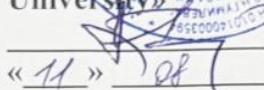


Approved
Acting Member of the Management
Board – Vice-Rector
for Science and Commercialization
Non-profit joint-stock company
«L.N. Gumilyov Eurasian National
University»


« 11 » 2026

Editorial Policy of the Journal
**“Bulletin of the L.N. Gumilyov Eurasian National University. Mathematics,
Computer Science, Mechanics Series”**

1. General Provisions

1.1. «The Bulletin of the L.N. Gumilyov Eurasian National University. Mathematics, Computer Science, Mechanics Series» (hereinafter referred to as the Journal) is a peer-reviewed research, methodological, and scholarly organizational journal specializing in the publication of original, high-quality works in all areas of theoretical and applied research, scientific and methodological studies, as well as scholarly organizational issues in the fields of Mathematics, Computer Science, and Mechanics, including descriptive sections reflecting contemporary scientific developments.

1.2. The Journal has been published since 1995. It is registered with the Ministry of Information and Communications of the Republic of Kazakhstan. Certificate of re-registration No. KZ65VPY00031936 dated February 2, 2021.

1.3. The Journal has been assigned the following identifiers by the International Centre for the Registration of Serial Publications: ISSN (Print) 3007-0155, ISSN (Online) 3007-0163.

1.4. The Journal is published once every three months, four times a year.

1.5. The languages of publication are Kazakh, English, and Russian.

1.6. Open access policy. The Journal provides immediate open access to its content based on the following principle: free open access to research results contributes to the increase of universal knowledge. The official website of the Journal <https://bulmathmc.enu.kz/> provides all interested readers and authors with the necessary information about the scientific journal and the conditions for publishing articles (link to the archive of issues: <https://bulmathmc.enu.kz/index.php/main/issue/archive>).

1.7. Archiving. Electronic versions of the scientific journal are provided to “National Center of Science and Technology Evaluation” for the formation of collections and inclusion in the electronic library. The Journal also archives its materials in Elibrary.ru.

1.8. The founder and publisher is the Non-Profit Joint-Stock Company “L.N.Gumilyov Eurasian National University”. Address: Kazakhstan, 010008, Astana, Satpayev Street, 2, ENU, Academic and Administrative Building No. 1.

1.9. Amendments and additions to the editorial policy of the Journal are made by decision of the Editorial Board.

2. Goals, scope, and continuous development of the Journal

At the outset, we note that everything stated below is based on the authors' experience in scientific, methodological, and organizational research and development, where each assertion is formed through insight and reflection on specific examples of the authors' own activities, leading to the conclusion that “it is hardly possible to conceive all this purely theoretically.”

The goal of the Editorial Board of the Journal is:

The publication of carefully selected original high-quality scientific research, scientific-methodological, and scientific-organizational works in all areas of theoretical and applied research in the fields of Mathematics, Computer Science, and Mechanics.

An article accepted for publication, through the best efforts of the Editorial Board and reviewers, should be free from scientific errors and from a lack of results or meaningful contribution.

Objectives of the Journal:

- publication of articles with mandatory scientific novelty as something new, previously unknown, and substantive in the context of existing knowledge, on promising topics and research directions, with the aim of making an unconditional contribution to international science and involving students of all levels, faculty members, and staff of the Science and Education System of Kazakhstan in these studies;
- publication of scientific research, scientific-methodological, and scientific-organizational articles on the systemic organization of Kazakhstan in the mass training of highly qualified specialists, both domestic and foreign, in Mathematics, Computer Science, and Mechanics;
- publication of “key articles of the Journal issue” of direct thematic focus, with the involvement of leading national and international specialists of international standing as authors; the articles themselves should be in a state of readiness for immediate application in the development of Mathematics, Computer Science, and Mechanics in the international scientific space and in the Republic of Kazakhstan;
- provision of the Journal's scientific platform to national and international authors for consolidating new ideas in the international arena through detailed presentation and for their discussion;
- the Journal publishes scientific-organizational proposals aimed at stimulating large-scale scientific activities (scientific conferences, grant funding with relevant competitive documentation and peer review, textbooks and curricula for school mathematics courses, scientific and educational programs for master's and PhD

doctoral studies, awarding of academic degrees and titles, evaluation and requirements for experts of various appointments, etc.);

- the Journal welcomes publications of scientific-methodological materials of direct practical application on current topics in school and university mathematics;

- improvement of the quality of scientific articles through systematic work of the Journal's Editorial Board with authors and reviewers in accordance with the Journal's established requirements for the structure of articles and reviews;

- proactive integration of Kazakhstan into the global scientific community through original national scientific breakthroughs in Mathematics, Computer Science, and Mechanics, with the development of regulations for collaboration with leading specialists from top universities based on the development and generalization of productive experience gained at each stage.

Needs of the Journal for further development:

The Journal is published in Kazakhstan, in the capital city of Astana, and is based at the Non-Profit Joint-Stock Company «L.N. Gumilyov Eurasian National University». The Journal primarily pursues the goal of developing Mathematics, Computer Science, and Mechanics in the Republic of Kazakhstan at the international level. Kazakhstan occupies a vast territory of 2.7 million square kilometers and is divided into 19 regions, each having regional universities; the Journal's materials are aimed at supporting their development.

In Kazakhstan, strict state-level regulations based on scientometric indicators have been adopted; therefore, the Journal's scientific-research and scientific-methodological publications aimed at activating scientific development do not belong to administratively supported categories. Precisely for this reason, in 2024 the Editorial Board of the Journal appealed to Web of Science with a request, first, to accelerate the decision-making process and, second, to assign the highest Web of Science category, Q1. In justification of this perhaps unconventional request, we emphasize that during less than eight years of its existence, the Journal has published solutions to four problems of international significance and has introduced and developed, as a know-how project, the authorial initiative «Key Article of the Journal Issue» (currently represented by 21 articles).

We are compelled to acknowledge that, whether justified or not, the Key Articles published in the Journal—which we hope are of the highest scientific level and therefore should have been reflected in one way or another in survey papers of the type “Current State of the Art in the Field”—have not been represented anywhere. We refer in particular to the Lead Articles “The Linear Congruential Generator” (2018), “Computational (Numerical) Diameter” (2018), and “Computer Tomography” (2023). Had our Journal possessed the scientometric standing that we are requesting from Web of Science, namely Q1 status, this situation would probably not have occurred.

The Kazakhs represent a unique steppe civilization; however, throughout their history prior to gaining Independence, they did not possess their own system for governing Science and Education.

The beginning of the inclusion of the Kazakhs into the world of major mathematics dates back to 1935, when, for the first time, a full-fledged scientific mathematical article by a Kazakh author was published:

I.A. Akbergenov On the Approximate Solution of the Fredholm Integral Equation and on the Determination of Its Eigenvalues, Matematicheskii Sbornik, 42:6 (1935), 679–698.

Since then, the development of the Kazakh component of World Mathematics has continued, as always and everywhere, with both advances and setbacks.

Today, among many others, the highest achievements of Kazakh mathematics are represented by Ibatulla Akbergenov, Saduakas Bokayev, Asan Dabysovich Taimanov, Toleubai Idrisovich Amanov, Kabdush Zhumagazyevich Nauryzbayev, Umirzak Makhmudovich Sultangazin, Alexander Alipkhanovich Zhensykbayev, Askar Dzhumadildaev, Ualbai Umirbayev — recipient of the Moore Prize, Mirbolat Sikhov, Kairat Sherniyazov, and Shapen Azhgaliyev.

In terms of formulations, the following may be mentioned:

1. The inverse C(N)D as a direct formula-based solution (without Neural Networks) to the AI-ML problem for every smooth Mathematical model, with the idea of further extension to non-smooth problems through the creation of new mathematical structures.

Another variation of the general principle “The ways of Science are inscrutable” is the interpretation of smooth Machine Learning–Artificial Intelligence problems as the Computational (Numerical) Diameter (C(N)D) in reverse reading. Such was the original idea.

Temirgaliyev N. and the entire IThM&SC An attempt at the formalization of problems of Artificial Intelligence, Machine Learning, Big Data, and Neural Networks within the framework of the extended Computational (Numerical) Diameter (C(N)D)

with a vague sense of some connection, which had to be clarified, between the Kazakh Computational (Numerical) Diameter (C(N)D), extended from smoothness to certain of its shadows and to AI-ML.

As they say, “Reality surpassed expectations”: merely a prolonged reflection on the ideas of two statements formulated in entirely different ways led IThM&SC to the claim: “These are two sides of the same coin.”

2. The Lehmer Linear Congruential Sequence in the Coveyou–MacPherson Randomness Framework.

The Lehmer linear congruential sequence was introduced in 1948 from the equation of a straight line $y = ax + c$ in the form of a permutation of the sequence $1, 2, \dots, N$ according to the recurrence formula

$$x_{n+1} = ax_n + c \pmod{N} \quad (n \geq 0).$$

The randomness proposed by Covey and MacPherson in 1965 consists in finding a and c depending on N in such a way that, in the expansion into a finite

trigonometric Fourier sum of a fixed number of consecutive elements of this sequence, the coordinate of the nonzero Fourier coefficient closest to zero is as far as possible from that same zero—hence the name “spectral criterion”.

And in this, perhaps, lies the entire value of this problem: in mathematics there are many examples where a formulation based on the most elementary foundations is itself fundamental.

There is Stanford, the capital of Silicon Valley, and there is Donald Knuth.

Donald Knuth (Lex Fridman, science journalist, 2025): *Donald Knuth is*



one of the greatest and most influential scientists in the history of Computer Science and Mathematics. He is the recipient of the 1974 Turing Award, often referred to as the Nobel Prize of computing. He is the author of the multi-volume work The Art of Computer Programming, his magnum opus.

He made several key contributions to the rigorous analysis of the computational complexity of algorithms, including the popularization of asymptotic notation, which we all fondly know as Big O notation. He also created the TeX typesetting system, which is used by most computer scientists, physicists, mathematicians, and, more broadly, scientists and engineers to write scientific papers and give them a beautiful appearance.

The role of D. E. Knuth’s monograph *The Art of Computer Programming* in the world of Computer Science is elevated to the level of all humankind:

The journal American Scientist included The Art of Computer Programming in the list of the 12 greatest physical and mathematical monographs of the twentieth century, alongside the works of Dirac on quantum mechanics, Einstein on the theory of relativity, and a small number of others.

The cover of the third edition of the first volume of the book contains a quotation by Bill Gates: “If you think you’re a really good programmer..., read *The Art of Computer Programming* (by Knuth)... If you can read the whole thing, you should definitely send me your résumé.”

Let us turn to the monograph itself:

3.3.4. Спектральный критерий

В этом разделе рассматривается особенно важный метод проверки качества линейных конгруэнтных генераторов случайных чисел. Все хорошие генераторы проходят проверку спектральным критерием; все генераторы, известные сейчас как плохие, фактически провалились при этой проверке. Таким образом, спектральный критерий является наиболее мощным известным до сих пор критерием и заслуживает особого внимания.

In each of the three editions of his monograph, Donald Knuth described the state of the subject at the time of its preparation; in the latest known presentation, together with the accompanying material, it amounts to approximately 50 pages of text.

About a quarter of these pages are devoted to problems that, over the course of 50 years, have not found a complete and final solution in thousands and tens of thousands of publications with the highest scientometric indicators. And herein lies the power, beauty, and mystery of Mathematics: for 10 lines of problem formulation, there are 10 lines of a complete solution, followed by a practical recommendation expressed in just one line.

Temirgaliev N. Elementarnoe postroenie lineinoi kongruentnoi posledovatel'nosti Lekhmera s toi stepen'yu sluchainosti, s kakoi trebovaniyam sluchainosti otvechaet spektral'nyi test Koveiu i Makfersona [Elementary construction of the linear congruent Lehmer sequence with the degree of randomness that is required by the spectral test of Coveyou and MacPherson], Vestnik Evraziiskogo natsional'nogo universiteta imeni L.N. Gumileva. Seriya Matematika. Informatika. Mekhanika [Bulletin of L.N. Gumilyov Eurasian National University. Mathematics, Computer Science, Mechanics Series]. 2018. Vol. 123. No. 2. Pp. 8–55.

Temirgaliev N. Full spectral testing of linear congruent method with a maximum period // arXiv:1607.00950 [math.NA]

The Lehmer random number generator, or the linear congruential sequence of maximal period introduced in 1948, is, by definition, a recurrent sequence $\langle x_n \rangle$ of nonnegative integers

$$X_{n+1} = (aX_n + c) \bmod N, n \geq 0$$

where integer numbers $a > 1, N > a, c > 0$ such that c and N mutually prime, $a - 1$ divisible by each prime divisor N and divisible by 4, if N divisible by 4. Also, for s -dimensional ($s \geq 2$) sequence $y_1 = (x_1, \dots, x_s)$, $y_2 = (x_2, \dots, x_{s+1})$, ..., $y_{N-s+1} = (x_{N-s+1}, \dots, x_N)$ let define

$$v_s(a, N) = \inf \left\{ \sqrt{m_1^2 + \dots + m_s^2} : m = (m_1, \dots, m_s) \in Z^s, m \neq 0, \sum_{j=1}^s m_j a^{j-1} \equiv 0 \pmod{N} \right\}.$$

Then the problem consists, for given $s \geq 2, \tau \geq 2, \lambda \geq 1$ in choosing pairs N and a such that $(a - 1)^\tau \equiv 0 \pmod{N}, (a - 1)^{\tau-1} \not\equiv 0 \pmod{N}, \lambda N = (a - 1)^\tau$ and so that the quantity $v_s(a, N)$ is as large as possible, given a known upper bound of $v_s(a, N) \leq \gamma(s) N^{\frac{1}{s}}$.

A complete solution to the “SC-spectral criterion” problem for the “magic” numbers a and N is as follows:

1⁰.SC-2:

$$v_2^2(a, N; (a - 1)^2 = N) = (a - 1)^2 \left(1 - 2 \frac{a-2}{(a-1)^2} \right) = N \left(1 - 2 \frac{\sqrt{N}-1}{N} \right),$$

2⁰.SC(2 ≤ s = τ):

$$N^{\frac{2}{s}} \left(1 - (b_s - 1)N^{-\frac{1}{s}}\right)^2 = (a - b_s)^2 \leq v_s^2(a, N; (a - 1)^s = N) \leq a^2 + 1 = N^{\frac{2}{s}} \left(1 + 2N^{-\frac{1}{s}} + 2N^{-\frac{2}{s}}\right).$$

3⁰.SC(2 ≤ s < τ, λ ≥ 1):

$$(N\lambda)^{\frac{2}{\tau}} \left(1 - (b_s - 1)(N\lambda)^{-\frac{1}{\tau}}\right)^2 = (a - b_\tau)^2 \leq v_s^2(a, N; (a - 1)^\tau = N\lambda, 1 \leq \lambda \leq (a - 1)^{\tau-s}) \leq a^2 + 1 = (N\lambda)^{\frac{2}{\tau}} \left(1 + 2(N\lambda)^{-\frac{1}{\tau}} + 2(N\lambda)^{-\frac{2}{\tau}}\right),$$

$$4^0. \text{ SC } (s > \tau \geq 2, \lambda \geq 1): v_s^2(a, N; (a - 1)^\tau = N\lambda, \lambda \geq 1) \leq \sum_{k=0}^{\tau} \left(\binom{\tau}{k}\right)^2,$$

where $(-b_m)$ is the binomial coefficient with the largest absolute value and negative sign in the expansion of $(a - 1)^m$ in powers of a : $b_2 = 2, b_3 = 3, b_4 = 4, b_5 = 10, b_6 = 20, b_7 = 35, b_8 = 56, b_9 = 126, b_{10} = 252, b_{11} = 462, b_{12} = 792, b_{13} = 1716, b_{14} = 3432, b_{15} = 6435, \dots$ and so on.

We note that in Sections 1⁰-3⁰, a “strengthened” asymptotic estimate of the previously known upper bound is established, and hence it is unimprovable, whereas Section 4⁰ completes the full picture as the case of non-applicability.

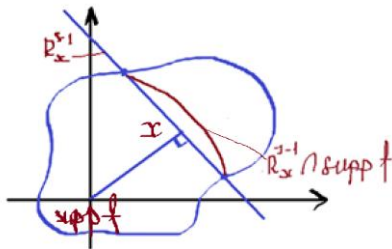
Practical choice of a and N :

$$a = 4^{r_0} p_1^{r_1} \dots p_t^{r_t} + 1, N = 4^{u_0} p_1^{u_1} \dots p_t^{u_t}, 2 \leq s \leq \tau = \max \left\{ \left\lceil \frac{u_1}{r_1} \right\rceil; \dots; \left\lceil \frac{u_t}{r_t} \right\rceil \right\}.$$

Apparently, it is hardly possible to experimentally identify the “magical” ≡ “enchanted” numbers a and N from all possible Big Data x_0, a, c, N , which provides yet another possible answer to the question: “Can ML-AI completely replace Science?”

