C. Some Results from the CT10-NNLO Global Analysis

28 data sets used for the CT10-NNLO global analysis

CT10-NNLO Table			Ndp	Chi^2	Nsy	
1/	159	HERA1X0	579	617.	114	Combined HERA1 NC+CC DIS (2009)
2/	101	BcdF2pCor	339	392.	5	BCDMS collaboration
3/	102	BcdF2dCor	251	291.	5	BCDMS collaboration
4/	103	NmcF2pCor	201	333.	11	NMC collaboration
5/	104	NmcRatCor	123	151.	5	NMC collaboration
6/	108	cdhswf2	85	70.5	0	P Berge et al Z Phys C49 187 (1991)
7/	109	cdhswf3	96	77.9	0	P Berge et al Z Phys C49 187 (1991)
8/	110	ccfrf2.mi	69	67.8	5	Yang&Bodek model-independent
9/	111	ccfrf3.md	86	34.8	0	Shaevitz&Seligman model-dependent processed by SK
10/	201	e605	119	95.7	0	DY Q^3 dSig/dQ dy proton on heavy target
11/	203	e866f	15	9.7	0	E866 experiment: pd / 2pp
12/	225	cdfLasy	11	13.4		W production: decay lepton asymmetry CDF Run-1
13/	140	HN+67F2c	8	9.3	0	H1 neutral current charm
14/	143	HN+90X0c	10	16.3	8	H1 neutral current charm
15/	156	ZN+67F2c	18	13.4	0	ZEUS neutral current charm
16/	157	ZN+80F2c	27	16.7	0	ZEUS neutral current charm
17/	124	NuTvNuChXN	38	29.6	0	NuTev Neutrino Dimuon Reduced xSec
18/	125	NuTvNbChXN	33	28.4	0	NuTev Neutrino Dimuon Reduced xSec
19/	126	CcfrNuChXN	40	48.0	0	Ccfr Neutrino Dimuon Reduced xSec
20/	127	CcfrNbChXN	38	26.4	0	Ccfr Neutrino Dimuon Reduced xSec
21/	204	e866ppxf	184	234.	0	E866 experiment: DY pp: Q^3 dSig/dQ dxf
22/	260	ZyD02a	28	15.6	6	Z rapidity dist. (D0 TeV II-a)
23/	261	ZyCDF2	29	46.5	6	Z rapidity dist. (CDF TeV II)
24/	227	cdfLasy2	11	11.4	0	W production: decay lepton asymmetry CDF Run-2
25/	231	d02Easy1	12	26.0	0	W production: decay elec asymmetry D0 Run-2 Pt>25
26/	234	d02Masy1	9	14.8	0	W production: decay muon asymmetry D0 Run-2 Pt>20
27/	504	cdf2jtCor2	72	101.	24	(run II: cor.err; ptmin & ptmax)
28/	514	d02jtCor2	110	114.	23	(run II: cor.err; ptmin & ptmax)

HERA Combined Data

ep deep inelastic scattering

positron scattering , neutral current , #data points = 366

electron scattering , neutral current , #data points = 145

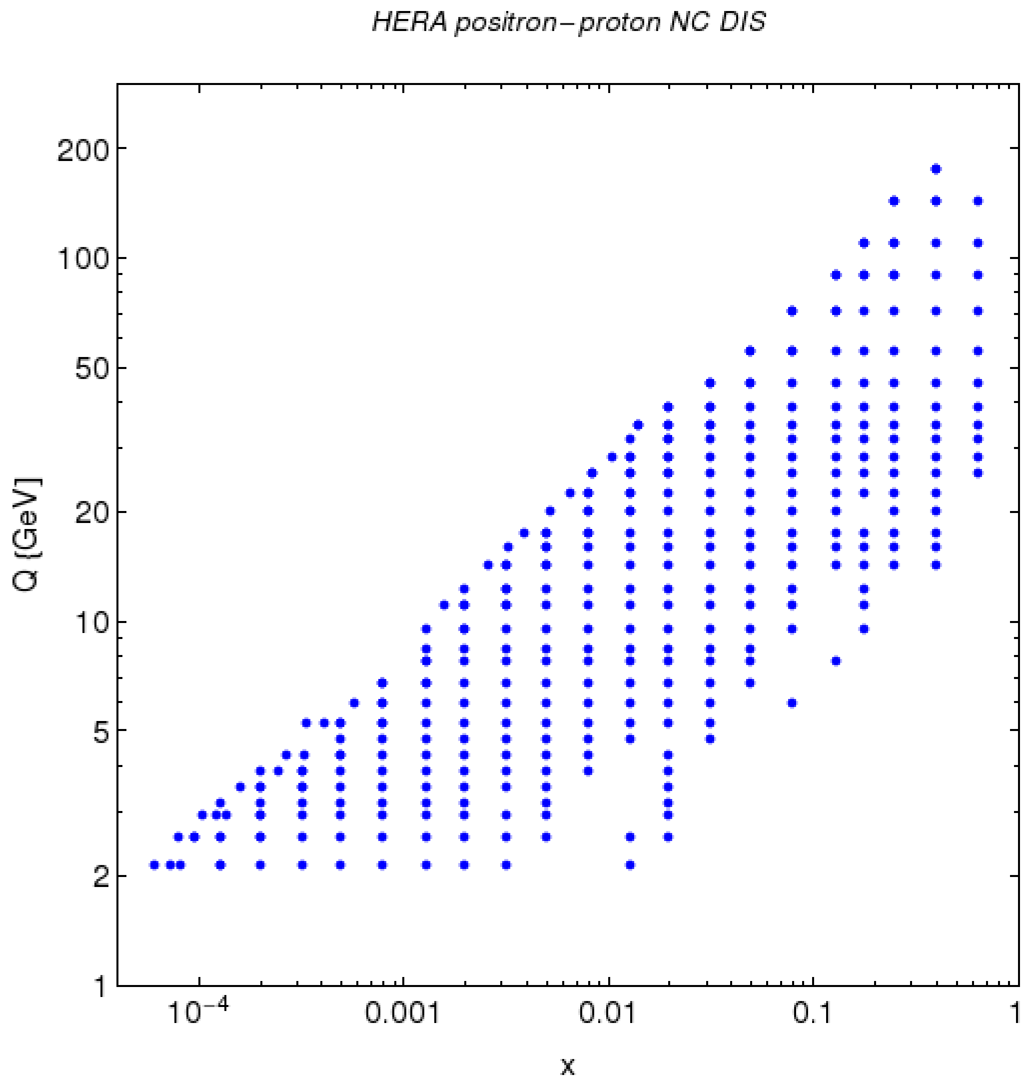
positron scattering , charged current , #data points = 34

