

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

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1 In high-energy nuclear collisions, the production of light nuclei is sensitive
2 to the temperature and density of the system at freeze-out. In addition, the
3 light nuclei production is also predicted to be sensitive to the local baryon
4 density fluctuations and can be used to probe the QCD phase transition.
5 The second phase of Beam Energy Scan (BES Phase-II) program at RHIC
6 has been completed in 2021, and the high-statistics data recorded by the
7 STAR experiment will provide high-precision measurements of the light nu-
8 clei production, an irreplaceable result for understanding the QCD phase
9 diagram.

10 In this poster, we will report the results of the centrality and transverse
11 momentum dependences of proton (p), deuteron(d), and ${}^3\text{He}$ production in
12 Au+Au collisions at $\sqrt{s_{\text{NN}}} = 14.6$ and 19.6 GeV measured by the STAR
13 experiment at RHIC BES Phase-II. We will present the coalescence param-
14 eters ($B_2(d)$ and $B_3({}^3\text{He})$) and particle ratios (N_d/N_p and $N_{{}^3\text{He}}/N_p$). Their
15 physics implications will be discussed.