

I. General considerations

The Scientific Council takes note of the comprehensive report by the JINR Director, G. Trubnikov, covering the decisions of the latest session of the Committee of Plenipotentiaries of the Governments of the JINR Member States (Hurghada, Egypt, 23 November 2022), the progress of implementation of the current Seven-Year Plan for the Development of JINR (2017–2023) as well as the recent events in JINR’s international cooperation.

The Scientific Council notes with regret the withdrawal of the Czech Republic, the Republic of Poland, and Ukraine from JINR from 1 January 2023. The Scientific Council has strong hopes that the geopolitical crisis in Eastern Europe will soon find a peaceful solution, which will allow to recover the lost members of JINR.

The Scientific Council welcomes the participation in its session of the national delegation of the United Mexican States headed by His Excellency Eduardo Villegas Megías, Ambassador of the United Mexican States to the Russian Federation.

The Scientific Council has listened to the report “Expanding Mexico–JINR collaboration: some areas of potential interest” presented by the President of the Mexican Physical Society, A. M. Cetto, and thanks the speaker.

The Scientific Council welcomes the signing of the Joint Declaration of Intent Concerning Cooperative Activities in the Area of Fundamental, Frontier and Applied Scientific Research between CONACYT (Mexico) and JINR, which took place on the sidelines of the Scientific Council session on 16 February 2023, and looks forward to increased participation of Mexican researchers in JINR activities and enhanced cooperation with the Mexican research community in general.

The Scientific Council notes with satisfaction the practical measures taken by the JINR Directorate to strengthen cooperation with scientific organizations and universities in China on the basis of partnership coordinated at the governmental level.

The Scientific Council expresses its interest in maintaining a high level of cooperation with the research organizations of all European countries, which have always played a very important role in the JINR research programme.

The Scientific Council notes with satisfaction the progress in implementing the current plan of research and development of the scientific infrastructure at JINR and JINR’s achievements in the international collaboration projects:

- the successful completion of the fourth technological cycle of the NICA accelerator complex, which has become the longest run in the history of VBLHEP (>3400 hours), the successful commissioning of the injection chain, including the common operation of all its elements, the optimization of the beam dynamics, the operation of the electron cooling, the testing of the SOCHI station with heavy ions, the calibration of the new diagnostic system, and the modernization of the vacuum system in the extracted beam line;
- the long-term stable operation of the accelerator complex for the BM@N experiment, for the first time in full configuration, as a result of which about 507 million events with the Xe beam at a kinetic energy of 3.8 A GeV and 48 million events at an energy of 3 A GeV were recorded, as well as the beginning of a physical analysis of the recorded data;
- the progress in the production of the magnets and their installation in the NICA collider tunnel, the completion of the installation of all the dipoles in the collider tunnel arches, the test assembly of the collider electron cooling system, performed in October 2022 at the Budker Institute of Nuclear Physics (Novosibirsk), and the transportation of some parts to JINR;
- the work carried out by the MPD collaboration and the VBLHEP team on the construction of the MPD detector, and the progress in the production of all the detector components required for a technological launch in 2023, including the cryogenics, control and power supply systems, detector subsystems, and other equipment;
- the presentation of the SPD TDR at the PAC PP session in January 2023 and the ongoing developments and tests of the detector prototypes;
- the successful progress of work and the high level of JINR's readiness to fulfill its obligations under the programme for the second phase of the upgrade of the ATLAS, CMS, and ALICE detectors at LHC, at CERN;
- the development of the Baikal-GVD neutrino telescope for observing natural neutrino fluxes, and the registration of 24 events — the candidates for being high-energy neutrinos, which indicated the observation of an astrophysical neutrino flux in the IceCube observatory, in the Southern Hemisphere. The presence of an isotropic neutrino flux of an astrophysical nature was indicated according to the Baikal-GVD data at a statistically significant level, taking into account the systematics of 3.05 sigma;
- the successful continuation of the experiments at the Factory of Superheavy Elements using the DGFRS-2 separator, in particular, on the synthesis of the new isotopes darmstadtium ^{276}Ds , hassium ^{272}Hs , and seaborgium ^{268}Sg , in the reaction $^{48}\text{Ca} + ^{232}\text{Th}$, as well as the continuation of preparations for the experiments related to the chemical properties of elements 114 (Fl) and 112 (Cn) at the DGFRS-3 (GRAND) separator,

scheduled for the 2nd half of 2023. The former experiments were carried out in December 2022;