electron scattering , charged current , #data points = 34

HERA Combined Data, positron – proton Neutral Current DIS

HERA : ē P → ē X

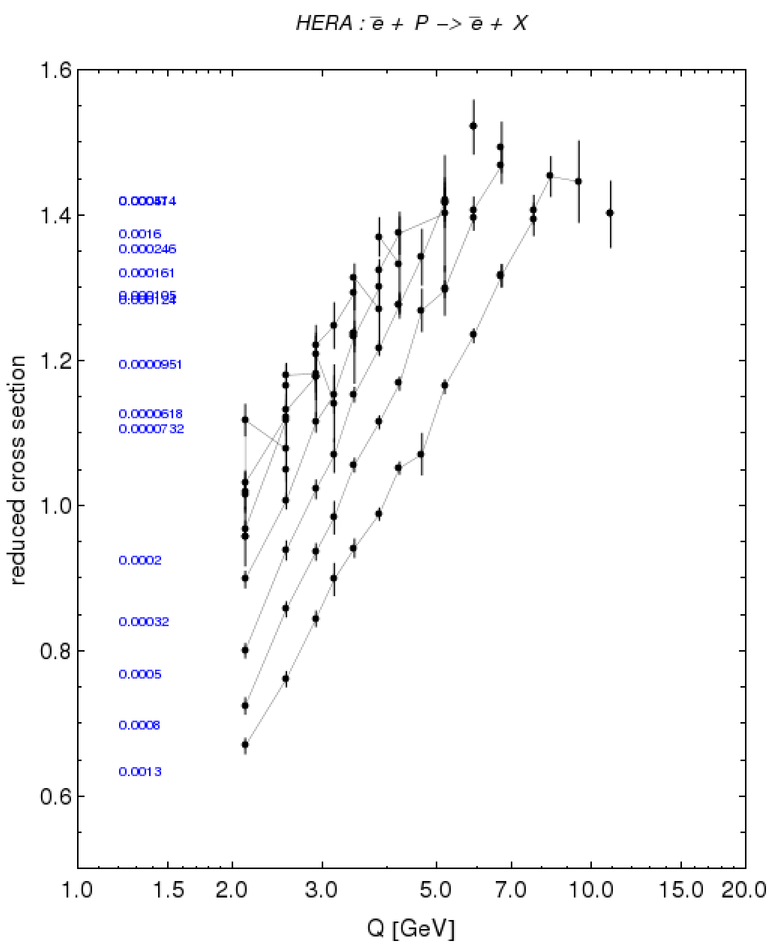
- Positron-proton, neutral current deep inelastic scattering
- Q and x are the kinematic variables for deep-inelastic scattering.
- The HERA combined data set – resolved H1 and ZEUS data

