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)

OpenReview: mathai.club/MathAI/2026/Conference **ZOOM:** https://us06web.zoom.us/j/85499791029?pwd=F1rSuj7udMQm5NTTLzeCawZzwjJc5Q.1 (https://us06web.zoom.us/j/85499791029?pwd=F1rSuj7udMQm5NTTLzeCawZzwjJc5Q.1) **Indetificator:** 854 9979 1029 **Password:** 422560

Sunday, March 29 — Arrival Day

Participant check-in and registration at the venue.

Monday, March 30 — Mathematical Foundations of AI

Opening Ceremony (9:00–9:40)

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

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

Time	Talk	Moderator: Andrey Nechesov
9:40–10:10	**[Invited Talk]** *Speaker and title TBD*	
10:10–10:30	**Polynomial-Time Fraisse Limits via Fixed Point Theorems: From Model Theory to Trustworthy AI** — Andrey Nechesov, Vadim Puzarenko	
10:30–10:45	**Anthropomorphic Cyber-Physical Systems** — Evgenii Vityaev	
10:45–11:00	**Exact Learning Dynamics of a Linear Autoencoder Through Diagram Expansions** — Eugene Golikov, Yaroslav Gusev, Dmitry Yarotsky	

☕ Coffee Break (11:00–11:30)

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

Time	Talk	Moderator: Andrey Nechesov
11:30–11:45	**Admissibility and Unification in a Certain Class of Multimodal Logics** — Protsenko Nikita Aleksandrovich, Vladimir Vladimirovich Rybakov	
11:45–12:00	**A Graded Multi-Agent Logic of Knowledge in Forward–Backward Time** — Grekovich Konstantin Vikentyevich, Vladimir Vladimirovich Rybakov	
12:00–12:15	**Linguistic Structures for Formal Semantics of Natural Languages** — Alexey Stukachev, Ulyana Zaitseva, Cao Zilu	
12:15–12:30	**A Monotone System Generator for Solving Big Data Aggregation Problems** — F.T. Adilova	
12:30–12:45	**Detection of Local and Global Separability in Blurry Models as a Method for Explainable AI** — Gulnara Yakhyaeva	
12:45–13:00	**The ΔP Programming Language: Combining Imperative, Logical, and Probabilistic Capabilities** — 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)

Time	Talk	Moderator: Evgeniy Vityaev
14:30–14:45	**Riemannian Geometry of Multimodal Biometric Embedding Spaces** — Alok Upadhyay	
14:45–15:00	**Know What You Don't Know: Cohomological Obstruction Theory for Equivariant Graph Neural Networks** — Bisiriyu Maqsudhat Kofoworola	

Time	Talk	Moderator: Evgeniy Vityaev
15:00–15:15	**Data-Driven Discovery of Lie Algebra Generators via Fréchet-Invariant Learning** — Ilya Markov, Alexander Hvatov	
15:15–15:30	**A Game-Theoretic Axiomatization of Diffusion Generation and a Unifying Equilibrium Semantics for Generative AI** — Yutong Zhang, Yaoran Yang	
15:30–15:45	**Task-Based Engineering** — Sviridenko Dmitry	

☕ Break (16:00–16:20)

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

Time	Talk	Moderator: Evgeniy Vityaev
16:20–16:35	**Glassy and Flexible Brain Attractor Networks: A Mathematical Framework for Modelling Cognitive Rigidity** — Andrey Vlasov	
16:35–16:50	**No Free Lunch GPT/LLM Limitations** — Serge Berger	
16:50–17:05	**The Maximal Calber Method for the Evolution Models, and Infinitely Complex Adaptive System** — David Saakian	
17:05–17:20	**The Principle of Maximum Entropy as a Tool for Unstructured Data Processing** — Anton V. Kvasnov, Sergey V. Kuleshov	
17:20–17:50	**The Evolution of Mind: Emergence of Collective Intelligence through Logical-Probabilistic Knowledge Dynamics in Multi-Agent Metaverse Ecosystems** — Andrey Nechesov, Sergey Evgenievich Barykin, Janne Ruponen	

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

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

Time	Talk	Moderator: Ivan Bondarenko, Alexandra Maksimova
9:00–9:30	**[Invited Talk]** *Speaker and title TBD*	
9:30–9:50	**Strategic Reasoning in Large Language Models** — Ivan Selivanov, Anna Kovalenko	
9:50–10:05	**Detecting Hallucinations in LLM Responses Using Token-Level Log-Probability Signals** — Vadim Eliseev, Aleksandra Maksimova	

