

I. Preamble

The Chairperson of the PAC, W. Greiner, welcomed the PAC members, in particular the new member Guinyun Kim, the ex officio members from JINR and members of the JINR Directorate.

The Chairperson presented a short overview of the implementation of the recommendations taken at the previous meeting.

JINR Vice-Director M. Itkis informed the PAC about the Resolution of the 115th session of the Scientific Council (February 2014) and the decisions of the Committee of Plenipotentiaries (March 2014). The PAC is pleased to note that most of the recommendations of the previous PAC meeting concerning JINR research in the areas of nuclear physics have been accepted by the JINR Scientific Council and Directorate.

The members of the PAC visited the Flerov Laboratory of Nuclear Reactions and thank the Directorate for the update on new developments at this Laboratory.

II. Recommendations of the joint session of the PAC for Particle Physics and the PAC for Nuclear Physics for the assessment of the JINR Neutrino Physics Programme

The PACs take note of the report “JINR Neutrino Programme” presented by V. Bednyakov and of the accompanying documents (“The White Book”) handed at the beginning of the PAC session and available on Indico.

The PACs recognize that neutrino physics and astrophysics constitute one of the main research activities at JINR. This research direction is of strategic importance and has very intriguing potential for discoveries and exciting results in the near and further future. The PACs note the establishment of priorities concerning the new experiments proposed with antineutrino beams of the Kalinin Nuclear Power Plant and the new basic facility of JINR being developed jointly with the Institute for Nuclear Research of the Russian Academy of Sciences at Lake Baikal.

The PACs heard with great interest of the report “Unsolved problems of neutrino physics and astrophysics and the potential of the Baikal experiment” presented by V. Rubakov.

Recommendations. Taking into account the broad scientific interests of the Dzhelapov Laboratory of Nuclear Problems in the various research areas, the PACs encourage the DLNP Directorate to accelerate their efforts towards reduction of

research topics of lower priority and concentration of all possible resources (human, financial, intellectual) in selected directions as far as the JINR Neutrino Programme is concerned. In particular, DLNP is encouraged to prioritize all the neutrino projects in which JINR is involved according to the following criteria: (i) scientific merit and discovery potential, (ii) resources involved (manpower and finances), (iii) visibility of JINR participation, (iv) competitiveness and timeliness with other international projects. For activities in house, the PACs recommend that the DLNP Directorate make every effort to attract international collaborators.

As far as the Baikal project is concerned, the PACs request that the proponents provide written answers to a series of questions regarding science, feasibility, cost, construction issues, milestones as well as synergies and competition with existing and planned international projects. The questions will be communicated to the DLNP Director shortly and the written answers are due before the next PAC meeting.

In order to improve the reviewing efficiency, the PACs kindly propose to the JINR Directorate to allow the PAC for Particle Physics to evaluate in the future all neutrino projects. For this, neutrino experts from the PAC for Nuclear Physics could be invited to join the future meetings of the PAC for Particle Physics whenever neutrino projects would be reviewed.

III. Recommendations on the theme “Synthesis and Properties of Nuclei at the Stability Limits” to be completed in 2014 and proposed for extension

The PAC took note of the report on the theme “Synthesis and properties of nuclei at stability limits” presented by M. Itkis. The PAC highly appreciates the results of investigations produced by the FLNR staff under this theme, which concern, in particular:

- synthesis of Element 117 and experimental work confirming the discoveries of elements 113 and 115;
- first experiments with a ^{50}Ti beam;
- investigation of chemical properties of Element 113;
- study of fission and quasi-fission mechanisms, as well production of neutron-rich nuclei in multi-nucleon transfer reactions;
- research of the structure of light nuclei ^{10}He , ^6Be beyond the limits of nucleon stability;
- theoretical studies of nuclear structure and nuclear reaction mechanisms.

Recommendations. In order to synchronize the theme “Synthesis and Properties of Nuclei at the Stability Limits” with the Seven-Year Plan, the PAC recommends

its extension for two more years (2015–2016) with first priority. In this regard, the PAC notes and commends initiatives being taken towards attracting young people into this project.

IV. Scientific reports

The PAC heard with interest the report “New insight into the ${}^6\text{Be}$, ${}^{10}\text{He}$ and ${}^{17}\text{Ne}$ structure at low excitation energy” presented by V. Chudoba, which he dedicated to studies of light nuclei beyond the drip-lines using radioactive beams of the U400M cyclotron. It notes the high quality of the results and looks forward to continuation of these studies at the new separator ACCULINNA-2.

The PAC heard with interest the report “Weak-interaction reactions with hot nuclei under supernova conditions” presented by A. Dzhiyev and A. Vdovin. It notes a positive tendency of extension of nuclear astrophysics studies at BLTP.

V. Poster session

The PAC was pleased with the presentations of new results and proposals by young scientists in the field of nuclear physics research. The best posters have been selected: “Production of doubly magic nucleus ${}^{100}\text{Sn}$ in fusion reactions via particle and cluster emission channels” presented by Sh. Kalandarov and “GEMMA: the results of search for the neutrino magnetic moment” presented by D. Medvedev.

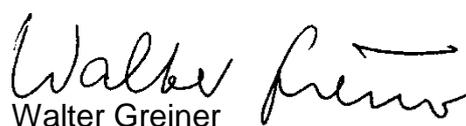
The PAC recommends the poster “Production of doubly magic nucleus ${}^{100}\text{Sn}$ in fusion reactions via particle and cluster emission channels” for presentation at the session of the Scientific Council in September 2014.

VI. Next meeting of the PAC

The next meeting of the PAC for Nuclear Physics will be held on 29–30 January 2015.

Its tentative agenda will include:

- Reports and recommendations on themes and projects to be completed in 2015
- Progress of construction of the SHE Factory
- Status of the IREN facility
- Consideration of new projects
- Poster presentations of new results and proposals by young scientists in the field of nuclear physics research
- Scientific reports.


Walter Greiner

Chairperson of the PAC