

1 First Measurement of the Jet Charge in
2 $\sqrt{s} = 200$ GeV pp Collisions at STAR

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5 **Abstract**

6 The total electrical charge in an isolated system is conserved, so the
7 charge of a parton, i.e. quark or gluon, originating from a high- Q^2 process
8 within a high-energy proton-proton collision, is conserved throughout the
9 parton shower evolution and hadronization process. Consequently, this
10 should be reflected in the overall charge of a measured jet. In this talk, we
11 present the first measurement of the jet charge at RHIC using data from
12 $\sqrt{s} = 200$ GeV pp collisions at STAR. By performing the measurement
13 differentially in jet transverse momentum, the jet energy dependent frac-
14 tions of quark- and gluon-initiated jets can be studied. On the other hand,
15 in heavy-ion collisions, hard gluons traversing the quark-gluon plasma are
16 expected to lose more energy via gluon bremsstrahlung than quarks due
17 to the increased color factor. Therefore, this reference measurement can
18 also be used as a baseline for a study of the quark and gluon energy loss
19 in the hot medium.