3. Computed tomography in an equivalent two-line linkage with the Computational (numerical) diameter (C(N)D) in the supervised machine learning (ML) framework, leading to artificial intelligence (AI)

The Radon transform of a function $f(x)$ is a real-valued function defined on $\mathbb{R}^s$.



$$(Rf)(x) := \int_{y \in R_x^{s-1} \cap \text{supp } f} f(y) dy = R(f(y))(x),$$

where $R_x^{(s-1)}$ is the $(s-1)$ -dimensional hyperplane perpendicular to the vector Ox and passing through the point x (see Figure 1).

Figure 1

The function $f(x)$ can be expressed in terms of its Radon transform $(Rf)(x)$. Let $\Omega = [0, 1]^s$, and suppose $f \in C_0^\infty(\Omega)$ and $f(x) = 0$ for all $x \in \mathbb{R}^s \setminus \text{supp } f$. Then, for $x \in \Omega, x = (\theta, t) \in S^{s-1} \times \mathbb{R}^1$

$$f(x) = \int_{\Omega} f(x)dx + \sum_k' \left(\frac{1}{|k|} \sum_{m=-\infty}^{\infty} Rf \left(\frac{k}{|k|}, \frac{m + k \cdot x}{|k|} \right) - \int_{\Omega} f(x)dx \right),$$

where

$$\theta = \frac{k}{|k|}, t = \frac{m + k \cdot x}{|k|},$$

and $\sum_k'$ denotes summation over all $k \in \mathbb{Z}^s$ such that $k_1 > 0$ and the greatest common divisor of $k_1, \dots, k_s$ equals 1.

It is clear that a computer operating only with finite information cannot process this functional series as an infinite object. Thus, the problem is to construct a computational device which, with any prescribed accuracy, determines the desired density f at any point x from a finite set of values $(Rf)(\xi_1), \dots, (Rf)(\xi_N)$.

In the technical implementation of computer tomography (CT), the most common approach is the preliminary selection of scanning points $\xi_1, \dots, \xi_N$, followed by the

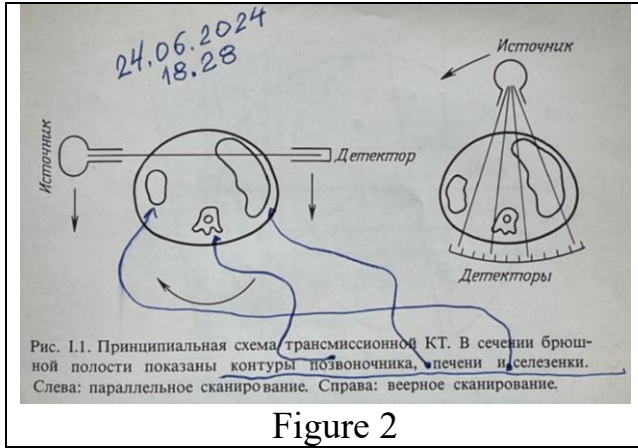


Figure 2

construction of an approximation theory for the target function $f(x)$ based on this data. In this case, the simplest methods are, naturally, parallel and fan-beam scanning (see Figure 2).

At the same time, from the standpoint of theoretical mathematics, the problem arises of optimally choosing the scanning nodes together with a corresponding algorithm for processing the obtained

numerical information, which would allow one, in a given metric and with any prescribed accuracy, to recover the desired density $f(x)$ at any point x of the considered body. Within the framework of C(N)D, this is precisely the problem C(N)D-1.

In the construction of a technical device for computer tomography, a crucial

role is played by C(N)D-2—the quantity of limiting error, which makes it possible to recover the desired function $f(x)$ without loss of accuracy. In its absence, the accuracy of the device must be determined experimentally, which involves significant financial costs.

The problem $K(B)P-3$ describes which computational systems are not better than the optimal one identified in $K(B)P-1$.

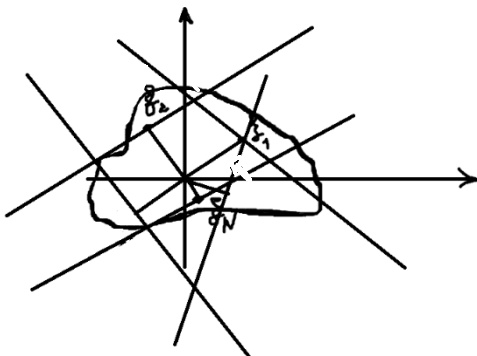


Figure 3

The problem of computer tomography turned out to be unexpectedly equivalent to the problem, developed in approximation theory, of optimal reconstruction of functions via finite convolution (see Figure 3):

$$\begin{aligned} & \sup_{\|f\|_{W_2^{\alpha(y)}(E_S)} \leq 1} \left\| f(x) - \sum_{k=1}^N f(\xi_k) \Phi_N(x - \xi_k) \right\|_{W_2^{\rho(y)}(E_S)} \asymp \\ & \asymp \sup_{\|f\|_{W_2^{\alpha(y) \cdot \|y\|^{\frac{s-1}{2}}(S^{s-1} \times R^1)} \leq 1} \left\| f(x) - \sum_{k=1}^N (R^2)^{-1} R f(\xi_k) R(\Phi_N(y - \xi_k))(x) \right\|_{W_2^{\rho(y) \cdot \|y\|^{\frac{s-1}{2}}(S^{s-1} \times R^1)} \end{aligned}$$

where the kernel $\Phi_N(x)$ is a real-valued function that is 1-periodic in each of the variables $x = (x_1, \dots, x_s)$.

“Contribution of Scientific Theories and Discoveries to the Progress of Society as a Whole (University of Vienna, 2016)”:

The Rector of the University of Vienna (referring to J. Radon) noted: “Mathematical theories are often presented in abstract form, perhaps regarded as sterile tricks, which suddenly turn out to be valuable tools for physical knowledge and thereby unexpectedly reveal their hidden power.”

K. Sigmund stated: “Johann Radon studied abstract problems of so-called pure mathematics and had no idea that today the Radon transform is the basis of computed tomography. Its numerous applications confirm the rule: there is nothing more practical than a good theory.”

In light of these considerations, the present result—expressed in just two lines (!)—claims a strengthening that encompasses essentially all works stemming from Radon’s foundational 1917 paper up to the present day, including the theoretical foundations of the devices developed by A. Cormack and G. Hounsfield, who were awarded the Nobel Prize in Medicine in 1979, and indeed all journals across any scientometric scale.

The same statement in an equivalent form:

$$\begin{aligned} f(x) & \stackrel{B}{=} \sum_{k=1}^N R^{-1} f(\xi_k) R(\Phi(y - \xi_k))(x) + \alpha_N(B) \\ & \left(x \in S^{s-1} \times R^1; B = W_2^{\rho(y) \cdot (y_1^2 + \dots + y_s^2)^{\frac{s-1}{2}}}(S^{s-1} \times R^1) \right) \end{aligned} \quad (*)$$

in the language of fundamental mathematics, this demonstrates a remarkable transition from theory to practice: on the left we have the function $f(x)$ as a “rule f ” (implicit and abstract), according to which each x is assigned a value $f(x)$, while on the right we obtain an explicit formula that approximates $f(x)$ with an error not exceeding $|\alpha_N|$.

In this sense, the explicit formula (*), written as

$$\sum_{k=1}^N R^{-1} f(\xi_k) R(\Phi(y - \xi_k))(x) \stackrel{B}{=} f(x) + \alpha_N(B),$$

represents a statement of the theory of “supervised machine learning”: it enables the computation of the values of the function f at all points x based on the data

$$(\xi_1, Rf(\xi_1)), \dots, (\xi_N, Rf(\xi_N)),$$

with maximal error

$$\sup \{ |\alpha_N(x)| : x \in S^{s-1} \times R^1 \}.$$

Thus, as a computationally theoretical (CT) solution, this framework effectively gives rise to what is now called artificial intelligence.

Practical recommendations of an innovative nature, in the context of automatic response of a computational system to the smoothness of the approximated function, are as follows: according to the mathematical model of the examined object, it is proposed to use direct formulas of computer scanning, in which, based on a prescribed accuracy from the Reconstruction Theorem, the number of nodes at which scanning must be performed is determined. The corresponding formula is thereby transformed into an algorithm that, with the specified accuracy, yields the desired density of the object.

The following table illustrates the transition from the problem of optimal function reconstruction via finite convolution to the reconstruction of the same function via Radon transforms.

1 ⁰ . The Sobolev and Nikolsky–Besov classes — scanning is performed at the nodes of a uniform grid:	
$\frac{1}{n^s} \sum_{\substack{k=(k_1, \dots, k_s) \\ k_j=1, \dots, n \ (j=1, \dots, s)}} f\left(\frac{k}{n}\right) \sum_{\substack{m=(m_1, \dots, m_s) \in \mathbb{Z}^s \\ -n \leq m_j \leq n \ (j=1, \dots, s)}} \exp\left(2\pi i \left(m, y - \frac{k}{n}\right)\right)$	
$\frac{1}{n^s} \sum_{\substack{k=(k_1, \dots, k_s) \\ k_j=1, \dots, n \ (j=1, \dots, s)}} (R^2)^{-1} Rf\left(\frac{k}{n}\right) \sum_{\substack{m=(m_1, \dots, m_s) \in \mathbb{Z}^s \\ -n \leq m_j \leq n \ (j=1, \dots, s)}} \int_{y \in \mathbb{R}_+^{s-1}} \exp\left(2\pi i \left(m, y - \frac{k}{n}\right)\right) dy$	
2 ⁰ . Classes of Korobov, Sobolev, and Nikolsky–Besov–Amanov type—Kairat Sherniyazov grids in the form of a linear combination of Korobov grids.	

$\sum_{\substack{\tau \in \mathbb{Z}_n^s: \\ \tau_j > 0, \ \tau\ < n}} \frac{1}{\det A_{n,\tau}} \sum_{k \in K(n,\tau)} f(k(A_{n,\tau}^{-1})') \sum_{m \in \rho(\tau)} \exp\left(2\pi i(m, y - k(A_{n,\tau}^{-1})')\right)$
$\sum_{\substack{\tau \in \mathbb{Z}_n^s: \\ \tau_j > 0, \ \tau\ < n}} \frac{1}{\det A_{n,\tau}} \sum_{k \in K(n,\tau)} (R^2)^{-1} Rf(k(A_{n,\tau}^{-1})') \sum_{m \in \rho(\tau)} \int_{y \in \mathbb{R}_x^{s-1}} \exp\left(2\pi i(m, y - k(A_{n,\tau}^{-1})')\right) dy$
- Smolyak-type grids generated by the method of tensor products of functionals.
$\sum_{(v_1, \dots, v_s) \in \Omega \subset \mathbb{Z}_{v_0}^s} \frac{1}{2^{v_1 + \dots + v_s}} \sum_{k_1=0}^{2^{v_1}-1} \dots \sum_{k_s=0}^{2^{v_s}-1} f\left(\frac{k_1}{2^{v_1}}, \dots, \frac{k_s}{2^{v_s}}\right) \left\{ \prod_{j=1}^s \sum_{n_j=-2^{v_j-1}}^{2^{v_j-1}} [\lambda_{n_j}^{(v_j)}(j) - \right.$ $\left. - \operatorname{sgn}(v_j - v_j^{(0)}) (1 + (-1)^{k_j}) \lambda_{n_j}^{(v_j-1)}(j) \right] \exp\left(2\pi i n_j \left(y_j - \frac{k_j}{2^{v_j}}\right)\right) \right\}.$
$\sum_{(v_1, \dots, v_s) \in \Omega \subset \mathbb{Z}_{v_0}^s} \frac{1}{2^{v_1 + \dots + v_s}} \sum_{k_1=0}^{2^{v_1}-1} \dots \sum_{k_s=0}^{2^{v_s}-1} (R^2)^{-1} Rf\left(\frac{k_1}{2^{v_1}}, \dots, \frac{k_s}{2^{v_s}}\right) \int_{y \in \mathbb{R}_x^{s-1}} \left\{ \prod_{j=1}^s \sum_{n_j=-2^{v_j-1}}^{2^{v_j-1}} [\lambda_{n_j}^{(v_j)}(j) - \right.$ $\left. - \operatorname{sgn}(v_j - v_j^{(0)}) (1 + (-1)^{k_j}) \lambda_{n_j}^{(v_j-1)}(j) \right] \exp\left(2\pi i n_j \left(y_j - \frac{k_j}{2^{v_j}}\right)\right) \right\} dy$

Quasi–Monte Carlo Method Based on Algebraic Number Theory (S.M. Voronin: “*The Breath of Real Mathematics — from Fermat’s Problem to Quadrature Formulas*”)

The natural problem of approximate integration became particularly relevant during the development of the atomic bomb in the United States, when the American mathematician von Neumann created the method now widely known as the “Monte Carlo method.” Later, the Soviet mathematician N.M. Korobov proposed a new, more computationally efficient number-theoretic approach to this problem. Subsequently, intensive research in this direction was carried out in Germany (E. Hlawka), in China (including Vice-President of the Chinese Academy of Sciences Hua Luogeng and Academician Wang Yuan, who also worked on their country’s nuclear project), as well as by many mathematicians from other countries.

However, despite the efforts of these internationally recognized scientific schools, the problem of constructing an effective algorithm for uniformly distributed grids remained unsolved.

One of the main achievements of N. Temirgaliev (1989) is the solution of this long-standing problem, which resisted the efforts of mathematicians from various countries and was referred to in the American journal *Contemporary Mathematics* as “central in numerical integration,” a status motivated by the rapid development of computer technology:

Which constitutes the desired random multidimensional sequence

$$x_k = \left(x_k^{(1)}, \dots, x_k^{(s)}\right) \quad (k = 1, 2, \dots, N)$$

will be extracted from the Monte Carlo method according to the rule

$$x_k^{(1)} \equiv a_1 k \pmod{N}, \dots, x_k^{(s)} \equiv a_s k \pmod{N},$$

in which, for an unboundedly increasing sequence of positive integers N , a well-defined algorithm is used to compute positive integers $a_1, \dots, a_s$ such that the corresponding s -dimensional sequence defined by $\{\dots\}$ (fractional part), $a = (a_1, \dots, a_s)$)

$$\xi_k(a) = \left(\left\{ \frac{a_1}{N} k \right\}, \dots, \left\{ \frac{a_s}{N} k \right\} \right) \equiv \left(\left\{ a \frac{k}{N} \right\} \right) \quad (k = 1, \dots, N) \quad (*)$$

is uniformly distributed.

Let s be a positive integer. A finite set $\{\eta_k\}_{k=1}^N$ of points in the s -dimensional unit cube $[0,1]^s$ is called a grid, and the points η_k are called its nodes.

The discrepancy (first studied as an independent concept under the term “dispersion of intensity”; the introduction of the term itself is attributed to van der Corput) of a grid $\{\eta_k\}_{k=1}^N \subset [0,1]^s$ is defined as the quantity

$$D_s(\eta_1, \eta_2, \dots, \eta_N) = \sup \left\{ \left| \frac{G_J}{N} - \frac{|J|}{1} \right| = \left| \frac{1}{N} \sum_{k=1}^N \chi_J(\eta_k) - \prod_{j=1}^s (b_j - a_j) \right| : J = \prod_{j=1}^s [a_j, b_j] \subset [0,1]^s \right\}$$

where J is a parallelepiped in $[0,1]^s$ with sides parallel to the coordinate axes, $|J|$ is its s -dimensional volume, G_J is the number of points among $\eta_1, \dots, \eta_N$ that lie in J , and $\chi_B(x)$ is the characteristic function of the set B .

The discrepancy is a quantitative measure of the deviation of the ratio G_J/N of grid points $\eta_1, \dots, \eta_N$ lying in a box J from the ideal distribution $\frac{|J|}{1}$, expressed as the ratio of the measure of J to the measure of the entire unit cube. In this way, it allows one to quantitatively distinguish “good” distributions from “bad” ones.

