Lifetime measurements of ${}^{3}_{\Lambda}H$ and ${}^{4}_{\Lambda}H$ in Au+Au Collisions at $\sqrt{s_{NN}} = 7.2$ GeV from STAR fixed target mode experiment

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Hypernuclei are bound nuclear systems of non-strange and strange baryons, i.e. nucleons and hyperons. As such, hypernuclei are correlated hyperon-baryon systems and therefore provide direct access to study the hyperon−nucleon (Y-N) interaction. Production of hypernuclei in collider systems provides an experimental avenue for studying the Y-N interaction. Λ hypernuclei, such as ${}^{3}_{\Lambda}H$ and ${}^{4}_{\Lambda}H$, are usually understood as a weakly bound system of a Λ and a nucleus. According to this concept, the Λ maintains its identity even if embedded in a system of other nucleons. Since the lifetime of a hypernucleus depends on the strength of the Y-N interaction, precise lifetime measurements of hypernuclei help us to understand the Y-N interaction.

In this talk, we will present the first lifetime measurements of ${}^{3}_{\Lambda}H$ and ${}^{4}_{\Lambda}H$ in Au+Au Collisions at $\sqrt{s_{NN}} = 7.2$ GeV, recorded by the STAR experiment with a fixed target mode in the year 2018.