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Using Photon-Jet Analyses to Probe the QGP

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RHIC at Brookhaven National Laboratory has been providing high energy heavy-ion collisions since the year 2000. Hard probes are often analyzed to study the properties of the matter created in heavy-ion collisions, by comparing the measurements to those in $p+p$ collisions. Direct photons, those produced during the collision rather than from decays of hadrons, are particularly interesting because they do not interact strongly and thus are not affected significantly by the medium. With the photon energy as a good approximation for the initial energy of the recoil parton (before interaction with the medium), the study of direct-photon-triggered away-side jets can give information about the energy loss of the recoil parton while traversing through the medium. In addition, it is useful to compare the suppression of jet-associated yields for direct-photon and neutral-pion triggers, in order to analyze the path-length and color-factor dependence of parton energy loss. Correlation measurements of direct-photon+hadron and neutral-pion+hadron will be presented and discussed. The status of an analysis of neutral-triggered reconstructed jets will also be discussed.

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