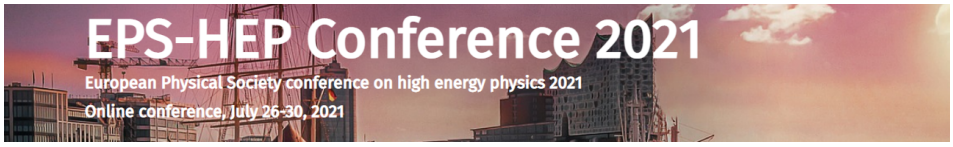

Contribution ID: **580** Type: **Parallel session talk**

Photon PDF and Impact from heavy flavors in the CT18 global analysis

Monday 26 July 2021 16:45 (15 minutes)

Building upon the most recent CT18 global fit, we present:
1) A new calculation of the photon content of proton based on an application of the LUXqed formalism.
2) The impact of heavy-flavor production data on the CT18 PDFs family.

CT18 Photon PDF: We explore two principal variations of the LUXqed ansatz. In one approach which we designate CT18lux, the photon PDF is calculated directly using the LUXqed formula for all scales, Q. In an alternative realization, CT18qed, we instead initialize the photon PDF in terms of the LUXqed formulation at a lower scale, $Q \approx Q_0$, and evolve to higher scales with a combined QED kernel at $calO(\alpha)$, $calO(\alpha\alpha_s)$ and $calO(\alpha^2)$. Phenomenological implications of these photon PDFs at the LHC are discussed.

Heavy flavors in CT18: We discuss the impact of heavy-flavor production data on the CT18 PDFs family. In particular, we discuss the impact on the CT18 global analysis of the latest charm and bottom production measurements from the H1 and ZEUS collaborations and the differential top-quark pair production cross section measurements from CMS and ATLAS. We discuss tensions and interplays between heavy-quark observables in the global fit and the different pulls on the CT18 gluon.

First author

Email

Collaboration / Activity

CTEQ-TEA

Primary authors: XIE, Keping (Pitt Pacc); YUAN, C.-P.; HOBBS, Tim; HOU, Tie-Jiun; YAN, Mengshi; SCHMIDT, Carl; GUZZI, Marco (Kennesaw State University)

Presenter: XIE, Keping (Pitt Pacc)

Session Classification: T06: QCD and Hadronic Physics

Track Classification: QCD and Hadronic Physics