

Review on the project
“Development of the open educational environment to support research priorities in nuclear physics”

Reviewer:

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Developing of the human civilization assumes the transition from generation to generation the experience-proved knowledge on the basic and fundamental laws of Nature. This transition is realized in the form of different educational systems, which evolve together with development of the science and new technologies.

One of the most important feature of any educational system should be incorporation into educational programs the present understanding of the fundamental Nature laws and technological development in the form which can be accepted by the wide auditorium and leads to increase the young people’s interest in scientific research and engineering professions.

Taking into account the rapid development of communication facilities and widespread use of the Internet the classical academic educational systems has to be extended to include online courses, interactive practicums and virtual laboratories, computer modeling and simulations.

1. Scientific merits, elements of novelty, timely nature of the research

The present project is addressed to develop such modern educational tools to support research activities in nuclear physics presented in the JINR research program. It means that the authors of the project understand the field of nuclear physics in the broader sense. These priorities includes not only nuclear and particle physics itself, but also condensed matter physics, chemistry, biophysics, radiobiology and many others presented in the research plans of the Joint Institute.

One of the directions in realization of this project will be creation online courses and new educational programs within the subjects of the JINR main scientific projects on the basis of modern educational open-source platforms using Massive Open Online Courses format. In developing check and reference materials the authors of the project will use Learning Tools Interoperability specifications to integrate these courses with a variety of Learning Management Systems.

To widespread the achievements of the Joint Institute and other scientific organizations working in the different fields of the particle and nuclear physics the authors of the projects will create the multi-media models of the present and future JINR basic facilities using modern technologies of dynamic interactive 2D and 3D web-graphics. These models can be used not only in the regular educational process

but also in different exhibitions and science festivals, which can be organized in Member States universities and scientific centers.

2. Expertise of the group and technical feasibility of the project within the proposed timescale

A significant amount of work in the directions of this project was already realized in the framework of the previous project “Developing of modern educational programs” realized by the authors in 2014-2016. In particular, a lot of multi-media presentations of the JINR basic research directions were used during celebration of JINR 60-years anniversary in 2016.

It is beyond any doubt that already obtained and future results of implementation of this project will allow for a considerable improvement of attractiveness and efficiency of the regular practices organized by the JINR University Center for the students of Member States in JINR laboratories. Works on creation of interactive virtual models of different experiments in nuclear physics will require collaborative work of teachers, methodists and IT specialists and authors of the project already have such experience.

3. Compliance of the requested financial resources with the objectives of the project/theme

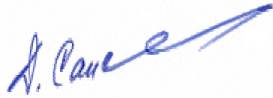
The financial resources required to realization of this project correspond to the research plan of the project, which is scheduled for the period 2017-2019.

4. Availability of human resources at JINR and in the collaborating institutions

Different universities from JINR Member and Associated States show the great interest in realization of such a project. In particular, the Plenipotentiary of Mongolian Government at JINR express a great interest for using the “Virtual laboratory of nuclear fission” in the education plans in nuclear and particle physics in Mongolian universities. This virtual laboratory was created during realization of the previous project and expertise of project team can be used to create new virtual laboratories based on research programs of the Joint Institute.

The project assumes wide participation of teachers and professors from Member States universities to expertise and implement this type of educational resources into educational plans of their institutions. This will hopefully lead to involvement of the personal from Member States universities to the collaboration with JINR scientific teams and better training of the future generations of scientists and engineers from Member States.

Taking all this into account I consider the project “Development of the open educational environment to support research priorities in nuclear physics” as a very important activity of the JINR University Center and propose to support it with first priority.

A handwritten signature in blue ink, appearing to read 'S. Deleg', with a long horizontal stroke extending to the right.

Member of CMP PAC

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