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Spin Physics Detector project at JINR

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The Spin Physics Detector at the constructing NICA collider (JINR, Dubna) is a universal facility to investigate the spin structure of the proton and deuteron and the other spin-related phenomena with polarized proton and deuteron beams at a collision energy up to 27 GeV. Comprehensive study of the unpolarized and polarized gluon content of the nucleon at large Bjorken- x using different complementary probes such as: charmonia, open charm, and prompt photon production processes is the central point of the SPD physics program. In the polarized proton-proton collisions, the SPD experiment at NICA will cover the kinematic gap between the low-energy measurements at ANKE-COSY and SATURNE and the high-energy measurements at the Relativistic Heavy Ion Collider, as well as the planned fixed-target experiments at the LHC. The possibility for NICA to operate with polarized deuteron beams at such energies is unique. The SPD experimental setup is planned as a multipurpose universal 4π detector with advanced tracking and particle identification capabilities, electromagnetic calorimeter and muon (range) system. To minimize possible systematic effects, SPD will be equipped with a triggerless data acquisition system. Spin physics program at the SPD is expected to start after year 2025 and to extend for about 10 years.

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