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## Measurements on the production and lifetime of light hypernuclei at STAR

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Hypernuclei are bound states of nucleons and hyperons. The hyperon-nucleon ( $Y$ - $N$ ) interaction, an important ingredient for the nuclear equation-of-state (EoS), remains poorly constrained. Precise measurements of hypernuclei intrinsic properties and production yields in heavy-ion collisions are crucial to the investigation of their production mechanisms and the strength of the  $Y$ - $N$  interaction. Model calculations predict that hypernuclei are abundantly produced at low energies due to high baryon density.

Thanks to the high statistical data taken from the STAR BES II program in 2018-2021, a series of measurements on production yields and properties of light hypernuclei at low energies are carried out. In this talk, the rapidity and energy dependence of light hypernuclei ( ${}^3_{\Lambda}\text{H}$ ,  ${}^4_{\Lambda}\text{H}$ ,  ${}^4_{\Lambda}\text{He}$ ) yields in Au+Au  $\sqrt{s_{\text{NN}}} = 3, 19.6,$  and 27 GeV collisions will be presented. The ratio of hypernuclei to light nuclei production yields will also be presented. We will also report precise lifetime measurements of light hypernuclei ( ${}^3_{\Lambda}\text{H}$ ,  ${}^4_{\Lambda}\text{H}$ ,  ${}^4_{\Lambda}\text{He}$ ) utilizing the BES datasets. The results will be compared with model calculations and physics implications will be discussed.

### Present via

Online

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