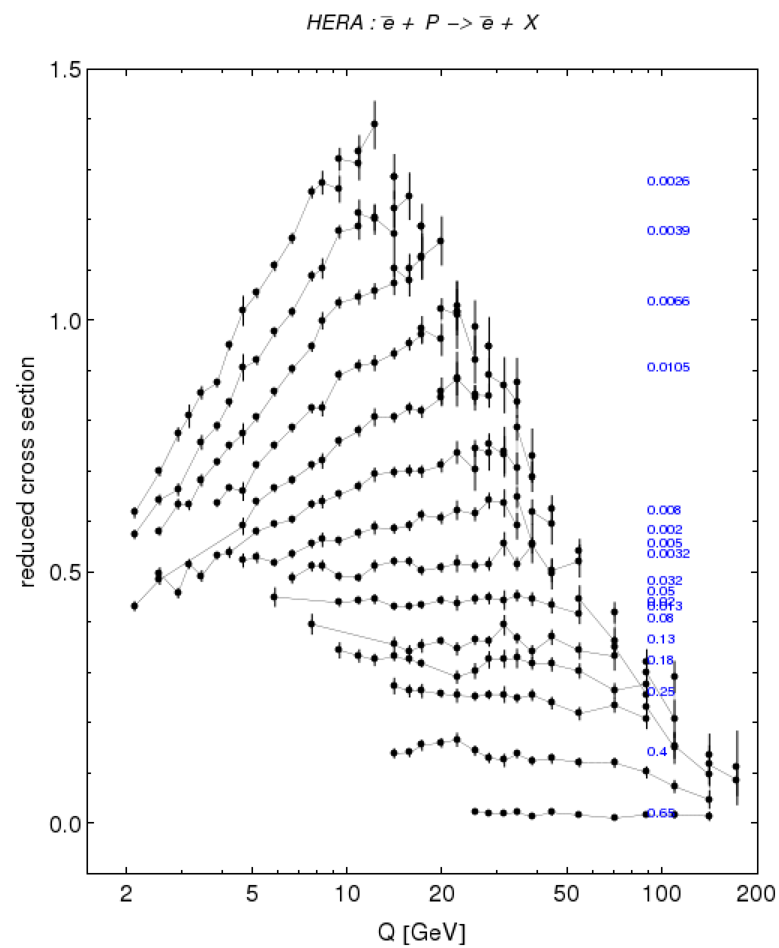


HERA Combined Data : positron – proton Neutral Current DIS

HERA : ē P → ē X

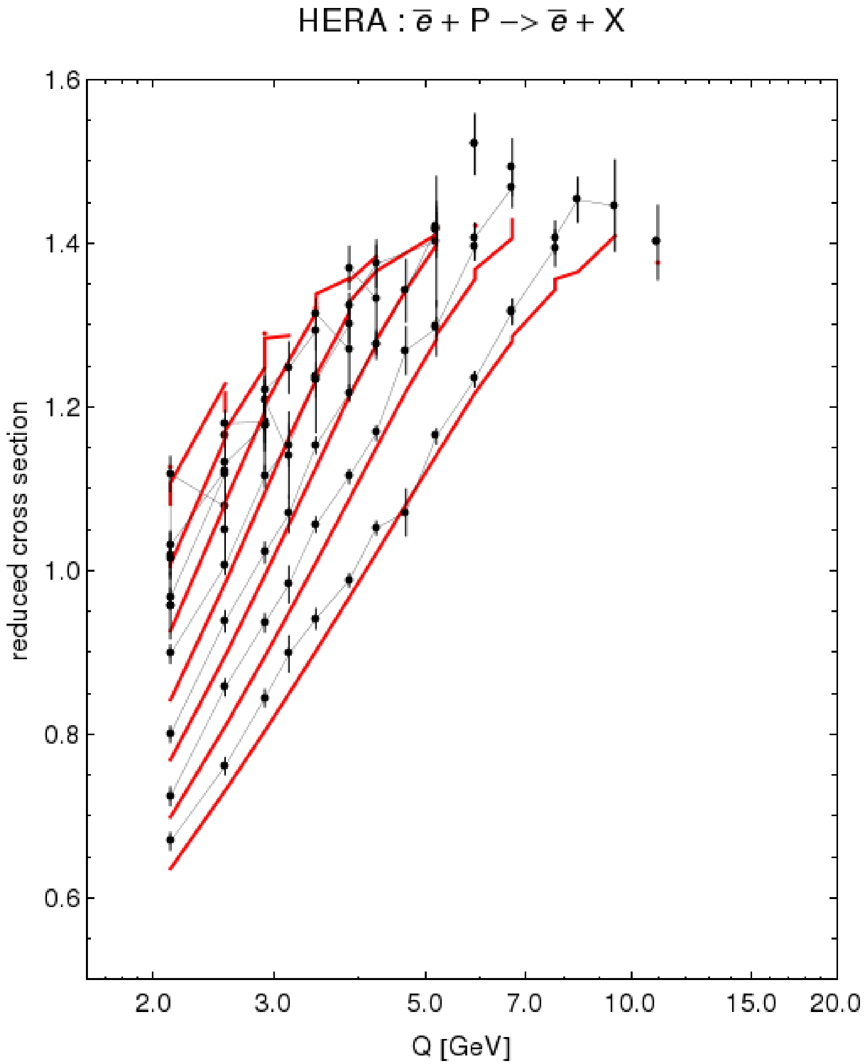
These graphs show the **reduced cross section** as a function of momentum transfer Q, for individual values of x.
(Q and x are the kinematic variables for deep-inelastic scattering.)

