Triangular flow and dihadron correlations in heavy ion collisions at RHIC

J. Xu and C.M. Ko

Using the default values for the parameters in the Lund string fragmentation function and a smaller but more isotropic parton scattering cross section than previously used in the AMPT model [1] for heavy ion collisions at RHIC, we have obtained a good description of both the charged particle multiplicity density and the elliptic flow measured in Au + Au collisions at $\sqrt{s_{NN}}$ =200 GeV, although the transverse momentum spectra are still softer than the experimental results [2]. With these constrained parameters, the magnitude of the triangular flow in these collisions was predicted as shown in the left window of Fig.1. We have also studied the dihadron azimuthal correlations triggered by energetic hadrons at impact parameters of b = 0 and 8 fm and found that the double-peak structure at the away side of triggered particles, which is seen after subtracting the background contributions due to the elliptic flow, is largely due to the triangular flow as shown in the right window of Fig.1. However, the residual correlations shown in our study after the subtraction of the flow contribution might still contain the contribution from flow fluctuations in addition to the nonflow contribution that we are interested.

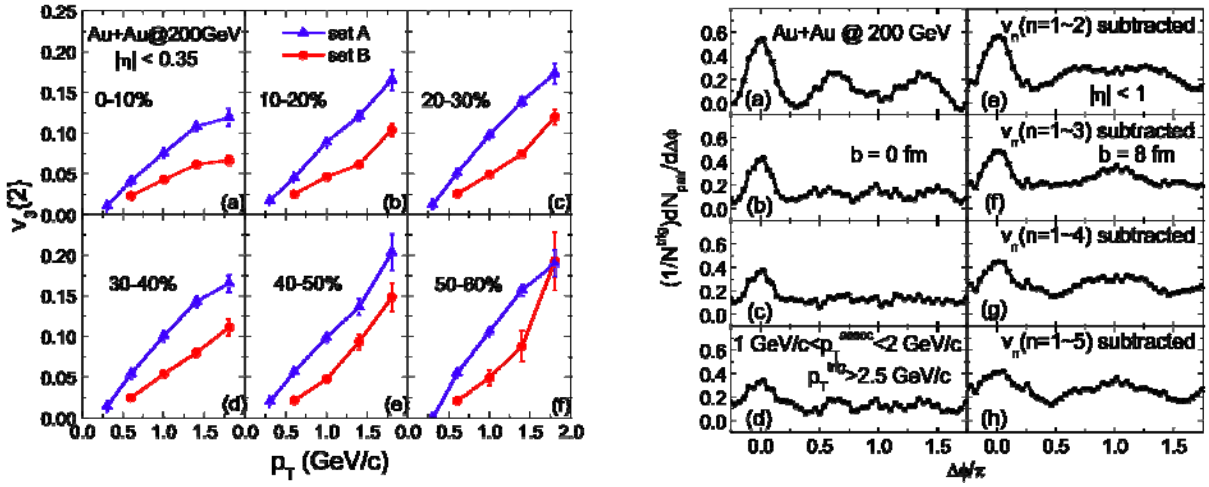

FIG. 1. Left window: Transverse momentum dependence of the triangular flow of mid-pseudorapidity (|η| < 0.35) charged particles by using parameter sets A (solid triangles) and B (solid circles) Au collisions at $\sqrt{s_{NN}}$ = 200 GeV in Au+Au collisions from the two-particle cumulant method. Right window: Dihadron correlations per trigger particle after subtracting background correlations up to different orders in same collisions for b=0 fm (a–d) and b=8 fm (e-h) from parameter set B.

[1] Z.W. Lin, C.M. Ko, B.A. Li, B. Zhang, and S. Pal, Phys. Rev. C **72**, 064901 (2005).

[2] J. Xu and C.M. Ko, Phys. Rev. C **84**, 014903 (2012).