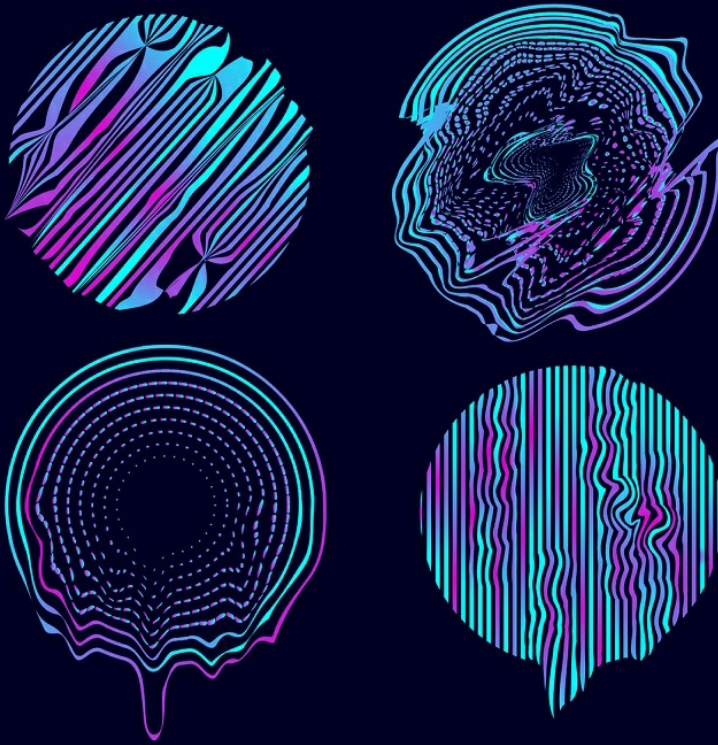


Applied Mathematics

Interdisciplinary Applications of Mathematics

# Mathematical Models in Engineering



**Editor in Chief**

Minvydas Ragulskis Kaunas University of Technology, (Lithuania) minvydas.ragulskis@ktu.lt

**Editorial Board**

Hojjat Adeli The Ohio State University, (United States) adeli.1@osu.edu  
Tahir Cetin Akinci Istanbul Technical University, (Turkey) cetinakinci@hotmail.com  
Mahmoud Bayat The University of Texas at Arlington, (United States) ranjan@rowan.edu  
Rafał Burdzik Silesian University of Technology, (Poland) rafal.burdzik@polsl.pl  
Jinde Cao Southeast University, (China) jdcao@seu.edu.cn  
Maosen Cao Hohai University, (China) cmszhy@hhu.edu.cn  
Sezgin Ersoy Technische Universität Braunschweig, (Germany) sersoy@marmara.edu.tr  
Hee-Chang Eun Kangwon National University, (South Korea) heechang@kangwon.ac.kr  
Wen-Hsiang Hsieh National Formosa University, (Taiwan) allen@nfu.edu.tw  
Vassilios Kappatos Center for Research and Technology Hellas, (Greece) vkappatos@certh.gr  
Sunil Kumar National Institute of Technology, (India) skumar.math@nitjsr.ac.in  
Giedrius Laukaitis Kaunas University of Technology, (Lithuania) giedrius.laukaitis@ktu.lt  
Petr Lepšík Technical University of Liberec, (Czechia) petr.lepsik@tul.cz  
Chen Lu Beihang University, (China) luchen@buaa.edu.cn  
Doina Pisla Technical University of Cluj-Napoca, (Romania) doina.pisla@mep.utcluj.ro  
Vinayak Ranjan Rowan University, (United States) vinayak.ranjan@bennett.edu.in  
Julia Irene Real Politechnical University of Valencia, (Spain) jureaher@tra.upv.es  
Eligijus Sakalauskas Kaunas University of Technology, (Lithuania) eligijus.sakalauskas@ktu.lt  
G. Eduardo Sandoval-Romero The National Autonomous University of Mexico, (Mexico) eduardo.sandoval@ccadet.unam.mx  
Reza Serajian University of California, (United States) rsera004@ucr.edu  
Agnieszka Wylomanska Wroclaw University of Technology, (Poland) agnieszka.wylomanska@pwr.edu.pl  
Xiao-Jun Yang China University of Mining and Technology, (China) xjyang@cumt.edu.cn

# **MME Mathematical Models in Engineering**

## **Aims and Scope**

MME publishes mathematical results which have relevance to engineering science and technology. Formal descriptions of mathematical models related to engineering problems, as well as results related to engineering applications are equally encouraged.

