Figure showing four panels of $d^2\sigma/dxdQ^2$ versus x for $e^+p \rightarrow \bar{\nu}X$ (CC) at $Q^2 = 2000$, 3000, 5000, and 8000, comparing HERA1+2 Data with HERAPDF and CTEQ14NLO predictions, with Theory/Data ratio panels below each.

Top-left panel:
σ_{red}

$e^+p \rightarrow e^+X$ (NC), $E_p = 820$ GeV

HERA1+2 Data $Q^2 = 90$

δ uncorrelated

δ total

Theory + shifts

HERAPDF

CTEQ14NLO

Theory/Data

x

Top-right panel:
σ_{red}

$e^+p \rightarrow e^+X$ (NC), $E_p = 820$ GeV

HERA1+2 Data $Q^2 = 120$

δ uncorrelated

δ total

Theory + shifts

HERAPDF

CTEQ14NLO

Theory/Data

x

Bottom-left panel:
σ_{red}

$e^+p \rightarrow e^+X$ (NC), $E_p = 820$ GeV

HERA1+2 Data $Q^2 = 150$

δ uncorrelated

δ total

Theory + shifts

HERAPDF

CTEQ14NLO

Theory/Data

x

Bottom-right panel:
σ_{red}

$e^+p \rightarrow e^+X$ (NC), $E_p = 820$ GeV

HERA1+2 Data $Q^2 = 200$

δ uncorrelated

δ total

Theory + shifts

HERAPDF

CTEQ14NLO

Theory/Data

x

Top-left panel: σ_{red} vs x and Theory/Data. $e^+p \rightarrow e^+X$ (NC), $E_p = 820$ GeV. HERA1+2 Data $Q^2 = 250$, δ uncorrelated, δ total, Theory + shifts, HERAPDF, CTEQ14NLO.

Top-right panel: $e^+p \rightarrow e^+X$ (NC), $E_p = 820$ GeV. HERA1+2 Data $Q^2 = 300$, δ uncorrelated, δ total, Theory + shifts, HERAPDF, CTEQ14NLO.

Bottom-left panel: $e^+p \rightarrow e^+X$ (NC), $E_p = 820$ GeV. HERA1+2 Data $Q^2 = 400$, δ uncorrelated, δ total, Theory + shifts, HERAPDF, CTEQ14NLO.

Bottom-right panel: $e^+p \rightarrow e^+X$ (NC), $E_p = 820$ GeV. HERA1+2 Data $Q^2 = 500$, δ uncorrelated, δ total, Theory + shifts, HERAPDF, CTEQ14NLO.

Top-left panel:
σ_{red} vs x

$e^+p \rightarrow e^+X$ (NC), $E_p = 820$ GeV

HERA1+2 Data $Q^2 = 1500$
δ uncorrelated
δ total
Theory + shifts
HERAPDF
CTEQ14NLO

Theory/Data

Top-right panel:
σ_{red} vs x

$e^+p \rightarrow e^+X$ (NC), $E_p = 820$ GeV

HERA1+2 Data $Q^2 = 2000$
δ uncorrelated
δ total
Theory + shifts
HERAPDF
CTEQ14NLO

Theory/Data

Bottom-left panel:
σ_{red} vs x

$e^+p \rightarrow e^+X$ (NC), $E_p = 820$ GeV

HERA1+2 Data $Q^2 = 3000$
δ uncorrelated
δ total
Theory + shifts
HERAPDF
CTEQ14NLO

Theory/Data

Bottom-right panel:
σ_{red} vs x

$e^+p \rightarrow e^+X$ (NC), $E_p = 820$ GeV

HERA1+2 Data $Q^2 = 5000$
δ uncorrelated
δ total
Theory + shifts
HERAPDF
CTEQ14NLO

Theory/Data

Top-left panel:

$e^+p \rightarrow e^+X$ (NC)

