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Al Farabi Kazakh National University, Almaty, Kazakhstan 56191871200 https://orcid.org/0000-0002-5882-5588 Смотреть больше

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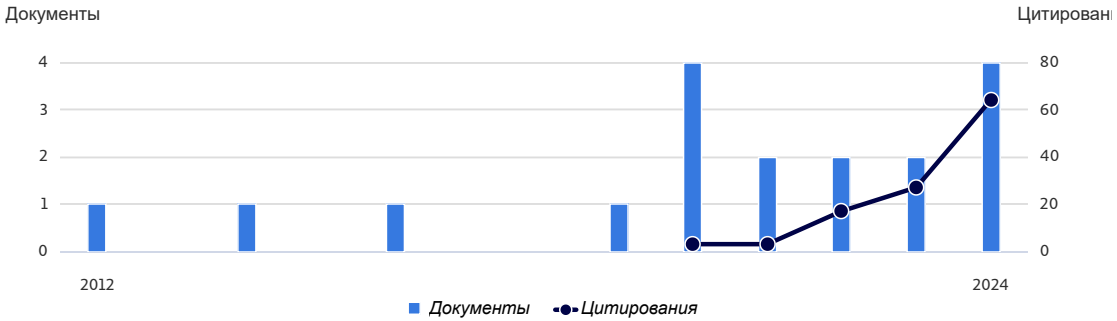

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Темы с наибольшим вкладом 2019–2023

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18 документы

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Conference Paper

Development of river flow modeling methodology

Kalimoldayev, M., Ziyatbekova, G., Mazakov, T., ... Mazakova, A., Suleimen, I.

SIST 2024 - 2024 IEEE 4th International Conference on Smart Information Systems and Technologies, Proceedings, 2024, страницы 20–23

Просмотреть реферат View at Publisher Связанные документы

0 Цитирования

Book Chapter

Digital Model of the Influence of Various Environmental Factors on Plant Biomass

Mazakova, A.T., Nurzhanov, C., Mazakov, T.Z., Jomartova, S.A., Burgegulov, A.D.

Advances in Science, Technology and Innovation, 2024, Part F2356, страницы 161–165

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0 Цитирования

Book Chapter

Digital Definition of Optimal Inventory Management

Kalimoldayev, A.M., Mazakova, A.T., Jomartova, S.A., Mazakov, T.Z., Ziyatbekova, G.Z.

Advances in Science, Technology and Innovation, 2024, Part F2356, страницы 111–115

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0 Цитирования

Book Chapter

Digital Determination of the Thermal Conductivity of a Square Bar by Reduction to a System of Integral Equations

Mazakova, A.T., Jomartova, S.A., Mazakov, T.Z., Ziyatbekova, G.Z., Begaliyeva, K.B.

Advances in Science, Technology and Innovation, 2024, Part F2356, страницы 167–171

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0 Цитирования

Article • *Открытый доступ*

MATHEMATICAL MODELING AND DEVELOPMENT OF AN AUTOMATED SYSTEM FOR SEARCHING RING STRUCTURES IN GEOLOGY

Mazakova, A.T., Jomartova, S.A., Mazakov, T.Z., Ziyatbekova, G.Z., Sametova, A.A.

News of the National Academy of Sciences of the Republic of Kazakhstan, Series of Geology and Technical Sciences, 2023, 1(457), страницы 154–165

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0 Цитирования

Article • *Открытый доступ*

Automated Linearization of a System of Nonlinear Ordinary Differential Equations

Mazakova, A., Jomartova, S., Wójcik, W., Mazakov, T., Ziyatbekova, G.

International Journal of Electronics and Telecommunications, 2023, 69(4), страницы 655–660

Просмотреть реферат View at Publisher Связанные документы

1 Цитирования

Conference Paper

Controllability of an unmanned aerial vehicle

Mazakova, A., Jomartova, S., Mazakov, T., Shormanov, T., Amirkhanov, B.

ENERGYCON 2022 - 2022 IEEE 7th International Energy Conference, Proceedings, 2022

Просмотреть реферат View at Publisher Связанные документы

15 Цитирования

Conference Paper

Human voice identification based on the detection of fundamental harmonics

Aliaskar, M., Mazakov, T., Mazakova, A., Jomartova, S., Shormanov, T.

