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High p_T single identified particles in various collision systems with the PHENIX detector at RHIC

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Jet quenching in the hot, dense medium formed in Au+Au collisions leads to the suppression of high p_T particles which can be studied with the measurement of the leading hadrons, like π_0 . They can be used to investigate the mechanism of energy loss of partons in a QGP when varying the collision geometry.

Asymmetric Cu+Au collisions provide a system with similar energy density but different collision geometry when compared to Au+Au, with the same number of nucleon-nucleon collisions. Furthermore, at RHIC we can study different highly asymmetric collisions, such as p+Au, d+Au and $^3\text{He}+\text{Au}$. The observation of collective behavior in these systems suggests the creation of a medium, but alternate explanations exist. The systematic study of the π_0 production could give us a deeper understanding of the physics in these very asymmetric systems.

We present new measurements of π_0 with PHENIX in the asymmetric collisions at midrapidity $|\eta| < 0.35$ with collision energy $\sqrt{s_{NN}} = 200$ GeV.

Experimental Collaboration

PHENIX collaboration

Author: DEHMELT, Klaus (Stony Brook University USA)

Presenters: DEHMELT, Klaus (Stony Brook University USA); DEHMELT, Klaus (State University of New York Stony Brook (US)); DEHMELT, Klaus (Stony Brook University USA)

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