

# MathAI 2026 — International Conference on Mathematics of Artificial Intelligence

## Conference Program

**Venue:** Sirius Federal Territory, Russia

**Dates:** March 29 – April 4, 2026

**Website:** [mathai.club](https://mathai.club) (<https://mathai.club>)

**OpenReview:** [mathai.club/MathAI/2026/Conference](https://mathai.club/MathAI/2026/Conference) **ZOOM:** [https://us06web.zoom.us/j/85499791029?](https://us06web.zoom.us/j/85499791029?pwd=F1rSuj7udMQm5NTTLzeCawZzwjJc5Q.1)

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### Sunday, March 29 — Arrival Day

Participant check-in and registration at the venue.

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### Monday, March 30 — Mathematical Foundations of AI

Opening Ceremony (9:00–9:40)

Time	Event	Moderator: <b>Andrey Nechesov</b>
9:00– 9:08	Welcome Address — Academician RAS <b>Sergey Goncharov</b>	
9:08– 9:15	Welcome Address — Academician RAS <b>Alexey Semenov</b>	
9:15– 9:23	Welcome Address — Corresponding Member of RAS <b>Alexander Gasnikov</b>	
9:23– 9:30	Welcome Address — Corresponding Member of RIA <b>Andrey Nechesov</b> , Chairman of IAIC	
9:30– 9:37	Welcome Address — Academician RIA <i>Joshua Huang</i>	
9:37– 9:40	Organizational remarks	

Plenary Session — Mathematics of AI (9:40–11:00)

**Moderator:  
Andrey  
Nechesov**

<b>Time</b>	<b>Talk</b>
9:40– 10:10	<b>Large-Scale Structural Dynamics Optimization through integrated Reduced Models</b> — Manyu Xiao, Professor, NPU, China, Xi'an
10:10– 10:30	<b>Polynomial-Time Fraise Limits via Fixed Point Theorems: From Model Theory to Trustworthy AI</b> — Andrey Nechesov, Vadim Puzarenko
10:30– 10:45	<b>Anthropomorphic Cyber-Physical Systems</b> — Evgenii Vityaev
10:45– 11:00	<b>Exact Learning Dynamics of a Linear Autoencoder Through Diagram Expansions</b> — Eugene Golikov, Yaroslav Gusev, Dmitry Yarotsky

☕ Coffee Break (11:00–11:30)

Session A1 — Algebra, Logic, and Formal Structures (11:30–13:00)

**Moderator:  
Andrey  
Nechesov,  
Evgeniy  
Vityaev**

<b>Time</b>	<b>Talk</b>
11:30– 11:45	<b>Admissibility and Unification in a Certain Class of Multimodal Logics</b> — Protsenko Nikita Aleksandrovich, Vladimir Vladimirovich Rybakov
11:45– 12:00	<b>A Graded Multi-Agent Logic of Knowledge in Forward–Backward Time</b> — Grekovich Konstantin Vikentyevich, Vladimir Vladimirovich Rybakov
12:00– 12:15	<b>Linguistic Structures for Formal Semantics of Natural Languages</b> — Alexey Stukachev, Ulyana Zaitseva, Cao Zilu
12:15– 12:30	<b>A Monotone System Generator for Solving Big Data Aggregation Problems</b> — F.T. Adilova
12:30– 12:45	<b>Detection of Local and Global Separability in Blurry Models as a Method for Explainable AI</b> — Gulnara Yakhyaeva
12:45– 13:00	<b>The <math>\Delta P</math> Programming Language: Combining Imperative, Logical, and Probabilistic Capabilities</b> — Sergey Goncharov, Andrey Nechesov, Sviridenko Dmitry, Dmitry Kondratyev, Igor Anureev, Evgenii Vityaev, Natalia Garanina, Ivan Gorobets, Gulnara Yakhyaeva

☐ Lunch (13:00–14:30)

Session A2 — Geometry, Analysis, and Mathematical Models (14:30–16:00)

**Moderator:  
Evgeniy  
Vityaev**

<b>Time</b>	<b>Talk</b>
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**Moderator:**  
**Evgeniy**  
**Vityaev**

