

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

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4 January 16, 2020

5 **Abstract**

6 In order to attribute the partonic energy loss within jets (jet quenching) observed in A+A
7 collisions to the traversal of partons through the hot QCD medium, it is necessary to examine
8 cold nuclear matter (CNM) effects on the corresponding jets. Such examination has historically
9 been done using p+A collisions. In this talk, we present fully corrected measurements of jet
10 substructure – with a focus on jet mass – in p+A collisions at STAR at $\sqrt{s_{\text{NN}}} = 200 \text{ GeV}$ as
11 a function of the event activity (EA) to increase or decrease the magnitude of CNM effects.
12 EA is determined in backward (Au-going) rapidity ($3.3 < |\eta| < 5.0$) by the STAR Beam-Beam
13 Counter detector to minimize auto-correlation effects of jet measurements at mid-rapidity. By
14 differentiating the measured jets by rapidity, we explore potential Bjorken- x dependence in
15 jets exiting the gold nucleus or proton. Finally, we compare the results in p+A collisions to
16 fully corrected corresponding measurements in p+p collisions and current vacuum and heavy-
17 ion Monte Carlo models to isolate these CNM effects in anticipation of an upcoming jet mass
18 measurement in A+A collisions.