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Gluon propagator in Color Glass Condensate and its Phenomenological Implications on Hadronic Cross Sections MAN-FUNG CHEUNG, University of Texas at Austin — The interaction between a color condensate and strongly interacting particles has recently received a large amount of attention when one considers high energy hadronic collisions. In this work we consider the interaction between the quantum gluon and the classical background color field in the Color Glass Condensate (CGC) formalism. We present a gauge invariant formulation of the gluon-background field interaction where the background field carries a space-time dependence. Within this formalism, to leading order in the coupling constant and the strength of the background field, we show that the Slavnov-Taylor identities are satisfied. Based on this background modified gluon propagator the gluon-gluon elastic cross-section at high energy is calculated where the saturation parameter of the CGC medium is at Q_s . This cross section is found to be suppressed as Q_s increases. The phenomenological implications of the modified propagator on the hadron-hadron and hadron-nucleus collision are presented.

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