Time	Talk	
10:05–10:20	**Evolving Pareto-Optimal Reasoning Paths in LLMs** — Jinuk Lee	
10:20–10:35	**Multi-Stage Goal Verification: A Defense In-Depth Mathematical Framework for Mitigating Deceptive Alignment in Large Language Models** — Aniket Deroy	
10:35–10:50	**OLoRA+: A Hybrid Approach to Parameter-Efficient Fine-Tuning of Large Language Models** — F.T. Adilova, Samariddin Kushmuratov	
10:50–11:00	**Context-Length Robustness in Question Answering Models: A Comparative Empirical Study** — Trishita Dhara, Siddhesh Sheth	

♨ Coffee Break (11:00–11:30)

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

Time	Talk	Moderator: Ivan Bondarenko, Alexandra Maksimova
11:30–11:45	**A Systematic Study of Gate Functions in Soft Adaptive Policy Optimization** — Egor Denisov, Svetlana Glazyrina, Maksim Kryzhanovskiy, Roman Ischenko	
11:45–12:00	**Evaluating Approaches to Surrogate ODE-Based Modelling of Diffusion Bridges** — Khilchuk Maria Denisovna, Vladimir Latypov, Kleshchev Pavel Sergeevich, Alexander Hvatov	
12:00–12:15	**When Data Amplifies Shortcuts: Gradient-Flow Evidence of Spurious Feature Reinforcement** — Rahul D. Ray, Rishi Mohapatra	
12:15–12:30	**Semi-Supervised Local Temporal Poisson Label Propagation on Dynamical Data** — Constantin Ruchkin	
12:30–12:45	**Hebbian Learning through the Lens of Sparse Autoencoders** — Nikita Kurdiukov, Anton Razzhigaev	
12:45–13:00	**Consistent Nonparametric Density Estimation with Neural Networks: A Unary Classification Approach** — Andrew Perminov, Andrey Kovalenko, Denis Turdakov	

⬜ Lunch (13:00–14:30)

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

Time	Talk	Moderator: Ivan Bondarenko, Alexandra Maksimova

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

☕ Break (16:00–16:20)

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

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

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	**Part 1: Mathematical Foundations of Trustworthy AI — From Polynomial Computability to Verifiable Systems**	Moderator: Evgeniy Vityaev, Andrey Nechesov
10:30–11:00	☕ Coffee Break	
11:00–12:15	**Part 2: Interdisciplinary AI — Mathematics for Finance, Medicine, and Engineering**	Moderator: Sergey Barykin, Yuriy L. Orlov
12:15–13:00	**Open Discussion: Future of MathAI, Publication Opportunities, Collaboration**	Moderator: Andrey Nechesov, Evgeniy Vityaev
13:00–14:00	🍽 Lunch	
14:00–17:00	Free time / Networking / Excursion	
17:00–18:00	**Conference Banquet**	

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, Ilia 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	**The Effectiveness of Fine-tuning Large Language Models to Measure Trust in the Central Bank** — Anastasia Matevosova	
11:45–12:00	**Robust Multi-Criteria Decision Support for AI-Assisted Marketplace Logistics with Uncertain Data and Preferences** — Timur Panesh, Anna Kovalenko	
12:00–12:15	**Optimal Control of the Solow Model with an Epidemic Factor Calibrated to Real Data** — Sergey Yakunin, Olga Krivorotko	
12:15–12:30	**Probabilistic Risk Scoring Frameworks for Automated Cyber Insurance Underwriting: A Bayesian Network Approach** — Sachin Panicker	
12:30–12:45	**Diffusion Approximation of Distribution Dynamics in an Agent-Based Economic Model with a Banking Sector** — Aleksandr Martynenko, Olga Krivorotko	
12:45–13:00	**Calibration under Sparse Data: Robust Canonical Surface Estimation from Transaction Bars** — 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	**Digital Twin Model of Investment Cash Flows in Distributed Ledger Environment with Neural Network Forecasting** — Glushankov Kirill, Sergey Evgenievich Barykin, Daria Dinets	
14:45–15:00	**A Financial-Logistics Graph Framework for Dynamic Mortgage Default Prediction Using Recurrent Hazard Modeling** — Aleksey Evgenievich Shulga, Sergey Evgenievich Barykin, Daria Dinets	
15:00–15:15	**Embedding Performance into Decision Logic: A KPI-Driven Framework for Omnichannel Logistics Networks under Uncertainty** — ZhangWenye, Sergey Evgenievich Barykin	
15:15–15:30	**A Multicriteria Neural Network-Based Approach to Adaptive Investment Portfolio Formation** — 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

