I. General considerations

The Scientific Council takes note of the report “Decisions of the session of the Committee of Plenipotentiaries of the Governments of the JINR Member States (November 2013). Major results of JINR activities in 2013 and plans for 2014” presented by JINR Chief Scientific Secretary N. Russakovich.

The Scientific Council is pleased to note the substantial progress in implementing the Seven-Year Plan for the Development of JINR (2010–2016), which concerns, in particular, the preparatory work at the NICA site, the civil engineering for the building of the Factory of Superheavy Elements, and the commissioning of new advanced spectrometers at the IBR-2 facility.

The Scientific Council concurs with the request of the Committee of Plenipotentiaries addressed to the JINR Directorate to start work on long-term planning for JINR until the year 2020.

The Scientific Council welcomes the initiative of the JINR Directorate, supported by the PAC for Particle Physics and PAC for Nuclear Physics, to evaluate and consolidate the programme of neutrino and astroparticle physics at JINR (especially in view of the two in-house flagship large projects — the Baikal neutrino observatory and the Kalinin nuclear reactor neutrino experiments), and recommends inviting leading world experts to take part in this evaluation process.

The Scientific Council highly appreciates the excellent collaboration between the FAIR project and the corresponding NICA project in the field of relativistic heavy-ion collisions.

The Scientific Council is satisfied with the contacts being developed between JINR and European bodies such as ESFRI and its Strategy Working Group on Physical Science and Engineering in which JINR has received observer status. The Scientific Council also believes that observership of JINR at CERN and vice versa would further promote and intensify the cooperation between these two international organizations, and recommends that the JINR Directorate approach the CERN Council with a suggestion for such a reciprocal arrangement.

II. Recommendations on reported activities

The Scientific Council takes note of the report “Prospects for research in the field of heavy-ion physics” presented by Vice-Director M. Itkis. The Scientific Council strongly supports the plans for the realization of the DRIBs-III project, including the construction of the Factory of Superheavy Elements and new experimental set-ups, and for the proposed research programme to study superheavy elements and light exotic nuclei. The Scientific Council expects that the time scale of the DRIBs-III project will be respected, and recommends that the JINR Directorate and the Committee of Plenipotentiaries take the necessary steps to achieve this important project.

The Scientific Council takes note of the report “Prospects for dense baryonic matter research at Nuclotron-NICA: BM@N and MPD projects” presented by VBLHEP Director V. Kekelidze. It highly appreciates the progress in preparing the research programme in this field and in developing the experimental instruments, and emphasizes the priority for implementing these projects.

The Scientific Council takes note of the report “Current state of the detector systems for nuclear physics with neutrons at FLNP” presented by FLNP Director V. Shvetsov. The Council recognizes the significance of the scientific results produced in the field of nuclear physics with neutrons and recommends further development of advanced instrumentation in order to maintain the positions achieved.

III. Recommendations in connection with the PACs

The Scientific Council takes note of the recommendations made by the PACs at their January 2014 meetings as reported at this session by Professors I. Tserruya, W. Greiner, and P. Alekseev.

Particle Physics Issues

The Scientific Council heard with interest the PAC’s comments concerning the reports presented by the Directors of VBLHEP, DLNP and LIT. Particularly:

– The Scientific Council recognizes the high quality of the scientific research being performed by VBLHEP groups and supports the efforts of the VBLHEP management for enhanced involvement of the staff in the research programme of the Nuclotron-NICA accelerator complex, while maintaining a balanced but visible participation in external experiments.

– The Scientific Council recognizes the importance of the neutrino physics and astrophysics research programmes carried out at DLNP. It requests the JINR Directorate to

consider having all neutrino physics-related proposals discussed in a single PAC or alternatively having regular joint meetings of the PAC for Particle Physics and the PAC for Nuclear Physics to assess the priorities for the JINR neutrino physics programme. This recommendation holds in particular to take a decision about the participation in the new projects NOvA and COMET proposed by the PAC for Particle Physics and by the PAC for Nuclear Physics, respectively.