<b>Time</b>	<b>Talk</b>
14:30–14:45	<b>Riemannian Geometry of Multimodal Biometric Embedding Spaces</b> — Alok Upadhyay (ZOOM)
14:45–15:00	<b>Know What You Don't Know: Cohomological Obstruction Theory for Equivariant Graph Neural Networks</b> — Bisiriyu Maqsudhat Kofoworola (ZOOM)
15:00–15:15	<b>Data-Driven Discovery of Lie Algebra Generators via Fréchet-Invariant Learning</b> — Ilya Markov, Alexander Hvatov
15:15–15:30	<b>A Game-Theoretic Axiomatization of Diffusion Generation and a Unifying Equilibrium Semantics for Generative AI</b> — Yutong Zhang, Yaoran Yang (ZOOM)
15:30–15:45	<b>Task-Based Engineering</b> — Sviridenko Dmitry (ZOOM)

☕ Break (16:00–16:20)

Session A3 — Mathematical Foundations (continued) (16:20–17:50)

**Moderator:**  
**Evgeniy**  
**Vityaev**

<b>Time</b>	<b>Talk</b>
16:20–16:35	<b>Glassy and Flexible Brain Attractor Networks: A Mathematical Framework for Modelling Cognitive Rigidity</b> — Andrey Vlasov
16:35–16:50	<b>No Free Lunch GPT/LLM Limitations</b> — Serge Berger
16:50–17:05	<b>The Maximal Calber Method for the Evolution Models, and Infinitely Complex Adaptive System</b> — David Saakian
17:05–17:20	<b>The Principle of Maximum Entropy as a Tool for Unstructured Data Processing</b> — Anton V. Kvasnov, Sergey V. Kuleshov
17:20–17:45	<b>The Evolution of Mind: Emergence of Collective Intelligence through Logical-Probabilistic Knowledge Dynamics in Multi-Agent Metaverse Ecosystems</b> — Andrey Nechesov, Sergey Evgenievich Barykin, Janne Ruponen (ZOOM)
17:45–18:00	<b>Big data and humanity knowledge</b> — Alexey Belov
18:00–18:15	<b>Evidence Accumulating Agents</b> — Andrey Novikov

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## Tuesday, March 31 — LLM Theory, Trustworthy AI & Engineering

Plenary Session — LLM and Trustworthy AI (9:00–11:00)

**Moderator: Ivan  
Bondarenko,  
Alexandra  
Maksimova**

<b>Time</b>	<b>Talk</b>
09:00– 09:15	<b>Strategic Reasoning in Large Language Models</b> — Ivan Selivanov, Anna Kovalenko
09:15– 09:30	<b>Detecting Hallucinations in LLM Responses Using Token-Level Log-Probability Signals</b> — Vadim Eliseev, Aleksandra Maksimova
09:30– 09:45	<b>Evolving Pareto-Optimal Reasoning Paths in LLMs</b> — Jinuk Lee
09:45– 10:00	<b>Multi-Stage Goal Verification: A Defense In-Depth Mathematical Framework for Mitigating Deceptive Alignment in Large Language Models</b> — Aniket Deroy
10:00– 10:15	<b>OLoRA+: A Hybrid Approach to Parameter-Efficient Fine-Tuning of Large Language Models</b> — F.T. Adilova, Samariddin Kushmuratov
10:15– 10:30	<b>Context-Length Robustness in Question Answering Models: A Comparative Empirical Study</b> — Trishita Dhara, Siddhesh Sheth
10:30– 10:45	<b>A Systematic Study of Gate Functions in Soft Adaptive Policy Optimization</b> — Egor Denisov, Svetlana Glazyrina, Maksim Kryzhanovskiy, Roman Ischenko
10:45– 11:00	<b>Evaluating Approaches to Surrogate ODE-Based Modelling of Diffusion Bridges</b> — Khilchuk Maria Denisovna, Vladimir Latypov, Kleshchev Pavel Sergeevich, Alexander Hvatov

☕ Coffee Break (11:00–11:30)

Session B1 — ML Theory and Methods (11:30–13:00)

