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Jet shape observables in p+p and Au+Au collisions at sqrt{s_{NN}} = 200 GeV at STAR

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Jets produced from hard scatterings of partons early in heavy-ion collisions traverse through the quark-gluon plasma (QGP) medium and get modified relative to vacuum (p+p collision) baseline. These modifications can change the distributions of jet shape observables, which are related to jet fragmentation and its internal structure, and calculated based on the intra-jet angular energy distribution. LHC results showed medium-induced modifications to differential jet shape ($\rho(r)$, radial distribution of constituents relative to the jet axis) distributions and a prevalence of quark-like fragmentation from Girth (jet angularity), p_T^D (jet momentum dispersion) and LeSub (splitting between leading and subleading jet constituents) measurements. At RHIC, we are able to study lower energy jets, complementary to those measured at the LHC. Hence measurements of jet shapes at RHIC can help constrain models at different energy scales. In this talk, we present measurements of the fully corrected $\rho(r)$ in p+p and Au+Au collisions at $\sqrt{s_{\rm NN}} = 200$ GeV collected by the STAR experiment. We also show fully corrected resutls for Girth, p_T^D and LeSub in p+p collisions. Exploratory studies of these observables in Au+Au collisions will also be discussed.

Experiment/Theory

STAR

Affiliation

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