A sequence of grids $\{\eta_k^{(N_t)}\}_{k=1}^{N_t} \subset [0,1]^s$, where $\{N_t\}_{t=1}^\infty$ is a sufficiently dense increasing sequence of positive integers (growing no faster than a polynomial rate), is called uniformly distributed on $[0,1]^s$ if, for some positive constants $c(s)$ and $\beta(s)$, and for all $t \geq 1$, the inequality holds:

$$D_s \left(\eta_1^{(N_t)}, \eta_2^{(N_t)}, \dots, \eta_{N_t}^{(N_t)} \right) \leq c(s) \frac{\ln^{\beta(s)} N_t}{N_t}.$$

Let us turn to the construction of grids. In 1959, N.M. Korobov proved that for any positive integer N , there exist integers $a_1, \dots, a_s$, coprime with N , such that the grid (*) corresponding to these numbers is uniformly distributed. Later, grids of type

(*) were rediscovered in 1962 by E. Hlawka from different considerations, and the application of divisor theory also leads to the same class of grids.

The theoretical and practical interest in constructing grids of type (*) is explained, in particular, by the following fact. In the general case, storing a grid of size N requires sN real numbers.

A key advantage of grids of type (*) is that they are completely determined— independently of the value of N —by specifying $s + 1$ integers

$$(N, a_1(N), \dots, a_s(N)) \in \mathbb{Z}^{s+1},$$

and can be generated with approximately $\asymp N$ elementary arithmetic operations. Moreover, each coordinate of every grid point is a simple fraction with a relatively small denominator N .

For example, in dimension $s = 10$ and with a grid size $N = 10^6$, the amount of data required to store the grid in computer memory is $sN = 10^7$ numbers, whereas in the case of a grid of type (*), storage and representation require only $s + 1 = 11$ integers (independently of the number of nodes N). Thus, for uniformly distributed grids of type (*), which, following S.M. Nikolsky's suggestion, we refer to as a “Korobov grid,” one deals with an extreme compression of information from volume sN down to $s + 1$, and consequently with extremely efficient storage in computer memory.

Let $l \geq 3$ – prime number, $\theta = \cos \frac{2\pi}{l} + i \sin \frac{2\pi}{l} = e^{i\frac{2\pi}{l}}$ and let

$$N(m) = \prod_{k=1}^s (m_1 + m_2 \theta^k + \dots + m_s \theta^{(s-1)k}),$$

where $s = l - 1$, $m = (m_1, \dots, m_s) \in \mathbb{Z}^s$.

Algorithm for constructing uniformly distributed grids:

Theorem A (E.A. Bailov, M.B. Sihov, N. Temirgaliev; *Journal of Computational Mathematics and Mathematical Physics*, 2014, Vol. 54, No. 7, pp. 1059–1077). Let $l = s + 1 \geq 3$ be a prime number and $r > 1$. Let $R > 1$ be given and

$$E = \Gamma_R \equiv \{m = (m_1, \dots, m_s) \in \mathbb{Z}^s : \bar{m}_1 \cdot \dots \cdot \bar{m}_s \leq R\},$$

$$\bar{m}_j = \max\{1, |m_j|\} \quad (j = 1, \dots, s).$$

Then there exist a prime p , $p \equiv 1 \pmod{l}$, $p \leq c(s)R^l n^s$, $R \equiv T$, and a positive integer a , with $(a, p) = 1$ and $a^{(p-1)/l} \not\equiv 1 \pmod{p}$, which can be found according to the algorithm consisting of the following steps:

Step 1. Compute

$$K(E) = \prod_{m \in E} N(m);$$

Step 2. Using the sieve of Eratosthenes, find all prime numbers p in the interval $(1, 18s \ln K(E))$;

Step 3. By direct checking of each prime p , with $p \equiv 1 \pmod{l}$, $p \in (1, 18s \ln K(E))$, find such a p that does not divide $K(E)$;

Step 4. Find an integer a such that

$$a^{(p-1)/l} \not\equiv 1 \pmod{p}.$$

It is sufficient to perform a finite number of elementary arithmetic operations such that for

$$\xi_k(a) = \left(\frac{k}{p}, \left\{ \frac{k}{p} a^{\frac{p-1}{l}} \right\}, \dots, \left\{ \frac{k}{p} a^{\frac{p-1}{l}(s-1)} \right\} \right) (k = 1, \dots, p)$$

the following relation holds

$$D_s(\xi_1(a), \dots, \xi_p(a)) << \frac{\ln^{2s} T}{T}.$$

However, implementing this algorithm is rather labor-intensive. Therefore, we turn to computational experiments to construct the grid $\{\xi_k(a)\}_{k=1}^p$.

Let us set

$$b_r(x) = \sum_{m=(m_1, \dots, m_s) \in \mathbb{Z}^s} (\bar{m}_1 \dots \bar{m}_s)^{-r} e^{2\pi i(m_1 x_1 + \dots + m_s x_s)},$$

for $r > 1$ and $\bar{m}_j = \max\{1, |m_j|\}$, $j = 1, \dots, s$.

Theorem B (M.B. Sihov, N. Temirgaliev; *Mathematical Notes*, 2010, Vol. 87, No. 6, pp. 948–950) is valid. For given $r > 1$ and $s = 1, 2, \dots$, there exist positive constants c_1, c_2, c_3, β_1 , and β_2 such that for any positive integer p and any integer vector $(a_1, \dots, a_s)$, the inequality

$$c_3(s) \frac{(\ln p)^{\frac{s-1}{2}}}{p} \leq D_s \left[\left\{ \left(\frac{a_1}{p} k, \dots, \frac{a_s}{p} k \right) \right\}_{k=1}^p \right] \leq c_1(s) \frac{(\ln p)^{\beta_1(s)}}{p}$$

is satisfied if and only if

$$\left| \frac{1}{p} \sum_{k=1}^p b_r \left(\frac{a_1}{p} k, \dots, \frac{a_s}{p} k \right) - 1 \right| \leq c_2(s) \frac{(\ln p)^{\beta_2(s)}}{p}.$$

It follows that in cases where the function $b_r(x)$ can be represented as an elementary function—such cases include positive integer values of r —the establishment of the uniform distribution of the grid reduces to showing that

$$\left(\frac{k}{p}, \left\{ \frac{a^{\frac{p-1}{l}}}{p} k \right\}, \dots, \left\{ \frac{a^{\frac{p-1}{l}(s-1)}}{p} k \right\} \right) (k = 1, 2, \dots, p)$$

reduces to the computation of the quantity

$$\Delta(s, r, a, p) \equiv \left| 1 - \frac{1}{p} \sum_{k=1}^p b_r \left(\frac{k}{p}, \left\{ \frac{a^{\frac{p-1}{l}}}{p} k \right\}, \dots, \left\{ \frac{a^{\frac{p-1}{l}(s-1)}}{p} k \right\} \right) \right|,$$

where the function $b_r(x)$, for positive integer r , is the Bernoulli polynomial.

Let us list the functions $b_r(x)$

for $r = 4$:

$$\sum_{m=(m_1, \dots, m_s) \in Z^s} (\overline{m_1} \dots \overline{m_s})^{-4} e^{2\pi i(m, x)} = \prod_{j=1}^s \left[1 + \frac{\pi^4}{45} - \frac{2\pi^4}{3} x_j^2 (1 - x_j)^2 \right],$$

for $r = 6$:

$$\sum_{m=(m_1, \dots, m_s) \in Z^s} (\overline{m_1} \dots \overline{m_s})^{-6} e^{2\pi i(m, x)} = \prod_{j=1}^s \left[1 + \frac{(2\pi)^6}{6!} \left(\frac{1}{42} - \frac{1}{2} x_j^2 + \frac{5}{2} x_j^4 - 3x_j^5 + x_j^6 \right) \right]$$

for $r = 8$:

$$\sum_{m=(m_1, \dots, m_s) \in Z^s} (\overline{m_1} \dots \overline{m_s})^{-8} e^{2\pi i(m, x)} = \prod_{j=1}^s \left[1 + \frac{(2\pi)^8}{8!} \left(\frac{1}{30} - \frac{2}{3} x_j^2 + \frac{7}{3} x_j^4 - \frac{14}{3} x_j^6 + 4x_j^7 - x_j^8 \right) \right]$$

for $r = 10$:

$$\begin{aligned} & \sum_{m=(m_1, \dots, m_s) \in Z^s} (\overline{m_1} \dots \overline{m_s})^{-10} e^{2\pi i(m, x)} = \\ & = \prod_{j=1}^s \left[1 + \frac{(2\pi)^{10}}{10!} \left(\frac{5}{66} - \frac{3}{2} x_j^2 + 5x_j^4 - 7x_j^6 + \frac{15}{2} x_j^8 - x_j^9 + x_j^{10} \right) \right]. \end{aligned}$$

The results of our computational experiments are presented in a table, where p is the number of nodes, and a is an integer such that $(a, p) = 1$ and $a^{(p-1)/l} \not\equiv 1 \pmod{p}$.

The computations are organized in the following order.

Given a prime $l = s + 1 \geq 3$ and an integer $r \geq 2$, the prime numbers p satisfying $p \equiv 1 \pmod{l}$ are listed in increasing order. From them, values of p are selected successively, and for each such p , a positive integer $a = a(p, s)$ is found such that

$$a^{(p-1)/l} \not\equiv 1(\text{mod } p).$$

For the obtained number $a = a(p, s)$, positive integers $a_2 = a_2(a, p, s), \dots, a_s = a_s(a, p, s)$ are defined by $a_t \equiv a^{(p-1)/l(t-1)}(\text{mod } p), 1 \leq a_t < p, t = 2, \dots, s$, with $a_1 \equiv 1$. Then the quantities $\Delta \equiv \Delta(s, r, p, a) = \beta_p 10^{-\tau}, 1 \leq \beta_p < 10$ are computed.

The quantities $\Delta(s, r, p, a)$ are divided into groups with the same index τ ($\tau = "1, 2, \dots"$), from which the values of the coefficients $a_2, \dots, a_s$ are extracted into the resulting table. These correspond to the cases with the smallest number of nodes p and the smallest error Δ .

In the table, the coefficients are numbered sequentially row by row. The parameter a is placed in the second column (the first column is reserved for the number of nodes p), the coefficient a_2 in the third column, and so on up to the case of s variables. The cases $s = 6, s = 10$, and $s = 12$ are presented in Tables 1–3.

Table 1 – Values of $a_2, \dots, a_s$ and the quantities $\Delta(s, r, p, a)$ for $s = 6$

p	a	a_2	a_3	a_4	a_5	a_6	$\Delta(s, r, p, a)$	
							$r = 4$	$r = 6$
379	2	125	86	138	195	119	7.6E-01	1.4E-01
421	2	359	18	176	324	25	5.9E-01	1.1E-01
449	2	359	18	176	324	25	5.7E-01	1.1E-01
463	2	118	34	308	230	286	5.4E-01	1.1E-01
1009	2	105	935	302	431	859	9.3E-02	5.6E-03
...	...	...	...	...	...	...	...	...
75209	2	66662	23270	39115	63309	26732	9.8E-07	1.2E-10
94207	2	13212	85580	10546	1599	23620	8.5E-07	1.6E-10
109537	2	99712	28528	17583	96411	37901	3.3E-07	2.5E-11
215503	2	57262	58499	206609	160864	149639	7.2E-08	2.7E-12
243671	2	135142	218714	155088	28773	182619	5.2E-08	1.9E-12
476981	2	8824	115073	388584	325788	465806	8.1E-09	1.3E-13
501019	2	130214	200798	32219	332779	353434	8.7E-09	1E-13
965189	2	863106	758445	225078	651860	166036	9.1E-10	3.9E-15

Table 2 – Values of $a_2, \dots, a_s$ and the quantities $\Delta(s, r, p, a)$ for $s = 10$

p	a	$a_2, \dots, a_{10}$	$\Delta(s, r, p, a)$		
			$r = 4$	$r = 6$	$r = 8$
23231	2	690,9680,9394,21943, 5341,572,21544,9883,9538	7,1E-01	3.9E-02	3.3E-03
25873	2	16747,24562,10860,11103, 18563,10466,10400,17637,671	8.5E-01	5.7E-02	5E-03
28183	2	18418,12136,1475,26321,	6.5E-01	4.2E-02	3.7E-03

		4395,5534,15484,535,17763			
29569	2	4699,22127,10169,627, 18942,5768,18628,8732,19465	6.1E-01	3.7E-02	3E-03
117833	2	14328,26498,5418,94990, 45570,14307,79109,38125,99045	9.3E-02	3.6E-03	2E-04
298651	2	230692,86617,6507,92918, 62382,231258,147802,52965,192068	9.8E-03	9E-05	1.1E-06
311323	2	275448,6343,21988,72982, 308503,298848,169474,258440,286586	9E-03	7.1E-05	7.5E-07
347887	2	103500,113496,83558,130067, 99148,195161,148506,27566,59713	9.8E-03	1.2E-04	2.1E-06

Table 3 – Values of $a_2, \dots, a_s$ and the quantities $\Delta(s, r, p, a)$ for $s = 12$

p	a	$a_2, \dots, a_{12}$	$\Delta(s, r, p, a)$		
			$r = 4$	$r = 6$	$r = 8$
232961	2	171101,42214,134770,103107,40199,148535, 72662,111175,189142,142105,168035	5E-01	2.2E-02	1.6E-03
246247	2	77327,95275,112179,168711,241931,167600, 25590,203285,241950,159331,112086	7.5E-01	3.6E-02	2.6E-03
251057	2	136464,19264,24649,39450,89549,15261, 59289,157,85003,11764,104038	8.3E-01	4.5E-02	3.4E-03
251707	2	44381,65886,6347,26074,93115,11289, 120179,244576,166495,103903,46803	9.3E-01	5.1E-02	3.5E-03
255763	2	211008,129972,176812,86160,47951,60328, 110351,24525,118421,244794,108398	8.6E-01	5.3E-02	4.6E-03
258337	2	257215,225536,118868,190333,91073,117546, 123595,53379,42946,123607,39915	8E-01	4.7E-02	4.2E-03

in a more detailed exposition on pages 44–66 of the journal issue

Temirgaliyev N. K voprosu o nauchno-issledovatel'skoi i nauchno-metodologicheskoi otchetnosti i kontrole [On the Issue of Research and Scientific-Methodological Reporting and Oversight], Vestnik Evraziiskogo natsional'nogo universiteta imeni L.N. Gumileva. Seriya Matematika. Komp'yuternye nauki. Mekhanika [Bulletin of L.N. Gumilyov Eurasian National University. Mathematics, Computer Science, Mechanics Series]. 2026. Vol. 153. № 4. P. 6–91.

By this, we wished once again to emphasize that assigning the Journal the Web of Science Q1 category would constitute genuine support for the development of Kazakhstan in the fields represented by the Series Mathematics, Computer Science, and Mechanics.

As can be seen from the Journal's published articles, the authors of the solved problems of international significance and of the “Key Articles of the Journal Issue”

are, at present, exclusively staff members of the Research Institute affiliated with L.N. Gumilyov Eurasian National University — namely, the Institute of Theoretical Mathematics and Scientific Computations (IThM&SC). Therefore, granting the Journal's request would represent substantial administrative support for the stated goal of advancing Mathematics, Computer Science, and Mechanics in Kazakhstan, elevating them to the level of international science in the format of the “Feature Article of the Journal Issue,” with the participation of specialists from other scientific institutions both within and outside the country. The Editorial Board of the Journal systematically appeals to many such domestic and foreign researchers for cooperation. Moreover, the presence of high scientometric indicators for the Journal would attract researchers from the international scientific community to submit “Key Articles of the Journal Issue,” since every researcher with breakthrough results understands the difficulties accompanying the publication of fundamentally new ideas.

In conclusion, we note that the “Feature Article of the Journal Issue,” although not formally designated under this heading, had effectively existed since the very foundation of the journal under the title “Bulletin of the Eurasian University,” and later “Bulletin of L.N. Gumilyov Eurasian National University,” before its division into separate series, through the publication of the following works:

Temirgaliev N. Teoretiko-chislovye metody i teoretiko-veroyatnostnyi podkhod k zadacham analiza. Teoriya vlozhenii i priblizhenii, absolyutnaya skhodimost' i preobrazovaniya ryadov Fur'e [Number-theoretic methods and a probabilistic approach to problems of analysis. Embedding and approximation theory, absolute convergence and transformations of Fourier series], Vestnik Evraziiskogo universiteta [Bulletin of the Eurasian University]. 1997. No. 3. P. 90-144.

Temirgaliev N. Komp'yuternyi (vychislitel'nyi) poperechnik. Algebraicheskaya teoriya chisel i garmonicheskii analiz v zadachakh vosstanovleniya (metod Kvazi-Monte Karlo). Teoriya vlozhenii i priblizhenii. Ryady Fur'e [Computer (computational) width. Algebraic number theory and harmonic analysis in reconstruction problems (the quasi-Monte Carlo method). Embedding and approximation theory. Fourier series], Vestnik Evraziiskogo natsional'nogo universiteta im. L. N. Gumileva. Spets. vypusk, posvyashchenniy nauchnym dostizheniyam matematikov ENU im. L. N. Gumileva [Bulletin of the L.N. Gumilyov Eurasian National University. Special issue dedicated to the scientific achievements of mathematicians of the L.N. Gumilyov Eurasian National University]. 2010. P. 1-194.

