Scientific Research Centre ''MachineStructure''



ISSN 2572-4347

Journal of Advanced Research in Natural Science

Issue 18

Journal of Advanced Research in Natural Science. –

Sydney, Australia: SRC MS. – 2023. – Issue 18. – 79 p.

ISSN 2572-4347

Themes of journal:

- 1. Physics and mathematics sciences:
- 1.1. Mathematics: Differential equations; Mathematical physics; Geometry; Probability theory and mathematical statistics; Logic; Computational mathematics; Cybernetics.
- 1.2. Mechanics: Theoretical mechanics; Mechanics of solids; fluid Mechanics; Dynamics and strength of machines, devices and instrumentation; Biomechanics.
 - 1.3. Astronomy: Celestial mechanics; Astrophysics; Planetary researches.
- 1.4. Physics: Theoretical physics; Experimental physics; Physical electronics; Optics and acoustics; Condensed matter physics; Physics of magnetic phenomena; thermal physics and thermal engineering; Physics and technology of nanostructures; Crystallography; Laser physics; High energy physics.
- 2. Chemical science: Organic and inorganic chemistry; Analytical chemistry; Physical chemistry; Polymers; Petrochemicals; Mathematical and quantum chemistry; solid state Chemistry; Chemical technology.
- 3. Biological Sciences: Biotechnology; Bioengineering; Mathematical biology; bioinformatics.
 - 4. Agricultural Sciences: Agronomy; Forestry; Edaphology; Fisheries.
- 5. Earth science: Geology; Geodynamics; Mineralogy; Hydrogeology; Soil science; prospecting and exploration of mineral deposits; mineral Beneficiation; Technology exploration; Technology of drilling and development wells; mine surveying; Geomechanics, destruction of rocks, miner aerogasdynamics; Geotechnology; Geoinformatics; Ecology.

Editor in Chief:

Ivan A. Zhukov – Saint-Petersburg mining university. Department of mechanical engineering

Editorial Board:

Petr M. Mazurkin - Volga State University of Technology, Department of

Environmental Management

Vladislav G. Malinin - Orel state agrarian university. Department of

engineering graphics and mechanics

Sergey P. Isaev – Pacific national university. Department of technology of forest management and landscape construction

Yury N. Kuznetsov – National technical university of Ukraine, Kiev polytechnic institute. Department of designing of

machines and tools

Yulia V. Zakharova – Bauman Moscow state technical university,

Department of computational mathematics and

mathematical physics

Copyright © 2023 Authors, SRC MS All rights reserved. ISBN: 979-8389745186

CONTENTS

Physics and mathematics sciences
Zhang Lele, Filimonov N.B. Identification of dynamic systems based on experimental data processing using genetic programming
Korolev A.E. Probabilistic planning of exchangeable elements of technical system
Tsegelskiy V.G. Comparison of the impacts of carbon and «green» energy on the Earth's climate from the perspective of non-equilibrium thermodynamics
Shabashov A.A. Investigation of the influence of the assembly process on its technical and economic parameters, using a simulation model
Kruglov A.I., Okunev V.S. On the possibility of time reversal: artificial and natural time loops in the microcosm
Roshchin M.N. Change in the coefficient of friction from the velocity in pairs with carbon-containing materials at high temperature
Roshchin M.N. Temperatures in a coating with titanium diboride particles on steel during laser surfacing
Samokhvalov V.N. Mechanical analogue of gyromagnetic effects
<u>Chemical Sciences</u>
Biryukov V.P., Goryunov Ya.A., Yakubovsky A.A. Influence of steel surface roughness on tribotechnical properties of polymer materials
Earth Sciences
Solodovnikov A.Yu. The evolution of the Red Book of Yamal-Nenets authonomous district
Ishmaev O.A. The issue of conducting a statistical assessment of the characteristics of permafrost-ground conditions in mathematical modeling on linear objects of railway transport

Scientific periodical issue

ISSN 2572-4347

Journal of Advanced Research in Natural Science

Issue 18

ISBN: 979-8389745186

Founder: Elena V. Zhukova.

Editorial: Scientific Research Centre «MachineStructure».

Editor in chief: Ivan A. Zhukov.

Printed by AmazonKDP.

Publication Date: 31.03.2023. Title ID: 23-06. Trim Size: 7" x 10" (17.78 x 25.4 cm).

Sydney, Australia, Pitt Street, 477: Scientific Research Centre «MachineStructure», 2023