ENERGYCON 2022 - 2022 IEEE 7th International Energy Conference, Proceedings, 2022

Просмотреть реферат View at Publisher Связанные документы

13 Цитирования

Conference Paper

Intelligent System for Assessing the Socio-economic Situation in the Region

Jomartova, S., Mazakov, T., Mukhaev, D., Mazakova, A., Tolegen, G.

Communications in Computer and Information Science, 2021, 1463, страницы 437–447

Просмотреть реферат View at Publisher Связанные документы

11 Цитирования

Article • *Открытый доступ*

The stability interval of the set of linear system

Mazakov, T., Wójcik, W., Jomartova, S., ... Ziyatbekova, G., Tursynbai, A.

International Journal of Electronics and Telecommunications, 2021, 67(2), страницы 155–161

Просмотреть реферат View at Publisher Связанные документы

15 Цитирования

Article • *Открытый доступ*

Mathematical modeling forecasting of consequences of damage breakthrough

Mazakov, T.Zh., Kisala, P., Jomartova, Sh.A., Ziyatbekova, G.Z., Karymsakova, N.T.

News of the National Academy of Sciences of the Republic of Kazakhstan, Series of Geology and Technical Sciences, 2020, 5(443), страницы 116–124

Просмотреть реферат View at Publisher Связанные документы

1 Цитирования

Article

Automated system for monitoring the threat of waterworks breakout

Mazakov, T., Jomartova, S., Ziyatbekova, G., Aliaskar, M.

Journal of Theoretical and Applied Information Technology, 2020, 98(15), страницы 3176–3189

Просмотреть реферат Связанные документы

11 Цитирования

Article • *Открытый доступ*

METHODS of EXTRACTING ELECTROCARDIOGRAMS from ELECTRONIC SIGNALS and IMAGES in the PYTHON ENVIRONMENT

Zholmagambetova, B., Mazakov, T., Jomartova, S., Izat, A., Bibalayev, O.

Diagnostyka, 2020, 21(3), страницы 95–101

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11 Цитирования

Article • *Открытый доступ*

The image processing algorithms for biometric identification by fingerprints

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Mazakov, T.Z., Jomartova, S.A., Shormanov, T.S., ... Amirkhanov, B.S., Kisala, P.
News of the National Academy of Sciences of the Republic of Kazakhstan, Series of Geology and Technical Sciences, 2020, 1(439), страницы 14–22

Цитирования

Просмотреть реферат View at Publisher Связанные документы

Article • *Открытый доступ*

Research of controllability of dynamical systems with constraints on control using interval mathematics

Jomartova, S.A., Nikulin, V.V., Karymsakova, N.T.
KazNU Bulletin. Mathematics, Mechanics, Computer Science Series, 2019, 102(2), страницы 69–80

0
Цитирования

Просмотреть реферат View at Publisher Связанные документы

Article • *Открытый доступ*

Interval arithmetic in calculations

Bairbekova, G., Mazakov, T., Djomartova, S., Nugmanova, S.
Open Engineering, 2016, 6(1), страницы 259–263

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Просмотреть реферат View at Publisher Связанные документы

Article

Comparison of two interval arithmetic

Dzhomartova, S.A., Mazakov, T.Z., Karymsakova, N.T., Zhaydarova, A.M.
Applied Mathematical Sciences, 2014, (69-72), страницы 3593–3598

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Цитирования

Просмотреть реферат View at Publisher Связанные документы

Conference Paper

Application of interval analysis in the research of organizational control systems

Sholpan, J., Talgat, M.
6th International Conference on Soft Computing and Intelligent Systems, and 13th International Symposium on Advanced Intelligence Systems, SCIS/ISIS 2012, 2012, страницы 244–247, 6505140