3. Science as a body of reliable exploratory knowledge.

The multidisciplinary journal «Bulletin of L.N. Gumilyov Eurasian National University. Mathematics, Computer Science, Mechanics Series» publishes original research papers containing new scientific results in Mathematics, Computer Science, and Mechanics, without any restrictions regarding research areas or fields, provided that all Journal requirements are satisfied. Particular attention is given to results of a definitive character, both within a specific specialization and in terms of their fundamental significance. Special emphasis is placed on new original problem formulations accompanied by illustrative supporting results, with the prospect of further development and activation in various directions.

The journal «Bulletin of L.N. Gumilyov Eurasian National University. Mathematics, Computer Science, Mechanics Series» also publishes articles at the intersection of Mathematics and Computer Science, including general recovery problems and works describing various Mathematical models. In this context, the Journal adheres to the principle of smoothness of the considered objects, ranging from finitely differentiable and analytic cases to completely non-smooth ones, accompanied by the construction of new mathematical structures endowed with certain analogues of developed topologies. Mechanics is considered within the same criteria.

3.1. Standard sections of the Journal. *The Journal accepts for consideration, without restrictions, articles in all major areas of theoretical and applied research*, which include mathematical analysis, function theory, functional analysis, algebra, geometry, topology, differential equations, partial differential equations, probability theory, stochastic processes, mathematical statistics, optimal control, number theory, mathematical logic, theory of algorithms, discrete mathematics, computational mathematics, the probabilistic approach to problems of analysis; computer graphics and visualization, computer security, computer vision and pattern recognition, digital education, software, theoretical computer science, databases and data mining, the gaming industry and software engineering, natural language processing, artificial intelligence, machine learning, soft computing—fuzzy systems, signal processing, and others; theoretical mechanics, applied mechanics and motion control, hydrodynamics, aeromechanics, gas and wave dynamics, elasticity theory, plasticity theory, and mechanics of composites.

The topics of articles published in the Journal cover a wide range of problems using research methods from various areas of mathematics, including algebraic number theory, probability theory, general measure theory, complexity theory, mathematical analysis, functional analysis, complex analysis, approximation theory, computational mathematics, the theory of trigonometric and orthogonal series, embedding theory, and others. Let us list some topics and directions of the published articles: multidimensional and infinite-dimensional problems, inverse and ill-posed problems, machine learning, the Monte Carlo and quasi-Monte Carlo methods, multidimensional numerical integration and differentiation, noisy data, numerical analysis, optimization, scientific computing, solvability of multidimensional problems, approximation theory, compressed computing, discrete problems, differential equations, artificial intelligence, computer science, pattern recognition, distributed computing, mechanics of mechanisms, and continuum mechanics. This also includes articles proposing new computational aggregates that arise in solving various optimization problems with service support in the form of admissible limits of computational errors of information functionals, preserving the orders of reconstruction errors with respect to exact information.

3.2. “Key Article of the Journal Issue” is devoted to a specific topic or direction based on new problem formulations with new solution methods, with the possibility of stimulating further new research, without any restrictions on volume

and format of presentation. This represents one of the forms of implementing scientific support through “providing the Journal’s scientific platform for consolidating new ideas in the international space through detailed presentation and their discussion”. The Journal has published 21 such articles with a total volume of 650 pages, the most recent of which is “Inverse $K(B)P$ as a direct formula-based solution (without neural networks) of an AI/ML problem for any smooth mathematical model, with the idea of further continuation through the creation of new mathematical structures for non-smooth problems with their own ‘topologies’.”

Within the framework of the Journal’s long-term plans, other topics and directions not yet covered in the section “Key Article of the Journal Issue” are awaiting their turn:

Direction 1. Computational (numerical) diameter ($C(N)D$) as a synthesis of the known and the new in Approximation Theory, Computational Mathematics, and Numerical Analysis, which, according to K. Fletcher, “includes as its constituent parts the formulation of the problem, mathematical analysis, the construction of an algorithm, and the refinement of a computer program so that it produces results.”

Topic 2. Classes (and spaces) of functions, which, in the words of A.N.Kolmogorov, solves the problem of “there are many of us,” that is, providing publication opportunities for “many.”

Direction 3. Mathematical tools of direct application: algebraic number theory combined with harmonic analysis in problems of numerical integration and the theory of random numbers.

Direction 4. Mathematical tools of direct application: tensor products of functionals combined with harmonic analysis in problems of numerical analysis, function reconstruction, and discretization of solutions of partial differential equations based on the values of initial and boundary conditions at points.

Direction 5. Irregular distributions and the quasi-Monte Carlo method as, according to K. Roth, promising research directions in mathematics and computer science of the 21st century with extensive applications.

Topic 6. Function reconstruction in the context of $C(N)D$.

Topic 7. Numerical differentiation of functions in the context of $C(N)D$.

Topic 8. Discretization of solutions of partial differential equations in the context of $C(N)D$.

Direction 9. Probabilistic approach to problems of Analysis: construction of probability measures on classes of functions.

Topic 10. Probabilistic approach to problems of Analysis: errors of numerical integration methods “on average” with respect to probability measures on classes of functions.

Topic 11. Probabilistic approach to problems of analysis: errors of function reconstruction methods and discretization of solutions of partial differential equations “on average” with respect to probability measures on classes of functions.

Direction 12. Embedding and approximation theory: solved and unsolved problems.

Topic 13. Fourier series: transformations of coefficients and summation.

Direction 14. Kolmogorov prewidth.

Topic 15. Morrey theory not as “trivial generalizations by replacing the Lebesgue norm with the Morrey norm”.

Direction 16. Discrete and fast “algebraic” Fourier transforms.

Direction 17. Random number generators in the context of new formulas of discrete “algebraic” Fourier transforms. Generation of Lehmer random numbers with maximal period according to the Covey–MacPherson requirements and their extensive applications.

Direction 18. “Geometry of numbers” in the context of algebraic number theory.

Direction 19. The Galerkin method and new theoretical developments with subsequent applications in the context of its inherent vulnerability.

Direction 20. C(N)D: analysis of infinitely smooth functions.

Direction 21. The Radon transform in the context of the equivalence of Computer Tomography and Computer (computational) width.

Topic 22. Oscillation theory and its applications in the context of the method of tensor products of functionals.

Direction 23. Reconstruction of continuous functions by polynomials with respect to an orthonormal system, with coefficients being values of the approximated function at points and with error expressed via Fourier coefficients with respect to the orthonormal system.

Direction 24. Inverse C(N)D as a direct formula-based solution (without neural networks) of an AI/ML problem for any smooth mathematical model, with the idea of further continuation through the creation of new mathematical structures for non-smooth problems with their own “topologies”.

3.3. The Journal has published authorial solutions to four problems in Mathematics and Computer Science. The journal “Bulletin of the L.N. Gumilyov Eurasian National University. Mathematics, Computer Science, Mechanics Series” publishes specialized studies in each of its scientific sections, distinguished by fundamental and innovative discoveries that expand the understanding of deep ideas in Mathematics, Computer Science, Artificial Intelligence (AI), and Machine Learning (ML). Their numerous applications confirm the principle that there is nothing more practical than a good theory.

The types of fundamental scientific novelty represented in the Journal, briefly outlined at the level of “two years of study at a faculty of the physical and mathematical sciences,” may be viewed as follows.

The first type is the development of ideas from mathematically well-formulated models toward intuitively and practically clear problems, accompanied by the creation of new Mathematical structures based on a critical analysis of the corresponding technologies.

The second type is a clearly formulated key problem whose solution presupposes an equally precise formulation.

The third type is a clearly formulated theoretical problem with a history of more than a century and universal practical applications, yet without any characterization of possible final solutions.

The fourth type consists of new unifying research schemes for developed topics and directions, supplemented by further continuations, in the context (at a considerable distance “from below”) of the position of A. N. Kolmogorov: “I am reproached for being a mathematician without theorems, who never proves anything. One who is much better at posing problems than solving them, but I believe this may indeed be true, and that it is not a deficiency, but rather a compliment.”

Proceeding to expanded formulations of the four aforementioned authorial solutions, we note that the first three have already been presented above in Section 2; therefore, we shall limit ourselves here to their titles and turn to the fourth and final one.

This entire formulation is called the **Computational (Numerical) Diameter (C(N)D)** and is divided into three sequential tasks:

C(N)D-1. Reconstruction from exact information, depending on the type of functionals and algorithms for processing the numerical information obtained from them, encompasses all known approximation theory, numerical analysis, computational mathematics, and function theory – Fourier series, bases.

C(N)D-2. In the optimal computational aggregate, the values of the informational functionals can be replaced by nearby values while maintaining optimality. The search for the largest such deviations forms an independent problem of finding extremal errors – a new optimization problem.

C(N)D-3. There exists, or does not exist, another computational aggregate with a structure analogous to that of the considered optimal computational aggregate, and perhaps even more general, but with a larger order of extremal error.

The *C(N)D* problem is historically and substantively presented in full detail in the articles

Temirgaliyev N., Zhubanysheva A.Zh. Teoriya priblizheniy, Vychislitel'naya matematika i Chislennyy analiz v novoy kontseptsii v svete Komp'yuternogo (vychislitel'nogo) poperechnika [Approximation Theory, Computational Mathematics and Numerical Analysis in new conception of Computational (Numerical) Diameter], Vestnik Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva. Seriya Matematika. Informatika. Mekhanika [Bulletin of L.N. Gumilyov Eurasian National University. Mathematics, computer science, mechanics series]. 2018. Vol. 124. \No 3. P. 8-88.

Temirgaliyev N., Zhubanisheva A.Zh. Computational (Numerical) Diameter in a Context of General Theory of a Recovery, Russian Mathematics. 2019. Vol. 63. \No 1. P. 79-85.

The problem of recovery from exact information (*C(N)D-1*) has been known and developed over many decades in numerous publications with various notations. These works include those by A. Sard, S.M. Nikolsky, N.S. Bakhvalov, I. Babushka and S.L. Sobolev, C.A. Mitchell and T. J. Ravlin, J.F. Traub, G. Vasilkovsky, and H. Wozniakovsky, A. Pincus, V.N. Temlyakov, N.P.Korneichuk, E. Novak, H. Vozhnyakovsky, J. Vibiral, B. Kashin, E. Kosov, I. Limonova, V. Temlyakov, and many others.

Regarding recovery from inexact information, the publications can be divided into three groups: the first group includes works by N. Temirgaliev and co-authors; the second group – by V.M. Tikhomirov, G.G. Magaril-Ilyaev, K.Y. Osipenko, A.G. Marchuk and co-authors; and the third group – by J. Traub, H. Vozhnyakovsky, L. Plaskota and co-authors. These groups differ not only in their problem statements but also, interestingly, in the terminology used for essentially the same mathematical objects, and consequently in the formulation of results. The problem of recovery from inexact information in the context of the second and third parts (C(N)D-2 and C(N)D-3) represents a new development.

The next lower bound, obtained for all possible computational aggregates constructed from arbitrary linear information $l_1(f), \dots, l_N(f)$ and processed according to the algorithm $\varphi_N(z_1, \dots, z_N; \cdot)$, without any restrictions except for natural ones

$$\inf_{\substack{l_1, \dots, l_N - \text{все возможные} \\ \text{линейные функционалы}; \varphi_N}} \sup_{f \in W_p^r(0,1)^s} \|f^{(\alpha_1, \dots, \alpha_s)}(\cdot) - \varphi_N(l_1(f), \dots, l_N(f); \cdot)\|_{L^q(0,1)^s} \\ \gg \begin{cases} N^{-\frac{r}{s} + \frac{\alpha_1 + \dots + \alpha_s}{s} + (\frac{1}{p} - \frac{1}{q})}, & \text{если } 2 \leq p \leq q \leq \infty, \\ N^{-\frac{r}{s} + \frac{\alpha_1 + \dots + \alpha_s}{s} + \frac{1}{2} - \frac{1}{q}}, & \text{если } 1 \leq p < 2 \leq q \leq +\infty, \\ N^{-\frac{r}{s} + \frac{\alpha_1 + \dots + \alpha_s}{s}}, & \text{если } 1 \leq p \leq q < 2 \end{cases}$$

allows the widely developed C(N)D-1 problem, with its separately studied cases, to be unified into a single framework through upper bounds that encompass the known diameters of Kolmogorov, Korneichuk, Tikhomirov, Temlyakov, etc., and approximation problems – Fourier-Lebesgue series over all possible orthonormal systems and their means, various bases and frames. This also covers actively researched topics of recent years, including wavelet systems and greedy algorithms.

The C(N)D formulation in three tasks will be illustrated using the example of Numerical Differentiation in one (out of three possible) case $2 \leq p \leq q \leq \infty$, $r > \alpha_1 + \dots + \alpha_s + s \left(\frac{1}{p} - \frac{1}{q} \right)$, $N = 2^{ns}$ ($n = 1, 2, \dots$), where the function $(\alpha_1, \dots, \alpha_s)$ – derivatives are defined in the sense of Weyl.”

$$\text{C(N)D-1: } \delta_N(0; L_N(W_p^r(0,1)^s) \times \{\varphi_N\}_{L^q(0,1)^s})_{L^q(0,1)^s} \equiv \\ \equiv \inf_{\substack{l_1, \dots, l_N - \text{все возможные} \\ \text{линейные функционалы}; \varphi_N}} \sup_{f \in W_p^r(0,1)^s} \|f^{(\alpha_1, \dots, \alpha_s)}(\cdot) - \varphi_N(l_1(f), \dots, l_N(f); \cdot)\|_{L^q(0,1)^s} \\ \gg N^{-\frac{r}{s} + \frac{\alpha_1 + \dots + \alpha_s}{s} + (\frac{1}{p} - \frac{1}{q})},$$

Here, the optimal (non-improvable) order of recovery from exact information has been obtained.

C(N)D -2: For $(\alpha_1, \dots, \alpha_s)$ derivative of the partial sum of Fourier-Lebesgue series

$$\bar{\varphi}(\{\hat{f}(m)\}_{m \in I_n}; x) \equiv S_N^{(\alpha_1, \dots, \alpha_s)}(f; x) = \sum_{\substack{m=(m_1, \dots, m_s) \in \mathbb{Z}^s: \\ |m_j| \leq 2^n (j=1, \dots, s)}} \hat{f}(m) \prod_{j=1}^s (e^{2\pi i m_j x_j})^{(\alpha_j)}$$

the value $\tilde{\varepsilon}_N \equiv \tilde{\varepsilon}_N(\Phi_N) \equiv \tilde{\varepsilon}_N(\Phi_N(W_p^r) \times \{\varphi_N\}_{L^q(0,1)^s}) = N^{-\frac{r}{s} - (1 - \frac{1}{p})}$ is the limiting error:

Firstly,

$$\begin{aligned} & \delta_N(0; L_N(W_p^r(0,1)^s) \times \{\varphi_N\}_{L^q(0,1)^s})_{L^q(0,1)^s} \succ \prec \\ & \succ \prec \delta_N(\tilde{\varepsilon}_N(\Phi_N) = N^{-\frac{r}{s} - (1 - \frac{1}{p})}; L_N(W_p^r(0,1)^s) \times \{\varphi_N\}_{L^q(0,1)^s})_{L^q(0,1)^s} \equiv \\ & \equiv \inf_{\substack{l_1, \dots, l_N - \text{all possible} \\ \text{linear functionals}; \varphi_N}} \sup \left\{ \left\| f^{(\alpha_1, \dots, \alpha_s)}(\cdot) - \varphi_N(l_1(f) + \gamma_N^{(1)} \tilde{\varepsilon}_N, \dots, l_N(f) + \gamma_N^{(N)} \tilde{\varepsilon}_N; \cdot) \right\|_{L^q(0,1)^s} : f \right. \\ & \quad \left. \in W_p^r(0,1)^s, |\gamma_N^{(\tau)}| \leq 1 (\tau = 1, \dots, N) \right\} \succ \prec \\ & \succ \prec \delta_N(\tilde{\varepsilon}_N(\Phi_N) = N^{-\frac{r}{s} - (1 - \frac{1}{p})}; S_N^{(\alpha_1, \dots, \alpha_s)}(f; x))_{L^q(0,1)^s} \equiv \\ & \equiv \sup_{\substack{f \in W_p^r(0,1)^s \\ |\gamma_N^{(\tau)}| \leq 1 (\tau=1, \dots, N)}} \left\| f^{(\alpha_1, \dots, \alpha_s)}(x) - \sum_{\substack{m=(m_1, \dots, m_s) \in \mathbb{Z}^s: \\ |m_j| \leq 2^n (j=1, \dots, s)}} (\hat{f}(m) + \gamma_N^{(m)} \tilde{\varepsilon}_N) \prod_{j=1}^s (e^{2\pi i m_j x_j})^{(\alpha_j)} \right\|_{L^p(0,1)^s} \succ \prec \\ & \succ \prec N^{-\frac{r}{s} + \frac{\alpha_1 + \dots + \alpha_s}{s} + (\frac{1}{p} - \frac{1}{q})}. \end{aligned}$$

secondly, for any increasing to $+\infty$ positive sequence $\{\eta_N\}_{N=1}^{+\infty}$ there is the equality

$$\lim_{N \rightarrow \infty} \frac{\delta_N \left(\eta_N \tilde{\varepsilon}_N; \sum_{\substack{m=(m_1, \dots, m_s) \in \mathbb{Z}^s \\ |m_j| \leq 2^n (j=1, \dots, s)}} \hat{f}(m) \prod_{j=1}^s (e^{2\pi i m_j x_j})^{(\alpha_j)} \right)_{L^q(0,1)^s}}{\delta_N(0; L_N(W_p^r(0,1)^s) \times \{\varphi_N\}_{L^q(0,1)^s})_{L^q(0,1)^s}} = +\infty.$$

Here, the exact order of the maximal error in computing the information functionals has been determined, while preserving the non-improvable orders of recovery from exact information (depending, we emphasize, on the optimal computational aggregate in C(N)D-1, of which there may be more than one).