σ_{red}

HERA1+2 Data $Q^2 = 3.5$
δ uncorrelated
δ total
Theory + shifts
HERAPDF
CTEQ14NLO

Theory/Data

x

Top-right panel:

$e^+p \rightarrow e^+X$ (NC)

σ_{red}

HERA1+2 Data $Q^2 = 4.5$
δ uncorrelated
δ total
Theory + shifts
HERAPDF
CTEQ14NLO

Theory/Data

x

Bottom-left panel:

$e^+p \rightarrow e^+X$ (NC)

σ_{red}

HERA1+2 Data $Q^2 = 6.5$
δ uncorrelated
δ total
Theory + shifts
HERAPDF
CTEQ14NLO

Theory/Data

x

Bottom-right panel:

$e^+p \rightarrow e^+X$ (NC)

σ_{red}

HERA1+2 Data $Q^2 = 8.5$
δ uncorrelated
δ total
Theory + shifts
HERAPDF
CTEQ14NLO

Theory/Data

x

Top-left panel: $e^+p \rightarrow e^+X$ (NC); HERA1+2 Data $Q^2 = 10$; δ uncorrelated; δ total; Theory + shifts; HERAPDF; CTEQ14NLO. Lower panel: Theory/Data vs x.

Top-right panel: $e^+p \rightarrow e^+X$ (NC); HERA1+2 Data $Q^2 = 12$; δ uncorrelated; δ total; Theory + shifts; HERAPDF; CTEQ14NLO. Lower panel: Theory/Data vs x.

Bottom-left panel: $e^+p \rightarrow e^+X$ (NC); HERA1+2 Data $Q^2 = 15$; δ uncorrelated; δ total; Theory + shifts; HERAPDF; CTEQ14NLO. Lower panel: Theory/Data vs x.

Bottom-right panel: $e^+p \rightarrow e^+X$ (NC); HERA1+2 Data $Q^2 = 18$; δ uncorrelated; δ total; Theory + shifts; HERAPDF; CTEQ14NLO. Lower panel: Theory/Data vs x.

Figure showing reduced cross section σ_{red} versus x for $e^+p \rightarrow e^+X$ (NC) at four values of $Q^2 = 60, 70, 90, 120$, comparing HERA1+2 Data with HERAPDF and CTEQ14NLO predictions, with Theory/Data ratio panels below each plot.

Top-left panel:
$e^+p \rightarrow e^+X$ (NC)
σ_{red}
HERA1+2 Data $Q^2 = 400$
δ uncorrelated
δ total
Theory + shifts
HERAPDF
CTEQ14NLO
Theory/Data
x

Top-right panel:
$e^+p \rightarrow e^+X$ (NC)
σ_{red}
HERA1+2 Data $Q^2 = 500$
δ uncorrelated
δ total
Theory + shifts
HERAPDF
CTEQ14NLO
Theory/Data
x

Bottom-left panel:
$e^+p \rightarrow e^+X$ (NC)
σ_{red}
HERA1+2 Data $Q^2 = 650$
δ uncorrelated
δ total
Theory + shifts
HERAPDF
CTEQ14NLO
Theory/Data
x

Bottom-right panel:
$e^+p \rightarrow e^+X$ (NC)
σ_{red}
HERA1+2 Data $Q^2 = 800$
δ uncorrelated
δ total
Theory + shifts
HERAPDF
CTEQ14NLO
Theory/Data
x

Figure showing reduced cross section σ_{red} versus x for $e^+p \rightarrow e^+X$ (NC), $E_p = 460$ GeV at four values of Q^2 (60, 90, 120, 150), comparing HERA1+2 Data with HERAPDF, Theory + shifts, and CTEQ14NLO predictions. Each panel includes a Theory/Data ratio sub-panel.

