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## HERAFitter project and its related studies

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The uncertainties of protons parton distribution functions (PDFs) play a dominant role for the precision tests of the Standard Model (SM) and they also impact substantially the theory predictions of Beyond SM high mass production. We present the HERAFitter project which provides a unique open-source software framework for the determination of the proton's PDFs and for the interpretation of the physics analyses in the context of Quantum Chromodynamics (QCD).

We report here the highlighted results based on the HERAFitter functionalities, as well as novel studies performed by HERAFitter. The latter includes the impact of correlations between uncertainties for PDFs extracted at different perturbative QCD orders as well as the QCD analysis of the recent Drell-Yan production measurements at Tevatron.

Reference of studies that the abstract covers are:

1. "HERAFitter Open Source QCD Fit Project", arXiv:1410.4412 [accepted by EPJC]
2. "Parton distribution functions at LO, NLO and NNLO with correlated uncertainties between orders", EPJC (2014) 74:3039, arXiv:1404.4234
3. "QCD analysis of W- and Z-boson production at Tevatron", arXiv:1503.05221 [submitted to EPJC]

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