**Moderator: Ivan  
Bondarenko,  
Alexandra  
Maksimova**

<b>Time</b>	<b>Talk</b>
11:30– 12:00	<b>From modelling language to modelling scientific discovery. An overview</b> <i>Tatiana Shavrina (Institute of Linguistics, RAS, and Llama-team)</i>
12:00– 12:15	<b>When Data Amplifies Shortcuts: Gradient-Flow Evidence of Spurious Feature Reinforcement</b> — Rahul D. Ray, Rishi Mohapatra
12:15– 12:30	<b>Semi-Supervised Local Temporal Poisson Label Propagation on Dynamical Data</b> — Constantin Ruchkin
12:30– 12:45	<b>Hebbian Learning through the Lens of Sparse Autoencoders</b> — Nikita Kurdiukov, Anton Razzhigaev
12:45– 13:00	<b>Consistent Nonparametric Density Estimation with Neural Networks: A Unary Classification Approach</b> — Andrew Perminov, Andrey Kovalenko, Denis Turdakov

□ Lunch (13:00–14:30)

Session B2 — Trustworthy & Explainable AI (14:30–16:00)

**Moderator: Ivan  
Bondarenko,  
Alexandra  
Maksimova**

<b>Time</b>	<b>Talk</b>
14:30– 14:45	<b>Formalizing Multi-Agent Systems in Multiblockchain Architectures via Oracles</b> — Novikov Sergey Denisovich, Andrey Nechesov
14:45– 15:00	<b>Explainable AI for Mathematics: Proofs as Code with Knowledge Graph and Domain Ontology Support</b> — Andrey Khalov, Olga Ataeva, Natalia Tuchkova
15:00– 15:15	<b>Improving Fairness in AI-Powered Recruitment: An Interpretable Resume Screening System</b> — Natalia A. Agapova, Rustam A. Lukmanov
15:15– 15:30	<b>Beyond Isolation: Effects of Defense Combinations on Evasion and Privacy Risks in Machine Learning</b> — Maria Terenteva, Kirill Lukianov
15:30– 15:45	<b>On the Formalization of Constrained Adversarial Attacks in Network Traffic Analysis</b> — Anastasiya Nikolskaya, Dmitry Rybolovlev
15:45– 16:00	<b>Using Large Language Models for Building Fuzzy Cognitive Maps</b> — Anna Kovalenko, Alina Petukhova, Chubyr Natalia Olegovna, Veronika Rastorgueva

☕ Break (16:00–16:20)

Session B3 — Applied AI & Engineering (16:20–18:00)

**Moderator: Ivan  
Bondarenko,  
Alexandra  
Maksimova**

<b>Time</b>	<b>Talk</b>
16:20– 16:35	<b>Hybrid Evolutionary Algorithm with Optimized Operators for Scheduling on Permutations</b> — Yulia Zakharova
16:35– 16:50	<b>Estimating Importance of Highly Correlated Features Using Matrix Decomposition</b> — Alexander S. Minkin
16:50– 17:05	<b>Semantic Modeling for World-Centered Architectures</b> — Andrei Mantsivoda, Daria Gavrilina
17:05– 17:20	<b>Automated Structural Learning of Stochastic Dynamics</b> — Xeniya Bashkova, Alexander Hvatov
17:20– 17:35	<b>Hybrid UAV Hazard Detection Approach Based on Open-Vocabulary Detection and Mivar Expert System</b> — Oleg Lamcev, Ivan Chernyadiev, Aleksandra Maksimova
17:35– 17:50	<b>Generalized Heavy-Tailed Mutation for Evolutionary Algorithms</b> — Anton Ereemeev, Valentin Topchii, Silaev Dmitry Vyacheslavovich

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# Wednesday, April 1 — Round Table

Round Table: Mathematics and Artificial Intelligence — Challenges and Perspectives  
(9:00–13:00)

