

Collision Energy Dependence of Hypertriton Production in Au+Au Collisions at RHIC

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Hypernuclei are nuclear bound states composed of nucleons and one or more hyperons. Precise measurements of hypernuclei properties and production yields in heavy-ion collisions provide important insights into the hyperon–nucleon interaction and hypernuclear production mechanisms. The second phase of the Beam Energy Scan program at RHIC (BES-II) provides a unique opportunity to investigate the collision energy dependence of hypernuclei production in a wide range of baryon chemical potentials. In this talk, we will report systematic measurements of the transverse momentum spectra and transverse momentum-integrated yields of hypertriton (${}^3_\Lambda\text{H}$) at mid-rapidity ($|y| < 0.5$) in Au+Au collisions at 11 collision energies from 3.2 to 27 GeV. The energy dependence of the ${}^3_\Lambda\text{H}$ yields, the ${}^3_\Lambda\text{H}/\Lambda$ yield ratio, and the double ratio $({}^3_\Lambda\text{H}/\Lambda)/(t/p)$ will be presented. The results will be compared with calculations from thermal models, transport models with coalescence afterburners, and transport models with dynamical cluster formation. The physics implications for hypernuclei properties and production mechanisms in heavy ion collisions will be discussed.