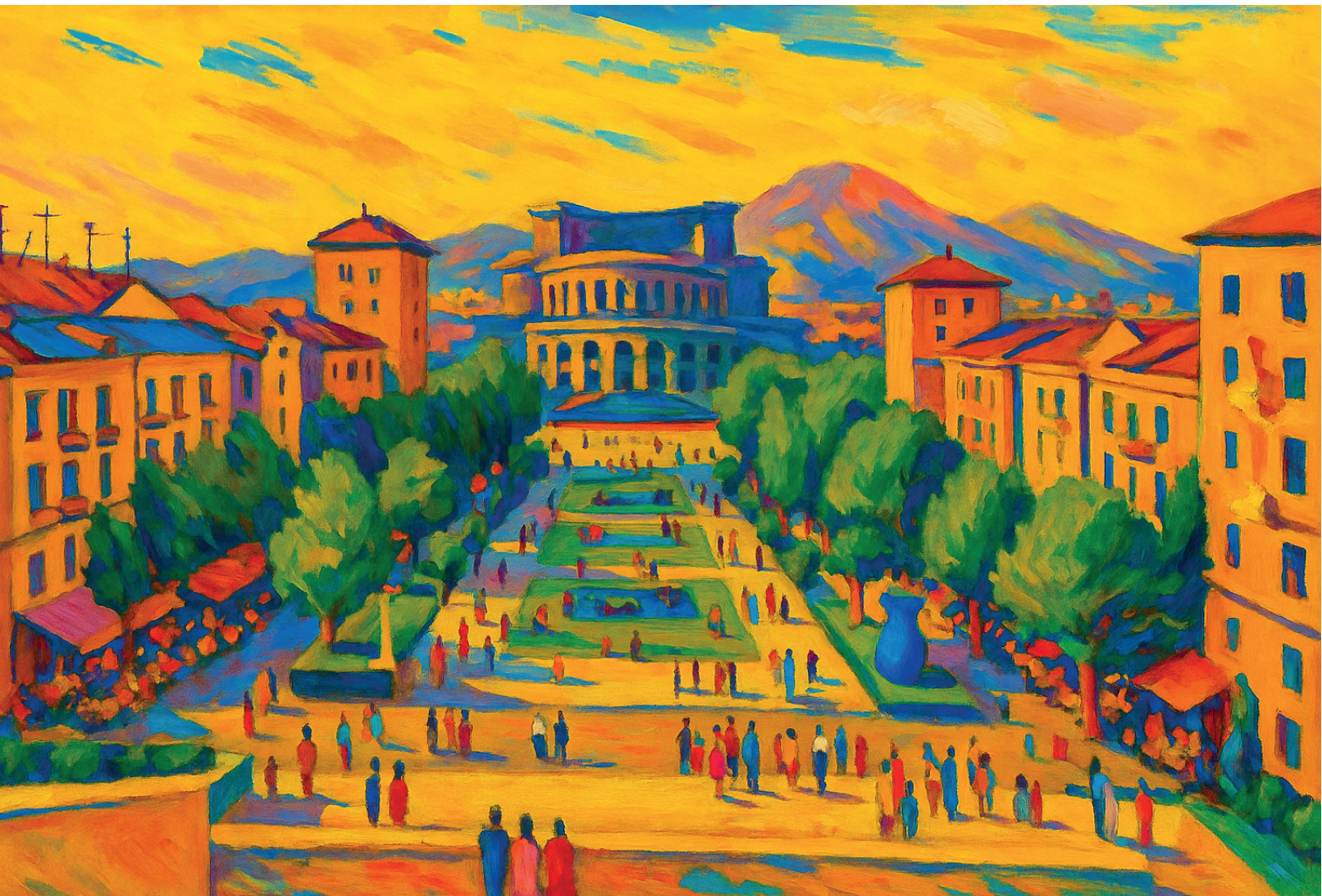
JINR & Armenia Cooperation

2024 – 2025

Short Review



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THE JOINT INSTITUTE FOR NUCLEAR RESEARCH

is an international intergovernmental organization, a world-famous scientific centre that integrates fundamental theoretical and experimental research with the development and application of advanced technology and university education.

There is a wide range of experimental facilities at JINR.

The megascience project to construct the NICA Superconducting Heavy Ion Collider.

JINR plays a significant role in implementing the megascience project to build the deep underwater Baikal–GVD Neutrino Telescope.

JINR scientists have discovered 10 new elements. The Institute has a unique IBR–2 High-Flux Fast Pulsed Reactor for research in neutron nuclear physics and condensed matter physics.

RESEARCH DIRECTIONS

Theoretical Physics

Relativistic Heavy Ion Physics

Spin Physics

Particle Physics

Low Energy Nuclear Physics

Neutron Nuclear Physics

Condensed Matter Physics

Neutrino & Astroparticle Physics

Life sciences: **Radiobiology**, **Biomedicine**, **Structural Biology**, **Astrobiology**, **Ecology**

IT & High-Performance Computing

Outreach & Education

7 JINR Laboratories, each comparable in the research scale to a large academic institution

Frank Laboratory of Neutron Physics

flnph.jinr.ru

Veksler and Baldin Laboratory of High Energy Physics

lhep.jinr.ru

Flerov Laboratory of Nuclear Reactions

flerovlab.jinr.ru

Dzhelepov Laboratory of Nuclear Problems

dlnp.jinr.ru

Meshcheryakov Laboratory of Information Technologies

lit.jinr.ru

Bogoliubov Laboratory of Theoretical Physics

theor.jinr.ru

Laboratory of Radiation Biology

lrb.jinr.ru

DIGEST OF JINR EVENTS IN ARMENIA IN 2024–2025

In 2024–2025, the participation of Armenia in activities of the Joint Institute for Nuclear Research (JINR) was actively strengthened. Joint efforts were intensified across all areas: organizing scientific events, strengthening cooperation mechanisms, and expanding opportunities for mobility and education.