Time	Event	
9:00– 9:10	Opening remarks	
9:10– 10:30	<b>Part 1: Mathematical Foundations of Trustworthy AI — From Polynomial Computability to Verifiable Systems</b>	Moderator: Evgeniy Vityaev, Andrey Nechesov
10:30– 11:00	☕ Coffee Break	
11:00– 12:15	<b>Part 2: Interdisciplinary AI — Mathematics for Finance, Medicine, and Engineering</b>	Moderator: Sergey Barykin, Yuriy L. Orlov, Ivan Bondarenko
12:15– 13:00	<b>Open Discussion: Future of MathAI, Publication Opportunities, Collaboration</b>	Moderator: Sergey Goncharov, Andrey Nechesov, Evgeniy Vityaev, Yuriy L. Orlov, Sergey Barykin
13:00– 14:00	☐ Lunch	
14:00– 17:00	Free time / Networking / Excursion	
17:00– 20:00	<b>Conference Banquet</b>	

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# Thursday, April 2 — AI for Life Sciences, Medicine & Finance

*Session organized in coordination with Prof. Yuriy L. Orlov*

## Session D1 — AI in Life Sciences and Medicine (9:00–11:00)

| Time | Talk | Moderator: Yuriy L. Orlov |-----|-----| | 9:00–9:15 | **Interpretable Time-Series and Trajectory Analysis for Detection of Autism-Related Motor Behaviors** — Olga Isaeva, Ivan Maltsev, Anna Varlamova, Sergei Strijhak, Konstantin Gnidko, Olga Krivorotko | | 9:15–9:30 | **Algebraic Bioinformatics Based on Matrix-Operator Alphabets for Artificial Intelligence** — S.V. Petoukhov | | 9:30–9:45 | **Operator Learning for High-Dimensional Symplastic Growth Dynamics with Stochastic Cell Division** — Ulyana Zubairova | | 9:45–10:00 | **Trustworthy LLM-Based Medical Decision-Making Framework: An Iterative Validation Methodology with Safety Guarantees** — Maxmasoatov Elbek, Andrey Nechesov | | 10:00–10:15 | **SHAP-Guided Feature Selection and Model Simplification for Facial Time-Series Reaction Detection** — Andrei Kulinskii, Iliia Stulov, Bratenkov Miron Andreevich, Olga Krivorotko, Konstantin Gnidko, Sergei Strijhak | | 10:15–11:00 | *Additional talks organized by Prof. Yuriy L. Orlov (Life Sciences & Bioinformatics session — agenda TBD) | | 10:15–11:00 | Additional talks organized by Prof. Yuriy L. Orlov (Life Sciences & Bioinformatics session — agenda) | | 10:15–10:30 | **\*\*AI applications in bioinformatics for ageing and longevity studies\*\*** - Ming Chen,*

Zhejiang University, China | 10:30–10:45 | **Adaptive Semantic Chunking Method for Medical Retrieval-Augmented Generation Systems** - Eduard Fartushny, Georgiy Lebedev | 10:45–11:00 | **Medical AI at Sechenov University** - Georgiy Lebedev, Eduard Fartushny, Yuriy Orlov

☕ Coffee Break (11:00–11:30)

Session E1 — AI in Finance and Economics (11:30–13:00)

Time	Talk	Moderator: Sergey Barykin
11:30–11:45	<b>The Effectiveness of Fine-tuning Large Language Models to Measure Trust in the Central Bank</b> — Anastasia Matevosova	
11:45–12:00	<b>Robust Multi-Criteria Decision Support for AI-Assisted Marketplace Logistics with Uncertain Data and Preferences</b> — Timur Panesh, Anna Kovalenko	
12:00–12:15	<b>Optimal Control of the Solow Model with an Epidemic Factor Calibrated to Real Data</b> — Sergey Yakunin, Olga Krivorotko	
12:15–12:30	<b>Probabilistic Risk Scoring Frameworks for Automated Cyber Insurance Underwriting: A Bayesian Network Approach</b> — Sachin Panicker	
12:30–12:45	<b>Diffusion Approximation of Distribution Dynamics in an Agent-Based Economic Model with a Banking Sector</b> — Aleksandr Martynenko, Olga Krivorotko	
12:45–13:00	<b>Calibration under Sparse Data: Robust Canonical Surface Estimation from Transaction Bars</b> — Ekaterina Bagantsova	

□ Lunch (13:00–14:30)

Session E2 — Finance, Logistics & Digital Twins (14:30–16:00)