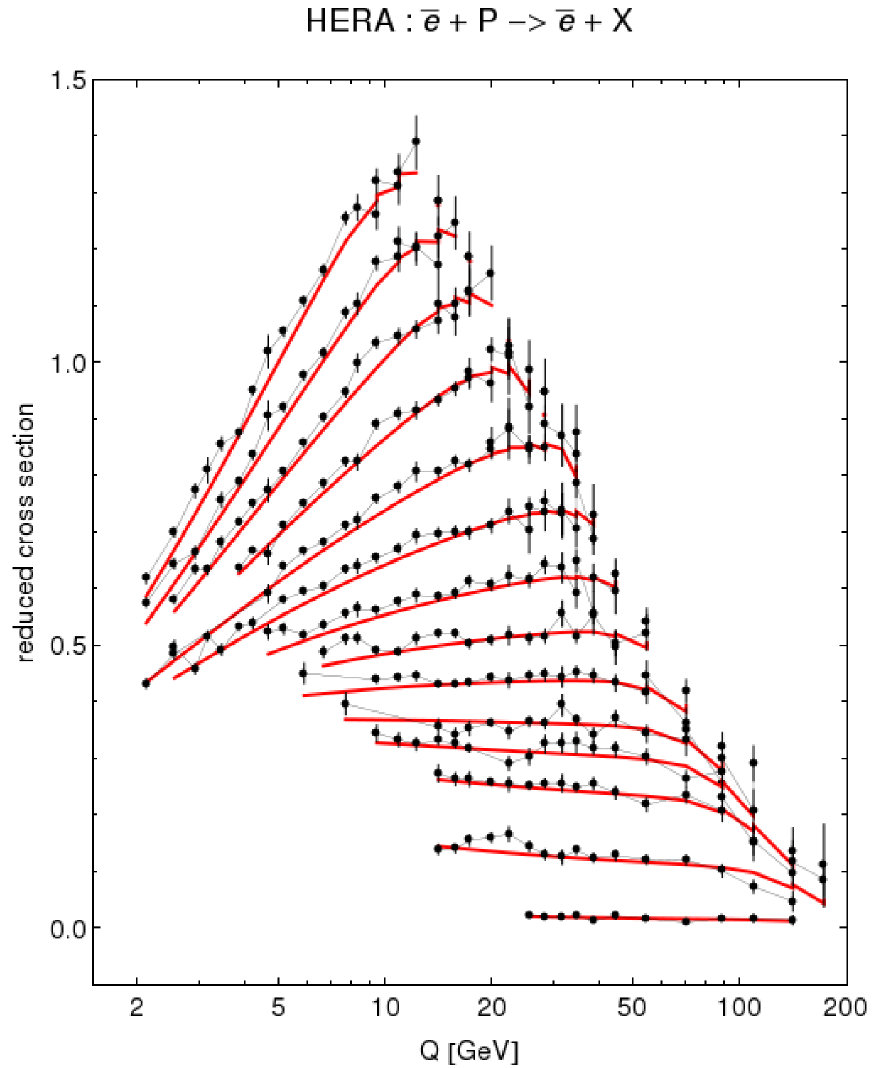




HERA : ē P → ē X

Red curves = CT10-NNLO theory





HERA : ē P → ē X

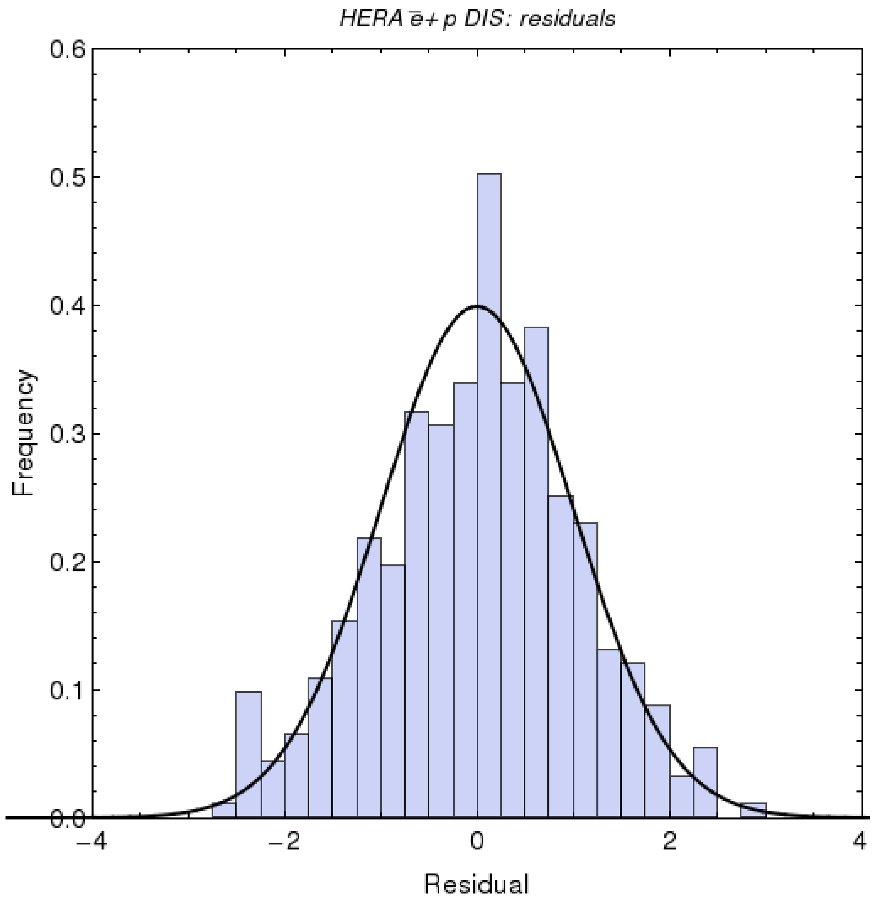
"Histogram of Residuals"

We define the *residual* by

$$\text{Residual}_i = \frac{D_i - T_i}{\sigma_{0i}}$$

(i = 1, 2, 3, …, NDP)

For good agreement between data and theory , the residuals should have a Gaussian distribution with mean = 0 and standard deviation = 1.



Theory = CT10-NNLO;

