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Searching for the baryon-to-meson transition region with the MPD at NICA

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In heavy-ion reactions, statistical models predict a rapid change in the baryon-to-meson ratio as a function of the collision energy. This change occurs when the hadronic medium transits from a baryon- to a meson-dominated gas. The transition is expected to take place at a temperature of 140 MeV and a baryon chemical potential of 420 MeV, corresponding to a collision energy of 8.2 GeV per nucleon in the center of mass. The Multi-Purpose Detector (MPD), which is now under construction at the JINR, in Dubna, is designed to study heavy-ion collisions at the energies from 4 to 11 GeV per nucleon. This energy range is suitable for the exploration of this transition region. In this talk, we present results of feasibility studies for the measurement of the transverse momentum spectra for mesons and baryons using Monte Carlo simulated data samples, in order to explore the crossing point between these transverse momenta as a function of the centrality and collision energy.

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