

Study of Cold and Hot Nuclear Matter Effects on Jets with Direct Photon-Triggered Correlations from PHENIX

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Direct photons, being colorless objects, provide an unmodified control particle that can be used in conjunction with jets to probe the quark-gluon plasma. To leading order the direct photon momentum balances the momentum of opposing jets and can therefore provide a clean handle on the jet energy. Therefore, angular correlations with direct photons provide a mechanism to study the fragmentation of the opposing jet without performing jet reconstruction. Jet fragmentation modification has been measured previously in PHENIX in central Au+Au collisions. Recent RHIC runs offer the potential to study these observables in heavy ion collisions with greater statistics and over different collision systems including asymmetric collision geometries. In this talk we present results of isolated direct photon-triggered correlations in d +Au collisions and discuss the constraints of cold nuclear matter effects on the fragmentation functions. We also present the latest results with higher statistics on direct photon-triggered correlations in Au+Au collisions including differential measurements of fragmentation function modification. Finally, we present the status of the centrality and collision species dependence of these observables, including comparisons to related di-hadron correlations. Together these results can give a view of jet modification going from small to large system size.

Preferred Track

Jets and High pT Hadrons

Collaboration

PHENIX

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