

Title: Direct measurement of fragmentation photons in p+p collisions at $\sqrt{s_{NN}} = 200$ GeV with the PHENIX experiment

Abstract: Direct photon production is an important observable in heavy ion collisions as photons are penetrating and therefore largely insensitive to the final state effects that lead to jet quenching. Perturbative QCD calculations predict a significant contribution to the direct photon yield from photons produced through parton fragmentation. In heavy ion collisions this contribution can be modified due to additional stimulated photon bremsstrahlung as well as the energy loss of the partons through gluon radiation prior to fragmentation. This stimulated bremsstrahlung provides direct observation of the scattering of jets in the medium. Thus direct measurements of the fragmentation component to direct photon yields in both p+p and Au+Au collisions will provide both an important test of pQCD predictions and of predictions for the nuclear modification factor. By selecting photons associated with jets on the near side using hadron-photon correlations, bremsstrahlung photons can be measured directly. Most photons correlated with jets come from π^0 's and other hadronic decays and must be tagged and subtracted from the inclusive correlations. Using this method we can obtain a measure of the bremsstrahlung photon contribution to investigate medium-induced modifications to the jet fragmentation function. We present studies of this methodology and its application to recent PHENIX data.