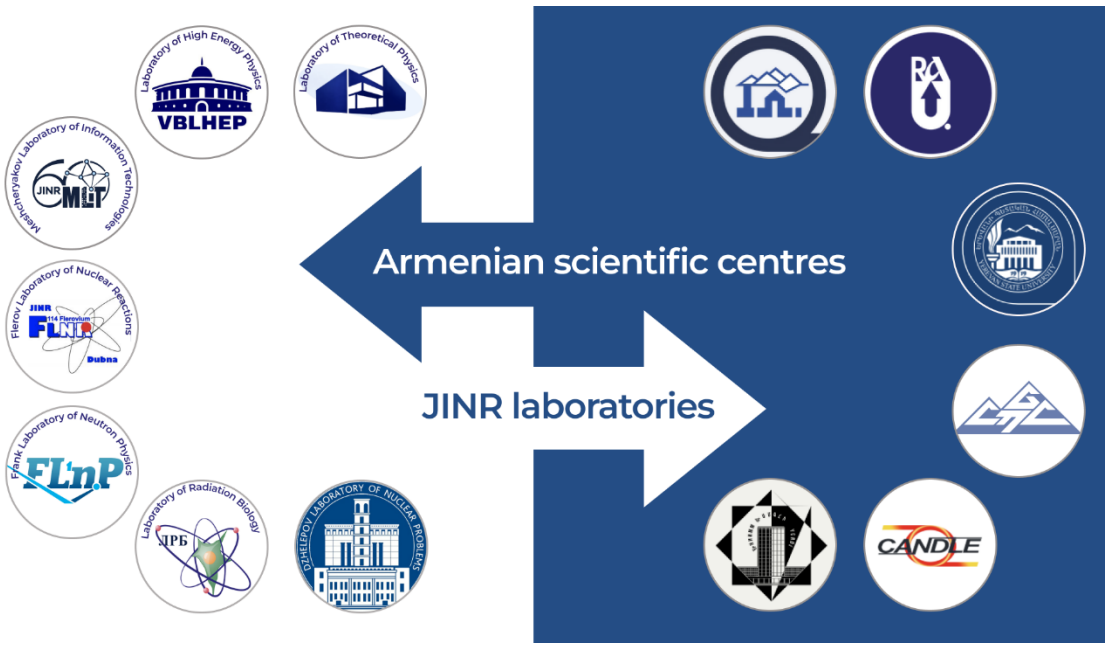
In 2024, JINR and Armenia's leading scientific organizations held multiple working meetings, coordination workshops, and joint scientific events, accompanied by the signing of several key cooperation agreements with A. I. Alikhanyan National Science Laboratory (Yerevan Physics Institute, AANL), the National Academy of Sciences of the Republic of Armenia (NAS RA), and Yerevan State University (YSU). These documents reflected a solid framework for long-term scientific collaboration.

A significant outcome of this period was intensified joint research and a notable increase in information exchange. Armenian colleagues became more closely integrated into JINR's scientific life, receiving regular updates, joining collaborative projects, and actively participating in JINR-based experimental and theoretical programmes.

Mobility initiatives also expanded. Young JINR researchers regularly undertake internships at AANL, and preparations began for targeted internships of Armenian students at JINR, aimed at providing hands-on experience with world-class facilities and integrating them into ongoing research.

By 2025, the effects of the 2024 agreements had become clearly visible: moving forward with the joint project, new interdisciplinary directions emerged, and Armenian scientists extended their participation in JINR's flagship initiatives, including those within the NICA megascience project.

This digest presents a selection of the most significant and illustrative events from the past two years, highlighting achievements that reflect the dynamic development of the JINR–Armenia partnership.



Spring of Science. Two Agreements Launch New Era of Collaboration

The spring of 2024 turned into a season of scientific momentum for Armenia and JINR. Within a span of just a few weeks in March and April, two landmark agreements were signed, setting the stage for one of the most ambitious phases of cooperation in the history of Armenia–JINR relations.

March: Renewing Trusted Partnership

The first milestone came in March, when JINR and A. I. Alikhanyan National Science Laboratory renewed and expanded their cooperation agreement. For decades, AANL and JINR have worked shoulder to shoulder, and the new document reinforces this partnership for the future.

The agreement covers the whole spectrum of modern science: nuclear and high-energy physics, detector technologies, materials research, and advanced computing. It also places a strong focus on young scientists, creating new opportunities for student exchanges, internships, and participation in international experiments, including the flagship NICA project.

As the scientific landscape becomes increasingly global and competitive, this renewed pact confirms that Armenia remains an active, valuable contributor to world-class research.

JINR Director Grigory Trubnikov and AANL Director Gevorg Karyan at the meeting in Dubna. Photo by JINR

April: Scientific and Technological Centre in Yerevan

Barely a month later, a second signature marked another breakthrough. In April 2024, JINR and the National Academy of Sciences of the Republic of Armenia agreed to establish a new scientific and technological centre in Yerevan – a modern platform designed to spark innovation, collaboration, and education.

The future centre is envisioned as a lively crossroads of ideas:

- scientists and engineers developing next-generation technologies,
- students and young researchers gaining hands-on experience,
- international teams co-shaping new projects and experiments.