– The Scientific Council supports the efforts of the LIT management in the concentration of human and material resources to best meet the fundamental interests of JINR and its Member States. For the computational services provided by LIT personnel to other JINR groups, the LIT Directorate is requested to clarify its strategy on how to distribute its resources, which research areas to enter, and eventually how to make the clients participate in covering the costs for this support.

The Scientific Council appreciates further improvements achieved in the Nuclotron operation as demonstrated in Run 48 and welcomes the beginning of site preparation for the NICA building construction work. It notes with satisfaction that the Nuclotron-NICA Machine Advisory Committee is pleased with the progress achieved by the Nuclotron-NICA team and by the proposed solutions to address the multiple challenges ahead.

The Scientific Council notes the progress concerning the BM@N project. It requests a report from the BM@N team with detailed staging of the project and a detailed concept of the tracking system suitable for Au beams. It also urges the BM@N team and the Laboratory management to establish the DAC for BM@N and to increase significantly the JINR manpower involved in BM@N.

The Scientific Council appreciates the progress in constructing, manufacturing and testing prototypes for the MPD detector systems achieved in 2013, and also the progress in the preparation of the MPD technical project. It urges the MPD and NICA managements to focus their efforts on completing contracts for the two critical items — manufacturing of the magnet and construction of the collider. It thanks the members of the MPD Detector Advisory Committee for their review of the project realization and recommends continuation of this activity.

The Scientific Council encourages continuation of the efforts in shaping the NICA scientific programme, focusing on quantitative assessment of the proposed measurements in close cooperation with the MPD, BM@N, and CBM@FAIR teams.

Nuclear Physics Issues

The Scientific Council is pleased to note that experiments with extracted beams and in the IREN target hall were continued during 2013. Neutron spectra from the gallium production target were experimentally measured. Work on the detailed technical project of the accelerating structure of IREN and an implementation of nonmultiplying neutron producing target made from natural uranium are in progress. These activities have not been finalized yet, the next milestone to be prepared for the next meeting of the PAC in June 2014.

The Scientific Council appreciates the FLNR group's work on the DRIBs-III project. It notes with satisfaction that the implementation of this project and the work related to the development of the DC-280 cyclotron, construction of new and upgrade of existing physics instruments (ACCULINNA-2 and VASSILISSA-GABRIELLA separators, Gals and others) generally proceed according to the Seven-Year Plan for the Development of JINR. In order to bring the implementation of the theme "Accelerator Complex of Ion Beams of Stable and Radioactive Nuclides (DRIBs-III)" into accordance with the Seven-Year Plan, the Scientific Council recommends extending this theme for two more years with first priority. At the same time the Scientific Council acknowledges that the construction of a new FLNR experimental hall is falling behind schedule. It recommends that the JINR and FLNR Directorates take the necessary steps to meet the deadlines for commissioning the SHE-factory, which is a key project of the Seven-Year Plan for the Development of JINR.

The Scientific Council supports the approval of the new project "Design and development of the tagged neutron method for elemental analysis and nuclear reaction studies" (project TANGRA) aimed at developing the tagged neutron method, which is already successfully used in applied research for detection of hazardous substances.

Condensed Matter Physics Issues

The Scientific Council highly appreciates the stable operation of the IBR-2 facility providing experiments with extracted neutron beams. It also notes the importance of implementing the programme of regular physics experiments in accordance with the user policy and the relevance of disseminating the obtained results in order to highlight the capabilities of the updated facilities. Noting the successful operation of the FLNP User Programme at the spectrometer complex of the IBR-2 facility and the increased number of high-quality experiments performed, the Scientific Council concurs with the PAC that the implementation of this programme should remain one of the major activities of FLNP in 2014.

The Scientific Council notes the progress in upgrading the FLNP instrumentation. In particular, it appreciates the commissioning and first experiments carried out at the GRAINS reflectometer and welcomes the intention to include it in the User Programme. The Scientific Council also notes the efforts taken in the modernization of the YuMO spectrometer and the increasing number of proposals on investigations based on small-angle neutron scattering.

