

Productions of ${}^3_\Lambda\text{H}$, ${}^4_\Lambda\text{H}$ and ${}^4_\Lambda\text{He}$ in different coalescence channels in Au-Au collisions at $\sqrt{s_{NN}}=3$ GeV

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We study the productions of Λ -hypernuclei ${}^3_\Lambda\text{H}$, ${}^4_\Lambda\text{H}$ and ${}^4_\Lambda\text{He}$ in the coalescence mechanism in Au-Au collisions at $\sqrt{s_{NN}} = 3$ GeV. Considering the abundance and great importance on the collision dynamics of baryons and light (hyper-)nuclei, we include not only nucleon+ Λ coalescence but also nucleus+nucleon(Λ) coalescence. We present contributions from different coalescence channels for ${}^3_\Lambda\text{H}$, ${}^4_\Lambda\text{H}$ and ${}^4_\Lambda\text{He}$ in their productions. We explain the centrality and rapidity dependent behaviors of ${}^3_\Lambda\text{H}$ and ${}^4_\Lambda\text{H}$ measured by the STAR Collaboration. We propose that the production asymmetry between ${}^4_\Lambda\text{H}$ and ${}^4_\Lambda\text{He}$ can give constraints on the existences of the possible neutron- Λ bound states ${}^2_\Lambda n(n\Lambda)$ and ${}^3_\Lambda n(nn\Lambda)$.

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