

**I. General considerations**

The Scientific Council takes note of the decisions of the regular session of the Committee of Plenipotentiaries of the Governments of the JINR Member States (November 2010), as well as of the major results obtained by JINR in 2010 and of the activities planned for 2011 presented in the report by JINR Acting Director M. Itkis.

The Scientific Council notes the plans of the JINR activities for the current year as outlined in the report and endorses them.

The Scientific Council recognizes the impressive achievements of JINR scientists in implementing the research programmes, in updating the accelerator and reactor base of the Institute as well as in the areas of information technology, the education of young scientists, and innovative developments in 2010, in particular:

- the synthesis of Element 117 — an outstanding world-class discovery,
- the successful upgrade of the Nuclotron,
- the successful physical start-up of the IBR-2 modernized reactor,
- the reliable operation of all the JINR basic facilities for the needs of experimental programmes,
- the important contributions by JINR scientists to the physics results produced in external experiments,
- the significant advances in the development of the Grid infrastructure at JINR.

The good progress of the activities at JINR last year would have been impossible without the strong support provided by the Member States. The Scientific Council is pleased to note the decision of the Committee of Plenipotentiaries to increase the JINR budget by 21% in 2011, and looks forward to further adequate financing of this Institute for achieving the goals of the approved Seven-Year plan.

The Scientific Council supports the efforts being taken by the JINR Directorate to ensure the social package for the JINR employees, in particular the started construction of housing for young scientists, the increase of salaries of the JINR staff in 2010 and the planned increase of salaries in April 2011.

The Scientific Council welcomes the investment agreement signed on 31 August 2010 between JINR and the State Corporation “Russian Corporation of Nanotechnologies”, which regulates JINR’s participation in the realization of the project for the establishment of an infrastructural nanotechnology centre in Dubna.

The Scientific Council congratulates the JINR University Centre on the 20th

anniversary of its establishment and wishes its staff further successful work in realizing and developing the educational programme.

The Scientific Council notes the festive activities planned in Dubna on the occasion of the 55th anniversary of JINR on 26 March 2011.

The Scientific Council welcomes the election of Professors Ch. Stoyanov and the appointment of Professor N. Tonchev as new members of the Scientific Council.

## **II. Recommendations on reported activities**

The Scientific Council takes note of the report "Status of the Nuclotron-M and NICA projects" presented by VBLHEP Deputy Director G. Trubnikov. The Scientific Council congratulates the VBLHEP Directorate and staff on the accomplishment of the upgrade of the Nuclotron accelerator. This achievement is seen as a major step towards the NICA facility.

The Scientific Council takes note of the report "Physical start-up of the IBR-2 modernized reactor" presented by FLNP Director A. Belushkin. The Scientific Council looks forward to the completion of this work, to the accomplishment of the power start-up and to the beginning of the operation of the reactor for experiments in 2011.

The Scientific Council has heard with great interest the report "Road map in the field of superheavy elements" presented by FLNR Scientific Leader Yu. Oganessian. The Scientific Council endorses the proposed programme and expects that its realization — using the new experimental set-ups being developed under the DRIBs-III project — will yield new knowledge in the nuclear physics and chemistry of superheavy elements. This will enable JINR to keep its leading position in this field of science.

The Scientific Council takes note of the report "Young scientists and specialists at JINR" presented by the Chairman of the JINR Association of Young Scientists and Specialists, A. Ayriyan. The Scientific Council appreciates the progress of implementation of the programme "Young staff at JINR" and emphasizes the vital importance of this issue for the future of JINR.

## **III. Recommendations in connection with the PACs**

The Scientific Council concurs with the recommendations made by the PACs at their January 2011 meetings as reported at this session by Professors E. Tomasi-Gustafsson, W. Greiner, and P. Alekseev.

### Particle Physics Issues

The Scientific Council highly appreciates the progress that has been made in

developing the VBLHEP accelerator complex and the fulfillment of obligations for the Nuclotron-M project whose main goals have been achieved. Given the successful performances of the Nuclotron-M, the Scientific Council emphasizes its recommendation that the JINR Directorate should publish an international call for experiments at this facility.

The Scientific Council is pleased to note that the design of the NICA project is progressing well. Significant modifications for the concept of the NICA collider have been adopted. There is considerable progress in developing a new lattice for the collider and the ring design. However, aggressive work on the design is required in order to stay within the proposed timeline for the project. The Scientific Council endorses the detailed recommendations taken by the Machine Advisory Committee (MAC) for the Nuclotron-M/NICA accelerator complex at its meeting on 5 October 2010, and thanks the MAC for providing valuable expertise for this project.

The Scientific Council supports the PAC's recommendations on the approval of the new project "Nuclotron-NICA" for the next construction stage of the VBLHEP accelerator complex and welcomes the proposed programme, strategy and schedule of this project.

The Scientific Council appreciates the progress of the ongoing work to prepare the White Paper dedicated to the research programme of the NICA project and the emergence of new interesting proposals. A synthesis of this work will establish a comprehensive and competitive research programme.

The Scientific Council appreciates the results obtained by the COMPASS collaboration with participation of JINR physicists and concurs with the recommendation on the approval of the new project COMPASS-II.

The Scientific Council emphasizes the scientific significance of the results being obtained with the active participation of JINR physicists in the ATLAS, ALICE, and CMS experiments, and encourages these groups to strengthen their efforts in the data analysis and in the presentation of the results at international conferences.

