

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

*Monday 19 March 2018 14:55 (35 minutes)*

The determination of the quark and gluon structure of the proton is a central component of the precision phenomenology program at the Large Hadron Collider (LHC) as well of future hadron-hadron and lepton-hadron colliders. In this talk I review recent progress in the determination of the quark and gluon structure of the proton, with emphasis on the impact of new processes in the global PDF fit, such as top quark differential distributions and the transverse momentum of Z bosons, and discuss some of their implications for the current and upcoming LHC runs and well as for future colliders. I will also discuss a number of related aspects of the global QCD analysis including the photon content of the proton, the need for small-x resummation in HERA data, the connection with lattice QCD calculations, and a recent precision determination of the strong coupling constant.

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