Top-left panel:
$e^+p \rightarrow e^+X$ (NC), $E_p = 460$ GeV
σ_{red}
HERA1+2 Data $Q^2 = 500$
δ uncorrelated
δ total
Theory + shifts
HERAPDF
CTEQ14NLO
Theory/Data
x

Top-right panel:
$e^+p \rightarrow e^+X$ (NC), $E_p = 460$ GeV
σ_{red}
HERA1+2 Data $Q^2 = 650$
δ uncorrelated
δ total
Theory + shifts
HERAPDF
CTEQ14NLO
Theory/Data
x

Bottom-left panel:
$e^+p \rightarrow e^+X$ (NC), $E_p = 460$ GeV
σ_{red}
HERA1+2 Data $Q^2 = 800$
δ uncorrelated
δ total
Theory + shifts
HERAPDF
CTEQ14NLO
Theory/Data
x

Bottom-right panel:
$e^+p \rightarrow e^+X$ (NC), $E_p = 575$ GeV
σ_{red}
HERA1+2 Data $Q^2 = 3.5$
δ uncorrelated
δ total
Theory + shifts
HERAPDF
CTEQ14NLO
Theory/Data
x

Figure showing reduced cross section σ_{red} for $e^+p \rightarrow e^+X$ (NC), $E_p = 575$ GeV, at four values of Q^2 (5, 6.5, 8.5, 12), with HERA1+2 Data, δ uncorrelated, δ total, HERAPDF, Theory + shifts, and CTEQ14NLO comparisons. Each panel includes a Theory/Data ratio subplot.

Figure showing $e^+p \rightarrow e^+X$ (NC), $E_p = 575$ GeV reduced cross sections σ_{red} versus x for four values of Q^2 (45, 60, 90, 120), comparing HERA1+2 Data with HERAPDF, Theory + shifts, and CTEQ14NLO. Lower panels show Theory/Data ratios.

Figure: Four panels showing $e^+p \rightarrow e^+X$ (NC), $E_p = 575$ GeV. Each panel plots σ_{red} versus x with a Theory/Data ratio subpanel. The four panels correspond to HERA1+2 Data at $Q^2 = 150$, $Q^2 = 200$, $Q^2 = 250$, and $Q^2 = 300$. Legends indicate δ uncorrelated, δ total, HERAPDF, Theory + shifts, and CTEQ14NLO.

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19 **PDF_nuisance_param_19**

