


ISSN: 2790-8410

# Baku Mathematical Journal

---

Volume 1, Issue 2

September 2022

Sponsored by  ADNSU

## **EDITORS IN-CHIEF**

Araz ALIEV (Azerbaijan State Oil and Industry University, Baku, Azerbaijan)

## **MANAGING EDITOR**

Samir GULIYEV (Azerbaijan State Oil and Industry University, Baku, Azerbaijan)

## **EDITORIAL BOARD**

Vagif ABDULLAYEV (Azerbaijan State Oil and Industry University, Baku, Azerbaijan)

Akbar ALIEV (Azerbaijan State Oil and Industry University, Baku, Azerbaijan)

Rovshan ALIYEV (Baku State University, Baku, Azerbaijan)

Anar DOSI (Middle East Technical University, Mersin, Turkey)

Yalchin EFENDIEV (Texas A&M University, Texas, United States of America)

Messoud EFENDIYEV (Institute of Computational Biology, Munich, Germany)

Elshad EYVAZOV (Baku State University, Baku, Azerbaijan)

Angelo FAVINI (Universit'a di Bologna, Bologna, Italy)

Khanlar GAMZAEV (Azerbaijan State Oil and Industry University, Baku, Azerbaijan)

Sabir GUSEIN-ZADE (M.V. Lomonosov Moscow State University, Moscow, Russia)

Javanshir HASANOV (Azerbaijan State Oil and Industry University, Baku, Azerbaijan)

Vugar ISMAILOV (Institute of Mathematics and Mechanics, Azerbaijan National Academy of Sciences, Baku, Azerbaijan)

Varga KALANTAROV (Koç University, Istanbul, Turkey)

Elnur KHALILOV (Azerbaijan State Oil and Industry University, Baku, Azerbaijan)

Magomed MEKHTIEV (Baku State University, Baku, Azerbaijan)

Karakhan MIRZOEV (M.V. Lomonosov Moscow State University, Moscow, Russia)

Sabir MIRZOEV (Baku State University, Baku, Azerbaijan)

Boris MITYAGIN (The Ohio State University, Columbus, Ohio, United States of America)

Garib MURSHUDOV (University of Cambridge, Cambridge, United Kingdom)

Heybetkulu MUSTAFAYEV (Yüzüncü Yıl University, Van, Turkey)

Ibrahim NABIEV (Baku State University, Baku, Azerbaijan)

Ryskul OINAROV (L.N. Gumilyov Eurasian National University, Astana, Kazakhstan)

Geylani PANAHOV (Institute of Mathematics and Mechanics, Azerbaijan National Academy of Sciences, Baku, Azerbaijan)

Etibar PANAHOV (Institute of Applied Mathematics, Baku State University, Baku, Azerbaijan)

Mahir SABZALIEV (Azerbaijan State Oil and Industry University, Baku, Azerbaijan)

Arif SALIMOV (Baku State University, Baku, Azerbaijan)

Andrei SHKALIKOV (M.V. Lomonosov Moscow State University, Moscow, Russia)

Yaudat SULTANAIEV (M. Akmullah Bashkir State Pedagogical University, Ufa, Russia)

Durvudkhan SURAGAN (Nazarbayev University, Astana, Kazakhstan)

Hassan ZEDAN (Kafr El-Sheikh University, Kafr El-Sheikh, Egypt)

## **EXECUTIVE EDITORS**

Elviz ISMAYILOV (Azerbaijan State Oil and Industry University, Baku, Azerbaijan)

Nigar ISMAYILOVA (Azerbaijan State Oil and Industry University, Baku, Azerbaijan)

Zaman SAFAROV (Azerbaijan State Oil and Industry University, Baku, Azerbaijan)

## **EDITORIAL ASSISTANTS**

Sevda MAMMADOVA (Azerbaijan State Oil and Industry University, Baku, Azerbaijan)

*Journal is printing under the direction of General and Applied Mathematics Department,  
Azerbaijan State Oil and Industry University*

ISSN: 2790-8410

# Baku Mathematical Journal

---

Volume 1, Issue 2

September 2022

Sponsored by  ADNSU  
ADNSU Azerbaijan Digital North-Western University

## Instructions for Authors

The Baku Mathematical Journal (Baku Math. J.) publishes research papers up to 24 pages in length and survey papers requested by the Editorial Board. Research papers exceeding this page limit should be pre-agreed with the Editorial Board.

