

Measurement of single diffractive differential cross section ($d\sigma/(d|t|)$) at $\sqrt{s} = 1.96$ TeV using the DØ Forward proton detectors

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This analysis uses the Forward Proton Detector (FPD), a sub-system of the DØ detector at the Tevatron collider at Fermilab to measure the single diffractive differential cross section ($d\sigma/(d|t|)$) at $\sqrt{s} = 1.96$ TeV center of mass energy. The single diffractive candidate sample was selected using triggers requiring hits in both proton detectors in an FPD spectrometer, and a veto on hits in the same side Luminosity Monitor, consistent with an intact proton. The four-momentum transfer $|t|$ of the scattered protons were measured using the FPD system. The analysis presents the measurement of the differential cross section of single diffraction as a function of $|t|$ in the range $0.2 < |t| < 1.25$ GeV². The differential cross section measurement is consistent with the theoretical and experimental expectations. The total single diffractive cross section (σ_{sd}) in the region $0.0 < |t| < 1.25$ GeV² is consistent with other experiments.

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