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Charm and beauty structure functions and heavy quark masses at HERA

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Summary

The copious production of charm quarks at HERA has yielded a detailed understanding of QCD dynamics, the only measure of the charm contribution to the proton structure, as well as a measurement of the charm mass. Although with smaller samples, measurements of beauty production also place constraints on the structure of the proton and allow a measurement of the beauty quark mass. Several measurements of heavy quark production in deep inelastic scattering, using different decay modes, are presented, both new individual measurements from the H1 and ZEUS collaborations, as well as combined data. These provide a powerful vindication of the form of the gluon density in the proton derived from scaling violations of inclusive deep inelastic scattering data. QCD fits to the data lead to measurements of the charm and beauty masses and also provide precise predictions for e.g. W and Z production at the LHC.

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