

Standard Model Physics at HERA

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The H1 and ZEUS experiments at the HERA collider recorded unique data of electron-proton collisions at center-of-mass energies of up to 320 GeV.

Although data taking ended in the year 2007, analysis activities still continue at a low level to date. The measurements of deep-inelastic scattering (DIS) allow precise tests of both components of the Standard Model, QCD and the electroweak sector.

In this seminar, I will review the final measurements of inclusive neutral and charged current DIS cross sections and their importance for the measurements of the proton structure. Beyond these QCD studies, the large accumulated integrated luminosity of almost 1 fb^{-1} enable to study processes at higher scales and thus also the electroweak sector is tested in the space-like domain.

Recent developments in theoretical calculations provide the first predictions of inclusive jet and dijet cross section at next-to-next-to-leading order accuracy. Together with new measurements at HERA the production and dynamics of jets are studied in a large kinematic range with high precision. The potential for the determination of the strong coupling constant from DIS jet cross sections will be elaborated.

The talk will close with an outlook to QCD and electroweak studies at future colliders.