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Charged kaon- and ϕ-reconstruction in Au+Au-collisions at 1.23 AGeV

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In Au+Au-collisions at 1.23 AGeV incident energy, strangeness is produced below the free nucleon-nucleon threshold. In baryon dominated matter K^+ and K^- mesons exhibit different properties, since only K^- can be resonantly absorbed by nucleons.

Although strangeness exchange reactions have been proposed to be the dominant channel for K^- production in this energy regime, the production yield could also be explained in Ar+KCl-reactions at 1.76 AGeV based on a statistical hadronization model fit to the measured particle yields. To guarantee strangeness conservation, strangeness is calculated canonically within R_c in these models, and therefore the ratio of ϕ/K^- is predicted to rise with decreasing beam energies and as a consequence the feed-down of ϕ-mesons to kaons becomes important.

In total 7.3 Billion 40% most central Au(1.23 GeV per nucleon)+Au collisions have been analyzed for this investigation. The data has been recorded with HADES and a substantially improved reconstruction method has been employed to reconstruct the hadrons with high purity in a wide phase space region. In this contribution, we present results on charged kaons and ϕ-mesons.

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On behalf of collaboration:

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