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Effects of Photon Absorption in High Energy Heavy Ion Collisions JOSHUA WINCHELL, SIDHARTH SOMANATHAN, RANIER FRIES, Cyclotron Institute, Texas A&M University — Photons are an important probe of the hot and dense nuclear matter created in high-energy collisions of nuclei at the Relativistic Heavy Ion Collider (RHIC) and the Large Hadron Collider (LHC). Since the mean free path of photons is larger than the size of the fireball of nuclear matter, final state interactions of photons are usually neglected. In light of recent tension between theoretical calculations and data from RHIC and LHC, we study the effect of reabsorption of photons on elliptic flow v2 and on the nuclear modification factor RAA. We consider photons emitted in primary hard collisions and thermal photons from quark-gluon plasma and hot hadron gas. We use the jet-quenching code PPM to simulate the propagation of those photons in a fireball of quark-gluon plasma and hot hadron gas created by collisions of heavy nuclei. For the absorption cross-sections we consider three different approaches: (a)Compton and pair production processes calculated by us in a static approximation, (b)the photon damping rates calculated by Thoma (1995), and (c)absorption rates derived from a recent photon calculation by van Hees et al.

Joshua Winchell
Cyclotron Institute, Texas A&M University

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