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Production of light nuclei in Au+Au collisions with the STAR BES-II program

The studies of the production of light nuclei, such as deuteron, triton, and helium nuclei in heavy-ion collisions, are essential for understanding the dynamics of nuclear matter under extreme conditions. In addition, the yields of light nuclei and their ratios serve as an effective method for distinguishing between the thermal and coalescence models. The significantly larger datasets from the STAR Beam Energy Scan phase-II, combined with enhanced detector capabilities, allow for more precise and comprehensive measurements compared to phase-I.

In this poster, we will present measurements of light nuclei production, including p, p, d, d, t, ${}^3\text{He}$ in Au+Au collisions at BES-II energies of $\sqrt{s_{\text{NN}}} = 7.7 - 27$ GeV. The results will cover the centrality dependence of transverse momentum (p_{T}) spectra and dN/dy . We will also report the coalescence parameters (B_{A}) and the particle ratios. The physics implications of these results will be discussed.

Category

Experiment

Collaboration (if applicable)

STAR

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