Grigory Trubnikov and President of the NAS RA Ashot Saghyan. Photo by JINR

New Chapter Begins

Taken together, the March and April agreements form a powerful message: Armenia and JINR are not just continuing their cooperation, they are expanding it with ambition and vision.

These initiatives strengthen Armenia's role in global science, empower the next generation of researchers, and build a foundation for long-term technological growth. Most importantly, they reflect a shared belief that great discoveries happen when nations combine their strengths and look forward together.

The spring of 2024 may well be remembered as the moment when the Armenia–JINR partnership entered a new, inspiring phase with exciting years of collaboration ahead.

Strengthening Dialogue: JINR and Armenia Hold Two Spring Working Meetings

Dubna and Yerevan host strategic sessions shaping the future of cooperation. The spring of 2024 marked an active phase of dialogue between the Joint Institute for Nuclear Research and the Armenian scientific community. Two high-level working meetings held in March in Dubna and in April in Yerevan brought together researchers, administrators, and representatives of scientific institutions to review achievements, set priorities, and plan new joint initiatives.

March Meeting in Dubna: Reviewing Progress and Setting Priorities

The first working session took place in March 2024 at JINR in Dubna. Delegations from A. I. Alikhanyan National Science Laboratory visited Dubna and held with JINR scientists detailed discussions on current projects and future directions of collaboration.

Key topics:

- participation of Armenian research teams in experiments at JINR,
- development of detector and accelerator technologies,
- computing and data-analysis cooperation,
- opportunities for training young scientists and specialists.

The meeting provided a clear assessment of ongoing work and helped refine the research agenda for the coming years. It also laid the groundwork for the renewed cooperation agreement signed later that month.

April Meeting in Yerevan: Expanding Cooperation and Planning New Infrastructure

The dialogue continued in April 2024 with a follow-up working meeting in Yerevan, hosted by A. I. Alikhanyan National Science Laboratory.

This session focused on the strategic expansion of collaboration, including:

- establishment of a new scientific infrastructure in Armenia,
- joint educational and training programmes,
- larger involvement of Armenian researchers in JINR's flagship projects,
- planning for future technological development.

Together, the two working meetings demonstrated the strong mutual interest of JINR and Armenian scientific institutions in long-term collaboration. They helped align strategic goals, intensified scientific contacts, and prepared the basis for realizing the agreement signed in March 2024.

These meetings were not just routine consultations, they were important steps in shaping a shared scientific future, improving cooperation mechanisms, and supporting the integration of Armenian researchers into major international projects carried out at JINR.

Armen Tumasyan Chaired SPD Collaboration Board

In June 2024, an important organizational development took place within the Spin Physics Detector (SPD) collaboration at NICA: Dr. Armen Tumasyan, a prominent scientist from AANL, was elected Chair of the SPD Collaboration Board at the meeting held on 21 June 2024.

As Collaboration Board Chair, Dr. Tumasyan is responsible for coordinating the internal structure of the collaboration, supporting communication between participating institutes, and ensuring a smooth organization of scientific and technical activities. His leadership has contributed to strengthening cooperation across SPD working groups and maintaining an efficient decision-making process during a period of active detector development.

The SPD experiment, one of NICA's flagship projects, aims to study the spin structure of nucleons using polarized proton and deuteron beams. Effective collaboration management plays an essential role in advancing detector R&D, simulation efforts, and preparation for future operation at NICA.

The election of Dr. Tumasyan reflects the trust of the international SPD community and highlights the growing contribution of Armenian scientists to the NICA research programme. His ongoing service continues to support the coordinated progress of the experiment.

SymPhys XIX: Symmetry and Modern Physics

8–13 September 2024. Yerevan State University

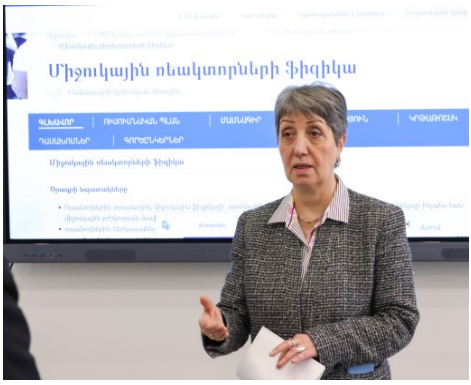
In early autumn 2024, Yerevan turned into a hotspot for theoretical physics as scientists from Armenia, JINR, and leading research centres worldwide gathered at the 19th International Conference on Symmetries in Physical Sciences.

For more than 30 years, SymPhys has been one of Armenia's signature scientific events – a place where ideas about symmetry, quantum theory, mathematical physics, and high-energy phenomena collide in the best possible way. The 2024 edition at Yerevan State University continued that tradition with renewed energy. The conference highlighted the deep and growing connection between YSU and the Joint Institute for Nuclear Research. JINR scientists took an active part in the programme, giving invited talks and joining discussions on quantum symmetries, supersymmetry, and modern computational methods.

The opening ceremony underscored the shared goal: strengthening research ties and supporting the next generation of physicists. A strong focus of SymPhys XIX was on young researchers. Students and early-career scientists presented cutting-edge results from new symmetry-based mathematical tools to applications in quantum field theory and condensed-matter physics. Their presence added momentum and showed how vibrant the field had become.

Across lectures, discussions, and informal exchanges, SymPhys XIX created space for new scientific ideas and future joint projects. For Armenia and JINR, the conference once again proved that symmetry was not only a fundamental concept of physics, but also a powerful bridge connecting research communities.





