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Impact of PDFs at LO, NLO and NNLO with correlated uncertainties between orders using HERAFitter

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We present the HERAFitter project which provides a framework for Quantum Chromodynamics (QCD) analyses related to the proton structure in the context of multi-processes and multi-experiments.
Based on the concept of factorisable nature of the cross sections into universal parton distribution functions (PDFs) and process dependent partonic scattering cross sections, HERAFitter allows determination of PDFs from the various hard scattering measurements.
Here we report a set of parton distribution functions determined with the HERAFitter program using HERA data and preserving correlations between uncertainties for the LO, NLO and NNLO sets. The sets are used to study uncertainties for ratios of cross sections at LHC calculated at different order in QCD. A reduction of overall theoretical uncertainty is observed in this case.

Summary

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