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The Nuclotron/NICA Project at JINR

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The NICA (Nuclotron-based Ion Collider fAcility) complex is presently under realization phase at JINR [1]. The main goal of the NICA scientific program is an experimental study of hot and dense strongly interacting matter in heavy ion collisions at nucleon-nucleon centre-of-mass energies of 4-11 GeV and at average luminosity of $10^{27} \text{ cm}^{-2}\text{s}^{-1}$ for Au (79+) in the collider mode. In parallel, fixed target experiments at the upgraded JINR superconducting synchrotron Nuclotron are carried out with the extracted beams of various nuclei species up to gold with the momenta up to 13 GeV/c for protons. The program also foresees a study of spin physics with extracted and colliding beams of polarized deuterons and protons at the centre-of-mass energies up to 26 GeV for proton collisions. The proposed program allows to search for possible signs of the mixed phase and critical endpoint, and to shed more light on the problem of nucleon spin structure.

An overview of the NICA project as well as the present project status will be presented.

References

[1] N. Agapov et al. (NICA Collaboration), Design and Construction of Nuclotron-based Ion Collider fAcility (NICA), Conceptual Design Report, Dubna, 2008; <http://nica.jinr.ru>.

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