

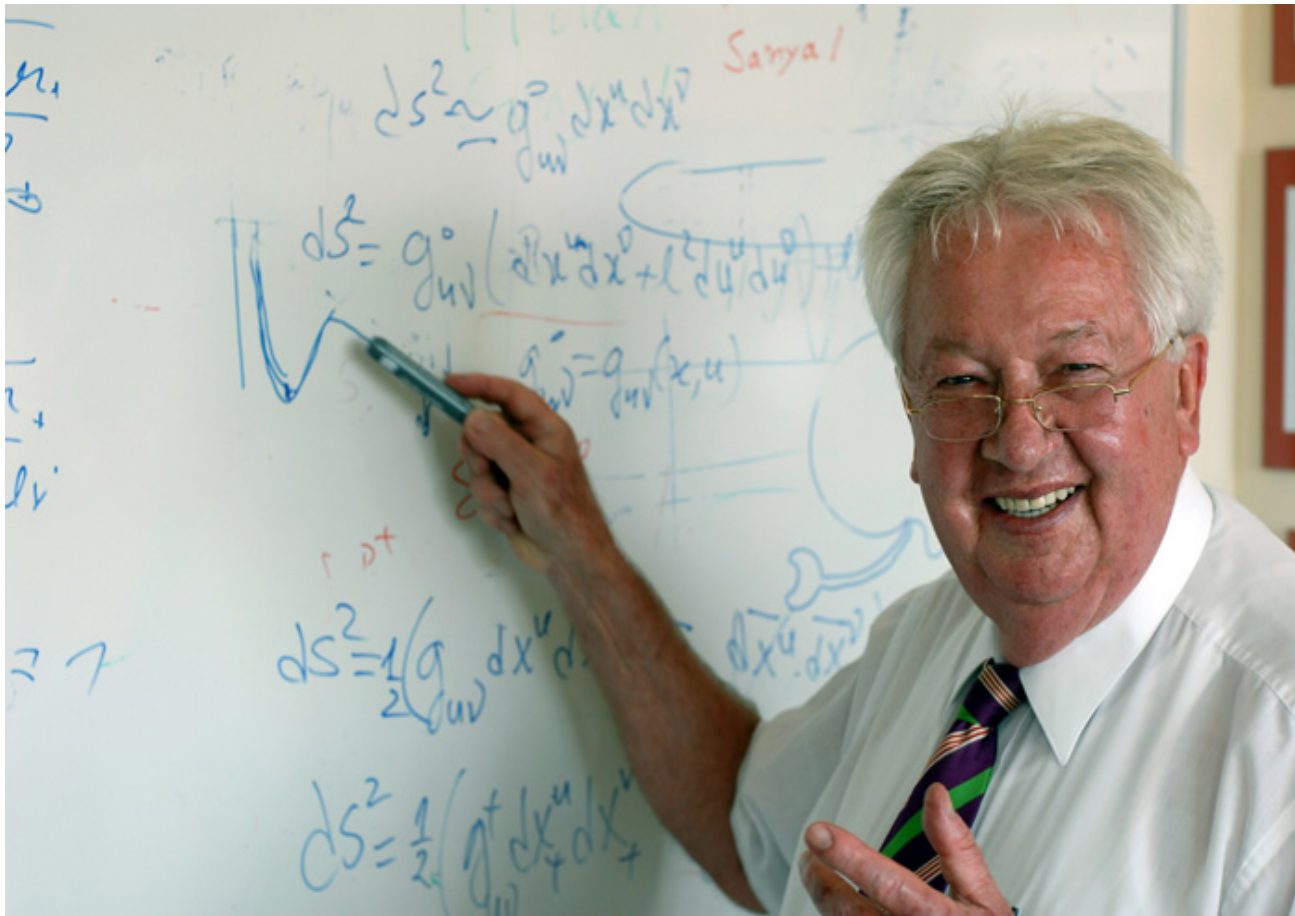
# **Programme Advisory Committee for Nuclear Physics**

**45-th meeting**

**January 25–26, 2017**

**Marek Lewitowicz**

It was with extreme sadness that the Programme Advisory Committee noted and expressed condolence on the passing away of Professor **Walter Greiner**, an outstanding nuclear theorist and Chairperson of the PAC for Nuclear Physics since 2007.