- the implementation of the work plan at the IBR-2 reactor to replace the heat exchangers with the new ones and prepare a complete package of documentation for the licensing, and the important progress in the development of the IBR-2 spectrometers;

- the further active development of the fundamental and applied areas of research related to life sciences and condensed matter physics, based on the development of an interlaboratory research programme based in the Laboratory of Radiation Biology;

- the successful development of the JINR MICC, including the modernization of the Govorun supercomputer carried out in 2022, and the successful operation of the Tier1 center for the CMS and NICA-MPD collaborations;

- the significant progress in creating the Digital JINR Ecosystem platform for the integration of the existing and future services to support scientific, administrative, and social activities as well as the maintenance of the engineering and IT infrastructures of the Institute.

II. On the Draft Seven-Year Plan for the Development of JINR for 2024–2030

The Scientific Council notes with satisfaction the report concerning the revised Draft Seven-Year Plan for the Development of JINR for 2024–2030 presented by the JINR Director, G. Trubnikov.

The Scientific Council seconds the JINR Directorate's position that the revised draft of the Seven-Year Plan fully complies with the architecture and logic of the JINR Long-Term Development Strategic Plan up to 2030 and beyond. The Scientific Council acknowledges that the presented Plan contains an ambitious international scientific programme, which requires optimal staff and financial resources. The Scientific Council notes with satisfaction that the Plan has been significantly improved in comparison with its draft. The revision of the draft Plan has taken into account the recommendations of the 132nd session of the Scientific Council. The Scientific Council appreciates the inclusion of a section on risk assessment in the revised Plan. The Scientific Council underlines that the reduction of this Plan would inevitably lead to a decrease in the JINR's competitiveness among international scientific institutions.

In order to complete the process of expert evaluation of the Seven-Year Plan and optimize the implementation of its first stage in the current Topical plan of scientific research at JINR, the Scientific Council recommends that a joint working group is organized, which will include representatives of all three PACs, and that the considerations of this group are taken into account in the recommendations of the June 2023 sessions of the PACs.

III. Discussions of the Director's report

In the course of the discussions of the report by the JINR Director, G. Trubnikov, members of the Scientific Council made the following recommendations:

- to maintain efforts to achieve gender balance at JINR;
- to include in the agenda of the Scientific Council a special presentation on the NICA project.

IV. Recommendations of the Programme Advisory Committees taken at the meetings in January 2023

The Scientific Council takes note of the recommendations made by the PACs at their meetings in January 2023, as reported at this session by I. Tserruya, Chair of the PAC for Particle Physics, V. Nesvizhevsky, Chair of the PAC for Nuclear Physics, and D. L. Nagy, Chair of the PAC for Condensed Matter Physics. The Scientific Council asks the JINR Directorate to consider these recommendations while preparing the Topical Plan for JINR Research and International Cooperation for the year 2024.

Particle physics

The Scientific Council recognizes the PAC's support of the steps taken by the JINR Directorate to emphasize the international status of the Institute and overcome the difficulties of this challenging time.

