

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

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Abstract

1 The correlations measured from the Hanbury Brown and Twiss effect (HBT) allows access to
2 the spatial and temporal characteristics of the systems produced in relativistic heavy-ion collisions.
3 This presentation contains new measurements of the two-pion HBT radii, R_{out} , R_{side} and R_{long}
4 which have been made for shape-engineered events by the STAR experiment. Shape selection was
5 accomplished via cuts on the distributions of the second-order flow vector Q_2 [1]. Selected events,
6 characterized with larger magnitudes of Q_2 , indicate a systematic decrease for R_{long} and R_{out} with
7 little, if any, change for R_{side} . Results obtained as a function of collision centrality and average
8 pair transverse momentum (k_T) will be presented for the full range of the Au+Au beam energy
9 scan ($\sqrt{s_{NN}} = 7.7 - 200$ GeV). The implications of these results for expansion dynamics of the
10 collision systems will be discussed.

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