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Light Nuclei (d, t) Production in Au+Au Collisions at $\sqrt{s_{\rm NN}}$ = 27 and 54.4 GeV from the STAR experiment

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In high energy nuclear collisions, light nuclei production is sensitive to the baryon density fluctuations and thus can be used to study the QCD phase transition. For example, the neutron density fluctuation can be extracted from the yield ratio of proton, deuteron and triton, $N_{\rm p}N_{\rm t}/N_{\rm d}^2$, which may provide a method to study critical phenomena in relativistic heavy-ion collisions.

In this poster, we will present measurements of (anti-)deuteron and triton production in Au+Au collisions at $\sqrt{s_{\rm NN}}$ = 27 and 54.4 GeV. These results are obtained from the large data samples collected by the STAR experiment in the years 2018 and 2017, respectively. We will show the centrality dependence for the coalescence parameters $B_2(d)$ and $B_3(t)$, particle ratios (d/p, t/p, and t/d), and the yield ratio of $N(t)\cdot N(p)/N^2(d)$. Their physics implications will be discussed.

Author: LIU, Hui (CCNU)

Presenter: LIU, Hui (CCNU)

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