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Forward Di-Hadron Correlations and RdA in d+Au Collisions at RHIC IHNJEA CHOI, University of Illinois at Urbana-Champaign — Measurements using the PHENIX forward detectors in high energy deuteron-gold collisions make it possible to study cold nuclear matter effects in nucleon structure. The high parton densities in nuclei at low-x lead to gluon fusion causing saturation of the gluon distribution and thus suppression of hadron production cross section. This saturation has been described as the formation of the Color Glass Condensate (CGC). A conclusive measurement discriminating between different mechanisms has yet to be carried out. CGC calculations predict significant suppression of conditional yields for rapidity separated hadron pairs with one of the hadrons at forward rapidity. Two new forward electromagnetic calorimeters (Muon Piston Calorimeters, $-3.1 < \eta < -3.7, 3.1 < \eta < 3.9$) allow the PHENIX experiment to further study forward di-hadron correlations and RdA which have been predicted to show dramatic effects due to gluon saturation. Azimuthal correlations of di- hadron pairs at different pseudorapidities and RdA of π^0 and η will be shown. The forward pseudorapidity correlations are especially interesting because it is expected that they provide a test of gluon saturation down to x 10^{-3} in the Au nucleus. The analysis presented is based on the high integrated luminosity data sample of d+Au collisions at $\sqrt{s_{NN}} = 200$ GeV taken at RHIC in 2008.

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