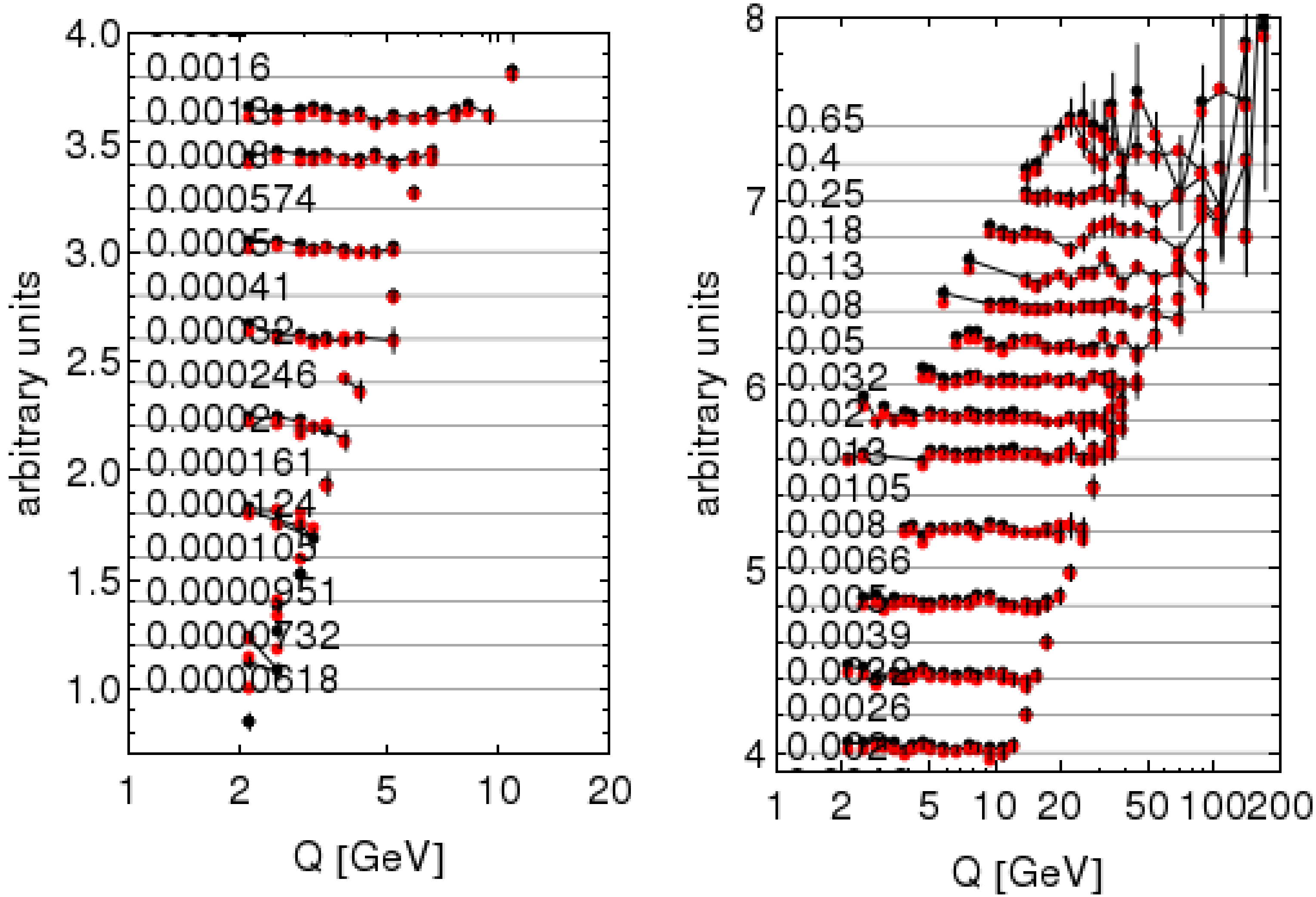
Data = HERA combined data with systematic errors;

Black curve = ideal Gaussian distribution

HERA Combined Data : positron – proton Neutral Current DIS

HERA : ē P → ē X

HERA Data / Theory : ē + P –> ē + X



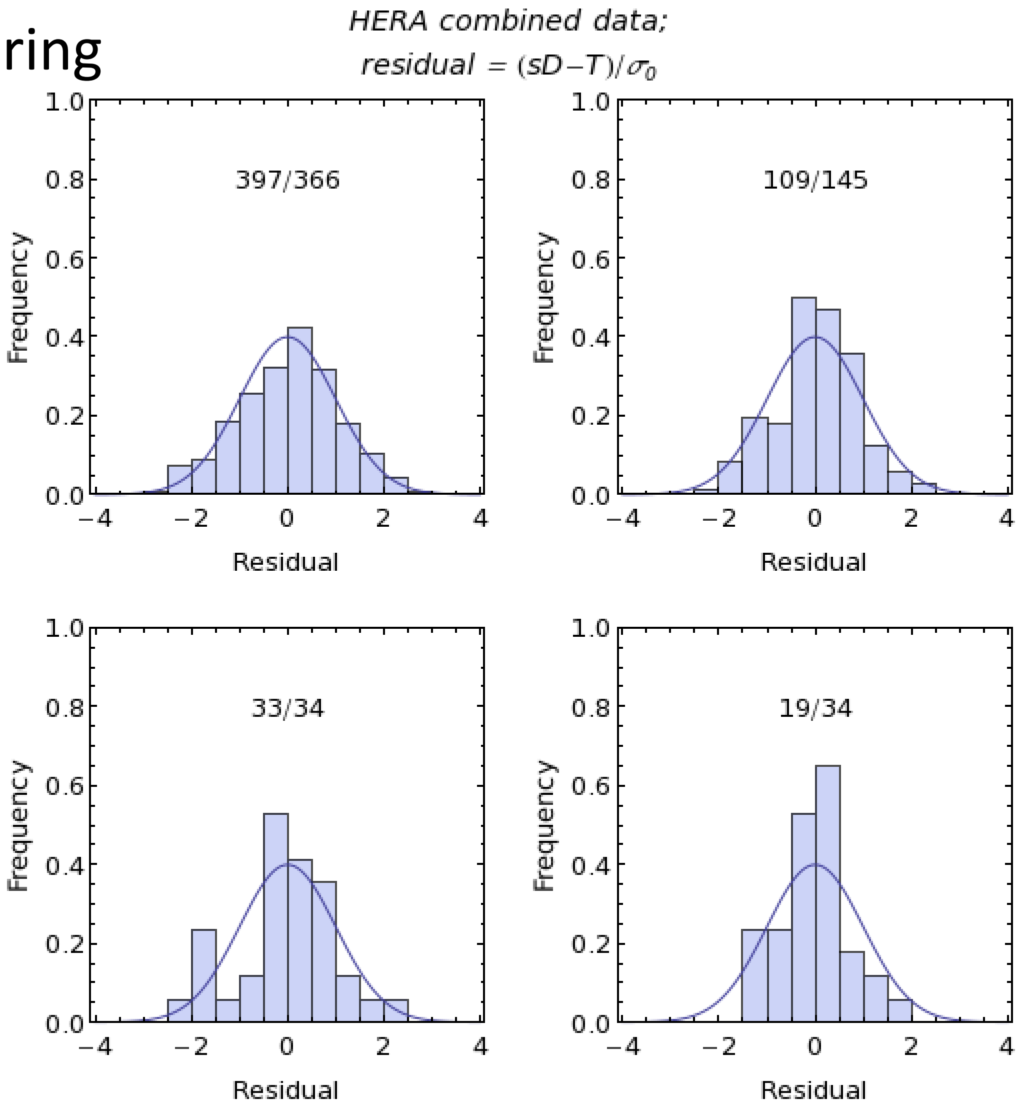
HERA Combined Data:
e± p deep inelastic scattering