C(N)D-3: Any computational aggregate $\varphi_N(\hat{f}(m^{(1)}), \dots, \hat{f}(m^{(N)}); x)$ constructed

by trigonometric Fourier coefficients with an arbitrary spectrum of N harmonics cannot have a limiting error larger (by order) than the limiting error of $S_N^{(\alpha_1, \dots, \alpha_s)}(f; x)$:

for any positive sequence increasing to $+\infty$ the following equality is fulfilled

$$\lim_{N \rightarrow \infty} \frac{\delta_N(\eta_N \tilde{\varepsilon}_N; \varphi_N(\hat{f}(m^{(1)}), \dots, \hat{f}(m^{(N)}); x))_{L^q(0,1)^s}}{\delta_N(0; L_N(W_p^r(0,1)^s) \times \{\varphi_N\}_{L^q(0,1)^s})_{L^q(0,1)^s}} = +\infty.$$

Here, the question is addressed whether one can switch to another computational aggregate while achieving order improvements in both recovery speed and maximal error, with the answer being negative.

The approach follows the principle of smoothness of the considered objects, ranging from finitely differentiable and analytic ones to completely non-smooth cases, accompanied by the construction of new mathematical structures endowed with certain analogues of developed topologies.

4. Methodology. The journal publishes scientific and methodological articles of direct practical application on all topics within the specialties of Mathematics, Computer Science, and Mechanics, as well as reviews of published educational materials in these fields.

The journal in school mathematical education pursues the goal of achieving «Mathematical maturity», the implementation project of which is presented in the article ‘Kazakh mathematical fairness in school education – equal conditions for everyone in textbooks and teachers’.

The journal in university mathematical education pursues the goal of achieving «Understanding mathematics», in which Mathematical Analysis plays the central role; a number of articles are devoted to the organization of the process of obtaining fundamental education.

4.1. Articles of methodological content.

The methodology of direct practical presentation of a key point of a curriculum or a scientific topic, developed in the course of scientific research, is presented in separate articles.

✓ *Temirgaliyev N. Predislovie Glavnogo redaktora zhurnala "Vestnik Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva. Seriya Matematika. Informatika. Mekhanika" o tselyakh izdaniya i putyakh ikh realizatsii [Introduction of the Editor-in-Chief of the journal "The Bulletin of the L.N. Gumilyov Eurasian National University. Mathematics. Computer Science. Mechanics series" about the issue purposes and the ways of its implementation], Vestnik Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva. Seriya Matematika. Informatika. Mekhanika [Bulletin of L.N. Gumilyov Eurasian National University. Mathematics, computer science, mechanics series]. 2018. Vol. 122. № 1. P. 8-69.*

✓ *Temirgaliyev N. Nauchnyy, nauchno-metodicheskiy i organizatsionnyy otchet «Institut teoreticheskoy matematiki i nauchnykh vychisleniy (ITMiNV) Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva v 2019 godu (chast' II)» [Scientific, scientific-methodological and organizational report "The Institute of theoretical mathematics and scientific computing (ITMSC) L.N.Gumilyov Eurasian National University in 2019 year (Part II)"], Vestnik Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva. Seriya Matematika. Komp'yuternye nauki. Mekhanika [Bulletin of L.N. Gumilyov Eurasian National University. Mathematics, computer science, mechanics series]. 2020. Vol. 132. № 3. P. 31-69.*

✓ *Temirgaliyev N. Nauchnyy, nauchno-metodicheskiy i organizatsionnyy otchet «Institut teoreticheskoy matematiki i nauchnykh vychisleniy (ITMiNV) Evraziyskogo natsional'nogo*

universiteta imeni L.N. Gumileva v 2019 godu (chast' IV)» [Scientific, scientific-methodological and organizational report "The Institute of theoretical mathematics and scientific computing (ITMandSC) L.N.Gumilyov Eurasian National University in 2019 year (Part IV)"], Vestnik Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva. Seriya Matematika. Komp'yuternye nauki. Mekhanika [Bulletin of L.N. Gumilyov Eurasian National University. Mathematics, computer science, mechanics series]. 2021. Vol. 137. № 4. P. 25-59.

✓ Taugynbayeva G.E., Zhubanysheva A.Zh., Tabyldiyeva Zh.K., Temirgaliyev N. Metodika obucheniya chislom i primenyaemym k nim operatsiyam slozheniya i umnozheniya v nachal'noy shkole i lezhashchie v ikh osnove obshchie problemy [Methods of teaching numbers and the operations of addition and multiplication applied to them in elementary school and the general problems related to them], Vestnik Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva. Seriya Matematika. Komp'yuternye nauki. Mekhanika [Bulletin of L.N. Gumilyov Eurasian National University. Mathematics, computer science, mechanics series]. 2022. Vol. 138. № 1. P. 45-54.

✓ Zhubanysheva A.Zh., Taugynbayeva G.E., Nauryzbayev N.Zh., Temirgaliyev N. Ob odnom problemnom momente v uchebnikakh po teorii veroyatnostey [About one Problematic Moment in Textbooks on Probability Theory], Vestnik Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva. Seriya Matematika. Komp'yuternye nauki. Mekhanika [Bulletin of L.N. Gumilyov Eurasian National University. Mathematics, computer science, mechanics series]. 2022. Vol. 140. № 3. P. 15-22.

✓ Temirgaliyev N., Nurtazina, K., Taugynbayeva G.E., Zhubanysheva A.Zh. Kazakhskaya matematicheskaya spravedlivost' v shkol'nom obrazovanii – eto ravnye dlya vsekh usloviya v obuchayushchikh uchebnikakh i uchitelyakh [Kazakhmath ematical justice in school education is equal conditions for all in teaching textbooks and teachers], Vestnik Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva. Seriya Matematika. Komp'yuternye nauki. Mekhanika [Bulletin of L.N. Gumilyov Eurasian National University. Mathematics, computer science, mechanics series]. 2024. Vol. 148. № 3. P. 26-99.

An idea of the content of methodological articles is given by the following descriptions of three of them. There is a well-known textbook by A.N. Kolmogorov and S.F. Fomin «Elements of the Theory of Functions and Functional Analysis», in which the independent theories mentioned in its title are presented in the reverse order – first «Functional Analysis», and then «The Theory of Measure and the Lebesgue Integral». This sharply impoverishes the illustrative part of Functional Analysis, since concrete examples of functional spaces and operators in them are based on the Theory of Measure and the Lebesgue Integral, which the authors cannot yet use; therefore they limit themselves only to discrete examples. Likewise, the inaccessibility of the Theory of Measure and the Lebesgue Integral when presenting generalized functions leads to incorrect texts, since the Riemann integral does not provide the necessary properties.

There is a textbook of Mathematical Analysis by the Editor-in-Chief of the Journal, in which Mathematical Analysis is presented over 2000 pages of text with such a level of detail that the reader does not need to be in a qualified mathematical environment. In addition, in the SYNOPSIS-TABLE OF CONTENTS of this textbook a method of extended titles is used for 155 paragraphs and 891 items across

21 chapters – the contents of the textbook are supplied with synopsis explanations, which apparently constitutes a novelty in educational literature. The entire methodology of presenting the theory of Mathematical Analysis is described in a special article of the Journal.

Even studying at Cambridge may initially fail to ensure «Understanding mathematics» for a capable student if there is no solid course in Mathematical Analysis; for the famous G.H. Hardy, once he realized this, such a course was provided by Camille Jordan's textbook «Cours d'analyse», in contrast to the multitude who never realized this and therefore remained without understanding.

The notions of «Rigour – Understanding», which are not easily compatible in educational literature, find their resolution in a format of deep understanding of the subject combined with sensitivity to the accessibility of the methodology of presentation.

4.2. Without the section «Methodology», prior to the division into series, publications were carried out in the journal «Bulletin of L.N. Gumilyov Eurasian National University»:

✓ Temirgaliev N., Zhainibekova M., Vokaze K. *O nekotorykh «ponyatnykh» ponyatiyakh shkol'noy matematiki [On some “understandable” concepts of school mathematics]*, *Vestnik Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva. Gumanitarnye nauki [Bulletin of the L.N. Gumilyov Eurasian National University. Humanities]*. 2011. № 1(80). P. 33–38.

✓ Temirgaliev N. *Printsipy sozdaniya i provedeniya ekspertizy uchebnikov po matematike [Principles of creating and conducting the examination of mathematics textbooks]*, *Vestnik Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva. Gumanitarnye nauki [Bulletin of the L.N. Gumilyov Eurasian National University. Humanities]*. 2009. Vol. 72. № 5. P. 35–43.

5. The Journal publishes scientific and organizational proposals aimed at activating large-scale scientific and methodological activities.

As examples of the Journal's scientific and organizational publications, we present:

✓ Temirgaliyev N. *Nauchnyy, nauchno-metodicheskiy i organizatsionnyy otchet «Institut teoreticheskoy matematiki i nauchnykh vychisleniy (ITMiNV) Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva v 2019 godu (chast' I)» [Scientific, scientific-methodological and organizational report “The Institute of theoretical mathematics and scientific computing (ITMandSC) L.N.Gumilyov Eurasian National University in 2019 year (Part I)”]*, *Vestnik Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva. Seriya Matematika. Komp'yuternye nauki. Mekhanika [Bulletin of L.N. Gumilyov Eurasian National University. Mathematics, computer science, mechanics series]*. 2020. Vol. 130. No 1. P. 8-51.

✓ Temirgaliyev N. *Nauchnyy, nauchno-metodicheskiy i organizatsionnyy otchet «Institut teoreticheskoy matematiki i nauchnykh vychisleniy (ITMiNV) Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva v 2019 godu (chast' II)» [Scientific, scientific-methodological and*

organizational report “The Institute of theoretical mathematics and scientific computing (ITMSC) L.N.Gumilyov Eurasian National University in 2019 year (Part II)”, *Vestnik Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva. Seriya Matematika. Komp'yuternye nauki. Mekhanika* [Bulletin of L.N. Gumilyov Eurasian National University. Mathematics, computer science, mechanics series]. 2020. Vol. 132. No 3. P. 31-69.

✓ Temirgaliyev N. Nauchnyy, nauchno-metodicheskiy i organizatsionnyy otchet «Institut teoreticheskoy matematiki i nauchnykh vychisleniy (ITMiNV) Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva v 2019 godu (chast' III)» [Scientific, scientific-methodological and organizational report “The Institute of theoretical mathematics and scientific computing (ITMandSC) L.N.Gumilyov Eurasian National University in 2019 year (Part III)”, *Vestnik Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva. Seriya Matematika. Komp'yuternye nauki. Mekhanika* [Bulletin of L.N. Gumilyov Eurasian National University. Mathematics, computer science, mechanics series]. 2021. Vol. 135. No 2. P. 12-63.

✓ Temirgaliyev N. Nauchnyy, nauchno-metodicheskiy i organizatsionnyy otchet «Institut teoreticheskoy matematiki i nauchnykh vychisleniy (ITMiNV) Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva v 2019 godu (chast' IV)» [Scientific, scientific-methodological and organizational report “The Institute of theoretical mathematics and scientific computing (ITMandSC) L.N.Gumilyov Eurasian National University in 2019 year (Part IV)”, *Vestnik Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva. Seriya Matematika. Komp'yuternye nauki. Mekhanika* [Bulletin of L.N. Gumilyov Eurasian National University. Mathematics, computer science, mechanics series]. 2021. Vol. 137. No 4. P. 25-59

and also before the division into series

✓ Dzhumakaeva G.T., Temirgaliyev N. Metod analiza vozrastnykh sposobnostey uchashchikhsya k usvoyeniyu uchebnogo materiala [Method for analyzing students' age-related abilities to master educational material], *Vestnik Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva* [Bulletin of the L.N. Gumilyov Eurasian National University]. 2011. T. 80. № 1. P. 39–50.

6. The section «Memory» is dedicated to the legacy of prominent members of the scientific community in the journal's fields.

An example of a publication is the article:

✓ Temirgaliyev N. Nauryzbayev Kabdush Zhumagazievich kak etalon «Ponimaniya Matematiki» [Nauryzbayev Kabdush Zhumagazievich as a standard of “Understanding Mathematics”], *Vestnik Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva. Seriya Matematika. Komp'yuternye nauki. Mekhanika* [Bulletin of L.N. Gumilyov Eurasian National University. Mathematics, computer science, mechanics series]. 2022. Vol. 139. № 2. P. 77–80.

«Memory», without such a section before the division into series, publications were carried out in the journal «Bulletin of the L.N. Gumilyov Eurasian National University»:

✓ Temirgaliyev N. Neskol'ko slov vospominaniy o moem druze i uchitele Sergeye Voronine [A few words of reminiscence about my friend and teacher Sergey Voronin], *Vestnik Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva* [Bulletin of the L.N. Gumilyov Eurasian National University]. 2016. Vol. 115. No 6. P. 46–64.

✓ Temirgaliyev N. Matematika-informatika Kazakhstana – vpered «po-Ibrashevski!» [Mathematics and Computer Science of Kazakhstan – forward “in the Ibrashev style!”], *Vestnik Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva* [Bulletin of the L.N. Gumilyov Eurasian National University]. 2017. Vol. 117. No 2. P. 46–56.

7. The journal «Bulletin of L.N. Gumilyov Eurasian National University. Mathematics, Computer Science, Mechanics Series», as part of the Kazakh

scientific and organizational system, participates in the formation of effective management structures throughout the Education and Science System of the Republic of Kazakhstan through the publication of materials on Mathematics, Computer Science, and Mechanics. The journal adheres to the following positions:

- Promoting the development of scientific communications within the Education and Science System of the Republic of Kazakhstan, forming scientific schools and directions around the Journal, providing informational support for priority scientific research, and popularizing scientific ideas;
- Interacting with and engaging leading domestic and foreign specialists in publications and peer review;
- Providing opportunities for researchers, faculty members, doctoral and master's students, and undergraduate students to publish the results of their fundamental and applied research with theoretical, applied, and practical significance and novelty, and to inform the national and international professional community about the latest scientific results;
- Implementing state policy on the training of highly qualified personnel in the Republic of Kazakhstan;
- Offering the Journal's scientific platform for establishing new ideas in the international space in detailed form and for their discussion;
- Improving the quality of scientific articles through systematic work of the Journal's Editorial Board with authors according to the Journal's established requirements for article structure;
- Integrating Kazakhstan into the global scientific community;
- Maintaining high scientific standards by involving leading specialists in the peer review process;
- Striving to reduce the period of editorial processing of articles;
- Integrating Kazakh researchers into the international scientific community;
- Developing the Journal as an open-access scientific publication;
- Expanding the Journal's presence in international databases and open electronic resources;
- Increasing the accessibility of the Journal to a wide range of readers in the international scientific space, through the adopted article format by publishing in English an extended presentation of research novelty (Abstract), keywords (Keywords), and duplicating the reference list in the Latin alphabet (References);
- The Journal strives to maintain the highest level of integrity of the published content.

