

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

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

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