

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

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5 **Abstract**

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