

I. General considerations

The Scientific Council takes note of the comprehensive report presented by JINR Director A. Sissakian “Prospects for the development of JINR in 2010–2016” in light of the important decisions taken by the Committee of Plenipotentiaries of the Governments of the JINR Member States at its session held in Astana (Kazakhstan) in November 2009.

The Scientific Council notes that the Committee of Plenipotentiaries (CP) approved the Seven-Year Plan for the Development of JINR 2010–2016, based on concentration of resources for updating the accelerator and reactor base of the Institute, taking into account the recommendations of the Scientific Council and the Finance Committee. The CP also supported the efforts being taken towards integration of the JINR basic facilities into the common European research infrastructure.

The Scientific Council is pleased to note the decision of the Committee of Plenipotentiaries to increase the JINR budget by 20.7% in 2010. The CP also emphasized the importance of the annual increase of the budget in 2010–2016, planned according to the budget forecast approved by the CP, for achieving the milestones of the future development of JINR. The Scientific Council asks the Committee of Plenipotentiaries to try to ensure the requested financial support, despite the present difficult financial period in some Member States, for the successful realization of the approved seven-year plan.

The Scientific Council is pleased to note that most of its recommendations to the JINR Directorate, taken at the previous session, concerning the current and long-term scientific programmes of JINR, the operation and upgrade of the basic facilities, and the construction of new facilities are being successfully implemented as detailed in the report by Director A. Sissakian.

The Scientific Council appreciates the new efforts of the Directorate towards optimization of the JINR partnership programme with research centres of the Member States and other countries as well as with international scientific research organizations. The Scientific Council notes the importance of the Agreement between CERN and JINR concerning Scientific and Technical Cooperation in High-Energy Physics, signed in January 2010 by CERN Director-General R.-D. Heuer and JINR Director A. Sissakian, and looks forward to the successful continuation in the future of the long-standing and mutually beneficial cooperation between these two international laboratories.

II. Considerations concerning the results of the previous seven-year scientific programme and plans for 2010–2016

The Scientific Council highly appreciates the results of implementation of the “Programme of the Scientific Research and Development of JINR” (2003–2009) and the plans of activities for 2010–2016 in the fields of nuclear physics, condensed matter physics, and particle physics presented in the reports by Vice-Directors M. Itkis and R. Lednický. The Scientific Council recommends the concentration of human and financial resources on realization of three major basic facilities of JINR — NICA/MPD, DRIBs-III, and IBR-2M with spectrometers — according to a master planning, and looks forward to being regularly informed about the progress of the implementation of this recommendation.

III. Recommendations on reported activities

The Scientific Council takes note of the report "Status of the JINR Educational Programme" presented by the Acting Director of the University Centre (UC), S. Pakuliak, and emphasizes the need for continued support of the UC in addressing priority tasks of training young scientific and engineering personnel for the Member States of the Institute. The Scientific Council appreciates the UC's effort to enhance work with school teachers from Member States, in particular through the organization, together with CERN, of the annual schools for teachers of physics that will be held at CERN and JINR. The Scientific Council welcomes the increase in the number of students of JINR-based departments of the universities located in Dubna, which allows preparation of scientific staff from the date of enrolment of young people in the universities. This creates conditions for effective training of researchers and for rapid involvement of young scientists in the research programme of JINR.

The Scientific Council takes note of the report “Applied research and innovative activities at JINR” presented by DLNP Director A. Olshevskiy and recommends that these activities be continued and extended in accordance with the seven-year plan of JINR development.

The Scientific Council takes note of the report by JINR Assistant Director for Innovative Development A. Ruzaev about the status and objectives of the International Innovative Nanotechnology Centre for the countries of the Commonwealth of Independent States (CIS). This centre was established as a non-profit partnership at the foundation forum, held in Dubna in December 2009, and currently includes 15 organizations from 9 CIS countries. The Scientific Council highly appreciates the initiative of the JINR Directorate to establish this Centre in cooperation with the Russian Research Centre

“Kurchatov Institute” and the International Association of Academies of Sciences, and looks forward to being informed at future sessions about the progress of its activities.

The Scientific Council asks the JINR Directorate to prepare written materials (brochures, electronic presentations, etc.) about the applied research and innovative activities including the new Nanotechnology Centre to be used as information for the interested partners in the Member States.

The Scientific Council takes note of the information presented by Professor A. Kovalenko about the decision taken by the JINR Directorate to start the publication of a journal dedicated to heavy-ion physics research in 2010.

