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Open Charm Production in Diffractive Deep Inelastic Scattering at HERA

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Measurements of open charm production are presented in diffractive deep inelastic scattering ($5 < Q^2 < 100$ GeV^2), based on 287 pb^{-1} of H1 HERA-II data recorded at the center of mass energy sqrt(s)=319 GeV. The event topology is given by $ep \to eXY$, 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 fully reconstructed in the $D^* \to K\pi\pi$ decay channel. The measured cross sections are compared at the level of stable hadrons with next-to-leading order QCD predictions obtained in the massive scheme, where the charm quark is produced via the boson-gluon fusion. The calculations rely on the collinear factorization theorem and are based on diffractive parton densities previously obtained by H1 from fits of the inclusive diffractive cross sections. The measured data are further used to estimate the ratio of diffractive to inclusive open charm production in deep inelastic scattering.

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