș-Bolyai University Cluj-Napoca, Romania

# $Managing \ Editor$

BRIGITTE BRECKNER Babeş-Bolyai University Cluj-Napoca, Romania

### Members

OCTAVIAN AGRATINI Babeş-Bolyai University Cluj-Napoca, Romania

ALEXANDRU ALEMAN Lund University Lund, Sweden

DORIN ANDRICA Babeş-Bolyai University Cluj-Napoca, Romania

Zoltán Balogh University of Bern Bern, Switzerland

DAN COMAN Syracuse University Syracuse, United States

MARIUS CRAINIC University of Utrecht Utrecht, The Netherlands SORIN DĂSCĂLESCU Romanian Academy Bucharest, Romania

GAVRIL FARKAS Humboldt University Berlin, Germany

LOUIS FUNAR Université de Grenoble I Grenoble, France

MIRELA KOHR Babeş-Bolyai University Cluj-Napoca, Romania

Adrian Petruşel Babeş-Bolyai University Cluj-Napoca, Romania

RADU PRECUP Romanian Academy Cluj-Napoca, Romania IOAN A. RUS Babeş-Bolyai University Cluj-Napoca, Romania

DAN TIBA Simion Stoilow Institute of Mathematics of the Romanian Academy Bucharest, Romania

TUDOR ZAMFIRESCU Simion Stoilow Institute of Mathematics of the Romanian Academy Bucharest, Romania

#### Scientific secretaries

MIHAI IANCU Babeş-Bolyai University Cluj-Napoca, Romania VIRGILIUS-AURELIAN MINUȚĂ Babeș-Bolyai University Cluj-Napoca, Romania

Editorial assistant IRINA FILIP

#### Work published with financial support from Recurring Donor Fund of the Romanian Academy.

## © 2024 EDITURA ACADEMIEI ROMÂNE

Calea 13 Septembrie nr. 13, sector 5, 050711 București, România Tel.: 4021-318 81 46; Fax: 4021-318 24 44; E-mail: edacad@ear.ro; http://www.ear.ro

# MATHEMATICA

#### Historical note

MATHEMATICA was founded by Petre Sergescu in 1929 with the support of Dimitrie Pompeiu and Gheorghe Țițeica (the first directors of the journal), as well as of other members of the Faculty of Sciences from the University of Cluj. The journal was published without interruption between 1929 and 1948 and then, as a new series, from 1959 until today.

#### Publisher

MATHEMATICA is published by the Romanian Academy Publishing House under the auspices of the Mathematical Section of the Romanian Academy and the Department of Mathematics from Babeş-Bolyai University Cluj-Napoca. Romanian Academy and Babeş-Bolyai University Cluj-Napoca appoint and support the editorial work of the journal.

#### Aims and scope

Mathematica publishes original papers, preferably written in English, but also in French, German or Italian, in any area of pure and applied mathematics. In addition to research papers, the journal publishes proceedings of international conferences held in Romania and survey articles. The Editors will put strong emphasis on originality and applicability of the results. All manuscripts are strictly refereed and only papers of high quality are accepted for publication. The journal is reviewed or indexed by Zentralblatt für Mathematik, Mathematical Reviews, Scopus and EBSCO.

#### Information for authors

Our journal agrees with the international standards developed by COPE (Committee of Publication Ethics, https://publicationethics.org) for promoting integrity in research publication.

We strongly encourage electronic submission of the papers on the e-mail address of the Editorial Office. We also accept submissions by mail on the address of the Editorial Office, in which case the authors are requested to send the manuscript in duplicate. The authors are asked to provide an electronic address. Since the maximum number of pages of a yearly volume is 200, we recommend to the authors to submit papers not exceeding 15 printed pages. Manuscripts not accepted for publication are not returned to the authors. Uppon acceptance, manuscripts should be carefully prepared by the authors using IATEX with the amsart.cls document class and mathcluj.sty style file, available on the web page of the journal. Authors are requested to follow the arrangements in the sample article on our web page, or in a recent issue, for the style of sections, headings, equations, tables, figures and references.

