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Investigating jet and non-jet contributions to long range pseudo-rapidity correlations in di-hadron measurements from STAR.

Two particle number correlations in relative azimuth and pseudo-rapidity ($\Delta\phi$, $\Delta\eta$) develop novel features in heavy ion collisions at 200 GeV when compared to p+p results at the same energy.

Earlier STAR results have shown a $\Delta\eta$ elongated structure for the small $\Delta\phi$ angles (on the same-side) and the development of significant deformations at $\Delta\phi$
$aprox\pi$ (on the away-side). In this talk we will present new results from such correlation analysis that show unambiguously formation of a double-hump structure on the away side in raw correlation measured in very central Au+Au collisions for intermediate pT (2<pT<5GeV/c) particles.

We carry out systematic investigation of the same- and away-side features by varying the event centrality and kinematic selection for 200GeV Cu+Cu and Au+Au collisions. To characterize the observed correlation structure we fit the data with a multi-component model that includes a same side Gaussian and higher order Fourier moments (vn; n = 1,2,3,4). The impact of including the third Fourier moment in the fit on the elongated same-side structure and the second Fourier moment (related to the elliptic flow strength) is discussed.

Finally we compare our data to theoretical expectations based on CGC initial conditions [1], [2], initial density fluctuations [3] and pQCD [4]. We conclude that, within the studied model, the same-side eta elongated structure is consistent with a coexistence of jet and non-jet contributions.

[1]. Gavin, McLerran and Moschelli: Phys.Rev.C79:051902, 2009
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[3]. Alver and Roland: Phys.Rev.C81:054905, 2010
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