18 **PDF_nuisance_param_18**

17 **PDF_nuisance_param_17**

16 **PDF_nuisance_param_16**

15 **PDF_nuisance_param_15**

14 **PDF_nuisance_param_14**

13 **PDF_nuisance_param_13**

12 **PDF_nuisance_param_12**

11 **PDF_nuisance_param_11**

10 **PDF_nuisance_param_10**

9 **PDF_nuisance_param_09**

8 **PDF_nuisance_param_08**

7 **PDF_nuisance_param_07**

6 **PDF_nuisance_param_06**

5 **PDF_nuisance_param_05**

4 **PDF_nuisance_param_04**

3 **PDF_nuisance_param_03**

2 **PDF_nuisance_param_02**

1 **PDF_nuisance_param_01**
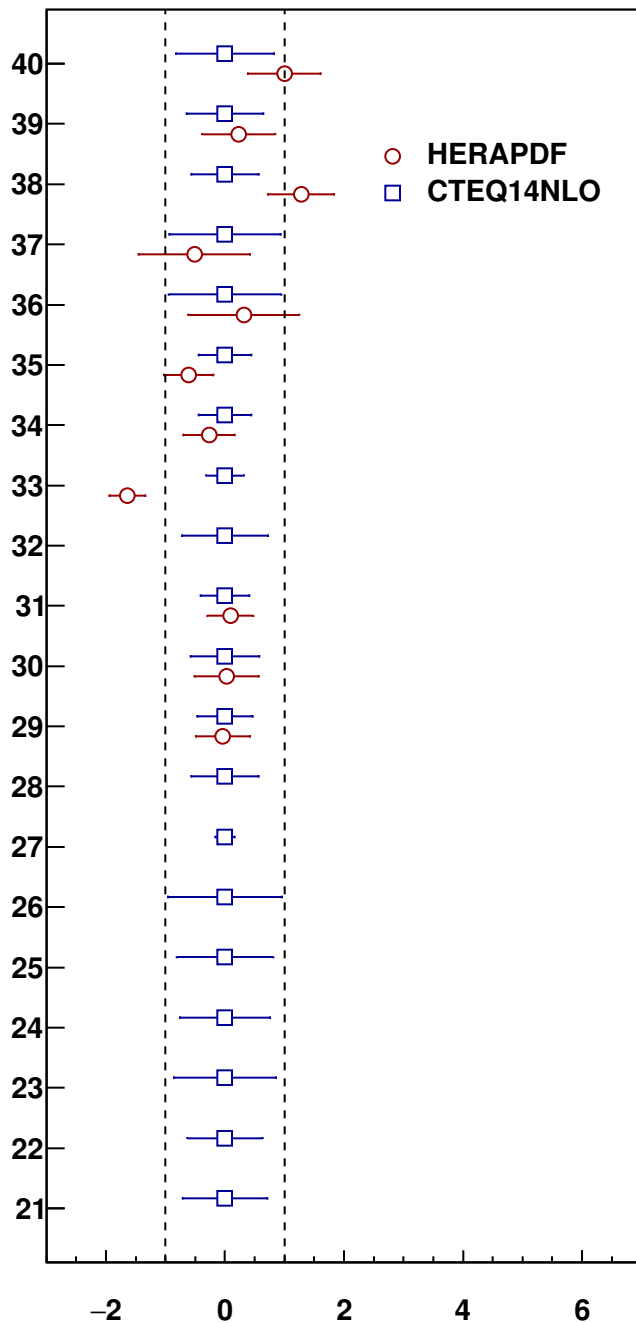
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39	**sysHZComb1004**
38	**sysHZComb1003**
37	**sysHZComb1002**
36	**sysHZComb1001**