At the SymPhys XIX opening session. Photos by YSU

MMCP'2024: Mathematical Modeling Takes Centre Stage in Yerevan

20–25 October 2024. Yerevan State University

In October 2024, Yerevan State University hosted the International Conference on Mathematical Modeling and Computational Physics (MMCP'2024), a long-established forum bringing together specialists in numerical simulation, high-performance computing, and computational physics. For a week, researchers from JINR, Armenia, Europe, and Asia exchanged ideas on how advanced mathematical tools and computation are reshaping modern science.

Group photo in front of Yerevan State University. Photo by JINR

Organized by JINR, YSU, and IIAP NAS RA, the 2024 edition honored the 80th anniversary of Alexei Norairovich Sissakian, whose legacy in theoretical and mathematical physics continues to inspire the field. Reflecting on the conference spirit, scientific secretary Alexander Ayriyan noted: "*MMCP has always been more than a meeting, it is a community. This year has shown how modeling unites physicists, computer scientists, biologists, and engineers.*"

Sessions and discussions highlighted the central role of simulation in current scientific advances. A defining feature was the strong participation of early-career researchers, who presented cutting-edge work and built new international connections.

With new collaborations already emerging, MMCP'2024 reaffirmed its place as a key platform linking Armenia's scientific community with JINR and global partners and once again demonstrated Yerevan's role as a welcoming venue for high-level scientific dialogue.

50 Years of Cold Fusion: Fresh Look at Long-Standing Scientific Mystery

19–24 November 2024. NAS RA

In November 2024, Yerevan hosted the International Conference "50 Years of Cold Fusion", organized by YSU, the National Academy of Sciences of the Republic of Armenia and JINR. The event brought together researchers from Armenia, Russia, Europe, the USA, and Asia to revisit one of the most debated topics in modern physics – low-energy nuclear reactions (LENR).

The conference marked five decades since early theoretical works that sparked interest in cold fusion and helped shape a field. Sessions covered experimental anomalies, materials capable of enabling nuclear processes in condensed matter, diagnostic techniques, and new theoretical models.

Conference opening session. Photo by JINR

Alongside leading specialists, the conference featured eminent figures of international science, including Academician Yuri Oganessian, a world-renowned nuclear physicist, Academician Grigory Trubnikov, and Prof. Ashot Saghyan, President of the NAS RA (at the left picture). Their participation underscored the importance of open discussion even in controversial scientific areas.

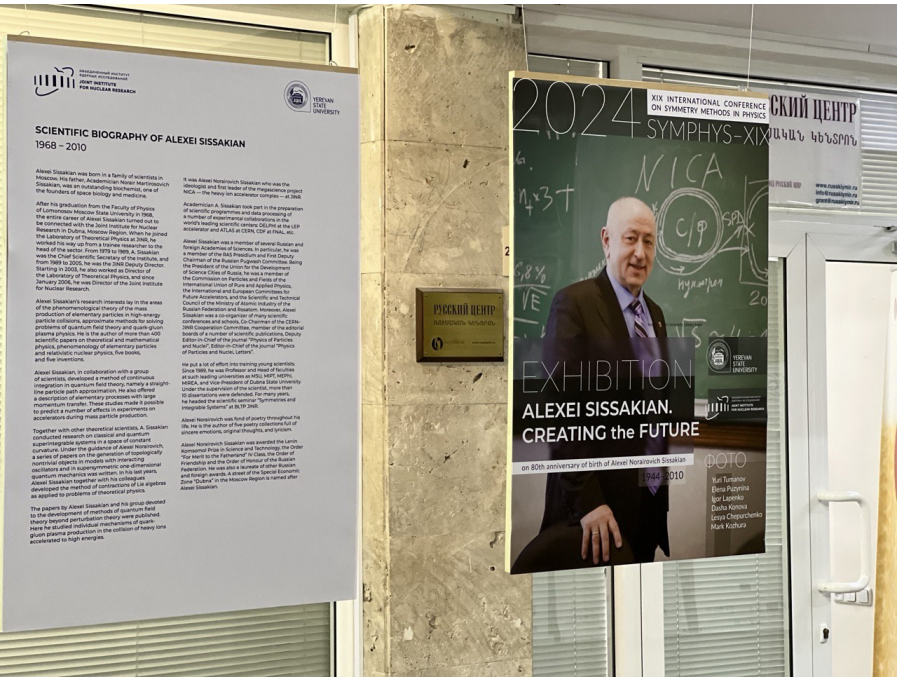
JINR scientists played a prominent role, contributing talks and joining round-table discussions focused on reproducibility, modern instrumentation, and the need for transparent scientific dialogue. The meeting emphasized that unresolved questions should inspire careful investigation rather than dismissal. By the week's end, the participants agreed that understanding LENR demanded interdisciplinary effort and open exchange.

Exhibition Honoring Academician Alexei Sissakian at Yerevan State University

September–October 2024, Yerevan

Yerevan State University hosted a special exhibition dedicated to the 80th anniversary of Academician Alexei Norairovich Sissakian, a distinguished scientist who devoted enormous effort to strengthening scientific and technical cooperation between JINR and Armenia.

The exhibition, which opened in September and remained on display until the end of October, invited visitors to discover not only the life and personality of the renowned physicist, but also the scientific world he helped shape.



Exhibition hall at YSU. Photos by JINR

A central theme of the exhibition was the NICA project, whose launch Alexei Sissakian strongly supported. The display introduced students and young researchers to the ambitious goals of the facility, its cutting-edge technologies, and the opportunities it offers to future specialists.

Through photographs, archival materials, and visual stories from the JINR Laboratories, the exhibition highlighted the role of individuals whose dedication drives big science forward.

