Contribution ID: **749** Type: **Poster Presentation**

Performance of the MPD detector for the study of multi-strange baryon production in heavy-ion collisions at NICA

Monday, 4 November 2019 17:40 (20 minutes)

Heavy-ion collisions at NICA are well suitable to investigate fundamental problem of strongly interacting matter such as its EOS, bulk properties, state of QCD vacuum, and criticality.
The production of (anti)hyperons is sensitive to the early stage of the collision, thus the degree of partonic collectivity can be tested by means of multi-strange baryon yields, spectra, and anisotropic flow coefficients. Moreover, the difference in production rates as well as in azimuthal anisotropy between hyperons and anti-hyperons could depend on the baryon density and EOS in the hadronic stage of the medium. Hence, multi-strange baryons can be a valuable probe to test multiple stages of the evolution of a heavy-ion collision.
The MPD detector is a spectrometer with a large uniform acceptance capable of detecting and identifying hadrons, electrons and gammas at the very high event rate achieved at NICA. Event reconstruction in MPD is expected to provide a high accuracy in collision centrality and event plane determination, as well as a good performance in secondary vertex finding.
We present the performance of the MPD detector for reconstruction of strange and multi-strange baryons (Lambda, Xi, Omega and their antiparticles) in heavy-ion collisions. The results, which are obtained from the full MPD simulation and reconstruction chain, include the yields, spectra, and anisotropy coefficients for (anti)hyperons from centrality selected Au+Au collisions. The estimates for the particle rates during first period of data taking at NICA and the accuracy, which can be achieved in multi-strange baryon measurements, will be given.

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Session Classification: Poster Session

Track Classification: Future facilities and instrumentation