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The quark/gluon structure of the proton in the high-precision LHC era

Thursday 2 August 2018 14:00 (30 minutes)

In this talk I review recent progress in the determination of the parton distribution functions (PDFs) of the proton, with emphasis on the applications for precision phenomenology and of searches for new physics beyond the Standard Model at the Large Hadron Collider (LHC). I discuss the number of recent developments such as the use of novel observables such as top quark pair production and charm production to constrain PDFs, the relevance of accounting for higher-order QCD and electroweak corrections, the photon and heavy quark content of the proton, and recent evidence for the onset of BFKL (small- x) dynamics in HERA data. I also provide representative examples of the implications of PDF fits for high-precision LHC phenomenological applications, such as Higgs coupling measurements, the W mass determination, and searches for high-mass New Physics resonances.

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