Applications of mathematical models in financial engineering, mechanical and aerospace engineering, bioengineering, chemical engineering, computer engineering, electrical engineering, industrial engineering and manufacturing systems, nonlinear science and technology are especially encouraged.

Mathematical models of interest include, but are not limited to, ordinary and partial differential equations, nonlinear analysis, stochastic processes, calculus of variations, operations research.

**All published papers are peer reviewed and crosschecked by plagiarism detection tools.**

More information is available online <https://www.extrica.com/journal/mme>

## **The journal material is referred:**

**Scopus:** ELSEVIER Bibliographic Database

**EBSCO:** Discovery Services (Complementary Index)

**Gale Cengage Learning:**

Academic OneFile Custom Periodical

Computer Database

Science in Context

**Scilit:** <https://www.scilit.net>

**Asian Science Citation Index (ASCI):** <https://ascidatabase.com>

**Dimensions:** <https://www.dimensions.ai>

**Semantic Scholar:** <https://www.semanticscholar.org>

**Google Scholar:** <https://scholar.google.com>

**JGate:** <https://jgateplus.com>

**CORE:** <https://core.ac.uk>

**BASE (Bielefeld Academic Search Engine):** <https://www.base-search.net>

**Ulrich's Periodicals Directory:** <https://ulrichsweb.serialssolutions.com>

**CNKI Scholar:** <http://eng.scholar.cnki.net>

**cnPLINKer (CNPIEC):** <http://cnlinker.cnpeak.com>

**WanFang Data:** <https://www.wanfangdata.com.cn>

**TDNet:** <https://www.tdnet.io>

**MIAR, Universitat de Barcelona:** <https://miar.ub.edu>

**JournalTOCs:** <https://www.journaltoocs.ac.uk>

**WorldCat Discovery Services:** <https://www.oclc.org/en/worldcat-discovery.html>

**MyScienceWork:** <https://www.mysciencework.com>

**Crossref:** <https://search.crossref.org>

Content is archived in **Martynas Mazvydas National Library of Lithuania**

**Internet:** <https://www.extrica.com>

**E-mail:** [publish@extrica.com](mailto:publish@extrica.com)

**Publisher:** Extrica

## Contents

<b>BINARY RAT SWARM OPTIMIZER ALGORITHM FOR COMPUTING INDEPENDENT DOMINATION METRIC DIMENSION PROBLEM</b> IQBAL M. BATIHA, BASMA MOHAMED	<b>119</b>
<b>TENSOR ANALYSIS OF TORNADOES: A NEW ANALYTICAL AND NUMERICAL MODEL</b> MUSTAMINA MAULANI, VALENTINUS GALIH VIDIA PUTRA	<b>133</b>
<b>ON THE DECISIONAL PROBLEM BASED ON MATRIX POWER FUNCTION DEFINED OVER NON-COMMUTATIVE GROUP</b> ALEKSEJUS MIHALKOVICH, JOKUBAS ZITKEVICIUS	<b>143</b>
<b>COMMON FIXED-POINT THEOREM FOR COMMUTING MAPS ON A METRIC SPACE</b> SURESH KUMAR SAHANI, VIJAY VIR SINGH, KRISHNAPAL SINGH SISODIA, KUSUM SHARMA	<b>152</b>
<b>SECURE METRIC DIMENSION OF NEW CLASSES OF GRAPHS</b> IQBAL M. BATIHA, BASMA MOHAMED, IQBAL H. JEBRIL	<b>161</b>
<b>ASSESSING ENVIRONMENTAL INFLUENCES ON RADON LEVELS: ANALYSIS OF INDEPENDENT VARIABLES</b> ANIL PAWADE, SHRIKANT CHARHATE	<b>168</b>
<b>A SPECIAL GRAPH FOR THE CONNECTED METRIC DIMENSION OF GRAPHS</b> IQBAL M. BATIHA, NIDAL ANAKIRA, AMAL HASHIM, BASMA MOHAMED	<b>193</b>



## SHORT DESCRIPTION ABOUT THIS CATEGORY

Mathematical modelling helps to create a mathematical representation of a real-world scenario to make a prediction or provide insight into the complex behavior of real-world systems. The journal publishes mathematical results which have relevance to engineering science and technology. Mathematical models of interest include, but are not limited to, ordinary and partial differential equations, nonlinear analysis, stochastic processes, calculus of variations, and operations research.