In the section «Scientific and Organizational Article», an article was published «Temirgaliyev N. K voprosu o nauchno-issledovatel'skoy i nauchno-metodologicheskoy otchetnosti i kontrolye [On the issue of scientific-research and scientific-methodological reporting and control], Vestnik Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva. Seriya Matematika. Komp'yuternye nauki. Mekhanika [Bulletin of the L.N. Gumilyov Eurasian National University. Mathematics, computer science, mechanics series]. 2025. Vol. 152. No 3».

8. Requirements of the Editorial Board for the content and structure of articles. In the Journal, in the context of «Scientific novelty is knowledge that is

substantive, new, and previously unknown in the scientific space», materials of the following types are published: Research Article, Scientific-Methodological Article, Scientific-Organizational Article, Short Communication, Feature Article of the Journal Issue, sections «Memory», «Review of Educational and Scientific Publications», and «Information Analytics».

The length of research articles ranges from 8 to 16 pages, the length of a short communication ranges from 5 to 7 pages, and the length of sections ranges from 2 to 5 pages. The calculation of the length of all three types of articles and the Short Communication does not include the abstract, keywords, the reference list in the original language and in English, or information about the author(s) in Kazakh, Russian, and English. Scientific articles exceeding the specified length are accepted for publication in exceptional cases by a special decision of the Journal's Editorial Board.

8.1. Research articles, in terms of structure, must represent a completed study with a detailed formulation of the problem posed, a full justification of the necessity of the research objective in the context of the development of the field, and a clear formulation of the obtained result (the consideration and completeness of these requirements are determined by the reviewers and the Editorial Board of the Journal). Separately or in combination, they must contain the following information:

- *Necessary notation and definitions to ensure understanding of the text of the article,*
- *Formulation of the problem to which the article is devoted,*
- *Historical information on the formulation of the problem with corresponding full references in connection with the subject of the article – who and when obtained the results preceding the topic of the article,*
- *Justification of the relevance either as a problem new to the field under study or necessary for its further development, which constitutes the task of the article as the most important part of any scientific work,*
- *Precise formulation and description of the solution to the posed problem presented in the article,*
- *Detailed justification of the novelty of the result(s) of the article as new, previously unknown, and substantive in the context of what was known earlier,*
- *The solution of the problem presented in the article must be supplied with complete and detailed proofs,*
- *Conceptual model of the research subject – a structured scheme of key components (primary attention is given to results of a final character both within a specific specialization and of fundamental significance).*

If at least one of these requirements is not satisfied, the article is not accepted for consideration.

8.2. Short Communication. The requirements for a Short Communication are the same as for a Research Article, except that detailed proofs may be replaced by an outline of the proof.

8.3. Scientific-Methodological Article. The Journal publishes scientific-methodological articles of direct practical application with methodological significance and novelty, presenting new methods, tools, forms, approaches, principles, and foundations for the presentation and transmission of knowledge in all areas of the specialties Mathematics, Computer Science, and Mechanics. Scientific-methodological articles must represent a completed study devoted to the presentation of a specific curriculum topic, an entire field, or a subject discipline, with a detailed formulation of the methodological problem posed, a full justification of the necessity of the research objective in the context of the development of the subject discipline against the general background of requirements of systematicity, precision of terminology, clear exposition of theoretical components, logical coherence and structure, accessibility and clarity in the presentation and transmission of knowledge (the consideration and completeness of these requirements are determined by the reviewers and the Editorial Board of the Journal). Separately or in combination, they must contain the following information:

- *Conceptual model of the subject of research – a structured scheme of key components for the creation of a complete set of school textbooks in Mathematics aimed at the ultimate goal «Mathematical maturity», the elevation of university courses to the level ensuring «Understanding», and the foundational preparation for mastering the diverse «Variable component»,*
- *Clear formulation of the methodological problem – a fundamental uncertainty or contradiction requiring resolution,*
- *Justification of the necessity and relevance of the methodological problem under development,*
- *Solution of the methodological problem and its principal novelty in the context of previously known methodologies.*

8.4. Scientific-Organizational Article. The Journal publishes scientific and organizational proposals aimed at activating large-scale scientific and methodological activities:

- *scientific conferences in the context of effectiveness,*
- *grant funding with corresponding competitive documentation and expert evaluation,*
- *textbooks and curricula for the school mathematics course with the final goal of achieving «Mathematical maturity»,*
- *educational programs for Master's and PhD studies with the intermediate goal of achieving «Understanding mathematics»,*

- *scientific programs for Master's and PhD studies aimed at integrating students of all levels into international science,*
- *expert evaluation and requirements for experts of various appointments: for scientific evaluation only specialists with Fundamental results are involved, exceptionally those with Significant results; for methodological evaluation, at least three results of direct practical application with theoretical preparation in the subject area are required,*
- *awarding academic degrees with corresponding documentation and evaluation: only specialists with Fundamental results are involved in awarding academic degrees, exceptionally those with Significant results,*
- *awarding academic titles with corresponding documentation and evaluation: the title of professor requires the mandatory presence of a Fundamental result, associate professor and docent require a Significant result,*
- *peer review of textbooks and monographs with corresponding documentation: for reviewing textbooks, specialists with at least five results of direct practical application and with theoretical preparation in the subject area close to the topic of the textbook are involved; for monographs, specialists with Fundamental results in areas close to the topic of the monograph are involved,*
- *documentation of scientific-research and scientific-methodological reporting and control, where every reporting and контроль document in science must contain explicit formulations of scientific novelty with full justification against the state of the Topic and the Field in the international scientific space at that time,*
- *training of scientific personnel with corresponding reporting and control documentation,*
- *journal scientific-research, scientific-methodological, and scientific-organizational policy: a scientific journal must include topics of Master's and PhD dissertations, promote scientific research at the international level for Kazakhstan, and be free from scientific errors and from the absence of meaningful and effective results.*

8.5. The «Key Article of the Journal Issue» is devoted to a specific topic or field based on Fundamental results, with continuations aimed at development in Kazakhstan and integration into the international scientific space, without any restrictions on the format or length of presentation.

8.6. The section «Review of Educational and Scientific Publications» is devoted to the scientific and methodological analysis of textbooks and monographs.

8.7. The section «Memory» is devoted to the legacy of prominent representatives of the scientific community in the journal's fields.

8.8. Requirements for Authors of Articles. Depending on the accepted types of publications:

- Research Article
- Short Communication
- Scientific-Methodological Article
- Scientific-Organizational Article
- “Feature Article of the Journal Issue”
- Section “Review of an Educational and Scientific Publication”
- Section “Memory”

the authors must ensure compliance with the corresponding above-mentioned requirements.

All articles undergo a peer review process. Based on the reviewer’s report, the authors must provide a response to each comment within the review text, with all modifications in the revised version of the article highlighted separately in color, together with a complete justification demonstrating the correspondence of the introduced changes to the full content of the reviewer’s comments.

The authors must submit, for forwarding to the reviewer, the full text of the revised article together with a complete list of separate explanations for each point in the format proposed above.

In the event that the responses do not satisfy the established requirements for revisions, the article shall be rejected without the right of resubmission.

8.9. The section «Information Analytics» is devoted to significant scientific events—conferences and seminars, scientific collaborations with global research centers, off-site scientific-research and scientific-methodological seminars in national and regional universities and secondary schools of the Republic of Kazakhstan, and presentations of national projects in Mathematics, Computer Science, and Mechanics.

9. The work of the Editorial Board on the peer review of articles submitted to the Journal. The primary role in developing the Journal’s objectives is carried out through the coordinated activity of the Editorial Board with specially invited reviewers—highly qualified specialists having direct or closely related results in the subject area of the article. At the same time, the review must necessarily contain a description of the reviewer’s own introduction to the subject matter of the article and of the results of the article as a whole, an assessment of the relevance and necessity of the problem posed, the presence or absence of scientific novelty in the context of preceding studies, a precise and complete formulation of the main results of the article, and a fully justified conclusion on acceptance for publication, rejection, or further work with proposed revisions to the article.

Sample structure of a Review of an article:

Review of an article submitted to the journal «Bulletin of L.N. Gumilyov Eurasian National University. Mathematics, Computer Science, Mechanics Series»

Title of the article: _____

The review must contain a complete and well-grounded response concerning the content of the article to each of the following points: _____

1. Does the topic and content of the article correspond to the scope of the Journal?

- yes, it does correspond;
- partially (*it is necessary to specify what work should be carried out by the authors*);
- no, it does not correspond (*the article should not be accepted for consideration due to non-compliance with the Journal's scope for the following reasons*).

2. The review must be based on individual evaluations of all requirements for a Research Article:

Research Articles, in terms of structure, must represent a completed study with a detailed formulation of the posed problem, a full justification of the necessity of the research objective in the context of the development of the field, and a clear formulation of the obtained result (the consideration and completeness of these requirements are determined by the reviewers and the Editorial Board of the Journal). Separately or in combination, the article must contain the following information:

- *Necessary notation and definitions to ensure understanding of the text of the article,*
- *Formulation of the problem to which the article is devoted,*
- *Historical information on the formulation of the problem with corresponding full references in connection with the subject of the article – who and when obtained the results preceding the topic of the article,*
- *Justification of the relevance either as a problem new to the field under study or necessary for its further development, which constitutes the task of the article as the most important part of any scientific work,*
- *Precise formulation and description of the solution to the posed problem presented in the article,*
- *Detailed justification of the novelty of the result(s) of the article as new, previously unknown, and substantive in the context of what was known earlier,*
- *The solution of the problem presented in the article must be supplied with complete and detailed proofs,*
- *Conceptual model of the research subject – a structured scheme of key components (primary attention is given to results of a final character both within a specific specialization and of fundamental significance).*

Failure to comply with at least one of these requirements results in the article not being accepted for consideration. The detection of scientific errors or meaningless statements entails unconditional rejection of the article.

Based on the reviewer's own assessment of compliance with the requirements for a Research Article, the reviewer must provide a complete and well-substantiated response concerning the content of the article to each of the following questions:

3. Description of the reviewer's vision of the article in the context of the general state of the field and the place of the article's results within it,

4. Justification of the necessity and relevance of the study,

5. Detailed justification of the novelty of the result(s) of the article in the context of previously known results,

6. Precise formulation and description by the reviewer of the solution to the problem presented in the article,

7. Comments (scientific, technical, grammatical):

8. Presentation and formatting:

8.1) Does the title of the article reflect its content (in the event that the reviewer recommends the article for publication)?

- yes,
- no, _____ (*it is necessary to specify the reasons why a complete change of the title is required*),
- partially, _____ (*it is necessary to specify what revisions should be carried out by the authors*),

8.2) The bibliography provided:

- fully reflects the content and purpose of the article;
- does not reflect the main provisions of the article;
- requires revision (*it is necessary to specify what work should be carried out by the authors*).

9. Conclusion:

- The article is recommended for publication
- The article may be reconsidered for publication in the Journal after revisions have been made in accordance with the reviewer's comments (if any), subject to the mandatory approval of the revised text by the reviewer;
- The article is not recommended for publication (*it is necessary to provide justification for the reasons for rejecting the article*).

Academic title, academic degree, position, place of work of the reviewer	Full name of the reviewer, date and signature
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Exactly the same requirements apply to all other types of articles specified in Section 8.

10. **Complete list of «Feature Articles of the Journal Issue».** The Journal has published 21 such articles with a total length of 650 pages, the latest of which is «The inverse C(N)D as a direct formula-based solution (without neural networks) of the AI–ML problem for any smooth Mathematical model, with the idea of further development through the creation of new Mathematical structures for non-smooth problems with their own «topologies»».

For a comprehensive understanding of the know-how «Feature Article of the Journal Issue», we present their full list:

1. Temirgaliyev N. Predislovie Glavnogo redaktora zhurnala "Vestnik Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva. Seriya Matematika. Informatika. Mekhanika" o tselyakh izdaniya i putyakh ikh realizatsii [Introduction of the Editor-in-Chief of the journal "The Bulletin of the L.N. Gumilyov Eurasian National University. Mathematics. Computer Science. Mechanics series" about the issue purposes and the ways of its implementation],

- Vestnik Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva. Seriya Matematika. Informatika. Mekhanika [Bulletin of L.N. Gumilyov Eurasian National University. Mathematics, computer science, mechanics series]. 2018. Vol. 122. № 1. P. 8-69.
2. Temirgaliyev N. Elementarnoe postroenie lineynoy kongruentnoy posledovatel'nosti Lekhmera s toy stepen'yu sluchaynosti, s kakoy trebovaniyam sluchaynosti otvechaet spektral'nyy test Koveyu i Makfersona [Elementary construction of the linear congruent Lehmer sequence with the degree of randomness that is required by the spectral test of Coveyou and MacPherson], Vestnik Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva. Seriya Matematika. Informatika. Mekhanika [Bulletin of L.N. Gumilyov Eurasian National University. Mathematics, computer science, mechanics series]. 2018. Vol. 123. № 2. P. 8-55.
 3. Temirgaliyev N., Zhubanysheva A.Zh. Teoriya priblizheniy, Vychislitel'naya matematika i Chislennyy analiz v novoy kontseptsii v svete Komp'yuternogo (vychislitel'nogo) poperechnika [Approximation Theory, Computational Mathematics and Numerical Analysis in new conception of Computational (Numerical) Diameter], Vestnik Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva. Seriya Matematika. Informatika. Mekhanika [Bulletin of L.N. Gumilyov Eurasian National University. Mathematics, computer science, mechanics series]. 2018. Vol. 124. № 3. P. 8-88.
 4. Tirgaliyev N. Teorii vlozheniy i priblizheniy v kontekste $K(V)P$ i vnutrennikh problem teorii funktsiy [Embedding and Approximation Theories in the Context of Computational (Numerical) Diameter and Internal Problems of the Theory of Functions], Vestnik Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva. Seriya Matematika. Informatika. Mekhanika [Bulletin of L.N. Gumilyov Eurasian National University. Mathematics, computer science, mechanics series]. 2018. Vol. 125. № 4. P. 8-68.
 5. Temirgaliyev N., Taugynbayeva G.Y., Abikenova Sh.K. Diskretizatsiya resheniy uravneniy v chastnykh proizvodnykh v kontekste Komp'yuternogo (vychislitel'nogo) poperechnika [Discretization of solutions of partial differential equations in the context of Computational (numerical) diameter], Vestnik Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva. Seriya Matematika. Informatika. Mekhanika [Bulletin of L.N. Gumilyov Eurasian National University. Mathematics, computer science, mechanics series]. 2019. Vol. 126. № 1. P. 8-51.
 6. Temirgaliyev N. Preobrazovaniya i absolyutnaya skhodimost' trigonometricheskikh ryadov Fur'e [Transformation and Absolute Convergence of Trigonometric Fourier Series], Vestnik Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva. Seriya Matematika. Informatika. Mekhanika [Bulletin of L.N. Gumilyov Eurasian National University. Mathematics, computer science, mechanics series]. 2019. Vol. 127. № 2. P. 8-26.
 7. Temirgaliyev N. Kontseptsiya S.M. Voronina v probleme sravneniy determinirovannykh i sluchaynykh vychisleniy v odnikh i tekhnicheskikh terminakh [The Concept of S.M. Voronin in the Problem of Comparisons in the Same Terms of Deterministic and Random Computation], Vestnik Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva. Seriya Matematika. Informatika. Mekhanika [Bulletin of L.N. Gumilyov Eurasian National University. Mathematics, computer science, mechanics series]. 2019. Vol. 128. № 3. P. 8-33.
 8. Temirgaliev N., Abikenova Sh. K., Azhgaliev Sh.U., Taugynbaeva G.E., Zhubanysheva A.Zh. Theory of Radon Transform in the Concept of Computational (Numerical) Diameter and Methods of the Quasi-Monte Carlo Theory, Bulletin of L.N. Gumilyov Eurasian National University. Mathematics, computer science, mechanics series. 2019. Vol. 129. № 4. P. 8-53.
 9. Temirgaliyev N. Nauchnyy, nauchno-metodicheskiy i organizatsionnyy otchet «Institut teoreticheskoy matematiki i nauchnykh vychisleniy (ITMiNV) Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva v 2019 godu (chast' I)» [Scientific, scientific-methodological and organizational report “The Institute of theoretical mathematics and scientific computing (ITMandSC) L.N.Gumilyov Eurasian National

University in 2019 year (Part I)”, Vestnik Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva. Seriya Matematika. Komp'yuternye nauki. Mekhanika [Bulletin of L.N. Gumilyov Eurasian National University. Mathematics, computer science, mechanics series]. 2020. Vol. 130. \No 1. P. 8-51.

