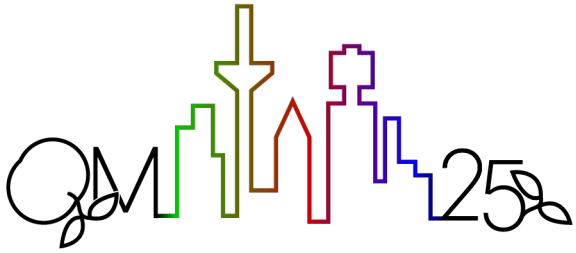

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Production of $^{3}\mathrm{H}$ and $^{4}\mathrm{H}$ in Au+Au collisions at $\sqrt{s_{NN}}$ = 3.2, 3.5, 3.9 and 4.5 GeV at STAR

Hypernuclei are bound states of nuclei with one or more hyperons. Hypertriton $^{3}\mathrm{H}$ ($np\Lambda$) and $^{4}\mathrm{H}$ ($nnp\Lambda$) are the two simplest observed hypernuclei. The $^{3}\mathrm{H}$ is the loosest bound hypernucleus, with a Λ binding energy of $\sim$0.1 MeV, while the $^{4}\mathrm{H}$ is more strongly bound, with a Λ binding energy of $\sim$2 MeV. Precise measurements of $^{3}\mathrm{H}$ and $^{4}\mathrm{H}$ yields in heavy ion collisions provide important guidance on the understanding of hypernuclei production mechanisms as well as the role of the hyperon-nucleon (Y-N) interaction in hypernuclei formation. The second phase of the Beam Energy Scan program at RHIC (BES-II) offers a great opportunity to investigate collision energy and system size dependence of hypernuclei production.

In this poster, the measurements of the production yields of $^{3}\mathrm{H}$ and $^{4}\mathrm{H}$ and their ratios to Λ in Au+Au collisions at $\sqrt{s_{NN}}$ = 3.2, 3.5, 3.9 and 4.5 GeV will be presented. The rapidity (y) and centrality dependence of the production yields (dN/dy) of $^{3}\mathrm{H}$ and $^{4}\mathrm{H}$ will also be reported. The physics implications of these results will be discussed together with theoretical model calculations.

Category

Experiment

Collaboration (if applicable)

STAR Collaboration

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