

Measurement of D^* Production in Diffractive Deep Inelastic Scattering at HERA

Thursday 5 July 2018 17:10 (15 minutes)

Measurements of D^* (2010) meson production in diffractive deep inelastic scattering ($5 < Q^2 < 100 \text{ GeV}^2$) are presented which are based on HERA data recorded at a centre-of-mass energy $\sqrt{s} = 319 \text{ GeV}$ with an integrated luminosity of 287 pb^{-1} . The reaction $ep \rightarrow eXY$ is studied, where the system X , containing at least one D^* (2010) meson, is separated from a leading low-mass proton dissociative system Y by a large rapidity gap. The kinematics of D^* candidates are reconstructed in the $D^* \rightarrow K\pi\pi$ decay channel. The measured cross sections compare favourably with next-to-leading order QCD predictions, where charm quarks are produced via boson-gluon fusion. The charm quarks are then independently fragmented to the D^* mesons. The calculations rely on the collinear factorisation theorem and are based on diffractive parton densities previously obtained by H1 from fits to inclusive diffractive cross sections. The data are further used to determine the diffractive to inclusive D^* production ratio in deep inelastic scattering.

Eur.Phys.J.C77 (2017), 340 [arxiv:1703.09476]

Primary authors: SCHMITT, Stefan (Deutsches Elektronen-Synchrotron (DE)); COLLABORATION, H1 (DESY); MEHTA, Andrew (University of Liverpool (GB))

Presenter: MEHTA, Andrew (University of Liverpool (GB))

Session Classification: Strong Interactions and Hadron Physics

Track Classification: Strong Interactions and Hadron Physics