

Direct Photon-Jet Measurements at RHIC

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Measurements of jets and jet fragments correlated to a high-momentum direct photon have been a vital tool for studying a variety of quantum chromodynamical processes seen at the Relativistic Heavy Ion Collider (RHIC). Most notably, direct photons serve as a colorless, well-calibrated probe for studying the jet modification seen in ultrarelativistic nucleus-nucleus collisions caused by the interaction of hard-scattered partons with the QGP medium. The colorless nature of direct photons further makes them an excellent way to study jet-producing hard-scatterings in any collision system, as they can carry information directly from the hard scattering without any final-state fragmentation effects. In this talk I will discuss direct photon-jet measurements from the PHENIX and STAR experiments at RHIC across $p + p$, $d + Au$, and $Au + Au$ collision systems and their impact on our understanding of QCD, jets, and the QGP. I will conclude by discussing future prospects for such measurements with the new, state-of-the-art jet detector, sPHENIX, scheduled to begin taking data in 2023.

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