10. Temirgaliyev N. Nauchnyy, nauchno-metodicheskiy i organizatsionnyy otchet «Institut teoreticheskoy matematiki i nauchnykh vychisleniy (ITMiNV) Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva v 2019 godu (chast' II)» [Scientific, scientific-methodological and organizational report “The Institute of theoretical mathematics and scientific computing (ITMSC) L.N.Gumilyov Eurasian National University in 2019 year (Part II)”], Vestnik Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva. Seriya Matematika. Komp'yuternye nauki. Mekhanika [Bulletin of L.N. Gumilyov Eurasian National University. Mathematics, computer science, mechanics series]. 2020. Vol. 132. \No 3. P. 31-69.

11. Temirgaliyev N. Nauchnyy, nauchno-metodicheskiy i organizatsionnyy otchet «Institut teoreticheskoy matematiki i nauchnykh vychisleniy (ITMiNV) Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva v 2019 godu (chast' III)» [Scientific, scientific-methodological and organizational report “The Institute of theoretical mathematics and scientific computing (ITMandSC) L.N.Gumilyov Eurasian National University in 2019 year (Part III)”], Vestnik Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva. Seriya Matematika. Komp'yuternye nauki. Mekhanika [Bulletin of L.N. Gumilyov Eurasian National University. Mathematics, computer science, mechanics series]. 2021. Vol. 135. \No 2. P. 12-63.

12. Temirgaliyev N. Nauchnyy, nauchno-metodicheskiy i organizatsionnyy otchet «Institut teoreticheskoy matematiki i nauchnykh vychisleniy (ITMiNV) Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva v 2019 godu (chast' IV)» [Scientific, scientific-methodological and organizational report “The Institute of theoretical mathematics and scientific computing (ITMandSC) L.N.Gumilyov Eurasian National University in 2019 year (Part IV)”], Vestnik Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva. Seriya Matematika. Komp'yuternye nauki. Mekhanika [Bulletin of L.N. Gumilyov Eurasian National University. Mathematics, computer science, mechanics series]. 2021. Vol. 137. \No 4. P. 25-59.

13. Taugynbayeva G.E., Zhubanysheva A.Zh., Tabyldiyeva Zh.K., Temirgaliyev N. Metodika obucheniya chislom i primenyaemym k nim operatsiyam slozheniya i umnozheniya v nachal'noy shkole i lezhashchie v ikh osnove obshchie problemy [Methods of teaching numbers and the operations of addition and multiplication applied to them in elementary school and the general problems related to them], Vestnik Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva. Seriya Matematika. Komp'yuternye nauki. Mekhanika [Bulletin of L.N. Gumilyov Eurasian National University. Mathematics, computer science, mechanics series]. 2022. Vol. 138. \No 1. P. 45-54.

14. Zhubanysheva A.Zh., Taugynbayeva G.E., Nauryzbayev N.Zh., Temirgaliyev N. Ob odnom problemnom momente v uchebnikakh po teorii veroyatnostey [About one Problematic Moment in Textbooks on Probability Theory], Vestnik Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva. Seriya Matematika. Komp'yuternye nauki. Mekhanika [Bulletin of L.N. Gumilyov Eurasian National University. Mathematics, computer science, mechanics series]. 2022. Vol. 140. \No 3. P. 15-22.

15. Sherniyazov K. Optimal'nye metody priblizhennogo vosstanovleniya funktsiy i resheniy uravneniy v chastnykh proizvodnykh vychislitel'nymi agregatami po lineynym kombinatsiyam setok Korobova so sverkh-szhatiem informatsii i smezhnye voprosy [Optimal methods for approximate recovery of functions and solutions of partial differential equations by computational units by linear combinations of Korobov grids with information supercompression and related issues], Vestnik Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva. Seriya Matematika. Komp'yuternye nauki. Mekhanika [Bulletin of L.N.

- Gumilyov Eurasian National University. Mathematics, computer science, mechanics series]. 2022. Vol. 139. \No 2. P. 26-76.
16. Temirgaliyev N. Nauryzbaev Nauryzbaev Kabdush Zhumagazievich kak etalon «Ponimaniya Matematiki» [Kabdush Zhumagazievich as a standard of "Understanding Mathematics"], Vestnik Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva. Seriya Matematika. Komp'yuternye nauki. Mekhanika [Bulletin of L.N. Gumilyov Eurasian National University. Mathematics, computer science, mechanics series]. 2022. Vol. 139. \No 2. P. 77-80.
17. Temirgaliyev N., Taugynbayeva G.E., Zhubanysheva A.Zh. Formula Plansherelya dlya preobrazovaniya Radona v gibkoy shkale gil'bertovykh prostranstv Soboleva [Plancherel's formula for the Radon transform in the flexible scale of Sobolev Hilbert spaces], Vestnik Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva. Seriya Matematika. Komp'yuternye nauki. Mekhanika [Bulletin of L.N. Gumilyov Eurasian National University. Mathematics, computer science, mechanics series]. 2022. Vol. 141. \No 4. P. 42-50.
18. Temirgaliyev N., Abikenova Sh.K., Azhgaliyev Sh.U., Nurmoldin Y.Y., [Taugynbayeva G.E., Zhubanysheva A.Zh. Ekvivalentnoe svedenie zadach Komp'yuternoy tomografii k razrabotannoy zadache vosstanovleniya funktsiy v vide konechnoy svertki v normakh «gibkikh» gil'bertovykh prostranstv Soboleva i Soboleva-Radona po skheme Komp'yuternogo \(vychislitel'nogo\) poperechnika](#) [Efficient reduction of Computed Tomography problems to the developed problem of recovery functions in the form of a finite convolution in the norms of "flexible" Hilbert Sobolev and Sobolev-Radon spaces according to the scheme of the Computational (numerical) diameter], Vestnik Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva. Seriya Matematika. Komp'yuternye nauki. Mekhanika [Bulletin of L.N. Gumilyov Eurasian National University. Mathematics, computer science, mechanics series]. 2023. Vol. 142. \No 1. P. 35-69.
19. Temirgaliyev N., Nurtazina, K., Taugynbayeva G.E., Zhubanysheva A.Zh. [Kazakhskaya matematicheskaya spravedlivost' v shkol'nom obrazovanii – eto ravnye dlya vsekh usloviya v obuchayushchikh uchebnikakh i uchitelyakh](#) [Kazakhmath ematical justice in school education is equal conditions for all in teaching textbooks and teachers], Vestnik Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva. Seriya Matematika. Komp'yuternye nauki. Mekhanika [Bulletin of L.N. Gumilyov Eurasian National University. Mathematics, computer science, mechanics series]. 2024. Vol. 148. \No 3. P. 26-99.
20. Zhubanysheva A. Ж., Nauryzbayev H. Ж., Taugynbayeva Г. Е., Nurtazina К. Б., & Temirgaliyev N. Nalichie statisticheskoi regul'yarnosti v paradokse Monti Kholla na avtorskikh sluchainykh algoritmax [Statistical Regularity in the Monty Hall Paradox Using Proprietary Random Algorithms], Vestnik Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva. Matematika. Komp'yuternye nauki. Mekhanika [Bulletin of L.N. Gumilyov Eurasian National University. Mathematics, Computer Science, Mechanics Series]. 2025. Vol. 152. \No 3. P. 30–59.
21. Temirgaliyev N. K voprosu o nauchno-issledovatel'skoi i nauchno-metodologicheskoi otchetnosti i kontrole [On the issue of research and scientific-methodological reporting and control], Vestnik Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva. Matematika. Komp'yuternye nauki. Mekhanika [Bulletin of L.N. Gumilyov Eurasian National University. Mathematics, Computer Science, Mechanics Series]. 2025. Vol. 153. No. 4. P. 6-91.
22. Temirgaliyev N. Obratnoe $K(V)P$ kak pryamoe formul'noe reshenie (bez neyrosetey) AI ML-problemy dlya vsyakoy gladkoy matematicheskoy modeli s ideey dal'neyshego prodolzheniya s sozdaniem novykh matematicheskikh struktur dlya negladkikh zadach s svoimi «topologiyami» [Inverse $C(N)D$ as a direct formula-based solution (without neural networks) of AI/ML problems for any smooth mathematical model with the idea of further

continuation through the creation of new mathematical structures for nonsmooth problems with their own “topologies”], Vestnik Evraziyskogo natsional'nogo universiteta imeni L.N. Gumileva. Matematika. Komp'yuternye nauki. Mekhanika [Bulletin of the L.N. Gumilyov Eurasian National University. Mathematics, computer science, mechanics series] – prepared for publication.

23. Temirgaliyev N. i ves ITMiNV. Metody AI-ML-analiza sotsialno-ekonomicheskogo sostoyaniya i perspektiv razvitiya malogo i srednego biznesa v rayonakh administrativnogo deleniya Kazakhstana po prirodno-klimaticheskim usloviyam i promyshlennym vozmozhnostyam (v klassifikatsiyakh s rayonnyimi osobennostyami) [Methods of AI-ML analysis of the socio-economic condition and development prospects of small and medium-sized businesses in the administrative districts of Kazakhstan according to natural-climatic conditions and industrial capacities (within classifications with district-specific features)] – prepared for publication.

11. Ethical responsibilities of authors. The Journal continuously strives to maintain the integrity of scientific data.

Authors should refrain from misrepresenting research results that could undermine trust in the Journal and should adhere to professionalism in scientific authorship and all scientific activities. Maintaining the integrity of research and its presentation is supported by compliance with good scientific practice, which includes:

A manuscript must not be submitted to more than one journal for simultaneous consideration. The submitted work must be original and must not have been published in another form or in any language (in part or in full), unless the new work represents an extension of previous work. When reusing materials, transparency with all necessary references must be ensured; presenting previously obtained results as new («self-plagiarism») is not permitted. A single study should not be divided into several parts for the purpose of increasing the number of publications in different journals or in one journal as independent articles in different issues. Results must be presented clearly and honestly, without falsification or inappropriate manipulation of data (including image-based manipulation). Authors must adhere to general mathematical, natural science, and interdisciplinary principles in the acquisition, selection, and processing of data. Data of other authors must not be presented as one's own. Verbatim copying of material must be indicated by quotation marks (to denote words, phrases, and sentences taken from other sources), and appropriate permissions must be obtained for copyrighted materials.

Authors should ensure that they have the right to use software, web surveys, and scales in their research (where applicable). Scientific articles and non-research materials (for example, Scientific-Organizational materials, sections «Memory», «Information Analytics») must cite relevant and appropriate literature to support the stated claims. Unjustified self-citation or coordinated efforts of multiple authors toward collective self-citation are strongly discouraged.

If there is suspicion of misconduct or alleged fraud, the Journal will conduct an investigation in accordance with its publication ethics policy, guided by the principles of COPE. If, after investigation, well-founded concerns are identified, the Editorial Office will contact the authors via the provided email address to allow the issue to be

resolved. Depending on the situation, this may lead to the following measures, including but not limited to:

- If the manuscript is still under consideration, it may be rejected;
- If the article has already been published, it will be retracted, meaning that the article will remain available on the platform with a watermark «retracted», and an explanation of the retraction will be provided in a note associated with the watermark;
- The author's institution will be informed. A notice of suspected violation of ethical standards of the peer review system will be included in the bibliographic record of the author and the article.

The author provides a cover letter confirming the originality of the work and compliance with ethical standards. The cover letter must be prepared on the official letterhead of the organization and signed by the head of the organization (for universities, by the vice-rector responsible for research activities).

Template of a cover letter

By this letter, the **author(s)** guarantee that the publication of the scientific article «**TITLE OF THE ARTICLE**» by **AUTHOR(S) FULL NAME** in the journal «Bulletin of L.N. Gumilyov Eurasian National University. Mathematics, Computer Science, Mechanics Series» does not violate any copyright. The **author(s)** grant the publisher of the journal, L.N. Gumilyov Eurasian National University, exclusive rights for an unlimited period:

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The **author(s)** bear full responsibility for unlawful use of intellectual property objects and copyrighted materials in the scientific article in accordance with the current legislation of the Republic of Kazakhstan.

By this letter, the **author(s)** give their consent to the publisher of the journal to check the manuscript for plagiarism.

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12. **Borrowing and plagiarism.** The Journal uses the software «Antiplagiat» <https://antiplagiat.enu.kz/> and the system «iThenticate (Turnitin)» to detect improper borrowings.

Authors of articles must guarantee that they have submitted a completely original work; in the case of using the work and/or quotations of other authors, bibliographic references or excerpts are mandatory. Appropriate references to the works of other authors are a required condition. Authors must cite publications that had a determining influence on the nature of the presented work and historically preceded the development of the topic of the article.

The Journal adheres to the principles of academic integrity and does not allow the publication of materials containing plagiarism, improper borrowings, or falsification of data.

Plagiarism is the appropriation of the results of another person's work in whole or in part without indicating the source: text, ideas, data, images, tables, methods, or formulas.

Self-plagiarism is the repeated publication of one's own previously published materials as new without proper citation and without indicating that the text was published earlier.

Improper borrowing is the use of fragments of others' works with distortion of meaning, without quotation formatting, without bibliographic reference, or with minimal changes (paraphrasing without indicating the source).

Data falsification is the intentional distortion, fabrication, or manipulation of research data, results, or methods in order to present unreliable or misleading conclusions. Falsification includes: modification or selective exclusion of data, artificial «improvement» of results, substitution of original materials, presentation of non-existent data, as well as any other actions that violate the reliability and reproducibility of research.

All articles submitted to the Journal's editorial office are checked for the independence of authorship through the licensed automatic plagiarism detection system «Antiplagiat» and the system «iThenticate (Turnitin)».

«Antiplagiat»:

- The originality of the article (text reproduced from other sources) for acceptance for publication must be at least 80%.
- Articles with originality of 75–79% may be reconsidered by the Editorial Council from the standpoint of the necessity of the reproduced text from other sources for revealing the purpose and content of the article.

- Articles with originality below 75% or if it is established that the text was generated by artificial intelligence are not accepted.

Only manuscripts with originality of 80% or higher after verification through the antiplagiarism system are sent for further peer review.

«iThenticate (Turnitin)»:

- The total percentage of similarity must not exceed 20%.
- Articles with a similarity percentage in the range of 21%–25% may be reconsidered by the Editorial Council from the standpoint of the necessity of the reproduced text from other sources for revealing the purpose and content of the article.
- Articles with a similarity percentage of 26% or higher or if it is established that the text was generated by artificial intelligence are not accepted.

Only manuscripts with 20% similarity or lower after verification through the system «iThenticate (Turnitin)» are sent for further peer review.

Plagiarism in all its forms constitutes unethical behavior and is unacceptable.

Articles with confirmed significant similarities, as well as cases of plagiarism or self-plagiarism, will be rejected in accordance with international standards of publication ethics. Based on the combination of the similarity report and the expert assessment of reviewers, the Editorial Council of the Journal makes the final decision.

An author must not submit manuscripts describing essentially the same research to more than one journal. Submission of the same manuscript simultaneously to more than one journal is unethical behavior and unacceptable.

In general, an author should not submit for consideration to another journal an article that has already been published.

If plagiarism is identified after publication, the editorial office:

- publishes a notice of violation,
- if necessary, retracts the article (retraction),
- informs the organization where the author works.

13. **Peer review policy.** The primary purpose of peer review is to provide the Editorial Board with the information necessary to make a fair, evidence-based decision consistent with the journal's editorial criteria.

All submitted manuscripts are first evaluated by the journal editors for compliance with the journal's scope and the requirements for articles specified in Section «8. Requirements of the Editorial Board for the content and structure of articles». If the manuscript is deemed suitable for further consideration, it is then checked for technical requirements and submitted to a licensed system for detecting improper borrowings (see Section «12. Borrowing and plagiarism»). Thereafter, manuscripts admitted for consideration by the editor are sent to two reviewers for independent expert evaluation of scientific quality. The Journal adheres to double-blind peer review, in which the identities of authors and reviewers are mutually unknown.

The selection of reviewers is crucial to the publication process. It is based on multiple factors, including expertise, reputation, specific recommendations, conflict of interest, and previous achievements.

Peer review assists the editor in making editorial decisions and may also help the author improve the article.

Peer review of articles is carried out by members of the Editorial Board and invited reviewers—leading specialists in the relevant field corresponding to the subject of the article. The decision on selecting a reviewer for the evaluation of an article is made by the Editor-in-Chief after collegial discussion with the Editorial Council.

Recommendations/exclusion of reviewers. Authors may suggest suitable reviewers and/or request the exclusion of certain individuals when submitting their manuscripts. It is recommended to propose reviewers from different countries and institutions. When suggesting reviewers, the corresponding author must provide an institutional email address for each recommended reviewer or, if this is not possible, include other means of identity verification, such as a link to a personal homepage, a publication record, or a researcher/author identifier in the submission letter. *Please note that the Journal may not use these suggestions, but they are welcomed and may facilitate the peer review process.*

Reviewers bear responsibility for the decisions expressed in their reviews; the peer review process is based on the principle of mutual trust among authors, reviewers, and editors.

