

**I. In memory of colleagues**

The Scientific Council paid tribute to the memory of Professor Alexei Sissakian. As Director of the Joint Institute for Nuclear Research, he made outstanding contributions to the development of JINR as a major international centre for fundamental research, as well as to the education of young scientists and the development of innovative activities, and played a leading role in the establishment of the current and future JINR research programmes based on broad international cooperation. His inspiring scientific leadership and personal qualities are sorely missed.

The Scientific Council also commemorated Professors Matey Mateev and Albert Tavkhelidze, members of the Scientific Council, who made outstanding contributions to the advancement of science and to the development of collaboration between JINR and research centres in Member States.

**II. General considerations**

The Scientific Council takes note of the decisions of the regular (March 2010) and extraordinary (May 2010) sessions of the Committee of Plenipotentiaries of the Governments of the JINR Member States, as well as of the overview of major results of JINR's ongoing activity presented in the report by JINR Acting Director M. Itkis.

The Scientific Council recognizes the significant scientific accomplishments of JINR scientists in 2010 in the fields of particle physics, nuclear physics and condensed matter physics, as well as in the areas of information technology, the education of young scientists, and innovative developments. As examples in these fields, the Scientific Council wishes to note:

- impressive advances in the fields of the synthesis and chemistry of superheavy elements and in the studies of the structure of light neutron-rich nuclei;
- the impressive increase of new results from the LHC with visible contributions by JINR physicists (ALICE, ATLAS, and CMS experiments);
- new achievements in both accelerator-based neutrino physics (OPERA experiment) and non-accelerator neutrino physics and astrophysics (GEMMA and EDELWEISS experiments);
- a number of important results in the field of solid-state physics and radiobiology;
- the high quality of theoretical studies related to the main directions of the JINR scientific programme;

- good performance of the internal computing infrastructure and Grid services;
- successes in the educational programme, now including schools for high-school teachers (together with CERN).

The Scientific Council highly appreciates the new efforts of the Directorate towards further development of the JINR partnership programmes, noting in particular the bilateral agreements signed by JINR in 2010 with the Budker Institute of Nuclear Physics, the Brookhaven National Laboratory, the Fermi National Accelerator Laboratory, and the Moscow Engineering Physics Institute.

The Scientific Council notes the decision taken at the extraordinary session of the Committee of Plenipotentiaries (CP) to appoint JINR Vice-Director M. Itkis as Acting Director of JINR until the election of a new director of the Institute at a future CP session.

The Scientific Council notes the election of Professor P. Jenni (CERN) as a new member of the Scientific Council.

### **III. Recommendations on reported activities**

The Scientific Council takes note of the reports about the progress of implementation of the Seven-Year Plan for the Development of JINR (2010–2016) in the fields of particle physics and high-energy heavy-ion physics, presented by JINR Vice-Director R. Lednický, and in the fields of low- and intermediate-energy nuclear physics, nuclear physics with neutrons, and condensed matter physics, presented by Chief Scientific Secretary N. Russakovich.

The Scientific Council also notes the status of the projects of the major basic facilities of JINR, namely the Nuclotron-M, the NICA/MPD facility, the cyclotron complex DRIBs-III, the IBR-2M reactor and neutron spectrometers, which were presented in the reports by VBLHEP Director V. Kekelidze, VBLHEP Deputy Director G. Trubnikov, FLNR Director S. Dmitriev, and FLNP Director A. Belushkin.

The Scientific Council notes with satisfaction that the schedule of construction and upgrade of JINR's home facilities is in general being well kept. It emphasizes the importance of following this schedule also in the future, especially in case of the NICA project, in order to maintain its world-leading potential. In accordance with the seven-year plan, NICA is expected to be commissioned in 2016.

The Scientific Council invites the JINR Directorate to develop a road map for optimizing the external participation in the NICA project and the associated experiments MPD and SPD.

The Scientific Council also invites the JINR Directorate to concretize in the near future the scope and areas of JINR's participation in the programme of upgrades of the LHC and its detectors.