The Scientific Council endorses the established priorities in the Seven-Year Plan for the Development of JINR for 2024–2030 in the area of particle physics and relativistic heavy-ion physics:

- the implementation of the physics programme to study hot and dense baryonic matter and phase transitions at the BM@N and MPD experimental facilities after the commissioning of the basic configuration of the NICA acceleration complex;
- the creation of the first stage of the SPD experimental setup for research in the field of spin physics;
- the launch and support of an international user programme for interdisciplinary applied research within the NICA facility, at the ARIADNA beam lines channels with end stations, and the creation of the user infrastructure around them;
- the promotion of international cooperation around the JINR's major projects, the NICA BM@N, MPD, and SPD projects, and at the Baikal-GVD neutrino project.

The Scientific Council seconds the PAC's recommendation on the allocation of manpower within VBLHEP to ensure a timely completion of the NICA complex, including the experimental facilities, and the realization of their ambitious physics programmes. Every

effort should be made to attract outside collaborators as well as to strengthen interlaboratory cooperation at the NICA complex and in in-house experiments.

The Scientific Council appreciates the intensive work in VBLHEP on the experimental programme at the SRC and BM@N facilities, and joins the PAC in congratulating the NICA team for the successful completion and joint operation of several elements of the NICA complex — the ion source, the heavy-ion linear accelerator, the Booster, the Nuclotron, and the modernized 136-meter beam transport line, and for the installation of all the dipole superconducting magnets in the arcs of the collider tunnel. This is a very significant achievement in the collider assembly and the preparation for the machine commissioning.

The Scientific Council notes that the production of all the components of the MPD first-stage detector configuration is progressing well. All the activities continue despite the recent changes in the geopolitical and economic situation. The Scientific Council joins the PAC in congratulating the MPD team on finding the viable solutions for the critical issues arising in many aspects of the detector construction, assembly, and commissioning.

The Scientific Council, together with the PAC, appreciates the achievement of an important milestone in the realization of the BM@N project — the physics run with the 3.8 A GeV Xe beam interacting with a CsI target which started in November 2022 and continued until the end of January 2023. The data acquisition system recorded over 500 million Xe+CsI interactions. The experiment was running with the full set of detectors. The Scientific Council notes the successful operation of the long vacuum beam line and the beam profile meters between the Nuclotron and the BM@N setup as well as inside the setup. It significantly reduced the beam background in the BM@N detectors.

The Scientific Council acknowledges the progress made by the SPD collaboration in preparing the Technical Design Report (TDR) based on the results obtained during the development and testing of the prototypes of the SPD subsystems. The Scientific Council endorses the PAC recommendation to the JINR management to appoint a Detector Advisory Committee for a thorough review of the SPD TDR.

The Scientific Council acknowledges the leading role that the JINR group is playing in the development and construction of the main subsystems of the COMET detector. It also notes with satisfaction the participation of the members of the JINR group in the management structures of the COMET collaboration. The Scientific Council appreciates the participation of the JINR group in the T2K-II experiment and shares the PAC's concern, expressed in the recommendations of the 55th session of the PAC for Particle Physics, on the role, strategy, and scientific visibility of the JINR group within the T2K-II project. The Scientific Council endorses the PAC's recommendation on the continuation of the COMET project until the end

of 2024 with ranking A and the continuation of the JINR's participation in the second phase of the T2K experiment until the end of 2024 with ranking B.

The Scientific Council notes with satisfaction the important scientific results obtained by the JINR teams participating in the ALICE, ATLAS, and CMS experiments at the LHC, and the growing visibility and increased involvement in physics analyses of the three JINR teams.

Nuclear physics

The Scientific Council takes note of the reports considered by the PAC for Nuclear Physics on the proposals for the Seven-Year Plan for the Development of JINR for 2024–2030 in the field of nuclear physics.

