



Contribution ID: 220

Type: **not specified**

Probing the gluon PDF at NNLO with top-pair differential data

Wednesday, 5 April 2017 12:20 (20 minutes)

I discuss the impact of recent measurements of top-pair differential distributions from ATLAS and CMS at $\sqrt{s} = 8$ TeV on the gluon parton distribution function (PDF). The new data is included in a global QCD analysis of PDFs at next-to-next-to-leading order (NNLO) accuracy, based on the NNPDF methodology. I comment on the compatibility between ATLAS and CMS measurements and I show how a suitable choice of differential distributions can maximize the reduction of the gluon uncertainty at large momentum fractions. I discuss some implications in gluon-initiated processes which are relevant in searches for new physics.

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Session Classification: WG1 and WG5 joint session

Track Classification: WG1) Structure Functions and Parton Densities