

Physics program of the future NICA facility at JINR

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Nuclotron-based Ion Collider fAcility (the NICA project) is under construction at the Joint Institute for Nuclear Research (JINR, Dubna). The corresponding experimental program includes a study of hot and dense strongly interacting matter in heavy ion collisions (up to gold) in the energy range up to $\sqrt{s_{NN}} = 11$ GeV and an investigation of the nucleon spin structure in collisions of polarized protons and deuterons at the energy up to $\sqrt{s} = 27$ GeV. Two experiments are in preparation to study heavy ion collisions, the MPD detector at the collider, and experiment BM@N with extracted beams. The nucleon spin structure will be studied with the SPD detector at the collider. Designed average luminosity of collider is $10^{27} \text{ cm}^{-2} \text{ s}^{-1}$ for Au(79+) and 10^{32} for polarized protons. The proposed experimental program allows one to search for manifestations of the phase transitions and critical phenomena and shed light on the nucleon spin structure dynamics.

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