Heavy-ion research at the Flerov Laboratory of Nuclear Reactions is aimed at completing the tasks outlined in two themes: “Synthesis and Properties of Superheavy Elements, the Structure of Nuclei at the Limits of Nucleon Stability” and “Development of the FLNR Accelerator Complex and Experimental Setups (DRIBs-III)”. The Scientific Council notes with satisfaction the discovery of 5 new isotopes in the reactions of ^{48}Ca beams with Th, U, Pu, and Am targets at the SHE Factory. Of particular relevance is the detection for the first time of the alpha decay branch of ^{268}Db and of the new isotope ^{264}Lr . The first experiments are currently conducted for studying the chemical properties of superheavy elements 112 (Cn) and 114 (Fl) using the GRAND separator. A number of gamma- and neutron spectroscopy experiments with a series of Rf and Fm isotopes were performed at the upgraded SHELS-GABRIELA setup.

The Scientific Council recognizes that one of the essential tasks of FLNR in 2024–2030 is the synthesis of new elements 119 and 120 in such reactions as $^{54}\text{Cr}+^{248}\text{Cm}$ and $^{50}\text{Ti}+^{249}\text{Bk}$. The further experimental studies of the structure and mechanisms of production of nuclei near and beyond the limits of nucleon stability are planned in FLNR at the ACCULINNA-1, ACCULINNA-2, and MAVR setups. A project for upgrading the U-400 → U-400R accelerator and the new 1500 m² experimental hall has been prepared. The Scientific Council supports the proposed strategy for the development of heavy-ion physics research in FLNR for 2024–2030.

Nuclear physics research with neutrons in the Frank Laboratory of Neutron Physics is carried out within the framework of the scientific theme “Investigations of Neutron Nuclear Interactions and Properties of the Neutron” and three projects.

Physics research within the framework of the theme can be divided into three areas:
1. study of violations of fundamental symmetries in the interaction of neutrons with nuclei,

obtaining nuclear data; 2. study of the fundamental properties of the neutron, physics of ultracold and very cold neutrons; 3. applied and methodological research.

The Scientific Council supports the PAC's recommendation to focus, for the seven-year period 2024–2030, on solving the following physical problems in the field of neutron physics: comprehensive study of the process of nuclear fission; study of the properties of neutron resonances; development and application of the method of tagged neutrons to study reactions of fast neutron interactions; development and application of neutron and nuclear methods for elemental analysis and applied research. The development of a new UCN source at the IBR-2 reactor will be one of the main tasks in this field.

The Scientific Council recommends the continuation of scientific research in the field of nuclear physics with neutrons using the FLNP neutron facilities, such as the IREN pulsed source of resonance neutrons and the IBR-2 pulsed reactor. The Scientific Council supports the planned increase in the intensity of the neutron flux of the IREN facility up to $3 \cdot 10^{12}$ n/s over the next seven-year period 2024–2030.

The Scientific Council takes note of the research within the theme “Non-Accelerator Neutrino Physics and Astrophysics”, which is devoted to the study of rare phenomena associated with the weak interaction by the methods of modern nuclear spectrometry. The following research directions are distinguished within this theme: investigation of double beta-decay; search for the neutrino magnetic moment, neutrino-nucleus coherent scattering; investigation of galactic and extragalactic neutrino sources, diffusive neutrino cosmic background, search for exotic particles.

The Scientific Council supports the proposal of the PAC and the DLNP Directorate to reorganize the structure of the theme. The Scientific Council underlines the importance of the efforts of DLNP to further improve the local infrastructure at JINR and on Lake Baikal.

Research in the field of low energy nuclear physics in the Bogoliubov Laboratory of Theoretical Physics is carried out within the framework of the theme “Theory of Nuclear Systems”. Study of the structure of nuclei far from stability, structure of superheavy nuclei, nucleus-nucleus collisions at low energies, fusion and fission dynamics, and reactions of astrophysical interest are the main research directions.

For the new seven-year period 2024–2030, the research in the field of low-energy nuclear physics will be focused on the study of exotic nuclei in the regions of superheavy elements and light nuclear systems at the borders of stability and beyond.

The Scientific Council appreciates the results obtained and recommends the extension of the theme “Theory of nuclear systems” until 2030.