e+ p , NC DIS
χ2 /N = 397/366

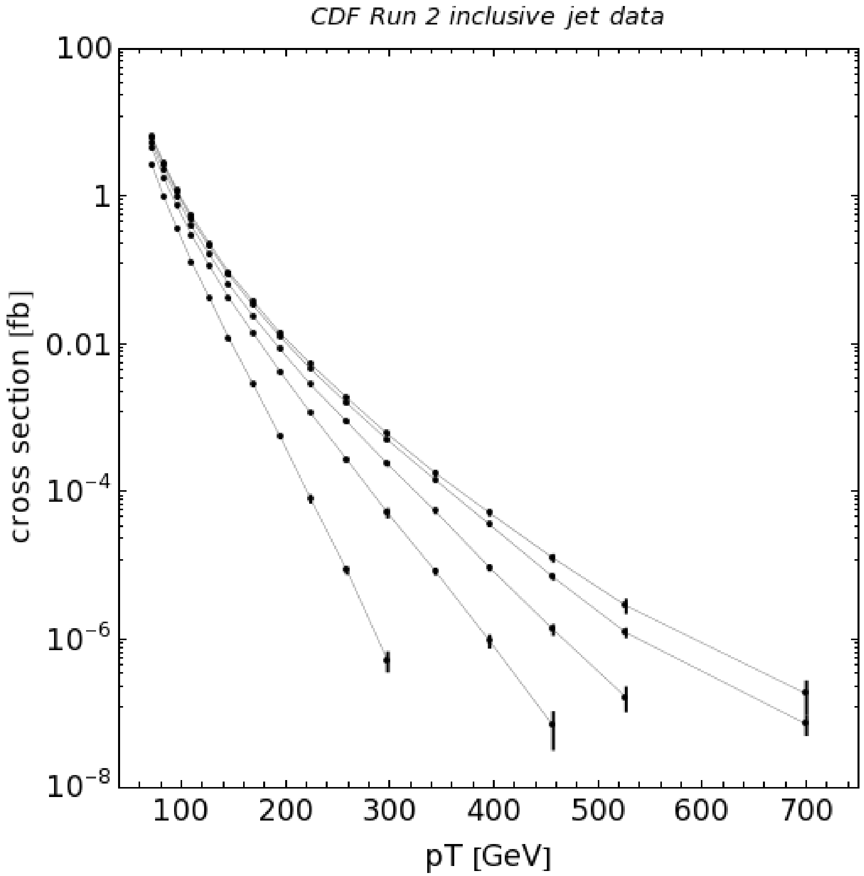
e- p , NC DIS
χ2 /N =109/145

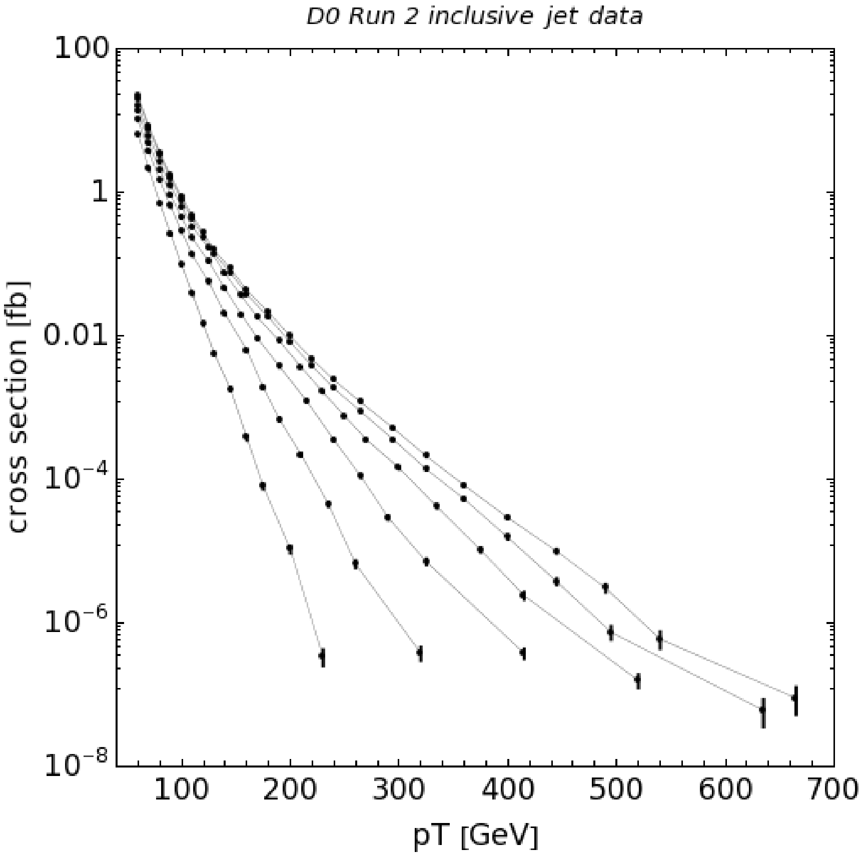
e+ p , CC DIS
