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System Size and Energy Dependence of Jet-Induced Hadron-Hadron Angular Correlations in Heavy Ion Collisions at PHENIX

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The observation of jet quenching in ultra-relativistic heavy ion collisions demonstrates significant energy loss of fast partons passing through the created medium. Azimuthal angular correlations allow for further study of the medium-induced energy loss, the energy loss mechanism, and responses of the medium to the deposited energy. We present azimuthal angle correlation results for intermediate transverse momentum charged hadrons in Cu+Cu and Au+Au collisions at both $\sqrt{s_{NN}} = 62.4$ and 200 GeV at RHIC. Focus is given to away-side jet-induced characteristics of the correlations. We find that the jet-induced away-side distribution is broadened, non-Gaussian, and peaked away from $\Delta\phi = \pi$ in central and semi-central collisions in both heavy ion systems. The away-side broadening and peak location are found to depend upon the number of participants in the collision, but do not strongly depend on the collision energy or beam nuclei. Additional studies of the transverse momentum dependence and other properties of the jet-induced correlations will be discussed.

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