The Scientific Council welcomes the increased number of high-quality results obtained in different fields of applied research, presented as scientific reports at the PAC meeting.

Reports by young scientists

The Scientific Council appreciates the following reports by young scientists, which were selected by the PACs for presentation at this session: “Study of the magnetic structure of $HoCo_2$ and $ErCo_2$ compounds at high pressures”, “Study of hyperon and antihyperon production in deep inelastic muon scattering”, “Study of the processes of fusion-fission and of evaporation residue formation within the knowledge base on low-energy nuclear physics”, and thanks the speakers: A. Rutkauskas, N. Rossiyskaya, and A. Karpov. The Scientific Council welcomes similar reports in the future.

IV. Memberships of the PACs

The Scientific Council deeply regrets the loss of Professor Natalia Janeva, a prominent Bulgarian expert in the fields of nuclear physics with neutrons and nuclear waste transmutation. It highly appreciates her great contributions to the PAC for Nuclear Physics as a member since 1994 and Chairperson during 2006–2007.

The Scientific Council also deeply regrets the loss of Professor Vladislav Petrov, a prominent Russian expert in the fields of space research, radiation safety and radiobiology. It highly appreciates his great contributions to the PAC for Condensed Matter Physics as a member since 2005.

As proposed by the JINR Directorate, the Scientific Council appoints for a term of three years:

– Professors P. Hristov (CERN, Geneva, Switzerland) and J. Pluta (Warsaw University of Technology, Poland) as new members of the PAC for Particle Physics,

– Professors L. Avramov (Institute of Electronics, Sofia, Bulgaria), L. Dubrovinsky (Bayerisches Geoinstitut, Bayreuth, Germany), and R. Saladino (Tuscia University, Viterbo, Italy) as new members of the PAC for Condensed Matter Physics,

– Professor Guinyun Kim (Kyungpook National University, Daegu, South Korea) as a new member of the PAC for Nuclear Physics.

The Scientific Council thanks the outgoing members Professors J. Dobeš and A. Steuwer for their successful work as members of the PAC for Nuclear Physics and the PAC for Condensed Matter Physics, respectively.

V. Scientific reports

The Scientific Council highly appreciates the scientific reports: “Unsolved problems of neutrino physics and astrophysics and the potential of the experiment on Baikal” presented by Professor V. Rubakov, “From one-carbon atom compounds to spontaneous generation of RNA. Which source of energy?” presented by Professor E. Di Mauro, and thanks the speakers for their excellent presentations.

VI. Awards and prizes

The Scientific Council endorses the proposal of the JINR Directorate to award the title “Honorary Doctor of JINR” to Professors S. Enkhbat (Mongolia), L. Kostov (Bulgaria), and R. Maier (Germany), in recognition of their outstanding contributions to the advancement of science and the education of young scientists.

The Scientific Council approves the Jury’s recommendations on the JINR prizes for 2013 (Appendix) in the annual scientific research competition in the fields of theoretical physics, experimental physics, physics instruments and methods, and applied physics.

The Scientific Council congratulates Professor L. Maiani (Sapienza University of Rome, Italy) on the award of the 2013 B. Pontecorvo Prize for his outstanding contributions to elementary particle physics, in particular to weak interaction physics and neutrino physics. The Scientific Council thanks Professor L. Maiani for his inspired presentation.

VII. Appointment of Deputy Directors of JINR laboratories

The Scientific Council endorsed the appointment of V. Glagolev and D. Naumov as Deputy Directors of the Dzhelepov Laboratory of Neutron Physics, and N. Kučerka as Deputy Director of the Frank Laboratory of Neutron Physics, until the completion of the terms of office of the directors of their respective laboratories.

VIII. Next session of the Scientific Council

The 116th session of the Scientific Council will be held on 25–26 September 2014.

R. Lednický
Chairman of the Scientific Council

M. Waligórski
Co-chairman of the Scientific Council

N. Russakovich
Secretary of the Scientific Council