

Systematic Study of Highly Asymmetric Systems Using π^0 Production at PHENIX

Wednesday, February 8, 2017 11:00 AM (20 minutes)

Single particle production has proven to be a valuable tool to study heavy ion collisions. The observation of collective behavior in p +Pb at the LHC and d +Au RHIC has spurred speculation that a plasma is formed in small collision systems. Jet production in the same collisions at the LHC and RHIC has an anomalous centrality dependence if centrality is determined the same way as in large ion-ion collisions. One interpretation could be that the nucleus probes the dynamical structure ("color fluctuations") of the projectile. Hints of gluon saturation effects have been observed at forward rapidities in d +Au collisions at RHIC. To systematically explore the physics using very asymmetric systems, RHIC has provided beams of p +Au, p +Al, d +Au and ^3He +Au. Single particle production in these collisions should be sensitive to the physics of energy loss, modifications of the nuclear wavefunction, and the dynamics of the projectile wavefunction. PHENIX Central arms can measure π^0 at mid-rapidity. New MPC-EX detector allows π^0 measurement for $3.1 < \eta < 3.8$. In this talk we present the systematic study of π^0 production in several very asymmetric collision systems from PHENIX and discuss their impacts on our understanding of the physics of such systems.

Preferred Track

Jets and High p_T Hadrons

Collaboration

PHENIX

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