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Photons associated with jets in p-p and A-A collisions[1]
CHATHURANGA SIRIMANNA, ABHIJIT MAJUMDER, Wayne State University, JETSCAPE COLLABORATION — Jet modification is now understood to be a multistage effect: a parton produced in a high virtuality initial state, radiates a multitude of partons, giving way to a variety of lower virtuality stages. Hadrons produced in the fragmentation from these partons are clustered within jets. Modeling of these multistage effects involves several parameters. We consider a set of these parameters which have been tuned to successfully describe a variety of jet-based data. Quarks inside jets can radiate photons along with gluons. Photons are also produced in the hard scattering, via the quark-gluon Compton scattering process. In this work, we study the correlation of photons with jets in p-p and A-A collisions. Photon radiation from the hard scattering, along with radiation from a PYTHIA based hadronization model are included in this analysis. We focus on the photon jet transverse momentum and angular balance. The calculations of photon production from each stage are calculated in close analogy to gluon radiation, with the exact same approximations, i.e., no new parameters are introduced or tuned either in the p-p or A-A collisions. The level of agreement with experimental data provides independent verification of the multi-stage theory of jet modification.

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