By submitting a manuscript, the author acknowledges that it is original and not under simultaneous consideration by any other journal. Papers should be written in English.

The manuscript file must be prepared according to the journal's [LaTeX class file](#) or [sample file](#), which can be downloaded from our site.

References should be listed in alphabetical order and all entries in the reference list must be cited in the text. Titles of periodicals should be abbreviated in accordance with "Mathematical Reviews". The following are sample references:

1. Aliev A.R., Eyvazov E.H. Finite-difference proof of the completeness of eigenfunctions of the Sturm-Liouville operator in conservative form. *Comput. Math. Math. Phys.*, 2015, **55** (1), pp. 1-7.
2. Simon B. *Functional Integration and Quantum Physics*. Academic Press, New York–London, 1979.

All manuscripts must be submitted via email to [submission@bakumathj.org](mailto:submission@bakumathj.org) or [bakumathj@asoiu.edu.az](mailto:bakumathj@asoiu.edu.az).

Authors are asked to send both TeX and PDF files as attachments to their mails.

Further information can be found at [www.bakumathj.org](http://www.bakumathj.org).

## CONTENTS

A. K. Mekhdiev, R. K. Mekhtiev, TRANSVERSE SHEAR OF AN ISOTROPIC ELASTIC MEDIUM IN THE CASE WHEN THE BINDER AND INCLUSIONS ARE WEAKENED BY CRACK INITIATION .....	125
M. E. Kerimova, M. M. Sabzaliyev, ABOUT ONE BOUNDARY VALUE PROBLEM FOR A NON-CLASSIC TYPE DIFFERENTIAL EQUATION .....	145
A. R. Sagitova, A. V. Shakirova, Ya. T. Sultanaev, ON THE ASYMPTOTIC BEHAVIOR OF SOLUTIONS OF THE STURM-LIOUVILLE EQUATION WITH AN OSCILLATING POTENTIAL .....	150
O. Z. Namazov, R. M. Tagiyev, STUDYING THE SOLUTION OF THE SYSTEM OF DIFFERENTIAL EQUATIONS OBTAINED IN SIMULATION OF GAS-LIFT PROCESS BY THE RELAXATION METHOD .....	155
A. Karakuş, M. Dzh. Manafov, THE REGULARIZED TRACE FORMULA FOR “WEIGHTED” STURM-LIOUVILLE EQUATION WITH $\delta$ -INTERACTION .....	164
T. R. Muradov, S. A. Nurieva, V. F. Salmanov, BASICITY OF THE SYSTEMS OF SINES AND COSINES WITH LINEAR PHASES IN GRAND-SOBOLEV SPACES .....	172
A. M. Akhtyamov, Kh. R. Mamedov, Ya. T. Sultanaev, INVERSE STURM-LIOUVILLE PROBLEMS WITH POLYNOMIALS IN NONSEPARATED BOUNDARY CONDITIONS .....	179
M. Yu. Salimov, A. A. Salimova, INVERSE BOUNDARY VALUE PROBLEM FOR NONLINEAR DIFFUSION EQUATION WITH NON-LOCAL TIME-INTEGRAL CONDITIONS OF THE SECOND KIND .....	195
Sh. T. Gurbuz, A. A. Nabiev, S. Saltan, ON THE INTEGRAL REPRESENTATIONS OF SOLUTIONS OF SOME MATRIX PENCILS OF THE STURM-LIOUVILLE EQUATION .....	205