The development of reliable network and information and computing infrastructure is carried out within the theme “Information and Computing Infrastructure of JINR” and its project “Multifunctional Information and Computing Complex (MICC)” in the Meshcheryakov Laboratory of Information Technologies. Another important activity of MLIT is related to the development and implementation of effective methods, algorithms, and software for modeling physical systems, mathematical processing and analysis of experimental data for the successful implementation of the scientific programme. The Scientific Council supports the MLIT scientific programme for the seven-year period 2024–2030 related to the development of the information and computing infrastructure of JINR and methods, algorithms and software for modeling physical systems, mathematical processing and analysis of experimental data.

Condensed matter physics

The Scientific Council notes the progress in replacing the air heat exchangers of the secondary reactor cooling circuit of the IBR-2 reactor and obtaining the operating license for this facility. The Scientific Council concurs with the PAC that the manufacturing of the new fuel load for IBR-2 is one of the crucial points for the next seven years, which will provide the necessary conditions for extending the reactor’s service life for the period after 2032. The Scientific Council also appreciates the continuation of the activity towards studying the mechanism of the occurrence of fluctuations in the power pulses of the IBR-2 reactor in cooperation with NIKIET and other organizations of the Rosatom State Corporation. The Scientific Council supports the PAC recommendation on the urgency of taking a decision on the choice of the manufacturer of the components for a new fuel load for IBR-2. The Scientific Council shares the PAC’s opinion on the importance of obtaining the new license for operation of the reactor as soon as possible, which will make it possible to resume the operation of IBR-2 for physics experiments, and to carry out the planned upgrade of the safety-related equipment and systems, including the suite of cryogenic moderators.

The Scientific Council supports the PAC’s recommendation on the themes to be included in the Topical Plan for JINR Research and International Cooperation in the context of the new Seven-Year Plan for the Development of JINR. As concerning the FLNP themes, the Scientific Council is pleased with the main directions suggested for the implementation within the theme “Investigations of Functional Materials and Nanosystems Using Neutron Scattering”. The Scientific Council supports the activities aimed at the development of the experimental infrastructure of the IBR-2 reactor within the theme “Scientific and Methodological Research and Developments for Condensed Matter Investigations with IBR-2 Neutron Beams”. The Scientific Council notes the progress made in experiments using

optical methods and supports the implementation of these studies within the new theme “Optical Methods in Condensed Matter Studies”. The Scientific Council appreciates the scope of activities within the theme “Development of the Conceptual Design of a New Advanced Neutron Source — Fast Pulse NEPTUNE Reactor at JINR” in terms of the current status and plans.

The Scientific Council is pleased with the status and prospects for the development of the scientific programme of MLIT and notes that a distinctive feature of the research areas related to information technology is the close cooperation with all the JINR laboratories and with organizations of the JINR Member States and other countries. Together with the PAC, the Scientific Council recommends further continuation of the IT-related research.

The Scientific Council notes the plans for the development of the BLTP theme “Theory of Complex Systems and Advanced Materials” and supports its general composition, constituted of four projects on the following topics: complex materials, mathematical models of statistical physics of complex systems, nanostructures and nanomaterials, and methods of quantum field theory in complex systems. The Scientific Council is also pleased with the basic scientometric information on the theme as well as with the composition of the personnel and the proposed types of collaboration.

The Scientific Council appreciates the wide range of R&D studies carried out and the high quality of the results obtained within the DLNP themes “Development of Scientific DLNP Infrastructure for Research Using Semiconductor Detectors, Laser Metrology, Electrons, Positrons and Cryogenic Technology” and “Biomedical and Radiation-Genetic Studies Using Different Types of Ionizing Radiation” and supports further continuation of these activities. The Scientific Council also notes the progress in the development of the LINAC200 facility and works on laser metrology focused on the development and installation of the high-precision instruments at the NICA facility and in the laboratories of JINR Member States.