χ2 /N =33/34

e- p , CC DIS
χ2 /N = 19/34

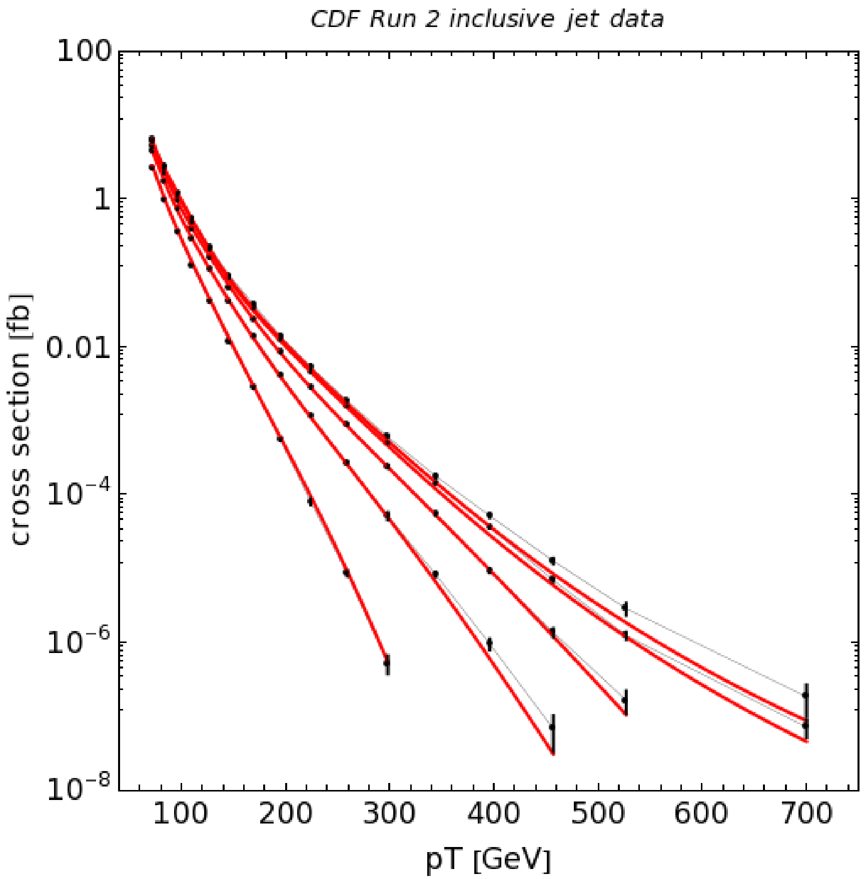


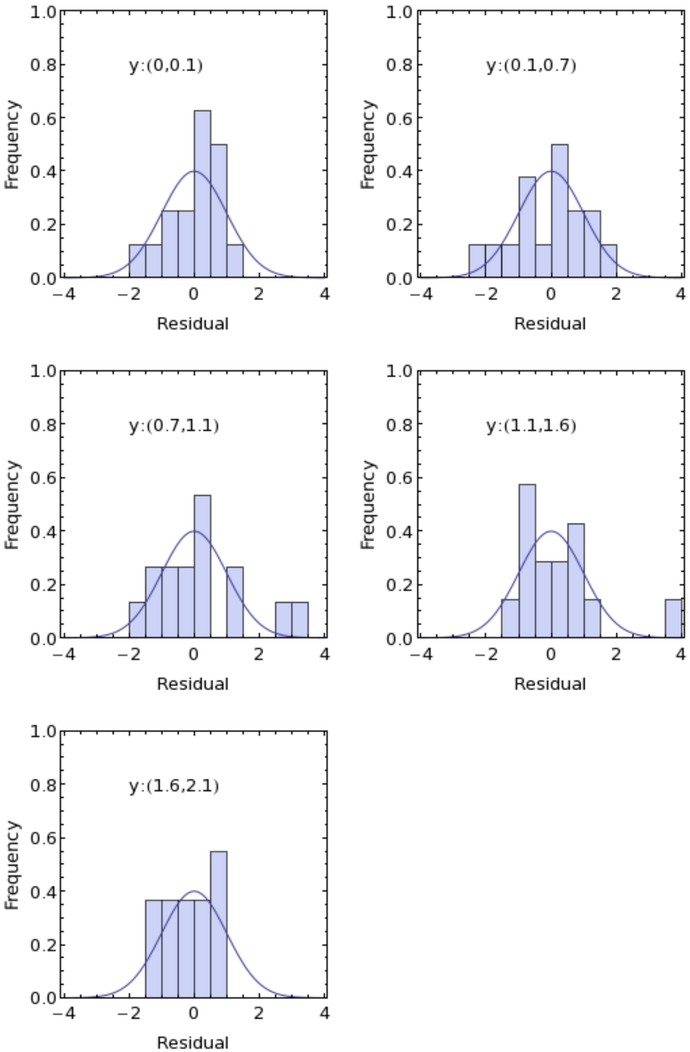
Inclusive Jet Production at the Tevatron



