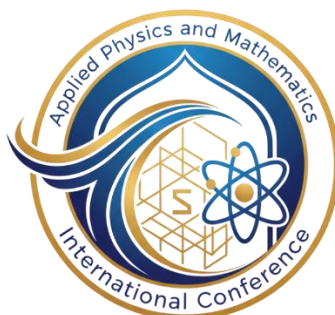




**МИНИСТЕРСТВО ВЫСШЕГО ОБРАЗОВАНИЯ, НАУКИ И ИННОВАЦИЙ
РЕСПУБЛИКИ УЗБЕКИСТАН**

БУХАРСКИЙ ГОСУДАРСТВЕННЫЙ УНИВЕРСИТЕТ



AAPM-2025

IV Международная конференция

**AAPM-IV 2025: Достижения в области прикладной
физики и математики**

**18-19 декабря 2025 г. | Бухарский государственный
университет, Узбекистан**

ПРОГРАММА

**IV International Conference
on Advances in Applied Physics and
Mathematics – AAPM-IV 2025**

Bukhara, Uzbekistan, 18-19 December 2025

Бухара-2025

Программа конференции

IV Международная конференция

ААРМ-IV 2025: Достижения в области прикладной физики и математики

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День 1. Торжественное открытие и пленарное заседание

- Регистрация участников
 - Торжественное открытие конференции
 - Приветственные слова организаторов и партнеров
 - Пленарные доклады:
 - A nonlocal problem for the time-fractional diffusion–wave equation, DSc. ASKAR RAHMONOV, Bukhara State University, Uzbekistan
 - Change of the effective mass of charge carriers under uniaxial pressure in cuprate superconductors within the Casimir–Kempf mode, ABDULLO AHADOV, Bukhara State Medical Institute, Uzbekistan
 - Effect of APS Processing Conditions on the Microstructure and Functional Behavior of $\text{Al}_2\text{O}_3\text{--TiO}_2$ Coatings, VLADISLAV KOTS, Shakarim University, Semey, Kazakhstan
 - Intelligent systems for monitoring the skills of personnel in food industry and agro-industrial complex enterprises based on mathematical modeling of work on electromechanical installations, IVAN POLEVSHCHIKOV, Russian Biotechnology University, Moscow, Russian Federation
 - Multiphysics Analysis of Cathodic Electrolytic-Plasma Treatment, RINAT KURMANGALIYEV, Shakarim University, Semey, Kazakhstan
 - Influence of Electrolyte–Plasma Hardening on the Electrophysical Parameters and Tribomechanical Properties of 45 Steel Used in Harrow Tines, NURLAT KADYRBOLAT, Shakarim University, Semey, Kazakhstan
 - Общее фото участников
 - Заключительное слово председателя пленарного заседания
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День 2. Секционные заседания

Секция 1. Прикладная физика и математика в энергетических системах (Applied Physics and Mathematics in Energy Systems)

- Algorithm for Modeling a Metal Single Crystal in Parallel Computing Systems — Akbarali Rasulov, Nodirbek Ibrokhimov, Jamoljon Djumanov, Jakhongir Khodjimatomov, Azamat Tukhtasinov, Nilufar Abdulhamidova — Fergana State Technical University, Fergana, Uzbekistan
- Numerical Investigation of the Influence of Boundary Conditions on the Mixing of Turbulent Coaxial Jets in a Channel — Aminov Khayotjon Khalimjonovich — Oriental University, Tashkent, Uzbekistan
- Automated Measurement System for Aluminum-Nickel Alloy Research — Vladimir Malikov, Sergey Voinash, Irina Vornacheva, Vladimir Chaplygin, Ilia Kozlitin, Denis Fadeev, Alexey Ishkov — Altai State Pedagogical University, Barnaul, Russia; Peoples' Friendship University of Russia named after Patrice Lumumba, Moscow, Russia; South-West State University, Kursk, Russia; Altai State University, Barnaul, Russia; Altai State Agricultural University, Barnaul, Russia
- Existence of the Quasi-Double Line of the Pair of the Distributions in the Partial Mapping of the Euclidean Space — Matieva Gulbadan, Kurbanbaeva Nurzhamal, Seitkazieva Gulnara — Osh State University, Osh, Kyrgyzstan
- Evaluating the Life Expectancy Function and Demographic Forecasting for the Population of Uzbekistan — Ismailova Shahzoda Axmadovna — Urgench State University, Urgench, Uzbekistan
- Digital Twin and Machine Learning for Optimal Control of Smart Energy Systems — Umida Togaeva, Nodir Azimov, Khayriniso Abduvalieva, Visola Zikrillayeva, Mironshokh Ibragimov — Bukhara State University, Bukhara, Uzbekistan; Bukhara State Pedagogical Institute, Bukhara, Uzbekistan; Bukhara University of Innovation, Bukhara, Uzbekistan

Секция 2. Физика окружающей среды и математическое моделирование (Environmental Physics and Mathematical Modeling)

- Study of the Adaptability of Complex Hybrid Mathematical Models of the Calibration Link in Establishing the Metrological Traceability of Physicochemical Quantities — SH.M. Masharipov, N.A. Raymjonov, R.A. Valiyev — "Metrology, Technical Regulation, Standardization and Certification", Tashkent State Technical University named after Islam Karimov, Uzbekistan
- Hybrid Mathematical Models for Uncertainty Assessment in Physicochemical Measurements — SH.M. Masharipov, M.M. Mahmudjonov, N.B. Nizomov — "Metrology, Technical Regulation, Standardization and Certification", Tashkent State Technical University named after Islam Karimov, Uzbekistan
- Системный подход к охране окружающей среды на примере ПАО «Ижнефтемаш» — А. М. Лыско, Н. Н. Мамась — ФГБОУ ВО «Кубанский государственный аграрный университет имени И. Т. Трубилина», Краснодар, Россия

