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Towards the NNPDF4.0 global analysis

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I present ongoing progress towards a new global PDF analysis from the NNPDF Collaboration: NNPDF4.0. As compared to its predecessor, NNPDF3.1, it contains several improvements from the theory input, dataset, and methodology points of view. NNPDF4.0 includes a large number of new experimental measurements from HERA, ATLAS, CMS, and LHCb, among others for the first time the HERA jet cross-sections, the ATLAS and CMS dijet distributions, and single top production. Theoretical calculations adopt NNLO QCD corrections in all cases and where relevant supplemented by NLO electroweak corrections including photon-induced contributions. A new fitting framework based on the TensorFlow machine learning tools has been developed, with an automated hyperparameter tuning carried out. We present preliminary results for NNPDF4.0 and compare it with NNPDF3.1 and other recent global PDF fits.

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