

Threshold resummation in direct photon production and its implications on large-x gluon PDF.

Thursday, 15 August 2013 16:20 (20 minutes)

The precise knowledge of parton distribution functions at large-x is important in order to understand the production of a massive state at forward rapidities at the LHC. Currently, the gluon PDF is highly unconstrained at large-x and it is mainly constrained by jet data. In the past, direct photon production with high transverse momentum at fixed target experiments was used to constrain gluon distribution due to its dominant contribution from $qg \rightarrow \gamma q$ subprocess in proton-proton collisions. Due to inconsistencies between the theory at NLO in pQCD and the data, direct photons was excluded from global fits. This talk will discuss an improvement to the theory at NLO by including “threshold resummation” at NLL and its impact on gluon distribution at large-x using Bayesian reweighting technique.

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Session Classification: QCD Physics

Track Classification: QCD Physics