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$p_T - p_T$ Correlators at High Baryon Density Region from the STAR Experiment

The study of event-by-event transverse momentum (p_T) fluctuations and p_T correlations between particles provide insight into the properties of the hot and dense matter created in Au+Au collisions at the Relativistic Heavy-Ion Collider (RHIC) spanning a wide range of collision energies. These measures have been proposed as tools to understand the initial state geometry and subsequent evolution of the system as well as quantify some of the thermodynamic properties. As the $\langle p_T \rangle$ fluctuation is related to the specific heat of the system, its study as a function of collision energy and centrality may help probe the onset of phase transition and the QCD critical point.

In this talk, we present the first results on the 2-particle p_T correlations as measured by the STAR collaboration in the STAR-FXT program. The results from central Au+Au collisions at $\sqrt{s_{NN}} = 3.0$ GeV and 3.2 GeV are compared to previous STAR BES-I measurements and measurements from ALICE at the Large Hadron Collider. The comparison of the experimental results with transport model calculations and the effect of primordial protons on the results will also be presented

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