

On the impact of lepton PDFs (20+10min)

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We discuss the effect of the complete leading-order QED corrections to the DGLAP equations in the perturbative evolution of parton distribution functions (PDFs). This requires the extension of the purely QCD DGLAP evolution, including a PDF for the photon and, consistently, also for the charged leptons e^\pm , μ^\pm and τ^\pm . We present the implementation of the QED-corrected DGLAP evolution in the presence of photon and lepton PDFs in the APFEL program and, by means of different assumptions for the initial scale PDFs, we produce for the first time PDF sets containing charged lepton distributions. We also present phenomenological studies that aim to assess the impact of the presence of lepton PDFs in the proton for some relevant processes at the LHC 13 TeV and the FCC-hh at 100 TeV.

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