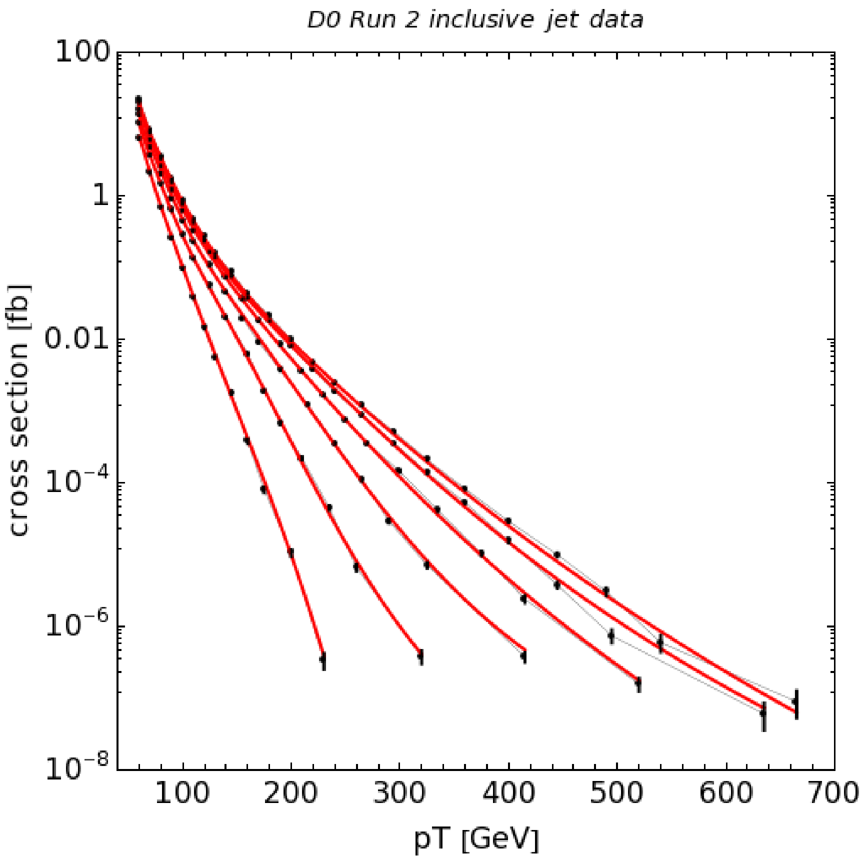


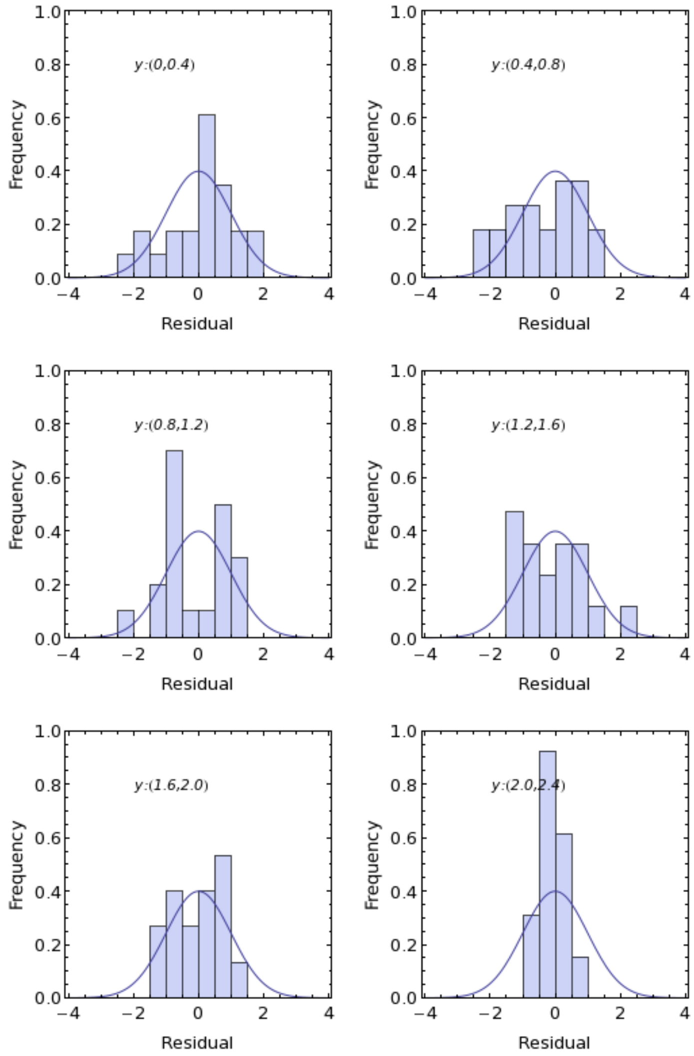
$(N_{dp}, N_{sy}) = (72, 25)$ (110; 23)





The red curves are the theoretical calculations with CT10-NNLO PDFs.





The red curves are the theoretical calculations with CT10-NNLO PDFs.