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Measurements of Hypertriton Production in Au+Au Collisions at 3 to 7.7 GeV

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Hypernuclei are bound states of nuclei with one or more hyperons. Precise measurements of hypernuclei properties and their production yields in heavy-ion collisions are crucial for the understanding of their production mechanisms. The strangeness population factor, $S_A = (\Lambda^A \text{H}/\Lambda^A \text{He})/(\Lambda/p)$ ($A=3,4$), is directly related to the ratio of light nuclei and hypernuclei coalescence parameters B_A . It eliminates canonical correction factors for strangeness and is independent of the chemical potential of the produced medium.

The STAR Beam Energy Scan II program offers us a great opportunity to investigate collision energy and system size dependence of hypernuclei production.

In this poster, we present new measurements on transverse momentum (p_T), rapidity (y), and centrality dependence of ${}^3\text{H}$ production yields in Au+Au collisions from $\sqrt{s_{\text{NN}}} = 3$ to 7.7 GeV. Strangeness population factors S_3 and S_4 as functions of collision energy, centrality, p_T , and y will be reported. These results are compared with phenomenological model calculations, and physics implications on the hypernuclei production mechanism will also be discussed.

Category

Experiment

Collaboration (if applicable)

The STAR collaboration

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Session Classification: Flash Talks

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