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## Measurement of $D^0$ Meson Tagged Jets in Au+Au Collisions at $\sqrt{s_{NN}} = 200$ GeV

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The Quark-Gluon Plasma (QGP) produced in heavy-ion collisions can be studied using hard probes, such as  $D^0$ -meson tagged jets created at the initial collision stage. The jet yield, shape, and its sub-structure get modified due to interactions with the medium compared with its vacuum propagation. This phenomenon is known as jet quenching.

The transverse momentum ( $p_T$ ) fraction of the jet, carried by hadrons along the jet axis ( $z = \vec{p}_{T,\text{hadron}} \cdot \vec{p}_{T,\text{jet}} / |p_{T,\text{jet}}|^2$ ), is related to jet fragmentation. The generalized angularities  $\lambda_\kappa^\alpha$  characterize the jet substructure and they can distinguish jets initiated by light and heavy quarks, and gluons where the different choice of  $\kappa$  and  $\alpha$  parameters tunes the sensitivity of the observable to various jet aspects. Measurements of the nuclear modification factor  $R_{CP}$  of  $D^0$  jets as a function of the transverse momentum fraction  $z$  and the generalized angularities in heavy-ion collisions open ways to investigate modifications of heavy quark fragmentation function and jet substructure in the QGP. In addition, studying radial distribution of  $D^0$  mesons in jets allows one to investigate the charm quark diffusion in the medium.

In this contribution, we report the measurement of  $D^0$  meson tagged jets in Au+Au collisions at  $\sqrt{s_{NN}} = 200$  GeV by the STAR experiment at RHIC. We present  $R_{CP}$  as a function of  $p_{T,\text{jet}}$  and  $z$ , measurements of generalized angularities, and the radial profile of the  $D^0$  mesons for  $D^0$  jets. These results may help distinguish between various models describing jet quenching and heavy flavor quark in-medium energy loss.

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