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# New CTEQ global analysis with high precision data from the LHC

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We present the new CTEQ-TEA global analysis of Quantum Chromodynamics (QCD). In this analysis, parton distribution functions (PDFs) of the nucleon are determined within the Hessian method at the next-to-next-to-leading order (NNLO) in perturbative QCD, based on the most recent measurements from the Large Hadron Collider (LHC) and a variety of world experimental collider data. Next-to-leading order (NLO) and leading order (LO) PDFs are also determined. Because of difficulties in fitting both the ATLAS 7 and 8 TeV $W$ and $Z$ vector boson production cross section data, we present two families of PDFs, named CT18 and CT18$Z$ PDFs respectively, without and with the ATLAS 7 TeV $W$ and $Z$ measurements. We study the impact of the CT18 family of PDFs on the theoretical predictions of standard candle cross sections at the LHC and the role of PDF uncertainties.

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