Like the previous exhibitions, it aimed to inspire the next generation, showing how fundamental research connects nations, advances technology, and relies on passionate people.

SPD Collaboration Meets in Yerevan: Advancing Spin Physics at NICA

12–16 May 2025. Alikhanyan Lab

In May 2025, A. I. Alikhanyan National Science Laboratory hosted the 9th Meeting of the International SPD Collaboration, bringing together more than 160 scientists in a hybrid format. Researchers reviewed progress on the Spin Physics Detector, a key experiment of the NICA Accelerator Complex.

The meeting opened with Armen Tumasyan, Chair of the SPD Collaboration Board, who outlined recent activities and announced upcoming Board updates in 2025. Victor Kim, SPD Spokesperson, presented the current status of the project: detector development, subsystem design, and the rapid expansion of the collaboration. Notably, Shandong University (China) formally applied to join.

Updates on the NICA accelerator were delivered by Valery Lebedev, who highlighted advances in building the injection complex and preparations for a test run with polarized deuterons.

Participants of the SPD collaboration meeting. Photo by JINR

Coordinators reported on key areas: physics studies (Amaresh Datta), Stage-1 physics programme (Evgeny Soldatov), detector construction (Alexander Korzenev), computing infrastructure (Danila Oleynik).

Throughout the week, the participants held detailed discussions on subsystem development, electronics, software, and the physics goals of the first SPD run. The Yerevan meeting showcased the collaboration's momentum and the growing contribution of Armenian research teams to the NICA project.

Grigory Trubnikov Visits Russian–Armenian University

In late June 2025, the Russian-Armenian University (RAU) welcomed a high-level delegation from the Russian Federation, marking another step in strengthening cooperation in science and education between Armenia and Russia. The delegation included Academician Grigory Trubnikov and Aslan Kanukoev, Director of the Department of Economic Policy of the Ministry of Science and Higher Education of the Russian Federation. They were received by RAU Rector Prof. Edward Sandoyan.

During the visit, the guests toured RAU's key scientific departments and learned about the university's growing research capabilities, particularly in physics, engineering, and computational sciences areas closely connected to JINR's scientific programmes.

A working meeting focused on expanding collaboration, including:

- increasing RAU student participation in JINR internships and training programmes,
- intensifying joint scientific activity in physics and high-tech research,
- strengthening institutional partnerships supporting long-term academic integration.

Both sides expressed strong interest in creating stable mechanisms that will allow Armenian students and researchers to more fully engage with JINR's infrastructure.

Grigory Trubnikov and Aslan Kanukoev in RAU. Photo by RAU

At the end of the visit, it was emphasized that cooperation between RAU, JINR, and the Ministry of Science and Higher Education of the Russian Federation continued to grow steadily. The visit of JINR Director Grigory Trubnikov reaffirmed the importance of JINR–Armenian scientific ties and highlighted RAU's expanding role in regional and international research collaboration.

New Bridges to Dubna: Polytechnic University Explores Cooperation with JINR

26 September 2025. National Polytechnic University of Armenia

A seminar at the National Polytechnic University of Armenia (NPUA) on 26 September 2025 opened new dialogue on student training, research projects, and participation in NICA collaborations. Bringing together university leadership, faculty, and young researchers, the meeting aimed to strengthen ties with JINR's international research community.

Initiated by Dr. Vahagn Abgaryan, the seminar focused on practical pathways for cooperation from student internships and industrial practice at JINR's experimental facilities to joint research and involvement in major NICA collaborations. The participants explored opportunities in detector development, accelerator technologies, data analysis, computing, and theoretical studies.

Presentations were given by Armen Nersessian (engineering and technological collaboration), Victor Ryabov (high-energy physics and MPD programme), Arkadiy Taranenko (heavy-ion physics and BM@N opportunities), and Alexander Ayriyan (prospects for student and researcher engagement).

Seminar at NPUA. Photo by JINR

The seminar concluded with discussion on exchange programmes, project-based courses, and creating direct channels for student participation in JINR's experiments. Both sides expressed readiness to deepen cooperation, marking the meeting as an important first step toward a long-term partnership that could broaden opportunities for Armenian students and strengthen their connection to world-class research.

CHEP-Yerevan'2025: Landmark Conference on High-Energy Physics

29 September – 3 October 2025. Yerevan

Yerevan once again stepped onto the global scientific stage as it hosted the International Conference on High Energy Physics (CHEP-Yerevan'2025). For five days, the city became a meeting ground for theorists, experimentalists, accelerator physicists, and young researchers exploring the deepest layers of matter. Organized by Yerevan State University and A. I. Alikhanyan National Science Laboratory with strong participation from JINR, the conference gathered an international audience to discuss the latest advances shaping modern particle physics.

Group photo in front of Yerevan State University. Photo by JINR

CHEP-Yerevan'2025 covered a broad spectrum of topics: precision tests of the Standard Model, searches for physics beyond it, heavy-ion and spin physics, and modern computational tools for HEP. JINR researchers played a prominent role, presenting results from the BM@N, MPD, and SPD experiments at the NICA Complex, as well as theoretical studies and phenomenology.

