Contribution ID: **233** Type: **Poster Presentation**

Probing small-x gluons with gamma+hadron correlations in the forward rapidity with the LHCb detector

Monday 4 November 2019 17:40 (20 minutes)

Gluon nuclear PDFs still have large uncertainties in the small-x (x<10^{-3}) and small virtuality Q^2 <50 (GeV/c)^2 region. Yields from particles coming from these gluons obtained in nuclear collisions are suppressed relative to p+p collisions because of initial-state effects such as shadowing, energy loss and gluon saturation. Precise measurement of yields coming from small-x, small-Q^2 gluons are essential to understand these effects which have a significant contribution to the suppressions observed in A+A collisions at RHIC and LHC. The inverse Compton process $q+q \rightarrow \gamma+q \rightarrow \gamma+h$ is one of the few which can access and provide information on the gluon x and Q^2 in the region where nPDFs are not well constrained. The LHCb detector can measure photons through the Electromagnetic Calorimeter or photon conversion to dielectrons in the pseudorapidity range 2< η <5, covering $x > 5 \times 10^{-6}$ and $Q^2 > 2\text{GeV}^2$ in the case of inverse Compton processes. This unique coverage allow us to search for the gluon saturation scale, the transition between dilute and saturated gluons, predicted by the Color-Glass Condensate effective theory. This presentation will show the status of the isolated γ+hadron correlation analysis using data collected in p+Pb and Pb+p collisions at 8.16 TeV and p+p collisions at 8 TeV. New techniques will also be presented to identify isolated photons and subtract the large background from neutral meson decays.

Author: MUKHERJEE, Maitreyee (Central China Normal University CCNU (CN))

Presenter: MUKHERJEE, Maitreyee (Central China Normal University CCNU (CN))

Session Classification: Poster Session

Track Classification: Electromagnetic probes