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Direct measurement of fragmentation photons in p+p collisions at $\sqrt{s}$ = 200 GeV with the PHENIX experiment ALI HANKS, Columbia U, PHENIX COLLABORATION — In heavy ion collisions direct photons are an important observable because they are penetrating, and therefore remain largely insensitive to the final state effects that lead to jet quenching. Perturbative QCD calculations predict a contribution to the direct photon yield of up to 30% from photons produced through fragmentation. In heavy ion collisions it is expected that this contribution is modified due to additional stimulated photon bremsstrahlung as well as energy loss of the partons through gluon radiation prior to fragmentation. A measure of such photons would provide direct observation of the energy loss of jets in the medium. Thus measurements of the fragmentation component to direct photon yields in both p+p and Au+Au collisions provides an important test of pQCD predictions and of the nuclear modification factor. Photons produced through jet fragmentation can be measured by selecting photons associated with jets using hadron-photon correlations, providing a natural way of extracting properties of the jet. However, this signal is small compared to the contributions to the inclusive yield from photons produced through π^0 , η, and other mesonic decays, requiring a precise determination of these backgrounds. We present results from the application of this approach to PHENIX p+p data and discuss its potential for signal extraction in heavy ion collisions.

Ali Hanks
Columbia U

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