The Scientific Council welcomes the implementation of research on the biological effects of ionizing radiation with different physical characteristics within the new LRB theme “Research on the Biological Effects of Ionizing Radiation with Different Physical Characteristics” and notes the planned studies of the mechanisms of action of ionizing radiation on the molecular, cellular, tissue, and organismal levels of biological organization as well as the research in astrobiology on the origin and persistence of life in the Universe using nuclear physics methods.

The Scientific Council appreciates the structure of the new FLNR theme “Radiation Materials Science, Nanotechnological and Biomedical Investigations with Accelerated Heavy Ion Beams”, which shows the relevance and demand of fundamental and applied research

based on the use of accelerated heavy ion beams for the studies of material properties and modifications, and supports the development of biomedical applications of track-etched membranes and research on nuclear isotopes and ecological investigations.

Common issues

The Scientific Council welcomes the efforts of the JINR Directorate to update the approach to the formation of the Topical Plan for JINR Research and International Cooperation by implementing the Regulations on structuring and planning scientific research at JINR, as well as risk assessment and mitigation measures.

Reports by young scientists

The Scientific Council followed with interest the reports by young scientists, selected by the PACs for presentation at this session: “A study of the correlation between the kinetic energy of a track and its energy response in the ZDC for run7 of the BM@N experiment”, by K. Alishina (VBLHEP), and “Structural studies of lithium-ion batteries in research of their functional characteristics”, by M. Yerdauletov (FLNP). The Scientific Council thanks the speakers and welcomes such selected reports in the future.

V. Awards and prizes

The Scientific Council congratulates FLNR Senior Researcher P. Apel on the award of the V. Dzhelepov Prize for the development of a new generation of track membranes and their applications in medicine and ecology.

The Scientific Council approves the Jury’s recommendations presented by Vice-Director V. Kekelidze on awarding the JINR annual prizes for best scientific, methodological, technological, and applied research papers (Appendix).

VI. Election and announcement of vacancies in the Directorates of the JINR Laboratories

The Scientific Council elected E. Lychagin as Director of the Frank Laboratory of Neutron Physics (FLNP) for a term of five years. The Scientific Council thanks V. Shvetsov for his successful tenure as Director of this Laboratory.

The Scientific Council elected S. Shmatov as Director of the Meshcheryakov Laboratory of Information Technologies (MLIT) for a term of five years. The Scientific Council thanks V. Korenkov for his successful tenure as Director of this Laboratory.

The Scientific Council endorsed the appointments of E. M. Anitas, N. Antonenko, and O. Teryaev as Deputy Directors of the Bogoliubov Laboratory of Theoretical Physics (BLTP) until the completion of the term of service of the current BLTP Director, D. Kazakov.

The Scientific Council announces the vacancies of the positions of FLNP and MLIT Deputy Directors. The endorsement of the appointments will take place at the 134th session of the Scientific Council, in September 2023.

VII. In Memory of V. Rubakov

The Scientific Council deeply regrets the loss of Academician V. Rubakov (Russia), member of the Scientific Council during 2013–2022. He was an outstanding scientist, one of the world’s leading experts in the fields of quantum field theory, elementary particle physics, and cosmology, who made significant contributions to the development of JINR.

VIII. Next sessions of the Scientific Council

The 134th session of the Scientific Council will be held on 21–22 September 2023.

The 135th session of the Scientific Council will be held in February 2024, the exact date to be decided at the 134th session.



G. Trubnikov

Chair of the Scientific Council



S. Kilin

Co-chair of the Scientific Council



S. Nedelko

Secretary of the Scientific Council

JINR PRIZES FOR 2022

For theoretical research papers

First prizes

“The anomalous Josephson effect”.

Authors: Yu. Shukrinov, I. Rahmonov, K. Kulikov, M. Nashaat, A. Mazanik.

“New methods in classical and quantum field theory with extended supersymmetry”.

Authors: E. Ivanov, I. Buchbinder, B. Merzlikin, K. Stepanyantz.