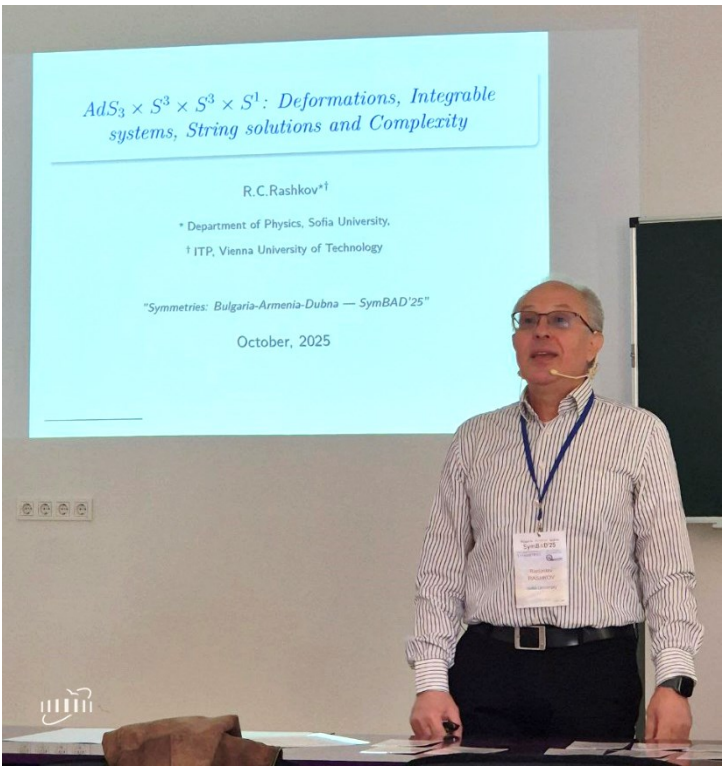
For Armenia, the conference was a significant milestone enabled by close cooperation with JINR. YSU and AANL demonstrated the strength of their physics schools, their active role in global collaborations, and their commitment to training young scientists. Students and early-career researchers engaged directly with experts from CERN, JINR, DESY, KEK, and other leading centres.

CHEP-Yerevan'2025 was not just about scientific results but about momentum, collaboration, and the shared excitement of exploring the fundamental laws of nature.

SymBAD'25: Armenia, Bulgaria, and JINR Unite for Week of Theoretical Physics

20–24 October 2025. Alikhanyan Lab

In late October 2025, A. I. Alikhanyan National Science Laboratory became a lively meeting ground for theorists as it hosted the International Workshop on Symmetries: Bulgaria-Armenia-Dubna (SymBAD'25). The event brought together researchers from the three scientific communities to strengthen collaboration and explore some of the most mathematically rich areas of modern physics.



Prof. Radoslav Rashkov opening the scientific programme. Photo by JINR

The participants spent the week immersed in frontier topics: supersymmetric models, integrable systems, gravitational theories, higher-spin fields, and mathematical physics. JINR scientists contributed a major share of the presentations, joined by colleagues from AANL, Sofia University, the Institute of Radiophysics and Electronics, and the Bulgarian Academy of Sciences.

The workshop opened with remarks from co-chairs Prof. Sergey Krivonos (JINR) and Prof. Ruben Manvelyan (AANL), who emphasized the value of long-term partnerships and thanked JINR Vice-Director Latchesar Kostov for initiating the meeting. The scientific programme began with Prof. Radoslav Rashkov's talk on Neumann–Rosochatius integrable systems in classical string theory, setting a high conceptual tone.

With its focused format and rich agenda, SymBAD'25 fostered open discussion and new collaborations, reaffirming the shared commitment of Armenia, Bulgaria, and JINR to advancing fundamental theoretical physics.

NPRM 2025: Global Dialogue on Neutron Science and Radiation Materials

27–30 October 2025. Yerevan State University

The International Conference on Neutron Physics and Radiation Materials (NPRM 2025) took place from 27 to 30 October 2025 at Yerevan State University, bringing together researchers, engineers, and young scientists from the JINR Member States and partner institutions.

Conference participants visiting CANDLE. Photo by CANDLE

Organized by A. I. Alikhanyan National Science Laboratory, the Frank Laboratory of Neutron Physics (FLNP JINR), YSU, and Armenia's Ministry of Education and Science, the conference offered a focused platform for discussing advances in neutron science and radiation-material studies.

More than fifty presentations covered neutron sources and diagnostics, materials under irradiation, modelling of radiation damage and ageing, and neutron-based methods applied in materials science, energy systems, chemistry, and biomedicine. Discussions often continued beyond formal sessions as the participants compared techniques and explored possibilities for collaboration.

Researchers from Armenia, JINR, and international laboratories contributed actively, while young scientists gained valuable experience presenting their work and receiving expert feedback.

By the end of the conference, new directions for cooperation had emerged, including coordinated experiments, expanded modelling efforts, and plans for future workshops. The participants noted that the synergy between neutron physics and materials research continued to drive innovations in energy technologies and radiation-resistant materials.

Joint Laboratory Launched to Develop Aerogel Cherenkov Detector for SPD

As agreed in March 2024 between JINR and A. I. Alikhanyan National Science Laboratory, the joint laboratory, based at AANL, is dedicated to developing detectors for the NICA experiments, with a particular emphasis on an aerogel Cherenkov detector for the Spin Physics Detector. The reliable particle identification essential for the SPD physics programme will depend on this aerogel detector.

The Scintillation and Cherenkov Detector Group at AANL, working closely with JINR specialists, is conducting simulations to optimize particle-separation capabilities and detector parameters, alongside developing software and reconstruction algorithms. AANL is also creating an infrastructure to measure aerogel optical properties such as refractive index and light transmittance. The first prototype counter has been designed, and assembly is underway, with optical measurements planned in the coming months.

