same as the one at the low $\mathcal{L}^{\rm inst}$. After making the shape of two spectra the same, the data at low $\mathcal{L}^{\rm inst}$ and high $\mathcal{L}^{\rm inst}$ are combined. The study was carried out independently for each rapidity region and the results were consistent with a common value $\delta_{p_{\rm T}}^{\rm mi} = 1.86 \pm 0.23$ GeV/c. The corresponding correction for the cone jets is 0.97 ± 0.29 GeV/c, which is measured by summing the $p_{\rm T}$ in a cone of $R = 0.7$ in minimum bias events.

The $p_{\rm T}$ spectra are compared in Figure 5 with NLO QCD predictions using the CTEQ6.1M PDFs [50] with $\mu = 0.5 \times p_{\rm T}^{\rm maxjet}$ for $D = 0.7$. The theoretical predictions are calculated using the JETRAD [15] program. The data are in very good agreement with QCD predictions except in the highest rapidity bin ($1.6 < |y| < 2.1$), where the data are lower than the prediction, but well within experimental systematic uncertainties. The theoretical uncertainties are dominated by the PDF uncertainties and are comparable or larger than the experimental uncertainties. The theoretical predictions using the MRST2004 PDFs is very close to those based on the CTEQ6.1M PDFs, except in the $1.6 < |y| < 2.1$ bin, where the MRST2004 cross section is smaller, but within the PDF uncertainty on the CTEQ6.1M prediction. The results for jet size $D = 0.4$ and $D = 1.0$ show similar behavior.

The jet $p_{\rm T}$ spectra measured using two different clustering algorithms are expected to be different and can be compared only via theoretical predictions. The ratios of data/theory from two analyses were compared and the two ratios were in very good agreement with each other except in the $0.7 < |y| < 1.1$ region where the $k_{\rm T}$ cross section is $\sim 5\%$ higher. In this y region, the CDF calorimeter coverage is not uniform which leads to a large variation in calorimeter response and poor jet energy resolution. The two CDF analyses have similar experimental uncertainties. Thus one concludes that both the $k_{\rm T}$ and the cone clustering algorithms can be successfully used at the hadron colliders.

C. Determination of Gluon Distribution Function

The parton distribution function (PDF) $f_i(x, \mu)$, which is the probability to find a parton with a type $i = g, q, \bar{q}$ with momentum fraction x and mass scale μ, must be experimentally determined. The PDFs for gluons and light quarks and anti-quarks $(u, d, s, \bar{u}, \bar{d}, \bar{s})$ are normally determined from experimental data. For heavier quarks, i.e. c and b, they are normally dynamically generated through gluon splitting. Data from $e^{\pm}p$ collisions at the ZEUS and H1 experiments [3], νp, $\bar{\nu} p$, νn, $\bar{\nu} n$ collisions at CCFR/NuTeV [52], and Drell-Yan