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## Neutral pion production in $\sqrt{s_{NN}}=200$ GeV Cu+Au collisions at PHENIX

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Cu+Au collisions at RHIC generate asymmetric initial geometries and densities in both azimuth and rapidity. High  $p_T$   $\pi^0$ s produced in  $\sqrt{s_{NN}} = 200$  GeV Cu+Au collisions provide new environments to study parton energy loss in the Quark Gluon Plasma, including very central events where the Cu nucleus is enveloped by the Au nucleus. By measuring  $\pi^0$  yields in  $\phi$  relative to the event plane, we can probe different core-corona regions in these very central events and study the path length dependence of energy loss in various lopsided initial geometries. PHENIX has observed the suppression of  $\pi^0$ s as a function of the azimuthal angle with respect to the event plane in  $\sqrt{s_{NN}} = 200$  GeV Au+Au collisions and found it consistent with a larger than quadratic path length dependence suggesting a non-perturbative energy loss model applies. The unique collision geometries available in Cu+Au provide new settings to explore and possibly confirm this path length dependence. The status of the Cu+Au  $\pi^0$  analysis will be presented.

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