Time	Talk	Moderator: Yuriy L. Orlov
15:50– 18:00	*Talks organized by Prof. Yuriy L. Orlov — agenda TBD. Potential topics: AI tools in bioinformatics, gene networks, medical RAG systems, e-Health education.*	

| 15:50–16:20 | **Computational biology and AI** - Natasa Przilj, MBZUAI, UAE | 16:20 –16:35 | **AI for Computational genomics** - Julia Medvedeva, MBZUAI, UAE | 16:35 –16:50 | ** Coronavirus genome analysis using AI ** - Nenad Mitic, University of Belgrade, Serbia (distant) | 16:50 –17:05 | **AI medical assistant – educational course on medical recommendations** - Ivan Pervushin, Irkutsk University | 17:05 –17:20 | **Review of ChatGPT-like models for gene network reconstruction** - Yana Syrovatskaya, Inessa Minenko, Yuriy Orlov, Sechenov University, Moscow | 17:20 – 17:30 | **AI tools in education** - Nina Orlova, Ekaterina Savina, Yuriy Orlov, Sechenov University | 17:30 –17:45 | **3D protein structure modeling using AplhaFold and educational courses ** - Anastasia Anashkina, Ekaterina Savina, Yuriy Orlov, Sechenov University (distant) | 17:45 –18:00 | **Review of AI applications in agrobiology** - 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	**Four-Term Finite-Sample OOD Transfer Bound for Fourier Neural Operators** — Sebastien Kawada	ZOOM	
9:15– 9:30	**When Neural PDE Solvers Fail to Extrapolate: Spectral Truncation and Boundary Condition Neglect** — Rahul D. Ray	ZOOM	
9:30– 9:45	**Application of Artificial Intelligence to Predict Vibrations in Mechanical Systems with Moving Boundaries** — Vladislav L. Litvinov		
9:45– 10:00	**Object Detection Systems for Vehicle Model and Body Color Recognition: A Comparative Study and Real-World Deployment on CCTV Data from Uzbekistan** — Misirov Farkhod	ZOOM	
10:00– 10:15	**Aligning the Number of Parameters with the Number of Linear Regions for Improved Neural Network Approximation** — Podoprosvetov Aleksei, Vladimir Smolin, Sergei Sokolov	Offline	
10:15– 10:30	**Machine Learning Augmented Tikhonov Regularization with Iterative Approach for Stable Neutron Spectrum Unfolding** — Konstantin Chizhov, Stepan Shirkov	Offline	
10:30– 10:45	**Multimodal Clustering of Students Using Social Media Profiles to Analyze Academic Performance** — Sergei Gorshkov	Offline	

Time	Talk	Mode	Moderator: Vladislav L. Litvinov
10:45–11:00	**Interpretable Emotion Attribution in Social Graphs: A Comparative Analysis of Rule-Based, Transformer, and LLM Models** — 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	**Regularized Physics-Informed Neural Networks for Numerical Solving of Inverse Problems in Dynamical Systems** — Shcherbina Yakov, Olga Krivorotko, Neverov Andrei		
11:45–12:00	**Graph Neural Networks for Modeling Social Processes in Online Social Networks** — Alina Smakotina, Olga Krivorotko		
12:00–12:15	**Identification of Localized Pollution Sources in a Two-Dimensional Diffusion-Reaction Equation via the Conjugate Gradient Method** — Konstantin Pronin, Olga Krivorotko		
12:15–12:30	**Semi-Supervised Classification of Dynamical Regimes in Hamiltonian Systems Using Poincaré Sections** — Constantin Ruchkin, Elena Avdyushina	Offline	
12:30–12:45	**Hybrid Bi-Level Index for Shortest Paths in Temporal Networks** — Vasilev M.	Offline	
12:45–13:00	**LURE: Latent Utility Reward Erosion as a Bayesian Signaling Game in Multi-Step Agent Interactions** — 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	**Towards Adaptive Video Stabilization: A Robustness Benchmark of IMU Predictors for Cascaded Routing** — Ilya Afanasyev	Offline	
14:45–15:00	**AI-Based Detection of Unwanted Behavior: The Paradoxical Effect of Standard Data Augmentation in Video Surveillance** — Maksim Emelianov	Offline	
15:00–15:15	**Implementation of a Cryptographic Hash Function Based on a Deep Neural Network** — Dmitry V. Yatsenko	Offline	
15:15–15:30	**Dependence Fidelity and Downstream Inference Stability in Generative Models** — Nazia Riasat	ZOOM	

Time	Talk	Mode	Moderator: Vladislav L. Litvinov
15:30–15:45	**Deep Learning for Educational Video Analysis: Benchmarking and Pipeline Optimization** — Gordey Zuev, Elena Kantonistova	ZOOM	

☕ Coffee Break (15:45–16:00)

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

Time	Event
16:00–16:30	Closing remarks — Program Committee
16:30–16:45	Papers Publishing
16:45–17:15	Announcement of **MathAI 2027**

Saturday, April 4 — Departure Day

Summary Statistics

	Count
Total accepted papers	**76** (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

Program compiled by the MathAI 2026 Program Committee.

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