"*The creation of this joint laboratory is a major step toward developing advanced detector technologies for NICA,*" noted Dr. Arthur Mkrtchyan, Senior Researcher at AANL, "*By combining the expertise of AANL and JINR, we are able to move much faster in optimizing aerogel detectors for the SPD experiment.*"

The establishment of the joint AANL-JINR laboratory marks an important milestone in strengthening Armenian-JINR scientific cooperation and advancing Armenia's contribution to the NICA megascience project.

The picture shows an experimental setup for the optical characterization of aerogel samples, including a Rohde & Schwarz oscilloscope and a custom-built measurement chamber at AANL.

Joint Experiments Advance Understanding of Proton-Induced Neutron Emission

A collaborative programme between A. I. Alikhanyan National Science Laboratory and JINR produced new experimental data on proton-induced neutron-emission reactions in thorium and uranium. These joint measurements, performed at AANL's irradiation facilities with methodological and analytical support from JINR, contribute important information for refining nuclear-reaction models and data libraries.

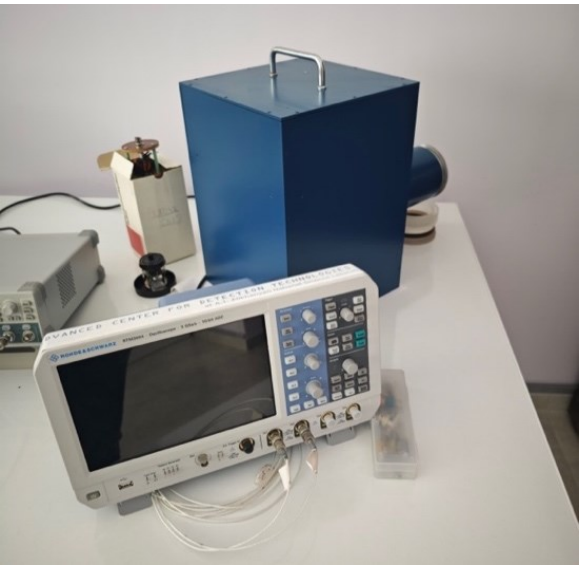


Photo by AANL

The team studied neutron-emission channels in the reactions 232Th (p,xn) and 238U (p,xn), adding results in energy ranges and configurations that remain insufficiently covered internationally. The work complements previous global studies and strengthens the experimental foundation needed for simulations of spallation sources, accelerator-driven systems, and radiation-material studies.

The project combines joint experience in nuclear-reaction physics, calibration, and data interpretation. This integrated approach improves the reliability of the extracted cross sections and provides valuable cross-checks for transport codes such as MCNP, FLUKA, and GEANT4.

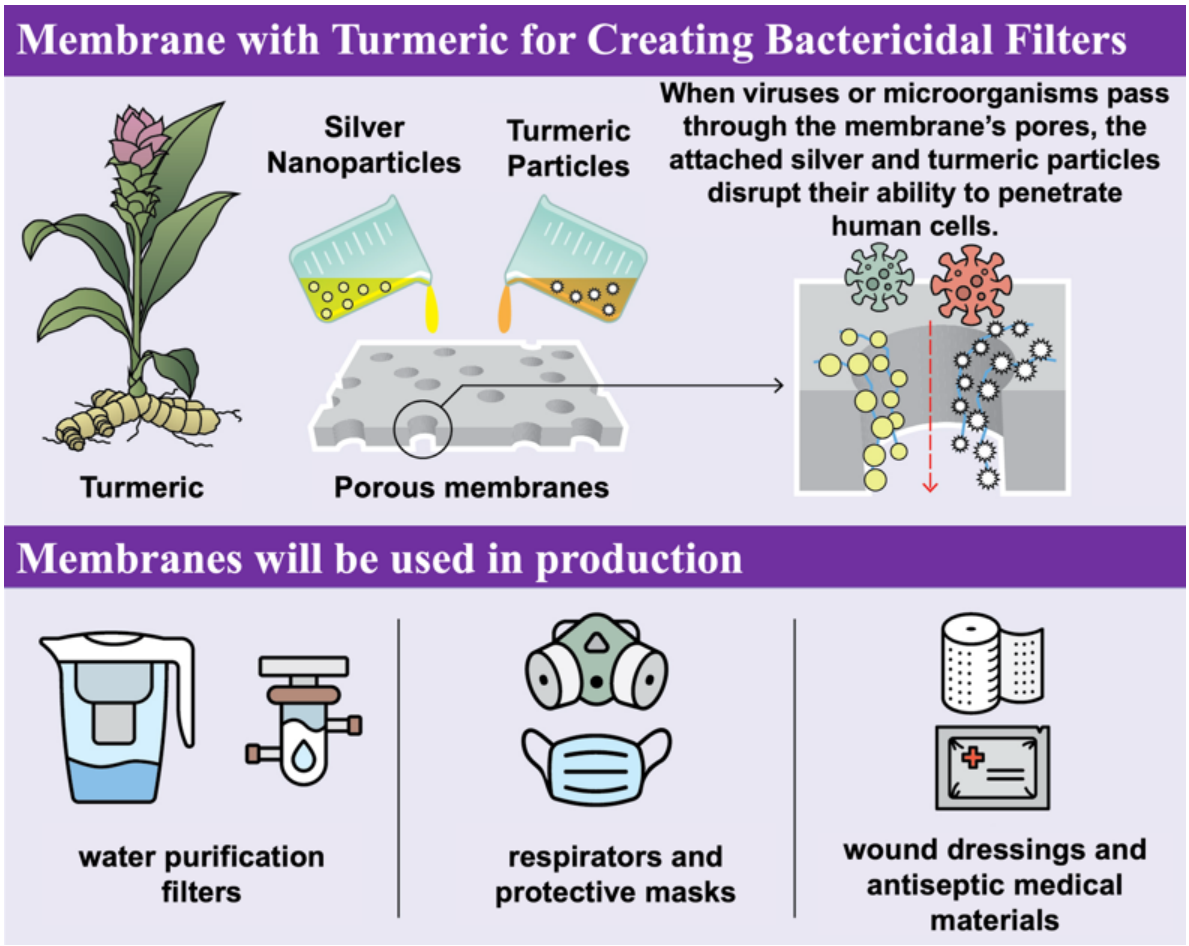
Thorium and uranium are central to modern nuclear-technology research, including isotope production, ADS concepts, shielding design, and studies of radiation damage. Accurate neutron-emission data is essential for these fields, and the new results help fill existing gaps in nuclear databases.