**Walter Greiner**

October 29, 1935 – October 6, 2016



Warm thanks to Fabrice Piquemal for chairing the  
PAC for Nuclear Physics meetings from  
June 2015 to January 2017

# Programme Advisory Committee for Nuclear Physics

## 45th meeting, 25–26 January 2017

### *Wednesday, 25 January 2017*

- |   |                       |
|---|-----------------------|
| 1. Opening of the meeting   | F. Piquemal           |
| 2. Implementation of the recommendations of the previous PAC meeting  | F. Piquemal           |
| 3. Information on the Resolution of the 120th session of the JINR Scientific Council (September 2016) and on the decisions of the JINR Committee of Plenipotentiaries (November 2016) | M. Itkis              |
| <b>4. Support of young scientists at JINR</b>   | <b>V. Chudoba</b>     |
| <b>5. Visit to the Veksler and Baldin Laboratory of High Energy Physics</b>   | <b>D. Peshekhonov</b> |
| <b>6. Report on the theme “Physics of Light Mesons” and its projects and proposal for their extension</b>   | <b>A. Kulikov</b>     |
| <b>7. Main directions of research planned at JINR for 2017–2023</b>   | <b>N. Russakovich</b> |
| <b>8. Status of the Factory of Superheavy Elements</b>  | <b>S. Dmitriev</b>    |
| <b>9. JINR neutrino programme. Baikal neutrino experiment: towards high-energy neutrino astronomy</b>   | <b>B. Shaibonov</b>   |
| 10. General discussion  |                       |

### *Thursday, 26 January 2017*

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|---|---------------------|
| 11. Meeting of the PAC members with the JINR Directorate (closed session)         |                     |
| <b>12. Scientific report: “Cluster approach to the structure of heavy nuclei”</b> | <b>T. Shneidman</b> |
| <b>13. Poster presentations by young scientists</b>                               |                     |
| Closed session:   |                     |
| 14. Proposals for the agenda of the next PAC meeting                              |                     |
| 15. PAC recommendations   |                     |
| 16. Closing of the meeting  |                     |

## **II. Recommendations on support of young scientists at JINR**

The PAC heard a report on the support of young scientists at JINR presented by Vratislav Chudoba. The PAC notes the importance of work for attracting and training young scientists at the Institute. The PAC strongly supports the policy of the JINR Directorate in this direction.

Recommendations. The PAC recommends that the JINR Directorate extends the training PhD programme for all the Member States and Associate Member States. The PAC also recommends that a postdoctoral fellowship programme be implemented at JINR in order to address the growth of early-career researchers.

# III. Recommendations on the theme “Physics of Light Mesons”

In accordance with the recommendations of the last session on the evaluation of further research on the physics of light mesons, the PAC heard a report on the theme “Physics of Light Mesons” presented by Anatoly Kulikov.

**Topics: spin physics, rare processes, interaction dynamics, ...**

PROJECTS:	<b>GDH&amp;SPASCHARM</b>	(2011-2019)	Mainz + Protvino
	<b>SPRING</b>	(2010-2016)	COSY
	<b>COMET</b> (PAC PP)	(2014-2016)	J-PARC
Activities:	MEG-PEN	former projects (2010-2015)	PSI
	TRITON	(2011-2015)	DLNP JINR
	MUON	(2011-2013)	PSI + Gatchina
	PAINUC	(2010-2012)	DLNP JINR

Recommendations. The PAC recommends approval of the report on the theme “Physics of Light Mesons” and particularly appreciates the significant results obtained in the terminated project SPRING and the great success in the TRITON experiment and in the MEG experiment. The PAC recommends extension of the theme until the end of 2017 in order to complete all the studies and activities within this theme.

The PAC looks forward to hearing final reports on the results obtained in the MEG-PEN, PAINUC and TRITON experiments. The PAC recommends continuation of the  $\mu \rightarrow e\gamma$  search in the MEG-II project. The PAC recommends that the DLNP Directorate provide funding for the GDH&SPASCHARM project until the end of 2019 and present information about this at the next meeting of the PAC.

