Measurement of photon-jet correlations in p+p and central Au+Au collisions at $\sqrt{s_{NN}} = 200$ GeV by STAR

Jace Tyler
Texas A&M University
for the STAR Collaboration

Abstract

We report the semi-inclusive distribution of fully-reconstructed jets recoiling from a direct photon trigger in pp and central Au+Au collisions at $\sqrt{s_{NN}} = 200$ GeV. This observable provides an incisive probe of the Quark-Gluon Plasma generated in high-energy nuclear collisions. Direct photons are measured using the STAR Barrel Electromagnetic Calorimeter (BEMC). Jet reconstruction is carried out by the anti-k_T algorithm with jet resolution parameters R=0.2 and R=0.5, utilizing neutral energy measured in the BEMC and charged-particle tracks measured in the Time Projection Chamber (TPC). Uncorrelated jet background is mitigated using event mixing. This measurement extends a recently reported STAR measurement of the same observable, which used charged-particle jets, to fully-reconstructed recoil jets. The status of the analysis will be reported, and its physics prospects will be discussed.