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Charm production at HERA

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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 measurements of the charm mass and the fragmentation parameters of charmed hadrons. Several measurements of charm 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. A QCD fit to the charm data leads to a measurement of the charm mass and also provides precise predictions for e.g. W and Z production at the LHC. Additionally, fragmentation fractions to the ground state charm hadrons are compared to e+e- data and previous

HERA results. The data have a precision similar to that of the e+e- data and support the hypothesis that fragmentation is independent of the production process.

Author: KARSHON, Uri (Weizmann.Institute of Science)

Presenter: KARSHON, Uri (Weizmann.Institute of Science)