

Beam-energy dependence of spatial and temporal characteristics of shape-selected events in Au+Au collisions at STAR

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Abstract

Femtoscopic measurements can be leveraged to gain insight into the expansion dynamics of the hot and dense medium created in heavy-ion collisions. This poster presentation will report and discuss excitation functions for shape-selected two-pion HBT radii (R_{out} , R_{side} and R_{long}) measured for a broad range of collision centrality and average pair transverse momentum (k_T) with the STAR detector. The shape selections were accomplished via cuts on the distributions of the second-order Q_2 vector [1]. The excitation functions, which span the full range of the RHIC beam energy scan ($\sqrt{s_{NN}} = 7.7\text{-}200$ GeV), indicate clear sensitivities to the magnitude of the Q_2 vector which give insight into the expansion dynamics. The connection between the magnitude of the Q_2 vector and the spatiotemporal characteristics of the quark-gluon plasma produced in the collisions will be discussed.

[1] J. Schukraft, A. Timmins, and S. A. Voloshin, Phys.Lett. B719, 394 (2013).