35	**proc_tb24**
34	**proc_tb23**
33	**proc_tb22**
32	**proc_tb21**
31	**proc_nrl**
30	**proc_had**
29	**proc_gp**
28	**PDF_nuisance_param_28**
27	**PDF_nuisance_param_27**
26	**PDF_nuisance_param_26**
25	**PDF_nuisance_param_25**
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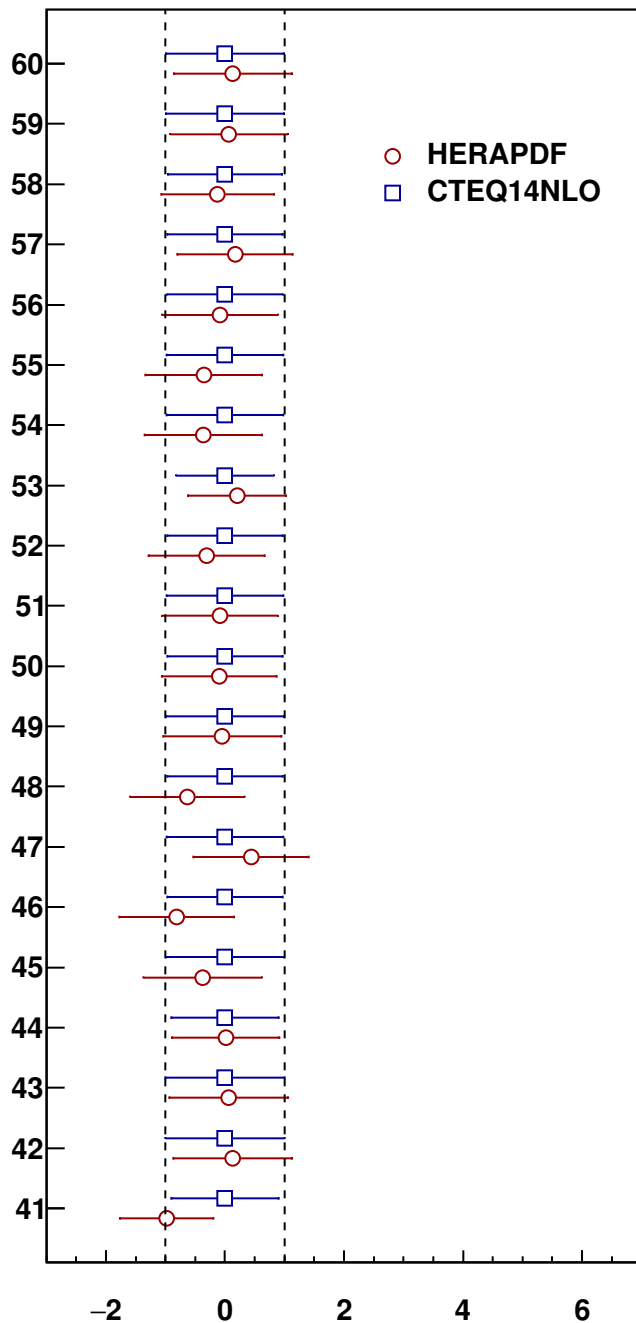
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59	sysHZComb1024
58	sysHZComb1023
57	sysHZComb1022
56	sysHZComb1021
55	sysHZComb1020
54	sysHZComb1019
53	sysHZComb1018
52	sysHZComb1017
51	sysHZComb1016
50	sysHZComb1015
49	sysHZComb1014
48	sysHZComb1013
47	sysHZComb1012
46	sysHZComb1011
45	sysHZComb1010
44	sysHZComb1009
43	sysHZComb1008
42	sysHZComb1007
41	sysHZComb1006