#### Nuclear Physics Issues

The Scientific Council notes that the studies of chemical properties of transactinide nuclei play a very important role in the JINR seven-year plan of scientific research. This programme includes investigations of the chemical properties of elements 112–114 in the fusion reactions  $^{243}\text{Am}+^{48}\text{Ca}$  and  $^{242,244}\text{Pu}+^{48}\text{Ca}$ , as well as measurements of isotope masses of these elements with the use of the upgraded mass-spectrometer MASHA. The Scientific Council recommends continuation of these studies with high priority. It also strongly supports the efforts of the FLNR Directorate towards construction of urgently needed new radiochemical laboratories.

The Scientific Council supports the PAC's recommendations on the approval of the new projects "A study of the nucleon spin structure in strong and electromagnetic interactions" (GDH&SPASCHARM) and "Experimental study of nuclear fusion reactions in the  $pt\mu$  system" (TRITON).

#### Condensed Matter Physics Issues

The Scientific Council notes with satisfaction the physical start-up of the IBR-2 modernized reactor according to the schedule.

The Scientific Council supports the directions of the development of the spectrometer complex and neutron scattering techniques at the IBR-2 modernized reactor and notes the importance of completing the basic configuration of the DN-6, GRAINS, EPSILON-MDS and SKAT instruments at the beginning of 2011. It supports the FLNP proposal for developing a specialized neutron diffractometer for the real-time investigations of irreversible processes in condensed matter. The Scientific Council appreciates the principles of the user policy of the spectrometer complex and considers this activity to be very important not only for FLNP but also for the whole Institute. It was recommended to launch a call for proposals of experiments at the reactor in November 2011.

The Scientific Council notes the efforts being undertaken by VBLHEP towards the construction of a special beam channel at the Nuclotron-M for medical and radiobiological experiments and regards the development of technical specifications and logistics of this channel as important tasks.

The Scientific Council supports the PAC's recommendations on the continuation of the research via the theme "Radiation Effects and Physical Basis of Nanotechnology, Radioanalytical and Radioisotope Investigations at the FLNR Accelerators" and on the approval of the project "Investigation of the interaction of polarized muons with matter" (MUON).

#### Common Issues

The Scientific Council is pleased to note that poster sessions of young scientists at the PAC meetings have become a well-established form of activity, expects continuation of this valuable means of interaction with young researchers, and thanks the PACs for selecting the poster presentations as reports at this session.

#### **IV. Scientific reports by young scientists**

The Scientific Council appreciates the scientific reports presented by young scientists: "Prospects of SUSY observation with the ATLAS detector" by E. Khramov, "Shear and bulk viscosities for pure glue matter" by A. Khvorostukhin, " $\mu$ -veto for low-background

experiments” by D. Zinatulina, and “A system for measurement of a therapeutic proton beam dose distribution” by A. Agapov, and thanks the speakers.

## **V. Awards and prizes**

The Scientific Council congratulates Professor V. Filchenkov on the award of the title “Honorary Doctor of JINR”.

The Scientific Council approves the Jury's recommendations on the JINR prizes for 2010 (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 the laureates of the 2010 B. Pontecorvo Prize: Professor S. Petcov (SISSA/INFN, Trieste, Italy; Bulgarian Academy of Sciences), awarded for his fundamental contributions to the studies of neutrino propagation in matter,  $\mu \rightarrow e\gamma$  and  $\mu \rightarrow 3e$  processes, and Majorana properties of the neutrino, and Professor Y. Suzuki (University of Tokyo, Japan), awarded for his outstanding contributions to the discovery of atmospheric and solar neutrino oscillations in the Super-Kamiokande experiment. The Scientific Council thanks Professors S. Petcov and Y. Suzuki for their informative presentations on these topics.

## **VI. Elections**

The Scientific Council elected by ballot Professors E.-M. Ilgenfritz and Yu. Potrebenikov as Deputy Directors of the Veksler and Baldin Laboratory of High Energy Physics (VBLHEP), until the completion of the term of office of the VBLHEP Director.

## **VII. General discussion**

The Scientific Council encourages the JINR Directorate to intensify the support of the participation of young scientists from non-Member States in the JINR educational programme.

The Scientific Council invites the Directorate to discuss plans to maximize the work of the available and future facilities not only for particle and nuclear physics but also for plasma physics, atomic physics, molecular physics, medicinal physics and radiobiology, etc.

The Scientific Council wishes to be informed about the effectiveness of the proton therapy delivered at JINR and about plans for wide application in cooperation with other similar international centres. A possibility should be considered to organize a dedicated international conference on this subject.

The Scientific Council highly appreciates the Dubna contribution to the CERN scientific programme and reiterates the recommendation given at the previous session that the JINR Directorate should concretize in the near future the scope and areas of JINR's participation in the programme of upgrades of the LHC and its detectors.

The Scientific Council recommends that the JINR Directorate intensify the collaboration between JINR and GSI in the field of relativistic heavy-ion physics and applied research related to this subject.

Taking into account the multitude of scientific projects and programmes in Europe and worldwide, a coordination of JINR objectives with these developments is needed to avoid repetitions and to enhance the effectiveness.

#### **VIII. Announcement of vacancies in the directorates of JINR laboratories**

The Scientific Council announces the vacancies of the positions of the Directors of the Bogoliubov Laboratory of Theoretical Physics, the Flerov Laboratory of Nuclear Reactions and the Frank Laboratory of Neutron Physics. The elections for these positions will take place at the 111th session of the Scientific Council.

#### **IX. Next session of the Scientific Council**

The 110th session of the Scientific Council will be held on 15–16 September 2011.

M. Itkis

Chairman of the Scientific Council

Gh. Stratan

Co-chairman of the session

N. Russakovich

Secretary of the Scientific Council