# IV. Recommendations on the Factory of Superheavy Elements

The PAC heard with great interest the report by Sergey Dmitriev on the status of construction of the Factory of Superheavy Elements (SHE). The PAC appreciates the progress of the installation of the DC-280 cyclotron and its major technological systems. In accordance with the schedule, the accelerator commissioning will start in December 2017. Implementation of such a tight schedule will require maximum concentration of financial and human resources of the Flerov Laboratory.

**SHE-Factory building**



11.01.2017 <http://inflnr.jinr.ru/dc280.html>



Recommendation. The PAC recommends that the FLNR Directorate takes all necessary measures to ensure the launch of the SHE Factory as scheduled. A more detailed presentation of the cyclotron, ion source, high-power target and detection system developments for the SHE Factory should be done at the next PAC meeting.

# **V. Seven-Year Plan for the Development of JINR for 2017–2023**

The PAC took note of the report by Nikolay Russakovich on the main directions of research planned at JINR for 2017–2023.



**In the field of nuclear physics, major objectives of the plan for the development of JINR in the next 7-year period (2017-2023) include:**

- construction and operation of the SHE Factory;
- modernization of IREN;
- promotion of international cooperation in experiments carried out by JINR, in particular BAIKAL, SHELS, and ACCULINNA-II;
- contributions to non-accelerator physics experiments

Recommendation. The Seven-Year Plan for the Development of JINR for 2017–2023, to the discussion of which the PAC for Nuclear Physics had contributed together with the other PACs, was approved at the recent session of the Committee of Plenipotentiaries in November 2016. The PAC wishes the Directorate and staff of JINR success in the implementation of this ambitious plan.

In the follow-up of this plan it will be useful to present an evolution of the budget and human resources (scientists and technical staff) as well as an updated schedule for **nuclear physics projects and activities** at future meetings of the PAC.

## VI. Scientific reports

The PAC heard with interest the report “**JINR neutrino programme. Baikal neutrino experiment: towards high-energy neutrino astronomy**” presented by **Bair Shaibonov**.

Baikal-GVD is a cubic kilometer-scale neutrino telescope (NT1000) which is currently under construction in Lake Baikal. The Array will be formed by multimegaton subarrays — clusters of strings. The first full-scale GVD cluster was deployed and started operation in April 2016. The PAC supports the effort of the JINR Directorate to include the Baikal-GVD experiment in the European Strategy on Research Infrastructures (ESFRI) Roadmap and recommends close cooperation with the KM3NeT.

The PAC heard with interest **the report “Cluster approach to the structure of heavy nuclei”** presented by **Timur Shneidman**.

A new, original model was developed which takes into account both deformation and cluster degrees of freedom. The use of the model allows one to explain observed excitation spectra and angular-momentum dependencies of the parity splitting and electromagnetic transition probabilities for a number of Ra, Th, U, and Pu isotopes.

## VII. Poster session

The PAC appreciated the high quality of presentations of new results and proposals by young scientists in the field of nuclear physics research.



The best posters selected are:

- “Fusion reactions with light neutron-rich nuclei: a pathway to synthesize new heavy nuclei” presented by Vladimir Rachkov,
- “Chemical investigation of the superheavy elements Cn and Fl: kinetic studies on the Hg-Se interaction using inverse thermochromatography” presented by Alexander Madumarov, and
- “SHELS (Separator for Heavy Element Spectroscopy)” presented by Alena Kuznetsova.

The PAC recommended the poster “Fusion reactions with light neutron-rich nuclei: pathway to synthesize new heavy nuclei” for presentation at the session of the Scientific Council in February 2017

## VIII. Visit to VBLHEP

The members of the PAC thank the Directorate of the Veksler and Baldin Laboratory of High Energy Physics for the organization of the visit to this Laboratory to get acquainted with the progress of implementation of the NICA project.



## IX. Next meeting of the PAC

The next meeting of the PAC for Nuclear Physics will be held on **June 14–15, 2017**.

Its tentative agenda will include:

- Reports and recommendations on themes and projects to be completed in 2017;
- Final reports on the scientific results obtained in the experiments MEG-PEN, PAINUC and TRITON;
- Report on the progress of the SHE Factory;
- Consideration of new projects;
- Poster presentations of new results and proposals by young scientists in the field of nuclear physics research;
- Scientific reports;
- Visit to the Flerov Laboratory of Nuclear Reactions (SHE Factory).

**Thank you for your  
attention!**