IV. Recommendations in connection with the PACs

The Scientific Council concurs with the recommendations made by the PACs at their January 2010 meetings as reported at this session by Professors E. Tomasi-Gustafsson, W. Greiner, and P. Alekseev.

Particle Physics Issues

The Scientific Council endorses the main lines of the JINR Programme of Particle Physics Research proposed for the period 2010–2012 in accordance with the new seven-year JINR development plan.

The Scientific Council appreciates the significant progress in upgrading the VBLHEP accelerator complex and notes that during the autumn run of the Nuclotron the obligations concerning the research programme were fulfilled and stable operation of the accelerator complex at high intensity was demonstrated.

The Scientific Council thanks the chairman, members and experts of the Machine Advisory Committee (MAC) for the Nuclotron-M/NICA accelerator complex for their work, which plays an extremely important role in the project realization, and especially notes that the expertise performed by the MAC has confirmed the feasibility of the NICA project. The Scientific Council supports the PAC’s recommendation on the preparation of a project for realization of the next stage of the NICA complex construction to be presented at a future PAC meeting.

The Scientific Council notes the substantial progress in scrutinizing all basic elements of the MPD detector and supports the PAC’s recommendation on the preparation of a project for the first-stage realization of the multipurpose set-up MPD to be presented at the next PAC meeting.

The Scientific Council notes the progress achieved in the preparation of the white paper for the NICA programme on the mixed phase and spin physics and recommends

continuation of the work to elaborate a competitive research programme in view of its complementarity with studies planned at CERN, RHIC, and FAIR, in particular with the CBM detector.

The Scientific Council takes note of the information on the first experience of JINR physicists in data taking in the ATLAS, ALICE, and CMS experiments. The Scientific Council congratulates these teams for having fulfilled their obligations in the construction of the detectors and the commissioning phase, and highly appreciates the presentation of the first physics results which witness the overall good operation of the detectors. The Scientific Council recognizes the important contribution of LIT to the first data analysis phase.

The Scientific Council supports the PAC's recommendations on JINR's participation, within the suggested time scales, in the new projects: "Physics research at the LHC. ATLAS, ALICE, CMS", "STAR at RHIC" and "PANDA. Experiments at FAIR", as well as on the continuation of the current activities and on the closure of 13 projects, as outlined in the PAC report.

The Scientific Council congratulates the directorates of JINR and DLNP and the entire staff of the Institute on the 60th anniversary of the commissioning of the JINR Synchrocyclotron — the first accelerator at Dubna. A wealth of important scientific results, including 13 registered discoveries, has been produced at this accelerator.

Nuclear Physics Issues

The Scientific Council endorses the main lines of the JINR Programme of Nuclear Physics Research proposed for the period 2010–2012 in accordance with the new seven-year JINR development plan.

The Scientific Council recommends the acceleration of the upgrade of IREN-1 to rapidly reach higher intensity of the source and to make it really comparable with powerful neutron sources in Europe. It also recommends that additional funding be provided for supplying the necessary equipment for the next phase of IREN and for its full-scale completion.

The Scientific Council suggests that the FLNR Directorate consider, during the modernization phase of the U400 cyclotron complex, the possibility to develop a uranium beam of large intensity ($\sim 10^{12}$ particles/s). This will allow the exploration, in further perspective, of alternative pathways to extend the nuclear chart towards even heavier and longer living nuclei.

The Scientific Council supports the PAC's recommendation that FLNR should start experiments with the MASHA mass spectrometer in 2010 and develop plans towards

further improvement of this set-up.

The Scientific Council notes the significant progress achieved in the upgrade of the VASSILISSA separator in close collaboration with IN2P3 (France). The modernization of this separator together with the GABRIELA system for detection of nuclear reaction products should be continued according to the proposed plans.

The Scientific Council supports the PAC's recommendation on the new project "Detector of reactor antineutrinos based on solid-state plastic scintillators" (DANSS) to be implemented within the theme "Non-accelerator Neutrino Physics and Astrophysics".

Condensed Matter Physics Issues

The Scientific Council is pleased to note that modernization of the IBR-2 reactor is proceeding in full accordance with the technical and financial plans, the accomplishment of the physical start-up of the IBR-2M reactor being the main task for 2010. The Scientific Council supports the PAC's recommendation for the completion of the current theme "Upgrade of the IBR-2 complex" and for the opening of the new first-priority theme "Development of the IBR-2M reactor with a complex of cryogenic neutron moderators" for 2011–2013. The major objective of the new activity is to increase the efficiency of using the IBR-2M modernized reactor and to develop it to a world-wide leading-edge neutron facility equipped with excellent spectrometers and thereby attracting users from all over the world.

