

XXV International Baldin Seminar on High Energy Physics Problems
"Relativistic Nuclear Physics and Quantum Chromodynamics"



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on High Energy Physics Problems
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Perspectives for the study of hyperon and hypernuclei production in heavy-ion collisions at NICA/MPD

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NICA (Nuclotron-based heavy-Ion Collider fAcility) is a new flagship project at JINR (Dubna, Russia) aimed at the construction of a new accelerator complex for heavy ions and polarized particles [1]. Collisions of relativistic ions with energies up to 11 GeV (center-of-mass) will be studied with the MultiPurpose Detector MPD providing accurate precise tracking and reliable particle identification in high-multiplicity events [2]. Hyperons and hypernuclei are among the most valuable probes in heavy-ion reactions. Production of particles with strangeness is sensitive to the deconfinement phase transition as well as to in-medium hyperon-nucleon potentials [3,4]. Statistical thermal models predict the highest production rates of (hyper)nuclei in the NICA energy range [5], thus the NICA/MPD program offers a unique possibility to investigate the properties of strongly interacting matter in the region of high net-baryon density.

In this talk we'll overview the prospects of the NICA physics program for the study of hyperons and hypernuclei and discuss the recent results of a detailed feasibility study for the reconstruction of hyperons and hypernuclei with the MPD detector in Bi+Bi collisions. In particular, the expected detector performance for the reconstruction of Lambda-hyperon invariant p_T -spectra and $3H\Lambda$ as well as $4He\Lambda$ invariant mass distributions in centrality selected Bi+Bi collisions will be discussed.

References

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