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Accessing Gluon Saturation at the EIC Through Photon-Hadron Azimuthal Correlations FARID SALAZAR, Stony Brook University, ISOBEL KOLBÉ, Institute for Nuclear Theory, University of Washington, KAUSHIK ROY, Stony Brook University, BJÖRN SCHENKE, RAJU VENUGOPALAN, Brookhaven National Laboratory — Azimuthal di-hadron correlations in deeply inelastic scattering (DIS) have been considered as one of the golden channels to probe gluon saturation effects at the future Electron-Ion Collider (EIC). A suppression in the yield of back-to-back hadrons when comparing electron-proton with electron-nucleus collisions could be indicative of the onset of gluon saturation. A complementary measurement is the correlations of direct photons with hadrons/jets which has been studied in proton-nucleus collisions, yielding similar theoretical conclusions about the effects of gluon saturation on the back-to-back peak. In this talk, I will present the computation of the direct photon-quark production in DIS within the Color Glass Condensate Effective Field Theory. We find that this process depends only on the dipole gluon transverse momentum distribution. We use these results to provide the first numerical estimates for direct photon-quark azimuthal correlations. We observe a systematic suppression and broadening pattern of the back-to-back peak as the saturation scale is increased by replacing proton targets with gold nuclei. I will briefly comment on the feasibility of this measurement at the EIC. arXiv:2008.04372 [hep-ph]. To appear on JHEP.

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