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Measurements of proton-proton Correlation Function in $\sqrt{s_{\text{NN}}} = 3$ GeV Au+Au Collisions at RHIC-STAR

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.

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, recorded by the STAR experiment with a FXT target mode at RHIC in the year 2018. Results of the collision centrality, proton transverse momenta, and rapidity dependence will be presented. The experimental results will be compared with the calculations from UrQMD transport model. In addition, a systematic energy dependence of the proton-proton correlation functions will be discussed.

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