

Measurements of Proton-Proton Correlation Function in $\sqrt{s_{\text{NN}}} = 3.0$ GeV Au+Au Collisions at RHIC-STAR

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The proton-proton correlation functions are widely used to infer the baryon source spatial and temporal extents in relativistic heavy-ion collisions. Due to the space-momentum correlation, information on collectivity can also be extracted from the correlation functions. There are ample data on the meson source information but results on baryon source are scarce.

In this talk, we will present the first measurement of proton-proton correlation functions in Au+Au collisions at $\sqrt{s_{\text{NN}}} = 3.0$ GeV with a FXT target mode at RHIC. At 3 GeV, the full rapidity coverage of protons is achieved by the STAR detector. The rapidity dependence of the proton source parameters will be discussed for the first time. In addition, collision energy and centrality dependence of the proton correlation functions will be discussed. The experimental results will also be compared with the calculations from UrQMD transport model.