The Scientific Council endorses the main areas of research in nanosystems conducted at FLNP and FLNR and supports the PAC's recommendations for the continuation of modernization of the facilities at these laboratories for nanoscale physics and nanomaterial studies.

The Scientific Council supports FLNP's plans to upgrade the IBR-2M reactor beams for the SKAT/EPSILON-MDS diffractometers and endorses the main fields of research to be carried out as part of the GRAINS project.

The Scientific Council highly appreciates the pool of expertise developed by LRB specialists in the radiation protection of high-energy accelerators and their activity concerning the design of the NICA complex radiation shielding. The Scientific Council notes the activity of LRB scientists on the application of nuclear physics methods to research on the elemental composition of the Solar System planet surfaces and the biology of living systems. The Scientific Council supports the PAC's recommendation on the necessity of creating a special beam channel at the modernized Nuclotron for medical and radiobiological experiments with intermediate-energy heavy ions.

The Scientific Council appreciates the high level of activities in condensed matter science pursued by the research groups at FLNP, BLTP, FLNR, and LRB.

V. Memberships of the PACs

As proposed by the JINR Directorate, the Scientific Council appoints Professor J. Cleymans (University of Cape Town, South Africa) as a new member of the PAC for Particle Physics and Professor F. Piquemal (CEN, Bordeaux, France) as a new member of the PAC for Nuclear Physics for a term of three years.

VI. Scientific reports

The Scientific Council highly appreciates the scientific reports “Maximal Net Baryon Density in the Energy Region Covered by NICA” presented by Professor J. Cleymans and “Experiments on the Synthesis of Element 117” presented by Professor Yu. Oganessian, and thanks the speakers.

The Scientific Council especially notes the results of the experiments on the synthesis of element 117 and congratulates the staff of the Flerov Laboratory on the discovery of this element and on the synthesis of new isotopes of elements 115, 113, 111, 109, 107, and 105.

VII. JINR prizes

The Scientific Council approves the Jury's recommendations on the JINR prizes for 2009 (Appendix).

The Scientific Council congratulates the laureates of the 2009 B. Pontecorvo Prize: Professor A. Dolgov (ITEP, Moscow, Russia), awarded for his fundamental results on neutrino oscillations and kinetics in cosmology, and Professor H. Sobel (University of California, Irvine, USA), awarded for his significant contributions to the field of neutrino oscillation experiments, and thanks them for their informative presentations on these topics.

VIII. Anniversaries of the JINR scientific journals

The Scientific Council appreciates the report presented by the Editor-in-Chief of “Physics of Particles and Nuclei”, V. Kadyshevsky, related to the activities of the journals “Physics of Particles and Nuclei” and “Physics of Particles and Nuclei, Letters”. These journals, published since 1970 and 1984 respectively, have been maintaining a high standard of publications, an excellent selection of authors from the JINR Member States and leading research laboratories worldwide, and as a result a significant citation index.

The Scientific Council congratulates the editorial boards on the 40th and 25th anniversaries of these journals and wishes them further successful work for the benefit of fundamental science.

IX. Elections

The Scientific Council elected by ballot Professors G. Trubnikov and A. Vodopyanov as Deputy Directors of the Veksler and Baldin Laboratory of High Energy Physics (VBLHEP) and Professors G. Timoshenko and A. Yagova as Deputy Directors of the Laboratory of Radiation Biology, until the completion of the terms of office of the directors of these laboratories.

The Scientific Council confirms the vacancies of the positions of two Deputy Directors of VBLHEP. The elections for these positions will take place at the 108th session of the Scientific Council.

X. In memory of Yuri Gaponov and Tsvetan Vylov

The Scientific Council deeply regrets the sad loss of Professor Yu. Gaponov, member of the JINR PAC for Nuclear Physics, who made outstanding contributions to the development of scientific collaboration between JINR and Russian research centres.

The Scientific Council also deeply regrets the sad loss of Professor Ts. Vylov, Vice-Director of JINR during 1992–2005, who made outstanding contributions to the development of scientific collaboration between JINR and research centres of the Member States and other countries.

XI. Next session of the Scientific Council

The 108th session of the Scientific Council will be held on 23–24 September 2010.

A. Sissakian

Chairman of the Scientific Council

I. Wilhelm

Co-chairman of the Scientific Council

N. Russakovich

Secretary of the Scientific Council