Legend: HERAPDF (○, red), CTEQ14NLO (□, blue)
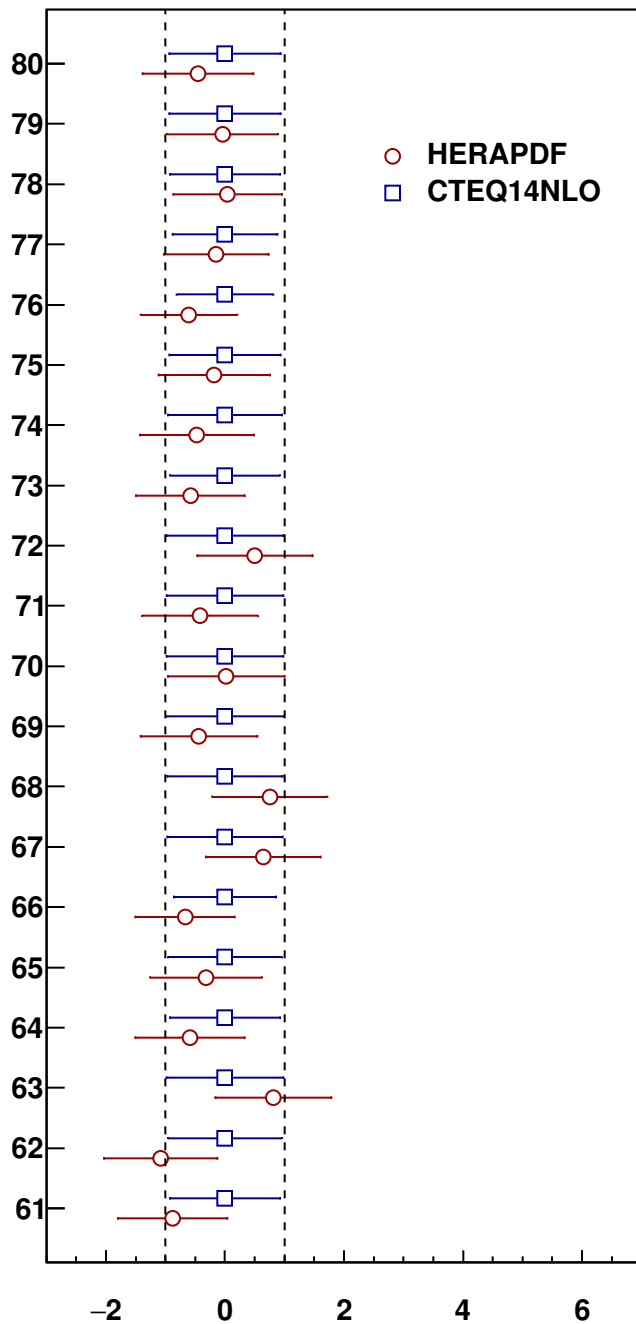
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78	sysHZComb1043
77	sysHZComb1042
76	sysHZComb1041
75	sysHZComb1040
74	sysHZComb1039
73	sysHZComb1038
72	sysHZComb1037
71	sysHZComb1036
70	sysHZComb1035
69	sysHZComb1034
68	sysHZComb1033
67	sysHZComb1032
66	sysHZComb1031
65	sysHZComb1030
64	sysHZComb1029
63	sysHZComb1028
62	sysHZComb1027
61	sysHZComb1026

