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 ($p\_{\text{T}}$) fraction of the jet, carried by hadrons along the jet axis ($z = \vec{p}\_{\text{T},\text{hadron}} \cdot \vec{p}\_{\text{T},\text{jet}}/|p\_{\text{T},\text{jet}}|^2$), is related to jet fragmentation. The generalized angularities $\lambda\_{\alpha}^{\kappa}$ 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 $R\_{\text{CP}}$ 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 $\sqrt{s\_{\mathrm{NN}}} = 200$ GeV by the STAR experiment at RHIC. We present $R\_{\text{CP}}$ as a function of $p\_{\text{T},\text{jet}}$ 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.