

1 An overview of recent STAR jet measurements and 2 futurity

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4 Jets are produced in heavy-ion and nucleon-nucleon collisions from hard-
5 scattered patrons of the incoming beams. We can infer the property of hot-
6 dense QCD matter, known as Quark-Gluon Plasma (QGP), by studying the
7 modified jet properties in heavy-ion collisions with respect to their vacuum
8 reference. The STAR experiment has recently reported several novel jet
9 measurements in heavy-ion collisions that provide information about the
10 medium-induced parton energy loss at RHIC. In central Au+Au collisions
11 at $\sqrt{s_{\text{NN}}} = 200$ GeV, the inclusive charged-particle jet yields show a strong
12 suppression for different jet resolution parameters (R), whereas the semi-
13 inclusive direct-photon and hadron triggered recoil jet measurements hint at
14 a R dependent jet suppression. We compare these measurements with those
15 at the LHC and investigate the parton energy loss in QGP by comparing
16 jet transverse momentum shift at different collision energies. Besides, we
17 study the QCD parton shower and jet evolution in vacuum by measuring
18 different jet substructure observables in p+p collisions. For example, the
19 SoftDrop groomed jet mass, shared momentum fraction, and groomed jet
20 radius are measured in p+p collisions at $\sqrt{s} = 200$ GeV, and compared with
21 different QCD-based models. Finally, we will discuss the forthcoming STAR
22 experiment data-taking plan during the final stage of RHIC running and the
23 improved precision achievable for jet measurements.