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Parallel sessions: 2,3,4
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A Measurement of the Diffractive Structure Function $F_2^{D(3)}$ at low Q^2

H1 Collaboration

A new analysis is presented of the inclusive cross section for the process $ep \rightarrow eXY$, where Y is dominantly a proton, using data from HERA taken in 1995 with the H1 detector. Data from the running period with the vertex shifted by 70 cm in the direction of the proton beam were used, corresponding to an integrated luminosity of 115 nb^{-1}. The newly installed SPACAL calorimeter allows an extention in the kinematic range of the measurement to values of Q^2 significantly lower than have previously been accessed. The cross section is measured in terms of a diffractive structure function $F_2^{D(3)}(Q^2, \beta, x_{\mathbb{P}})$ for $0.4 < Q^2 < 8.0\,\mathrm{GeV}^2$. A study is made of the nature of the transition between the Pomeron intercept measured in diffractive photoproduction, which is typical of soft interactions, and that in diffractive deep-inelastic scattering.