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

The Scientific Council concurs with the recommendations made by the PACs at their June 2010 meeting as reported at this session by their Chairpersons E. Tomasi-Gustafsson, W. Greiner, and V. Kantser.

##### Particle Physics Issues

The Scientific Council appreciates the significant progress in upgrading the VBLHEP accelerator complex and the vigorous implementation of the work schedule for the Nuclotron-M and NICA projects. It is pleased to note that the spring (2010) run of the Nuclotron-M was successful, and congratulates the VBLHEP Directorate and staff for achieving their goals. The Scientific Council welcomes the recent signature of the protocols and agreements with CERN, the Budker INP, and GSI concerning collaboration on the NICA project.

The Scientific Council supports the PAC in encouraging the JINR management to publish an international call for experiments at the Nuclotron-M as soon as reliable performance figures can be presented.

The Scientific Council notes the first scientific results produced at the LHC by the ALICE, ATLAS, and CMS collaborations, and concurs with the recommendation of the PAC that at its future meetings there should be regular presentations of the data analysis that focus on JINR physicists' contributions and activities and provide information how much of this work is performed at JINR using, e.g., the Grid.

The Scientific Council supports the PAC's recommendations on the new projects CBM, MPD and TRANSMUTATION, as well as on the continuation of the current activities beyond 2010, as outlined in the PAC report. The Scientific Council notes the PAC's intention to closely follow the progress on the projects CBM and MPD through regular reports and if necessary by appointing external referees.

The Scientific Council joins the PAC in encouraging the publication in the journal "Physics of Elementary Particles and Atomic Nuclei, Letters" of the reports delivered at the PAC session as poster presentations.

### Nuclear Physics Issues

The Scientific Council appreciates the results obtained within the framework of the theme “Nuclear Physics with Neutrons — Fundamental and Applied Investigations”, in particular experiments on neutron optics, the asymmetry of  $\alpha$  particles and  $\gamma$ -quanta emission in neutron capture by light nuclei. The start-up of Phase 1 of the IREN facility and first experiments with it was noted with great satisfaction.

The Scientific Council supports continuation of the research programme in nuclear physics using neutrons via the new theme “Investigations in the Field of Nuclear Physics with Neutrons” during 2011–2013, with first priority. The upgrade of IREN should be accelerated in order to reach rapidly the project intensity of  $10^{14}$  n/s. The improvement of the experimental base at the IREN and IBR-2M facilities is strongly supported. The development of the programme for nuclear data measurements for innovative reactor technologies in the IREN facility is also recommended.

The Scientific Council welcomes the work being done by the FLNR Directorate on the projects of new set-ups proposed within the framework of the DRIBs-III programme. It notes that further progress in experimental studies of reactions with radioactive beams and properties of superheavy elements at the Flerov Laboratory depends on the parameters of these set-ups, and emphasizes that these should meet modern requirements in accordance with the JINR seven-year plan and a long-term vision for the future of this field.

### Condensed Matter Physics Issues

The Scientific Council appreciates the ongoing efforts by the FLNP staff for the preparation of the reactor IBR2-M for the physical start-up in the 4th quarter of 2010, and for the installation, adjustment and alignment of the new reactor equipment, as well as for the project of cryogenic moderators.

The Scientific Council supports the main fields of joint research in the area of nanoscale physics and nanomaterials performed by FLNP, BLTP and research institutes in the JINR Member States.

The Scientific Council is pleased to note the progress in the realization of the DN-6 diffractometer project, and supports the PAC’s recommendation about completion of DN-6 basic configuration by late 2011. The Scientific Council agrees that the modernization of the NERA-PR spectrometer should be given high priority, and regards the financial support from grants of the Poland’s Plenipotentiary as very important for the full replacement of the NERA-PR neutron mirror guide in 2010–2011.

