

**Light Nuclei Production in Au+Au Collisions
at $\sqrt{s_{\text{NN}}} = 3$ and 27 GeV from STAR experiment**

Hui Liu for the STAR Collaboration

Central China Normal University

1 Light nuclei, such as deuteron and triton, are loosely bound ob-
2 jects. Their yields are expected to be sensitive to baryon density fluc-
3 tuations and can be used to probe the QCD critical point and the
4 signatures of a first-order phase transition in heavy-ion collisions. In
5 2018, RHIC started the second phase of the beam energy scan program
6 (BES-II). Up to now, the STAR experiment has taken the data of high
7 statistics Au+Au collisions at $\sqrt{s_{\text{NN}}} = 9.2, 11.5, 14.6, 19.6,$ and 27
8 GeV (collider mode) and 3 - 7.7 GeV (fixed-target mode).

9 In this talk, we will present light nuclei production in Au+Au
10 collisions at $\sqrt{s_{\text{NN}}} = 3$ GeV (fixed-target mode) and 27 GeV (collider
11 mode) recorded by the STAR experiment in 2018. We will show the
12 transverse momentum spectra of proton (p), deuteron (d), triton (t),
13 ^3He , and ^4He at various rapidity ranges. The rapidity and centrality
14 dependences of coalescence parameters (B_2, B_3), and yield ratio of
15 $N_p N_t / N_d^2$ will be also presented. Their physics implications will be
16 discussed.