

VOLUME VIII ISSUE II
ISSN 2636-8692

June 2025
<https://dergipark.org.tr/en/pub/jmsm>

JOURNAL OF MATHEMATICAL SCIENCES AND MODELLING



Editor in Chief

Mahmut Akyigit
Department of Mathematics
Faculty of Science, Sakarya University
Sakarya-TÜRKİYE
makyigit@sakarya.edu.tr

Assistant Editor

Emrah Evren Kara
Department of Mathematics
Faculty of Science and Arts, Düzce University
Düzce-TÜRKİYE
eevrenkara@duzce.edu.tr

Editorial Board of Journal of Mathematical Sciences and Modelling

Marija Paunovic
University of Kragujevac and MB University
SERBIA

Olena Sierikova
National University of Civil Protection of Ukraine
UKRAINE

Hadi Roopaei
Islamic Azad University Marvdasht Branch
IRAN

Dağıstan Şimşek
Konya Technical University
TÜRKİYE

Galip Oturanç
Karamanoglu Mehmet Bey University
TÜRKİYE

Melek Eriş Büyükkaya
Karadeniz Technical University
TÜRKİYE

İrem Bağlan
Kocaeli University
TÜRKİYE

Nebojša Ralević
University of Novi Sad
SERBIA

Mahnoor Sarfraz
Quaid-i Azam University
PAKISTAN

Mehdi Ghalambaz
Duy Tan University
VIETNAM

Language Editor

Tolga Aktürk
Yıldız Technical University
TÜRKİYE

Technical Editor

Arzu Öztürk Özkoç
Düzce University
TÜRKİYE

Ayla Erdur Kara
Tekirdag Namık Kemal University
TÜRKİYE



Contents

Research Article

- 1 **Modelling and Chaotic Based Parameter Optimization of Sliding Mode Controller**
Muhammed Salih Sarıkaya, Onur Demirel, Sezgin Kaçar, Adnan Derdiyok 42–55
- 2 **Mathematical Model of COVID-19 with Imperfect Vaccine and Virus Mutation**
Ceren Gürbüz Can, Sebaheddin Şevgin 56–74
- 3 **Geometric Brownian Motion Based on Stochastic Differential Equation Modeling Considering the Change Point Estimation for the Fluctuation of the Turkish Lira Against the US Dollar**
Sevda Özdemir Çalıkıuşu, Fevzi Erdoğan, Nihal İnce 75–85
- 4 **Tumor–Immune Dynamics: A Spatial-Spectral Perspective**
Serpil Yılmaz 86–92
- 5 **New Form of Newton-Type Inequalities for Multiplicative Conformable Fractional Integrals**
Hüseyin Budak, Büşra Betül Ergün 93–111