The Scientific Council emphasizes the importance of taking advantage of JINR’s potential for research focusing on different aspects of the biological effect of high-energy

heavy charged particles, the use of nuclear physics methods in investigations of planets and physical calibration of space instruments, and radiation-caused failures of spacecraft electronics. The Scientific Council supports the JINR Directorate's initiative to establish an International Joint Scientific Council of the Russian Academy of Sciences on the issues of general and space radiobiology, which would focus on realizing major research projects in this area using charged-particle accelerators.

#### Common Issues

The Scientific Council concurs with the PACs that the theme “Information, computer and network support of JINR's activity” should be continued for the period 2011–2013 with special emphasis on data protection in the Grid environment, and the development of collaborations with JINR Member States and Grid use beyond the LHC programme.

#### **V. Memberships of the PACs**

As proposed by the JINR Directorate, the Scientific Council re-appoints Professor E. Tomasi-Gustafsson as Chairperson of the PAC for Particle Physics for a term of two years and appoints Professor Nu Xu (LBNL, Berkeley, USA) as a new member of this PAC for a term of three years.

As proposed by the JINR Directorate, the Scientific Council appoints Professor A. Steuwer (Lund University, Sweden) as a new member of the PAC for Condensed Matter Physics to replace Professor F. Currell. The Scientific Council thanks the outgoing member Professor G. Pépy for his very successful work as member of this PAC.

The Scientific Council deeply regrets the sad loss of Professor František Špuný, a member of the PAC for Condensed Matter Physics during 2005–2010, who significantly contributed to the strengthening of collaboration between JINR and Czech research centres.

The Scientific Council asks to be informed regularly of the amount of rotation among the members of the PACs and of the areas of their expertise.

#### **VI. Awards**

The Scientific Council endorses the JINR Directorate's proposal to award the title “Honorary Doctor of JINR” to Professor V. Filchenkov in recognition of his outstanding contributions to the advancement of science and the education of young scientists.

The Scientific Council congratulates Professors S. Galès, D. Guillemaud-Mueller, and Yu. Penionzhkevich on being awarded the 2009 G. Flerov Prize for the research “Synthesis and properties of exotic nuclei near the nucleon drip-line”. The Scientific Council thanks

Professor S. Galès for his informative presentation on this topic.

The Scientific Council congratulates the laureates of the JINR prizes for 2009 — winners of the annual scientific research competition in the fields of theoretical physics, experimental physics, physics instruments and methods, and applied physics.

### **VII. Announcement of vacancies in the directorates of JINR Laboratories**

The Scientific Council confirms the vacancies of the positions of two Deputy Directors of the Veksler and Baldin Laboratory of High Energy Physics. The elections for these positions will take place at the 109th session of the Scientific Council.

### **VIII. General discussion**

A number of important points were brought out during the general discussion. The Scientific Council

- thanks the Acting Director for providing information on the procedure and time-scale for the choice of the next Director; looks forward to receiving more information in due course, and is ready to offer any advice that may be requested by the CP;

- welcomes JINR's policy of opening of Associate Membership to new countries around the world, and encourages initiatives to involve their scientists in JINR's activities and external collaborations;

- welcomes the efforts by the JINR Directorate to build closer relations with the European Union and European road maps in the scientific areas of JINR's activities;

- requests presentations at its next session of results of analyses of LHC data carried out by JINR physicists;

- emphasizes its recommendation to prepare a road map for international participation in experiments at NICA;

- encourages JINR to develop a long-term vision (road map) for maintaining JINR's leading role in nuclear physics of superheavy elements;

- requests the JINR Directorate to present at its next session a report on the conditions, recruitment and retention of young scientists;

- encourages the holding of poster sessions with presentations by young scientists, and requests that the best be selected for presentation to the Scientific Council;

- requests the JINR Directorate to improve the electronic availability of documents, e.g., via Indico.

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

The 109th session of the Scientific Council will be held on 17–18 February 2011.

M. Itkis

Chairman of the Scientific Council

I. Wilhelm

Co-chairman of the Scientific Council

N. Russakovich

Secretary of the Scientific Council