Time	Talk	Moderator: Sergey Barykin
14:30–14:45	<b>Digital Twin Model of Investment Cash Flows in Distributed Ledger Environment with Neural Network Forecasting</b> — Glushankov Kirill, Sergey Evgenievich Barykin, Daria Dinets	
14:45–15:00	<b>A Financial-Logistics Graph Framework for Dynamic Mortgage Default Prediction Using Recurrent Hazard Modeling</b> — Aleksey Evgenievich Shulga, Sergey Evgenievich Barykin, Daria Dinets	
15:00–15:15	<b>Embedding Performance into Decision Logic: A KPI-Driven Framework for Omnichannel Logistics Networks under Uncertainty</b> — ZhangWenye, Sergey Evgenievich Barykin	
15:15–15:30	<b>A Multicriteria Neural Network-Based Approach to Adaptive Investment Portfolio Formation</b> — Khudyakov Stanislav Andreevich, Sergey Evgenievich Barykin, Daria Dinets	

☕ Break (15:30–15:50)

Session D2 — Additional Talks (Life Sciences, organized by Prof. Orlov) (15:50–18:00)

Time	Talk	Moderator: Yuriy L. Orlov
15:50–18:00	<i>Talks organized by Prof. Yuriy L. Orlov — agenda TBD. Potential topics: AI tools in bioinformatics, gene networks, medical RAG systems, e-Health education.</i>	
15:50–16:20   <b>**Computational biology and AI**</b> - Natasa Przilj, MBZUAI, UAE   16:20 –16:35   <b>AI for Computational genomics</b> - Julia Medvedeva, MBZUAI, UAE   16:35 –16:50   <b>** Coronavirus genome analysis using AI**</b> - Nenad Mitic, University of Belgrade, Serbia (distant)   16:50 –17:05   <b>AI medical assistant – educational course on medical recommendations</b> - Ivan Pervushin, Irkutsk University   17:05 –17:20   <b>Review of ChatGPT-like models for gene network reconstruction</b> - Yana Syrovatskaya, Inessa Minenko, Yuriy Orlov, Sechenov University, Moscow   17:20 –17:30   <b>AI tools in education</b> - Nina Orlova, Ekaterina Savina, Yuriy Orlov, Sechenov University   17:30 –17:45   <b>**3D protein structure modeling using AlphaFold and educational courses**</b> - Anastasia Anashkina, Ekaterina Savina, Yuriy Orlov, Sechenov University (distant)   17:45 –18:00   <b>Review of AI applications in agrobiolgy</b> - Anton Poddubsky, Alexander Ignatov, Yuriy Orlov, RUDN University (distant)		

Friday, April 3 — Cross-Track Session & Closing (Offline + Zoom)

Session F1 — Applied AI (9:00–11:00)

Time	Talk	Mode Moderator: Vladislav L. Litvinov
9:00–9:15	<b>Four-Term Finite-Sample OOD Transfer Bound for Fourier Neural Operators</b> — Sebastien Kawada	ZOOM
9:15–9:30	<b>When Neural PDE Solvers Fail to Extrapolate: Spectral Truncation and Boundary Condition Neglect</b> — Rahul D. Ray	ZOOM
9:30–9:45	<b>Application of Artificial Intelligence to Predict Vibrations in Mechanical Systems with Moving Boundaries</b> — Vladislav L. Litvinov	
9:45–10:00	<b>Object Detection Systems for Vehicle Model and Body Color Recognition: A Comparative Study and Real-World Deployment on CCTV Data from Uzbekistan</b> — Misirov Farkhod	ZOOM
10:00–10:15	<b>Aligning the Number of Parameters with the Number of Linear Regions for Improved Neural Network Approximation</b> — Podoprosvetov Aleksei, Vladimir Smolin, Sergei Sokolov	Offline
10:15–10:30	<b>Machine Learning Augmented Tikhonov Regularization with Iterative Approach for Stable Neutron Spectrum Unfolding</b> — Konstantin Chizhov, Stepan Shirkov	Offline

Time	Talk	Mode	Moderator: Vladislav L. Litvinov
10:30– 10:45	<b>Multimodal Clustering of Students Using Social Media Profiles to Analyze Academic Performance</b> — Sergei Gorshkov	Offline	
10:45– 11:00	<b>Interpretable Emotion Attribution in Social Graphs: A Comparative Analysis of Rule-Based, Transformer, and LLM Models</b> — Usman Gidado, Anton Kolonin	ZOOM	