Second prize

“Superoperator approach to the theory of hot nuclei and astrophysical applications”.

Authors: A. Vdovin, J. Wambach, A. Dzhiyev, D. Kosov, K. Langanke, G. Martínez-Pinedo, V. Ponomarev, Ch. Penev Stoyanov.

For experimental research papers

First prize

“SHE factory: first results”.

Authors: Yu. Oganessian, S. Dmitriev, F. Abdullin, D. Ibadullayev, A. Polyakov, R. Sagaidak, V. Utyonkov, Yu. Tsyganov, M. Shumeiko, N. Kovrizhnykh,.

Second prizes

“Magnetism of ferromagnet – superconducting heterogeneous layered structures”.

Authors: V. Aksenov, V. Zhaketov, Yu. Nikitenko, A. Petrenko, Yu. Khaidukov.

“New data on the spectra of superheavy isotopes of hydrogen ${}^7\text{H}$, ${}^6\text{H}$ and the detection of spontaneous decay mode with the emission of 4 neutrons”.

Authors: A. Bezbakh, L. Grigorenko, A. Gorshkov, S. Krupko, I. Muzalevskii, E. Nikolskii, G. Ter-Akopian, A. Fomichev, V. Chudoba, P. Sharov.

For methodology, research and technology papers

First prizes

“The ν GeN experimental setup for the investigation of reactor’s antineutrino properties”.

Authors: V. Belov, I. Zhitnikov, S. Kazartsev, A. Lubashevskiy, D. Medvedev, D. Ponomarev, S. Rozov, K. Shakhov, E. Shevchik, E. Yakushev.

“Creation of systems of ion beam transfer to the Booster and Nuclotron synchrotrons of the NICA accelerator facility”.

Authors: A. Butenko, A. Galimov, S. Kolesnikov, O. Kunchenko, K. Levterov, V. Seleznev, A. Sidorov, A. Tuzikov, A. Fateev, V. Shvetsov.

Second prize

“The new gas-filled separator DGFRS-2”.

Authors: V. Bekhterev, G. Ivanov, A. Voinov, V. Konstantinov, D. Kuznetsov, O. Petrushkin, A. Podshibiakin, A. Popeko, D. Solovyev, V. Shubin.

For applied research and technology papers

First prize

“Hyperconverged “Govorun” supercomputer for the implementation of the JINR scientific program”.

Authors: D. Belyakov, A. Vorontsov, E. Druzhinin, M. Zuev, V. Korenkov, Yu. Migal, A. Moshkin, D. Podgainy, T. Strizh, O. Streltsova.

Second prizes

“Structural reorganization in a lipid membrane triggered by amyloid-beta peptide and temperature”.

Authors: O. Ivankov, N. Kučerka, T. Murugova, E. Ermakova, A. Rogachev, A. Kuklin, V. Skoi, Kh. Kholmurodov, D. Badreeva, E. Dushanov.

“Non-destructive microstructural analysis of promising cement materials for the construction of radioactive waste storage facilities and civil facilities: results of neutron radiography and tomography”.

Authors: S. Kichanov, K. Nazarov, D. Kozlenko, M. Balasoiu, A. Bekhzodjon, B. Savenko, I. Zel, M. Kenessarín.

Encouraging prizes

“Study of vector meson photoproduction processes in the ALICE (CERN) experiment”.

Authors: V. Pozdnyakov, Yu. Vertogradova, B. Rumyantsev, E. Kryshen, J. Contreras Nuno, D. Horak.

“Applying the neutron activation analysis for the assessment of the levels of elements in mussels from different regions of the World Ocean for the characterization of connection with their environment”.

Authors: P. Nekhoroshkov, M. Frontasyeva, I. Zinicovscaia, D. Nikolayev, T. Lychagina, A. Pakhnevich, K. Vergel, O. Chaligava, D. Grozdov, J. Bezuidenhout.