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Reviewers are not allowed to use generative AI or AI-based technologies, such as ChatGPT or similar services, in the process of reviewing and evaluating the manuscript.

The reviewer must be attentive to potential ethical issues in the article and bring them to the attention of the editor, including any substantial similarity or overlap between the manuscript under consideration and any other published work known personally to the reviewer. Any claim that an observation, conclusion, or argument has been previously reported must be accompanied by appropriate references.

Each reviewer has the right to decline the review in the event of a clear conflict of interest affecting the perception and interpretation of the manuscript materials. Based on the review, the reviewer provides recommendations regarding the дальнейшая судьба of the article with appropriate justification:

- the article is recommended for publication,
- the article is sent for revision taking into account the reviewer's comments,
- the article is rejected for publication.

If the authors do not provide a revised version within one month from the date the review is sent, the editorial office removes the article from consideration.

If irresolvable disagreements arise between the author and the reviewers regarding the manuscript, the Editorial Council has the right to send the manuscript

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The decision to reject a manuscript is made at a meeting of the Editorial Council taking into account the opinions of the reviewers. An article not recommended for publication is not accepted for reconsideration.

The final decision is made by the Editor-in-Chief of the Journal.

Editors and reviewers must evaluate the manuscript based on its intellectual content regardless of race, gender, religious beliefs, ethnic origin, citizenship, or political views of the authors.

Reviewers should not suggest that authors include citations to the reviewer's own work (or that of colleagues), except in cases where the suggested citations are justified by genuine scientific reasons and not intended to increase the reviewer's citation count or visibility (or that of colleagues). Editors may remove inappropriate citations from reviewers' comments.

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- if they were involved in funding, consulting, or technical support of the research presented in the manuscript;
- if they have personal disagreements, competition, or conflictual relationships with the authors that may affect the objectivity of the evaluation;
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In the presence of a conflict of interest, the corresponding author has the right to notify the editorial office during the submission process.

The Journal applies the practice of inviting authors to a scientific seminar in order to assess the scientific significance of the obtained results and to clarify issues requiring explanation.

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All authors must make a certain contribution to the scientific content of the article—in developing the research concept, in critically revising the article to identify important intellectual content, in expressing ideas, doubts, and suggestions that proved decisive in obtaining the main results, and in approving the final version of the article for submission.

The Journal adheres to transparency by publishing information about the authors' contributions if the article specifies the contribution of each author. The authors may indicate contributions in the format «Equal author contributions». The list of contributions may include, for example, problem formulation, literature review—history of the issue, methodology, data collection and management, numerical calculations, software, validation, analysis, and may not be limited to this list.

All authors are responsible for all aspects of the work to ensure the accuracy and integrity of any part of it.

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In the event that technical errors (typos in formulas, tables, words, or phrases that change the meaning, etc.) are discovered in published articles, information about corrections may be published in subsequent issues.

15. **Sources of funding.** Authors must disclose any sources of funding (indicate the funding organization, grant number, and other relevant funding information). For example: The work was carried out within the framework of project No. _____ (project number), funded by the Committee of Science of the Ministry of Science and Higher Education of the Republic of Kazakhstan.

16. **Editorial policy on generative AI in articles.** The Editorial Office of the Journal, guided by the principles set out in paragraph 5 of Appendix 1 to the Order of the Minister of Education and Science of the Republic of Kazakhstan dated March 31, 2011 No. 127 (as amended by the Order of the Minister of Science and Higher Education dated 06.01.2025 No. 4), formulates its position on the use of

artificial intelligence technologies (hereinafter – AI) in scientific articles, taking into account the specifics of the Journal’s research, ethical standards, and the principle of academic integrity in order to maintain the quality of published materials.

The Editorial Office permits the use of AI in scientific articles exclusively for auxiliary functions and subject to the following conditions:

1. Authors adhere to reliable, safe, and ethical use of information obtained using AI technologies.
2. Authors disclose the use of AI technologies by providing references indicating:
 - at which stages of the research and in what way the author(s) used AI technology;
 - a description of the methods and approaches used to verify the reliability of the obtained data and/or their processing and interpretation when using AI technologies;
 - references to the use of AI technologies must include the name of the technology, the developer (rights holder), version, and the date of access and use.The absence of such information is considered confirmation by the author that AI technologies were not used in the scientific article.
3. When AI technologies are used in the preparation of the article, its scientific results, statements, recommendations, and conclusions must be formulated independently by the author.
4. The use of AI technologies is permitted in the statistical processing of research results.

The use of AI technologies is prohibited in the following cases:

- for generating the text of the article (abstract, introduction, literature review, methodology, results, discussion, conclusions, references);
- use of AI technologies without proper reference indicating the name, developer (rights holder), version, and date of access and/or use;
- use of AI technologies for the purpose of reducing or eliminating the possibility of detecting plagiarism;
- for concealing plagiarism, i.e., modifying text from another work using AI without indicating the source;
- in empirical studies involving children under 13 years of age, due to ethical restrictions and the need to protect the rights of minors;
- for generating experimental data without actually conducting an experiment (creation of fabricated data).

17. **Use of inclusivity.** Inclusive language acknowledges diversity, expresses respect for all people, is sensitive to differences, and promotes equal opportunities. Authors must ensure that their work uses inclusive language throughout and does not contain anything that could imply the superiority of one person over another based on age, gender or ethnic affiliation, race, culture, disability, or health status.

18. **Technical requirements for article formatting.** The Editorial Office asks authors to familiarize themselves with the guidelines and adhere to them when preparing manuscripts submitted to the Journal. Non-compliance with the established rules does not allow the article to proceed to further consideration.

Tex and PDF files of the work, prepared in the LaTeX typesetting system, must be submitted to the Editorial Office, with mandatory use of the Journal's original style file. Authors are required to submit two versions of the manuscript, one of which—an anonymized version—must not contain information about the authors (full name, affiliation, author details) for the purposes of double-blind peer review.

The text of the work begins with the MRNTI classification (International Rubricator of Scientific and Technical Information, determined via the link <http://grnti.ru/>), followed by the initials and surnames of the author(s), ORCID of each author, full name of the organization, city, and country of the author(s). E-mail addresses of all authors must be indicated, as well as the corresponding author.

The title of the article must not exceed 15 words.

The abstract must: consist of 150–300 words, contain a concise summary of the article, reflect its key features, and preserve the structure of the article. It must not: contain complex formulas, duplicate the title of the article, or include references to the text or the reference list.

Keywords (no more than 7 words or phrases) must reflect the main content of the article, define the subject area of the research, and appear in the text of the article. Keywords are separated by commas.

The text of the article must comply with Section «8. Requirements of the Editorial Board for the content and structure of articles».

Tables must be included directly in the text of the article, numbered with appropriate titles, and accompanied by references to them in the text with comments. Figures and graphs must be provided in one of the standard formats: PS, PDF, TIFF, GIF, JPEG, BMP, PCX. Raster images must have a resolution of 600 dpi. All details in figures must be clearly visible. All figures must be included in the text of the article, numbered, and provided with titles and detailed captions.

Author contributions must indicate the role of each author in the preparation of the article.

Sources of funding. If necessary, authors must disclose sources of funding in the text of the article. For example: «The work was carried out within the framework of project No. ___, funded by the Committee of Science of the Ministry of Science and Higher Education of the Republic of Kazakhstan».

The reference list must include only those sources (numbered in the order of citation) that are cited in the text. References to unpublished works are not permitted.

When preparing the article, the reference list must comply with the **Numeric style**, with sources numbered in the order of their appearance in the text. The order of sources corresponds to the order of citation in the text, not alphabetical order.

When formatting references, the following template should be used: chapter number, section number, item number, theorem number (lemma, statement, remark to

a theorem, etc.), formula number. For example: «..., see [3; § 7, lemma 6]»; «..., see [2; remark to theorem 5]».

Examples of formatting the reference list:

[1] С.М. Воронин и А.А. Карацуба, Дзета-функция Римана, Физматлит, Москва, 1994.

[2] А. Утесов и Г. Утесова, К(Е)Д–қойылымында анизотропты жалпыланған Соболев класы функцияларын оптималды жуықтау, Вестник Еуразийского национального университета имени Л. Н. Гумилёва. Математика, компьютерные науки, механика серия 152 (2025), № 3, 22–29.
<https://doi.org/10.32523/bulmathenu.2025/3.2>

[3] А.Ж. Жубанышева и Ш.К. Абикенова, О нормах производных функций с нулевыми значениями заданного набора линейных функционалов и их применения к поперечниковым задачам, в Функциональные пространства и теория приближения функций: тезисы докладов Международной конференции, посвященной 110-летию со дня рождения академика С.М. Никольского, с. 141–142, 2015.

Bibliographic information (title of the article, initials and surname of the author(s), full name of the organization, address, city, country, article title, abstract, keywords) must be provided in Russian and English (if the article is prepared in Kazakh), in Kazakh and English (if the article is prepared in Russian), and in Russian and Kazakh (if the article is prepared in English).

A combination of English-language and transliterated parts of the reference list is required. Transliteration is carried out using the online tool available at <http://translit-online.ru/>. This online tool does not transliterate specific letters of the Kazakh alphabet; therefore, after transliteration of the Kazakh text, authors must make corrections guided by the following rules:

ӘҒҢӨҮҰҚІ
agnoyyuki

Example of combining the English-language and transliterated parts of the reference list:

[1] S.M. Voronin and A.A. Karatsuba, Dzeta-funktsiia Rimana [Riemann Zeta Function]. Fizmatlit, Moscow, 1994. [in Russian]

[2] A. Utesov and G. Utesova, K(E)D–kojylymynda anizotropty zhalpylangan Sobolev klasy funkciyalaryn optimaldy zhuyktau [Optimal C(N)D-recovery of Functions from the Anisotropic Generalized Sobolev Class]. *L.N. Gumilev atyndagy Euraziya ulttyk universitetinin habarshysy. Matematika, kompyuterlik gylymdar, mekhanika seriyasy* [Bulletin of L.N. Gumilyov Eurasian National University. Mathematics, Computer Science, Mechanics Series], 152 (2025), no. 3, 22–29.
<https://doi.org/10.32523/bulmathenu.2025/3.2> [in Kazakh]

[3] A. Zh. Zhubanysheva and Sh. K. Abikenova, O normah proizvodnyh funkciy s nulevymi znacheniyami zadannogo nabora linejnyh funkcionalov i ih primeneniya k poperechnikovym zadacham [On the norms of derivatives of functions with zero values of a given set of linear functionals and their application to transverse problems], *Funkcional'nye prostranstva i teoriya priblizheniya funkciy: Tezisy dokladov Mezhdunarodnoj konferencii, posvyashchennoj 110-letiyu so dnya rozhdeniya akademika S.M.Nikol'skogo* [Functional spaces and theory of approximation of functions: Abstracts of the International Conference dedicated to the 110th birthday of Academician S .M. Nikolsky], 141–142, 2015.

If a source has an official translation and is also published in English, then in the combination of the English-language and transliterated parts of the reference list, the official English translation must be indicated.

For example, an article

Баилов Е.А., Сихов М. Б., Темиргалиев Н. (2014). Об общем алгоритме численного интегрирования функций многих переменных. *Журнал вычислительной математики и математической физики*, 54(7), 1059-1077. <https://doi.org/10.7868/S0044466914070047>

[4] Е.А. Баилов, М.Б. Сихов и Н. Темиргалиев, Об общем алгоритме численного интегрирования функций многих переменных, *Журнал вычислительной математики и математической физики* 54 (2014), № 7, 1059–1077. <https://doi.org/10.7868/S0044466914070047>

has an official translation

[4] E.A. Bailov, M.B. Sikhov, and N. Temirgaliev, General algorithm for the numerical integration of functions of several variables, *Computational Mathematics and Mathematical Physics* 54 (2014), 1061–1078. <https://doi.org/10.1134/S0965542514070045>

Information about the authors. For each author, the following information must be provided in Kazakh, Russian, and English: full name, academic degree, academic title, place of work, official address, city, country.

19. **Submission of the article.** To submit article materials, you need [to log in](https://bulmathmc.enu.kz/) or [register](https://bulmathmc.enu.kz/) on the Journal's website <https://bulmathmc.enu.kz/>

Articles prepared in the LaTeX typesetting system with mandatory use of the original style file must be uploaded to the system in Tex and PDF formats. Authors are required to provide an anonymized version of the article that does not contain information about the authors (full name, affiliation, author details) for the purposes of double-blind peer review, as well as a cover letter in accordance with Section «11. Ethical responsibilities of authors».

20. **Preservation of scientific records.** The Journal adheres to COPE principles to support editors, reviewers, and authors in fulfilling their ethical responsibilities.

21. **Citation and metrics.** The editor does not attempt to influence the journal's ranking by artificially increasing any metric. In particular, authors are not required to include references to articles from the Journal.

Scientific and non-research articles (e.g., in the sections «Memory» or «Information Analytics») must cite relevant literature to support the claims made. Excessive self-citation, coordinated efforts by multiple authors to collectively self-cite, unjustified or unnecessary citation of articles published in the Journal to which the manuscript is submitted, and any other forms of citation manipulation are strictly prohibited.

Citation manipulation may result in article rejection and may be reported to the authors' institutions. Similarly, any attempts by reviewers or editors to encourage such practices should be reported by authors to the Journal.

Authors should follow these recommendations when preparing a manuscript:

- Any claim in the manuscript based on external sources (i.e., not on the author's own new ideas, conclusions, or common knowledge) must include a reference.
- Authors should avoid citing secondary sources instead of original works; for example, they should cite the original work rather than a review article that cites the original.
- Authors must ensure that their citations are accurate, i.e., they should support the claim made in the manuscript and must not misrepresent another work by citing it incorrectly.
- Authors should not cite sources they are not familiar with.
- Authors should not predominantly cite their own publications or those of close colleagues or affiliated organizations.
- Authors should avoid citing publications exclusively from one related group of researchers.
- Authors should not use an unreasonable number of references to support a single point.
- Ideally, authors should reference peer-reviewed sources whenever possible.

When using sources for research, authors should be aware that some materials may have been published in questionable journals with identified scientific errors and lack of validity or significance. Such journals often attract potential authors with flattering spam emails promising rapid publication. When using results from such journals, authors must ensure the reliability and accuracy of the cited work.

22. **Confidentiality.** The Journal protects the confidentiality of all submitted materials and all communications with reviewers, unless otherwise agreed with the

respective authors and reviewers. Privileged information or ideas obtained as a result of the peer review process must be kept confidential and not used for personal gain.

Authors should treat all communications with the Journal as confidential, including correspondence with direct representatives of the Journal, such as Editors-in-Chief and/or editorial and reviewer reports, unless explicit consent has been given to share the information.

Information obtained during the manuscript review process must not be used without the permission of the author and the reviewer.

23. **Vigilance in the Editorial Process.** The Journal's editor works to ensure the integrity of manuscripts submitted by authors, the Editorial Board members, and reviewers, and properly utilizes the publisher's systems to detect any misconduct.

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Authors should be prepared to provide public access to the data whenever possible and to retain such data for a reasonable number of years following publication. Upon request, authors must be ready to submit the relevant documentation or data to verify the accuracy of the reported results. This may include raw data, samples, records, etc.

25. **Grounds for Rejection of a Submitted Manuscript.** A manuscript may be rejected by the Journal under the following circumstances:

- The manuscript did not pass the originality check in the Antiplagiat system.
- The manuscript received two negative reviews.
- Non-compliance with the technical requirements specified in the Journal's policy.
- Non-compliance with the Journal's policy regarding scientific content and the structural formatting of the article.
- The author did not implement revisions recommended by the reviewers.
- The manuscript contains text generated by artificial intelligence in violation of the requirements outlined in section 16, Editorial Policy on Generative AI in Articles.
- Use of external assistance from brokers and/or intermediary organizations.

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28. **Policy on Prohibition of Intermediaries in Manuscript Submission.** The Journal's editorial team works directly with the author(s) of articles and does not

cooperate with intermediary organizations. The Journal does not use external broker/organization assistance systems.

In the event that the use of external broker/organization assistance by the author(s) is detected: Published articles are subject to mandatory retraction; Manuscripts under editorial review are withdrawn without the right of resubmission.

29. **Article Retraction.** In rare cases where the interpretation or conclusion of an article is significantly undermined, a retraction of the published article may be required. Editorial decisions on retraction are based on the reliability of the article and whether the editor remains confident in the interpretation of the work and/or its conclusions. In such situations, the Journal follows [COPE recommendations](#). These actions are intended as a neutral tool and should not be viewed as punitive measures. Retracted articles are marked with a “Retraction” watermark, and the title is amended with the prefix “Retracted Article.”

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