☕ Coffee Break (11:00–11:30)

Session F2 — Zoom + Offline Mixed Session (11:30–13:00)

Time	Talk	Mode	Moderator: Vladislav L. Litvinov
11:30– 11:45	<b>Regularized Physics-Informed Neural Networks for Numerical Solving of Inverse Problems in Dynamical Systems</b> — Shcherbina Yakov, Olga Krivorotko, Neverov Andrei		
11:45– 12:00	<b>Graph Neural Networks for Modeling Social Processes in Online Social Networks</b> — Alina Smakotina, Olga Krivorotko		
12:00– 12:15	<b>Identification of Localized Pollution Sources in a Two-Dimensional Diffusion-Reaction Equation via the Conjugate Gradient Method</b> — Konstantin Pronin, Olga Krivorotko		
12:15– 12:30	<b>Semi-Supervised Classification of Dynamical Regimes in Hamiltonian Systems Using Poincaré Sections</b> — Constantin Ruchkin, Elena Avdyushina	Offline	
12:30– 12:45	<b>Hybrid Bi-Level Index for Shortest Paths in Temporal Networks</b> — Vasilev M.	Offline	
12:45– 13:00	<b>LURE: Latent Utility Reward Erosion as a Bayesian Signaling Game in Multi-Step Agent Interactions</b> — Kabir Murjani, Parth Vyas	ZOOM	

☐ Lunch (13:00–14:30)

Session F3 — Remaining Talks (14:30–16:00)

Time	Talk	Mode	Moderator: Vladislav L. Litvinov
14:30– 14:45	<b>Towards Adaptive Video Stabilization: A Robustness Benchmark of IMU Predictors for Cascaded Routing</b> — Ilya Afanasyev	Offline	
14:45– 15:00	<b>AI-Based Detection of Unwanted Behavior: The Paradoxical Effect of Standard Data Augmentation in Video Surveillance</b> — Maksim Emelianov	Offline	

Time	Talk	Mode	Moderator: Vladislav L. Litvinov
15:00–15:15	<b>Implementation of a Cryptographic Hash Function Based on a Deep Neural Network</b> — Dmitry V. Yatsenko	Offline	
15:15–15:30	<b>Dependence Fidelity and Downstream Inference Stability in Generative Models</b> — Nazia Riasat	ZOOM	
15:30–15:45	<b>Deep Learning for Educational Video Analysis: Benchmarking and Pipeline Optimization</b> — Gordey Zuev, Elena Kantonistova	ZOOM	
15:45–16:00	<b>Shortest Path Search in Large-Scale Graphs with Cox-Distributed Edge Weights</b> – Maxim Yamkin, Alexander Kugaevskikh, Anna Avdyushina		
16:00–16:15	<b>Problems of higher education and intelligent pedagogical agents: possibilities, approaches and solutions.</b> – Vitaliy Kazakov		

☕ Coffee Break (16:15–16:30)

Closing Ceremony (16:00–17:00) | Moderator: Evgeniy Vityaev

Time	Event
16:30–17:00	Closing remarks — Program Committee
17:00–17:15	Papers Publishing
17:15–17:30	Announcement of <b>MathAI 2027</b>

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Saturday, April 4 — Departure Day

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## Summary Statistics

	Count
<b>Total accepted papers</b>	<b>76</b> (75 Oral + 1 Poster)
Monday — Mathematical Foundations	19 talks
Tuesday — LLM, Trustworthy AI & Engineering	24 talks
Thursday — Life Sciences, Medicine & Finance	15 talks + Orlov session
Friday — Cross-Track (Zoom + Offline)	18 talks
Invited Talks	2 (Monday + Tuesday)
Opening Speeches	3–6
Round Table (Wednesday)	9:00–13:00
Conference Banquet	Wednesday 17:00

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*Program compiled by the MathAI 2026 Program Committee.*

*Contact: [mathai.club@yandex.ru](mailto:mathai.club@yandex.ru)*