

Abstract Submitted  
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**$D^0$ -Hadron Correlations in Azimuth and Pseudorapidity in Au+Au Collisions at  $\sqrt{s_{NN}} = 200$  GeV** ALEXANDER JENTSCH, Univ of Texas, Austin, STAR COLLABORATION COLLABORATION<sup>1</sup> — Collisions of ultra-relativistic gold nuclei in the Relativistic Heavy-Ion Collider at BNL produce a hot and dense medium called the Quark-Gluon Plasma (QGP). Two-particle correlations on azimuth ( $\phi$ ) and pseudorapidity ( $\eta$ ) provide a sensitive probe of the dynamics of the QGP. In particular,  $\phi$ -dependent contributions (e.g. the second-order azimuthal anisotropy) and  $\eta$ -dependent contributions can be extracted simultaneously. Such correlations have been measured for light-flavor hadrons. Heavy flavor quarks (i.e. charm and bottom) provide unique information about QGP dynamics because they are predominantly formed in the early stage of the collisions. Furthermore, because of their high masses, flavor-dependent parton interactions with the medium (i.e. energy loss, thermalization) can be studied. We will present a measurement of  $D^0$ -hadron correlations in Au+Au collisions at  $\sqrt{s_{NN}} = 200$  GeV from the Solenoidal Tracker at RHIC (STAR) experiment. The  $D^0$  meson is reconstructed via its hadronic decay channel using the Heavy Flavor Tracker. Through this measurement, we will extract the evolution of the correlation structures as a function of  $D^0$  transverse momentum and collision centrality.

<sup>1</sup>Experiment at RHIC at Brookhaven National Lab in Long Island, NY.

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