Beyond the scientific outcomes, the project exemplifies the growing cooperation between the institutions. It supports the training of young Armenian researchers, integrates local teams into international nuclear data efforts, and sets the stage for follow-up measurements involving additional materials and energy domains.

The partnership continues to prove how coordinated experimental work can advance both fundamental research and applied nuclear science.

Joint Breakthrough in Antiviral Membrane Technology

A joint group from JINR, the National Academy of Sciences of the Republic of Armenia, and partners from South Africa reported promising results in developing hybrid membranes capable of significantly reducing viral activity. The study focuses on polymer materials enriched with silver nanoparticles and curcumin, the natural pigment from turmeric, a combination known for strong antiviral and antimicrobial effects.



Infographic of the presented results by www.iz.ru

Tests show that curcumin-silver membranes can markedly suppress viruses affecting respiratory and gastrointestinal systems. The dual mechanism, silver nanoparticles disrupting viral envelopes and curcumin inhibiting replication processes, creates a stable multifunctional barrier. Laboratory

experiments at the Institute of Molecular Biology of the NAS RA demonstrated strong viral inhibition, with membranes retaining long-term effectiveness. These materials show potential for:

- antiviral air and water filters,
- respirator elements and protective mask layers,
- medical dressings reducing infection risks,
- antiviral coatings for public and clinical surfaces.

Because they rely on durable nanoparticles and a natural pigment, the membranes may offer longer-lasting protection than chemical disinfectants.

The project also reflects expanding scientific cooperation with Armenian research centres, helping translate fundamental insights into practical antiviral technologies.

Armenia at JINR in Figures

Summary of Joint Agreements Signed in 2024–2025

In 2024–2025, the Joint Institute for Nuclear Research and Armenia's leading scientific institutions signed a series of landmark agreements that laid the foundation for a deeper and more structured partnership in science, technology, education, and innovation. These documents formalized long-standing ties and opened new avenues for joint research, student training, and the development of an advanced experimental infrastructure.

March–April 2024: Building Framework for Cooperation

The renewed wave of collaboration began on 20 March 2024, when JINR and A. I. Alikhanyan National Science Laboratory signed two key agreements:

- A Cooperation Agreement in science, technology, innovation, and education, setting the strategic direction for joint projects and personnel exchange.
- An Agreement on practical training for students, enabling Armenian undergraduates and graduate students to undertake internships and hands-on work at JINR's unique research facilities.

Just days later, on 29 March – 5 April 2024, the sides signed additional agreements (Addendum No. 1) aimed at expanding cooperation instruments and refining mechanisms for joint research, mobility programmes, and educational activities. These addenda strengthened the operational side of the partnership and ensured its long-term continuity.

April 2024: Cooperation at National Level

On 19 April 2024, JINR and the National Academy of Sciences of the Republic of Armenia signed a broad Agreement on cooperation in science, innovation, and education.

This document elevated the partnership to the national level, aligning Armenia's academic community with JINR's multilayered international research environment and paving the way for coordinated scientific initiatives across institutes, laboratories, and universities.

2025: Expanding into New Research Directions

The momentum continued in 2025. On 5 February 2025, JINR and AANL signed an additional Addendum No. 1, updating and extending the provisions of their 2024 cooperation agreement. This reaffirmed the commitment of both sides to develop joint research networks, modernize the scientific infrastructure, and support young scientists.

On 25 February 2025, JINR broadened its collaboration with Armenian universities by signing Cooperation Agreement No. 491 with the Center for the Physics of Strong Fields at Yerevan State University. This agreement focuses on optical methods and condensed-matter research, linking Armenia's theoretical and experimental expertise with JINR's multidisciplinary programme.

Finally, on 4 March 2025, a Memorandum of Understanding (ARIADNA) was concluded between JINR and the International Center for Advanced Studies (ICAS) at YSU. The memorandum establishes a platform for frontier research, joint academic programmes, and the participation of Armenian scholars in cutting-edge international projects coordinated by JINR. The latest agreements further extend the involvement of Armenian research centres in JINR's applied research programmes under the ARIADNA collaboration on applied research at the NICA Complex.

Contact Information

To get detailed information and ask questions about cooperation between Armenian scientific organizations and JINR, please contact the International Cooperation Department of the Joint Institute for Nuclear Research via email: **armenia@jinr.int**, as well as address the following contact persons:

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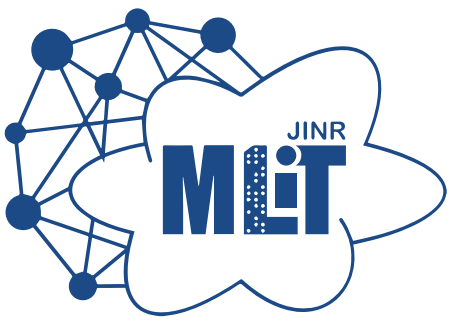

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