I. Preamble

The Chairperson of the PAC, W. Greiner, welcomed the PAC members and the ex-officio members from JINR, and reminded of the implementation of the recommendations taken at the previous meeting.

JINR Acting Director M. Itkis informed the PAC about the Resolution of the 109th session of the Scientific Council (February 2011) and the decisions of the Committee of Plenipotentiaries (March 2011).

The members of the PAC extended warm congratulations to Professors M. Itkis and Yu. Oganessian on the award of the 2010 State Prize of the Russian Federation in science and technology for the discovery of a new region of stability of superheavy elements. This prestigious award points again to the outstanding achievements of the Flerov Laboratory of Nuclear Reactions in the field of synthesis of superheavy elements.

II. Experiments at IREN and plans for its upgrade

The PAC heard with interest the progress report, presented by V. Shvetsov, on the experimental programme carried out in Phase 1 of the IREN facility and on the plans for the development of the source itself as well as on the experimental and methodological research. The PAC considers the plans of the Frank Laboratory of Neutron Physics concerning the speed-up in bringing the parameters of the IREN source up to highest possible standards of equivalent facilities to be realistic, and acknowledges the importance of doing so for the realization of the JINR scientific programme and for attracting specialists from JINR Member States.

Recommendation. The PAC recommends fast-tracking the development of the IREN source and suggests that the JINR Directorate support the FLNP plans concerning the development of IREN and the methodological research base of nuclear and neutron physics.

III. Possibility for the production and study of heavy neutron-rich nuclei formed in multi-nucleon transfer reactions

The PAC discussed the proposal of the Flerov Laboratory, presented by V. Zagrebaev, on the synthesis of heavy neutron rich nuclei formed in low-energy multi-nucleon transfer reactions. The use of this method opens a new field of research in low-energy heavy-ion physics, namely, the production and study of new neutron-rich heavy nuclei playing a key role in the r-process of nucleosynthesis. The development of an experimental set-up based on the method of stopping reaction fragments in gas and on their subsequent selective resonance laser ionization is proposed. With such a method atoms of required elements can be selected. The method is already used in several

laboratories for separation and study of light exotic nuclei and fission fragments. Because of the capability of selecting ions of specific atomic numbers, this set-up can also be employed in other studies, like the unknown charge distribution of the products of quasi-fission. The PAC emphasizes that the proposed experimental method is feasible.

Recommendation. The PAC strongly recommends starting to work on the details of this proposal within the Flerov Laboratory right away.

IV. Status of the GERDA project

The PAC heard with great interest the report, presented by A. Smolnikov, on the status of the GERDA project aimed at the search for the neutrinoless double-beta decay using ^{76}Ge diodes placed in liquid argon. The expected results will sufficiently improve the present knowledge about the nature of neutrino properties related to physics beyond the Standard Model. Following the successful realization of all phases, the expected sensitivity of the GERDA project can reach the region of the Majorana-electron-neutrino mass of about 10 MeV and cover the inverted hierarchy region, which is much below the current experimental level. The GERDA collaboration, with considerable participation of the JINR team, finished the installation of the experimental set up in the deep underground laboratory at LNGS (Italy) and is already starting the first commissioning runs. Next steps will be the operation with all available Ge detectors produced from ^{76}Ge-enriched material.

Recommendation. The PAC recognizes the fundamental importance in neutrino physics of searching for the neutrinoless double-beta decay of ^{76}Ge and recommends continuation of the GERDA project with high priority.

V. Status of the FASA-3 project

The PAC appreciated the status report of the FASA-3 project ("Nuclei multifragmentation at Nuclotron relativistic beams") presented by V. Karnaukhov. The experiments performed by the FASA collaboration were successful. New data for the properties of the very hot nuclei were obtained.

VI. Progress of the BECQUEREL project

The PAC heard the report, presented by P. Zarubin, on the progress of the BECQUEREL project for the study of the coherent dissociation of a family of light nuclei, with great interest.

Statement. Since it is known that both the FASA-3 and BECQUEREL projects are coming to an end by 2011, the PAC advises these groups to prepare a joint project to be presented at the next PAC meeting.

VII. Development of the JINR educational programmes

The PAC heard with interest the report on the development of JINR educational programmes presented by S. Pakuliak.

Recommendation. The PAC recommends that the JINR Directorate support the advanced training programme with modern educational and scientific equipment.

VIII. Scientific reports

The PAC highly appreciated the report “New results of the synthesis of element 115 in the reaction ^{243}Am+^{48}Ca” presented by V. Utyonkov. The PAC congratulates the FLNR staff on the new interesting results concerning the synthesis of element 115 and especially on the observation of the decay chain of the isotope ^{289}115 in the 2*n* channel, confirming the data obtained in the reaction ^{249}Bk(^{48}Ca, 4*n*)^{293}117.

The PAC heard with interest the report “Massive neutrinos in nuclear processes” presented by F. Šimkovic, and strongly recommends the support of this activity.

IX. Poster session

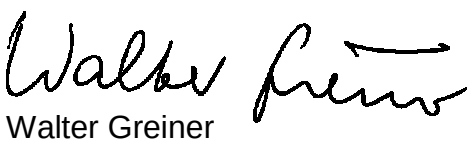
The PAC was pleased with the presentations of new results and proposals by young scientists in the field of nuclear physics research. Two best posters have been selected: “Asymmetric quasifission in reactions with heavy ions” presented by G. Knyazheva and “Microbial synthesis of silver nanoparticles *Streptomyces glaucus* and *Spirulina platensis*” presented by I. Zinicovscaia. The PAC recommends them for presentation at the Scientific Council session in September 2011.

X. Next meeting of the PAC

The next meeting of the PAC for Nuclear Physics will be held on 26–27 January 2012.

Its tentative agenda will include:

– Reports and recommendations on themes and projects to be completed in 2012
– Consideration of new projects
– Report on the experimental set-ups used in the GDH&SPASCHARM project
– Status of the Baikal experiment
– 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