1
Цитирования

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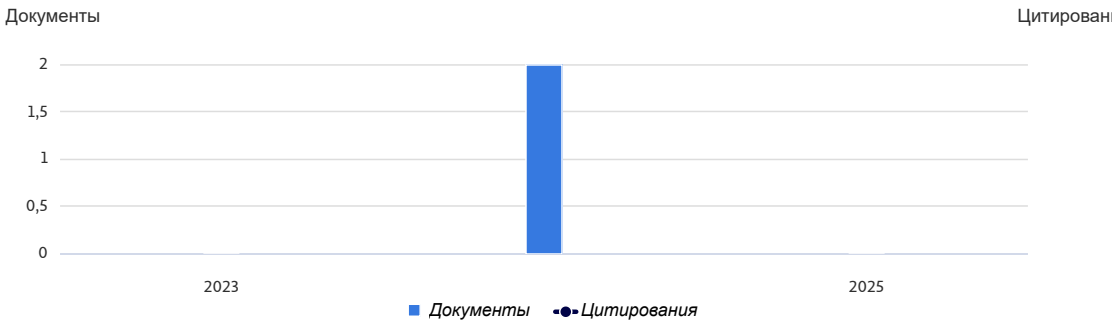

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Article
Application of mathematical methods in pharmacology
Mazakova, A., Jomartova, S., Mazakov, T., Ziyatbekova, G., Tursynbai, A.
Journal of Interdisciplinary Mathematics, 2024, 27(6), страницы 1421–1435

O
Цитирования

Просмотреть реферат View at Publisher Связанные документы

Article

The Use of Artificial Intelligence to Increase the Functional Stability of UAV Systems

Mazakova, A., Jomartova, S., Mazakov, T., Brzhanov, R., Gura, D.

International Review of Aerospace Engineering, 2024, 17(3), страницы 98–106

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Цитирования

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Yulia V. Ragulina
Editors

Ecological Footprint of the Modern Economy and the Ways to Reduce It

The Role of Leading Technologies and Responsible Innovations

Springer

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ISSN 2522-8714 ISSN 2522-8722 (electronic)
Advances in Science, Technology & Innovation
IEREK Interdisciplinary Series for Sustainable Development
ISBN 978-3-031-49710-0 ISBN 978-3-031-49711-7 (eBook)
https://doi.org/10.1007/978-3-031-49711-7

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Introduction: Opportunities for Advanced Technology and Responsible Innovation in Reducing the Ecological Footprint of Today's Economy

The ecological footprint of the economy embodies the environmental costs of economic growth: the consumption of resources and energy, as well as the production and consumption waste. In the twenty-first century, the economy's ecological footprint has reached a critical level and needs to be significantly reduced to maintain a healthy environment and preserve the natural heritage for future generations. Initiatives to reduce the economy's carbon footprint are being implemented globally as climate change issues are keenly felt worldwide.

Decades of industrialization, recently replaced by Neoindustrialization 4.0, have led to a serious decline in biodiversity. This has caused a surge in zoonotic diseases, emphasizing the need to protect ecosystems. The scale of environmental pollution from waste is so great that species have begun to adapt to their new habitat. Genetic mutations pose risks to public health. Advanced technology and responsible innovation help maintain the achieved economic growth rate while reducing the economy's ecological footprint.

The advanced technology of the digital economy was developing and spreading during the Fourth Industrial Revolution. Advanced technology makes it possible to automate business processes, thereby increasing their environmental friendliness through greater transparency, accountability, and intelligent support for environmental decision-making. Responsible innovations are innovative applications of corporate environmental responsibility, such as environmental management, environmental marketing, ESG investments, green jobs, and green value chains.

First, opportunities for advanced technology and responsible innovation in reducing the ecological footprint of today's economy include improving environmental monitoring. For example, the Internet of Things (IoT) and ubiquitous computing (UC) make it possible to control natural resource consumption accurately.

Green workplaces stimulate environmental innovation, responsibility, and discipline of employees. Environmental taxes and quotas on resource consumption and production waste, including carbon emissions, make optimizing the use of natural resources possible. Green value chains encourage the collective adoption of advanced technology and responsible innovation by all participants.

Second, circular business practices are developed. Digitalization makes it possible to systemically integrate responsible innovations into all stages of the value chain. The reuse of raw materials in recycling makes it possible to reduce the cost of production, strengthening its price competitiveness. The transition to renewable energy supports decarbonization. Clean energy is available. Nevertheless, using clean energy may be associated with additional costs that can be reduced through advanced technology.

Additionally, responsible innovations in marketing and finance help attract green investments and stimulate demand for products with improved environmental properties. Digital marketing helps generate consistently high demand for products produced by circular plants using renewable energy among responsible communities in sustainable territories.

