



Contribution ID: 226

Type: **not specified**

## Probing the Low $x$ Gluon with Exclusive $J/\psi$ Production

*Wednesday, 5 April 2017 11:40 (20 minutes)*

We present an updated and improved extraction of the low- $x$  gluon distribution from the HERA and LHCb (7 TeV and preliminary 13 TeV) exclusive  $J/\psi$  production data in the context of  $k_T$  factorisation. Critically, we use a more precise expression for the photon flux and re-calculate the rapidity gap survival factors.

In collinear factorisation exclusive  $J/\psi$  photoproduction receives large perturbative corrections at NLO which prevents immediately using the coefficient function to extract a gluon PDF from the data. Attempts to understand and overcome the problems caused by the large perturbative corrections are discussed.

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**Session Classification:** WG1 and WG5 joint session

**Track Classification:** WG1) Structure Functions and Parton Densities