

Light Nuclei Production in Au+Au Collisions at $\sqrt{s_{\text{NN}}} = 14.6$ and 19.6 GeV from RHIC BES-II

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In high-energy nuclear collisions, the light nuclei production is sensitive to the temperature and density of the system at freeze-out. It is also predicted to be sensitive to local baryon density fluctuations and can be used to probe the QCD phase transition. The second phase of Beam Energy Scan (BES-II) program at RHIC was completed in 2021. The high-statistics data recorded by the STAR experiment provide a unique opportunity to carry out high-precision measurements on the light nuclei production.

In this poster, we will report the results of the centrality and transverse momentum dependence of proton(p), deuteron(d) and ^3He production in Au+Au collisions at $\sqrt{s_{\text{NN}}} = 14.6$ and 19.6 GeV measured by the STAR experiment. We will also present the centrality dependence of coalescence parameters ($B_2(\text{d})$ and $B_3(^3\text{He})$) and particle ratios ($N_{\text{d}}/N_{\text{p}}$ and $N_{^3\text{He}}/N_{\text{p}}$), and discuss their physics implications.