- Mathematical Modeling of Elastic-Plasticity with and without Consideration of Material Hardening in Solid and Hollow Shafts — Jasurbek Egamov, Mirzokhid Sayidmuradov, Zarifaxon Sotimboeva, Lazizbek Abdullaev, Shamilidin Sirojiddinov — Namangan State University, Namangan; Namangan State Technical University, Namangan; Tashkent State Technical University, Tashkent, Uzbekistan
- Dynamics of the Predator–Prey System Taking into Account the Lower Critical Density of Prey Populations and Intraspecific Competition — T.E. Buriyev, V.E. Ergashev — Samarkand State University, Department of Mathematics, Uzbekistan
- Short-Term Air Pollution Forecasting in R with Machine Learning Algorithms — Laziz Olimov, Nargiza Juraeva, Mukaddas Egamberdieva, Yulduz Saidova, Feruza Yuldasheva — Bukhara State University; Bukhara State Pedagogical Institute; Bukhara University of Innovation, Bukhara, Uzbekistan

Секция 3. Прикладная физика в науках о Земле и управлении природными ресурсами (Applied Physics in Earth Sciences and Resource Management)

- Interdisciplinary Mathematical Modeling for Solving Problems Related to the Detection of Hydrocarbon Deposits — Viktor Yanushkevich, Iryna Burachonak, Vladimir Pitolin, Dzmitry Dauhiala, Siarhei Abramenka — Euphrosyne Polotskaya State University of Polotsk, Novopolotsk, Vitebsk Region, Belarus
- Phase Flow of Water Carrying Suspended and Bottom Sediments in Rivers and Canals — Karim Islamov, Kodirjon G'aybulov, Komiljon Shaimov, Bahodir Elmurodov — Samarkand State Architecture and Construction University named after Mirzo Ulugbek, Samarqand, Uzbekistan

Секция 4. Вычислительная физика и математические методы (Computational Physics and Mathematical Methods)

Improving the Performance of Hybrid Journal Bearings by Applying Reinforcement Learning Algorithms to Their Design Procedures — Maksim Litovchenko, Denis Shutin — Orel State University n.a. I.S. Turgenev, Orel, Russia

Solvability of 2D-Boundary Problem for Ultrasonic Field Pressure Distribution in Cavitating Fluid — Roman N. Golykh, Vladimir N. Khmelev, Alexey N. Slivin — Biysk Technological Institute (branch) of Polzunov Altai State Technical University, Russia

An Approach to Improving The Performance Of Finite Element Solutions To Multi-Parameter And Multi-Iterative Boundary Value Problems — Roman N. Golykh, Varvara Y. Gordeeva, Tatiana S. Popova — Biysk Technological Institute (branch) of Polzunov Altai State Technical University; North-Eastern Federal University named after M. K. Ammosov, Russia

Localized Wedge Wave in Topographic Waveguides with a Right Apex Angle — A.A. Matskovskiy, G.L. Zavorokhin — St. Petersburg Department of Steklov Mathematical Institute, St. Petersburg, Russia

On the Non-Existence of Waveguided Modes in a Right-Angled Elastic Wedge with Zero Poisson's Ratio — A.A. Matskovskiy, G.L. Zavorokhin — St. Petersburg Department of

V.A. Steklov Institute of Mathematics of the Russian Academy of Sciences,
St. Petersburg, Russia

About One Partial Mapping of Euclidean Space E_5 — Matieva Gulbadan,
Sarygulova Nurkyz Akbolushovna — Osh State University, Osh, Kyrgyzstan

Mutual Information-Driven Multi-Relational Graph Neural Network — Ma Zhanjun,
Lev Kazakovtsev — Reshetnev University, Krasnoyarsk, Russia

Study on Stability of Difference Schemes for a Nonlinear Problem of Quasi-Stationary
Processes in Semiconductors — D. Utebaev, R.Sh. Yarlashov, K.O. Tleuov —
Karakalpak State University named after Berdakh; Nukus State Technical University,
Nukus, Uzbekistan

Review of Methods for Evaluating and Ensuring Data Network Efficiency —
N. Tashpulatova, Sh. Mukhsinov — Tashkent University of Information Technologies
named after Muhammad Al-Khwarizmi, Tashkent, Uzbekistan

Web-Based Computational Platform for Teaching Mathematical Modeling in Physics
Education — Umida Xalikova, Gulnora Tuxtamishova, Jasmina Gofurova —
Bukhara State University, Bukhara, Uzbekistan

Structure and Energetics of Impurity Nanodefects in NaCl–Ag Crystals: A Quasiparticle
Approach — Ainagul Aslanbekovna Orozbaeva, Abdilazizova Akbermet Abdijalilovna,
Oichueva Roza Rakmanberdievna — Osh State University, Osh, Kyrgyz Republic

Секция 5. Физические явления в материалах и экологических системах (Physical Phenomena in Materials and Environmental Systems)

Determining the Optimal Longitudinal Spacing in the Operation of a Two-Tier Disc
Plough — Hamroev R. — Tashkent State Technical University, Tashkent, Uzbekistan

Thermal Performance Optimization of Electric Bus Cooling Systems under Hot-Climate
Operating Conditions — Hamroev R. — Tashkent State Technical University, Tashkent,
Uzbekistan