Third, the energy efficiency of production facilities is improved. Advanced technology has improved energy properties. The digital competition supports introducing energy innovations,

making them more attractive to investors. In addition to enhancing digital competitiveness, businesses adopting advanced technologies improve their energy efficiency.

The one-time capital cost of implementing advanced technology provides long-term financial benefits through increased sales and reduced energy costs. Advanced technology also provides enhanced control over energy consumption, preventing leakage and wasteful use of energy resources. In the fuel and energy complex, it helps reduce the risks of environmental disasters due to gas leaks, oil spills, etc.

Fourth, a climate-neutral economy is ensured. Responsible innovation in the area of climate change contributes to the climate adaptation of businesses and the achievement of a carbon-neutral economy. Responsible innovation enables the development of sustainable areas in harmony with ecosystems, particularly in smart regions with automated environmental controls.

Advanced technology and responsible innovation also support the adaptation of industries to climate change and the translation of successful experiences. It is possible to create sectoral environmental clusters, green innovation networks, ecological technoparks, environmental public-private partnership projects, and special economic zones in sustainable areas to conduct environmental R&D jointly, support the creation of green jobs, and introduce climate innovation among their participants.

Fifth, corporate environmental reporting as part of the documentation in the field of sustainable development is improved. Advanced technology makes it possible to automatically collect big data for corporate environmental monitoring and generate corporate sustainability reports based on it. Responsible innovation creates opportunities and incentives to increase the transparency, detail, and openness of this reporting to all stakeholders.

In the information society, digital environmental reporting plays an important role in investment and consumer decisions. Advanced technology also simplifies environmental quality certification and eco-labeling of products. Moreover, responsible innovations make biodegradable product packaging available. This supports the development of environmental culture in responsible communities and the combination of digital and green competition.

This book aims to systemically reflect the issues noted, comprehensively address and accurately measure the ecological footprint of today's economy, and highlight the potential of advanced technology and responsible innovation in reducing it. The scientific novelty of this book and its contribution to the literature lies in the fact that it systemically reflects the environmental properties of advanced technologies and environmental innovations from the perspective of their contribution to reducing the ecological footprint of the economy.

The book's novelty lies in the fact that it discusses in detail the international experience of applying advanced technology and responsible innovation to reduce the economy's ecological footprint. In particular, the book reflects the experience of the BRICS countries, the Eurasian Economic Union (EAEU), Zambia, and Russian regions. This makes the book particularly useful for reducing the ecological footprint of the economies in developing countries, whose experience is the least studied in the existing literature, representing a gap that this book aims to fill.

The practical relevance of the book stems from the fact that it details specific advanced technologies—digital models and digital twins, ensemble algorithms, solar databases, blockchain platforms, data systems for evaluating innovative investment projects, Web 3.0, and responsible innovations in intra-corporate environmental control, e-commerce, digital marketing, and smart government regulation. With this, the book has formed the guiding manual for achieving technological advancement in implementing a green economic growth model.

The book is logically divided into four parts. The first part identifies and measures the ecological footprint of today's economy and identifies key green innovations and ESG practices to reduce it. The second part details responsible innovations in the digital economy and advanced technology to reduce the ecological footprint of today's economy. The third part outlined the institutional framework for responsible innovation in society, business, and government, as well as its contribution to reducing the economy's ecological footprint.

The book concludes with the fourth part, which presents international experience in reducing ecological footprints at the level of regional and national economies, as well as groups of countries.

The book is intended for scholars engaged in studying the issues of innovative development of the economy. Scholars will find a comprehensive scientific look at the possibilities of advanced technology and responsible innovation in reducing the economy's ecological footprint. The green perspective of digitalization presented in the book opens up a wide field for further scientific research.

The book may also be of interest to practicing experts. Business representatives will find ready-to-use application solutions for improving the environmental attributes of products, combating climate change, and implementing corporate environmental responsibility programs based on cutting-edge technology and responsible innovation. For public authorities, the book provides scientific and methodological recommendations for improving state environmental regulation and reducing the ecological footprint of today's economy through stimulating the use of advanced technologies and responsible innovation by business entities.

Bruno S. Sergi
Elena G. Popkova
Anna A. Ostrovskaya
Alexander A. Chursin
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