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Azimuthal angular correlations in two-particle production in proton-nucleus collisions

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Di-hadron azimuthal angular correlations in the forward rapidity region of deuteron-nucleus collisions at RHIC show a disappearance of the away side peak with centrality and transverse momentum. This can be understood, in the Color Glass Condensate (CGC) formalism, to be due to multi-gluon exchanges between the projectile and target. We show that CGC formalism predicts a similar disappearance of the away side peak in the prompt photon-hadron azimuthal angular correlations. We make detailed predictions for transverse momentum and centrality dependence of this disappearance in deuteron-gold collisions at RHIC and proton-nucleus collisions at the LHC.

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