#### Copyright information

The submission of a manuscript carries with it the author's assurance that it has not been copyrighted or published elsewhere (except in the form of an abstract or as part of a published lecture or thesis); that is not under consideration for publication elsewhere; that its publication has been approved by all coauthors, and, after being accepted by *Mathematica*, it will not be published in another journal.

#### **Editorial office**

MATHEMATICA journal Department of Mathematics Faculty of Mathematics and Computer Science Babeş-Bolyai University Str. Mihail Kogălniceanu nr. 1, 400084 Cluj-Napoca, ROMANIA E-mail: mathjour@math.ubbcluj.ro; http://math.ubbcluj.ro/~mathjour

### Buying requests of the journal should be addressed to:

• EDITURA ACADEMIEI ROMÂNE, Calea 13 Septembrie nr. 13, sector 5, 050711 București, România; Tel.: 4021-318 81 46, 4021-318 81 06, Fax: 4021-318 24 44, E-mail: edacad@ear.ro, Internet: http://www.ear.ro

#### All subscriptions should be addressed to:

- ORION PRESS IMPEX 2000 S.R.L., P.O. Box 77-19, sector 3, Bucureşti, România; Tel./Fax: 4021-610 67 65, 4021-210 67 87, Tel.: 4031-104 46 68; E-mail: office@orionpress.ro
- S.C. MANPRES DISTRIBUTION S.R.L., Piaţa Presei Libere nr. 1, Corp B, Etaj 3, Cam. 301-302, sector 1, Bucureşti, România; Tel./Fax: 4021-314 63 39, 4021-314 63 39; E-mail: abonamente@manpres.ro, office@manpres.ro, Internet: http://www.manpres.ro
- DEREX COM S.R.L., E-mail: derex\_com@yahoo.com
- SORIRORI SOLUTIONS, Tel.: 4076-526 20 77, 4076-516 64 33; E-mail: sorin.costreie@sorirori.ro, rosana.guta@sorirori.ro, Internet: http://www.sorirori.ro

ISSN 1222-9016 ISSN-L 1222-9016

MATHEMATICA, 66 (89), N° 2, 2024, pp. 151–298

# MATHEMATICA

VOLUME 66 (89), N° 2, December 2024

# CONTENTS

| Ahmad Al-Omari, Murad Özkoç, and Santanu Acharjee                       |
|---|
| Primal-proximity spaces151  |
| Shahabaddin Ebrahimi Atani  |
| S-prime property in lattices  |
| AWATEF AZAZA and ELKADRI SAMIR  |
| On some algebraic and transcendental continued fractions                |
| over a finite field   |
| BOUHARKET BENAISSA and NOUREDDINE AZZOUZ                                |
| Tchebyshev-type inequalities with three functions                       |
| Mohamed Ben Chrouda   |
| Helmholtz equations for the Laplace operator and its powers             |
| MAHMOUD EL AHMADI, ABDESSLEM AYOUJIL, and MOHAMMED BERRAJAA             |
| On Kirchhoff-double phase problems without (AR)-condition               |
| ABDELAZIZ EL BOUKILI, AMAR RHAZI, and BOUAZZA EL WAHBI                  |
| An alternative solution to the problem of real cubic moment             |
| AHMED HAMROUNI and ABDELBAKI CHOUCHA                                    |
| Blow-up of solutions for a viscoelastic Kirchhoff equation              |
| with a source, delay and Balakrishnan-Taylor damping terms              |
| HAMIDEH RAHMANI and ALIREZA KAMEL MIRMOSTAFAEE                          |
| Some remarks on generalizations of the reverse order law in a *-ring262 |
| Hery Randriamaro  |
| Face counting for topological hyperplane arrangements                   |
| Abdelilah Zerbane, Slimane El Amrani, Abderrahmane Raji                 |
| and Abdelkarim Boua   |
| Study of the structure of near-rings with additive maps                 |
| · · · · · · · · · · · · · · · · · · ·                                   |