

Summary

Workshop on Perspectives for Joint Science and Academic Training at FAIR and NICA

The Russian Federation and the Federal Republic of Germany are collaborating together with other international partners in the construction and operation of the Facility for Antiproton and Ion Research (FAIR) in Darmstadt and Nuclotron-based Ion Collider Facility (NICA) at the Joint Institute of Nuclear Research (JINR) in Dubna. Both institutions will provide complementary research in the areas of heavy ion research, super heavy elements, hadron and nuclear structure physics as well as a variety of applied sciences such as plasma physics, biology and material sciences. It was emphasized that the research with NICA and FAIR is based on detectors and accelerator equipment, which are quite similar in its complexity and design.

To support common developments and research, a tripartite Memorandum of Understanding (MoU) between JINR, FAIR, and GSI was elaborated to provide a basis for the future cooperation. FAIR/GSI and JINR express their strong interest in getting the proposed joint research projects realized which will significantly enhance FAIR and NICA cooperation and expect that the MoU will be approved soon. Before signing the MoU some clarification about the concrete content is required.

The FAIR- NICA workshop, held in Darmstadt on the 16 November 2016, covered a wide variety of topics. Perspectives and benefits of international cooperation were discussed. The scientific and technological highlights of the experiments of FAIR and NICA, in particular Compressed Baryonic Matter (CBM) experiment at FAIR, Multi-Purpose Detector (MPD) and Baryonic Matter at Nuclotron (BM@N) at NICA, were presented, followed by an analysis of the common challenges faced by both facilities in the field of accelerators.

Both facilities are involved in a variety of programs for scientific educational training: In case of JINR - by own funds and in the case of FAIR - by the Helmholtz Association and other German national funding schemes. These programs also include participation in EU projects which were also presented and reported.

A variety of potential technical project of mutual interest have been demonstrated in several presentations in the workshop. The topics covered a wide range of scientific and technical issues, from magnets and testing infrastructure to entire system like stochastic and electron cooling systems, superconducting linear accelerators, cryogenics and common development of silicon based detectors. The scientific fields that could be addressed jointly beyond heavy ion and hadron physics are areas of nuclear physics, in particular super-heavy element research, bio-physics, high performance computing, as well as innovative material sciences. A specific joint interest lies also in the area of theory. In addition education and training of young scientists has been identified as an area of common interest. In order to assist the cooperation between the Universities and Research Infrastructures, Summer schools, Graduate schools and Exchange programs should be set up and existing programs should be prolonged.