Legend: HERAPDF (○), CTEQ14NLO (□)
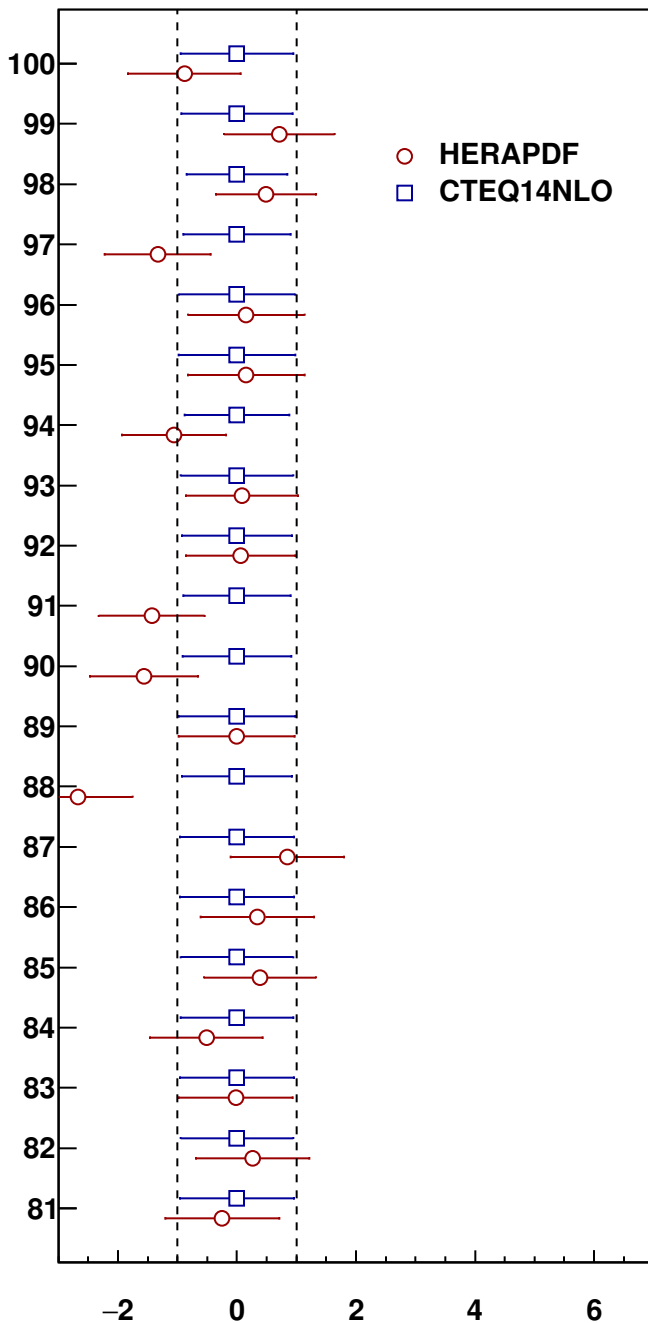
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98	sysHZComb1063
97	sysHZComb1062
96	sysHZComb1061
95	sysHZComb1060
94	sysHZComb1059
93	sysHZComb1058
92	sysHZComb1057
91	sysHZComb1056
90	sysHZComb1055
89	sysHZComb1054
88	sysHZComb1053
87	sysHZComb1052
86	sysHZComb1051
85	sysHZComb1050
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83	sysHZComb1048
82	sysHZComb1047
81	sysHZComb1046
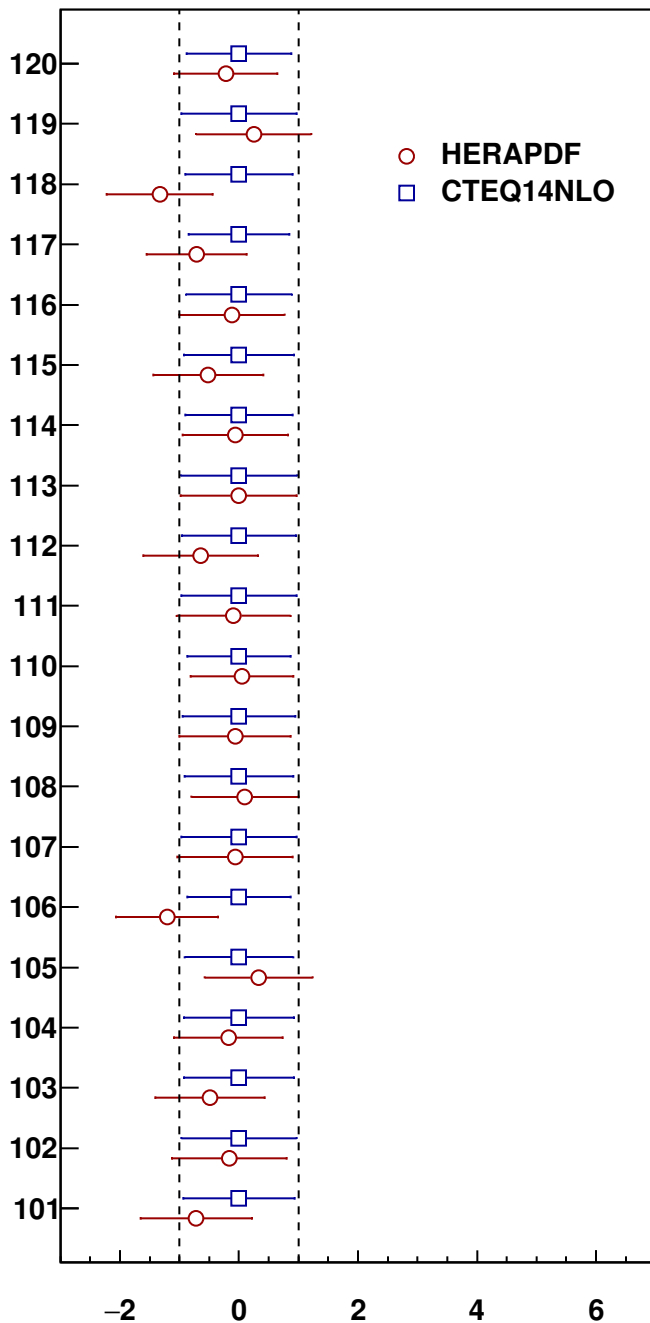
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119	sysHZComb1084
118	sysHZComb1083
117	sysHZComb1082
116	sysHZComb1081
115	sysHZComb1080
114	sysHZComb1079
113	sysHZComb1078
112	sysHZComb1077
111	sysHZComb1076
110	sysHZComb1075
109	sysHZComb1074
108	sysHZComb1073
107	sysHZComb1072
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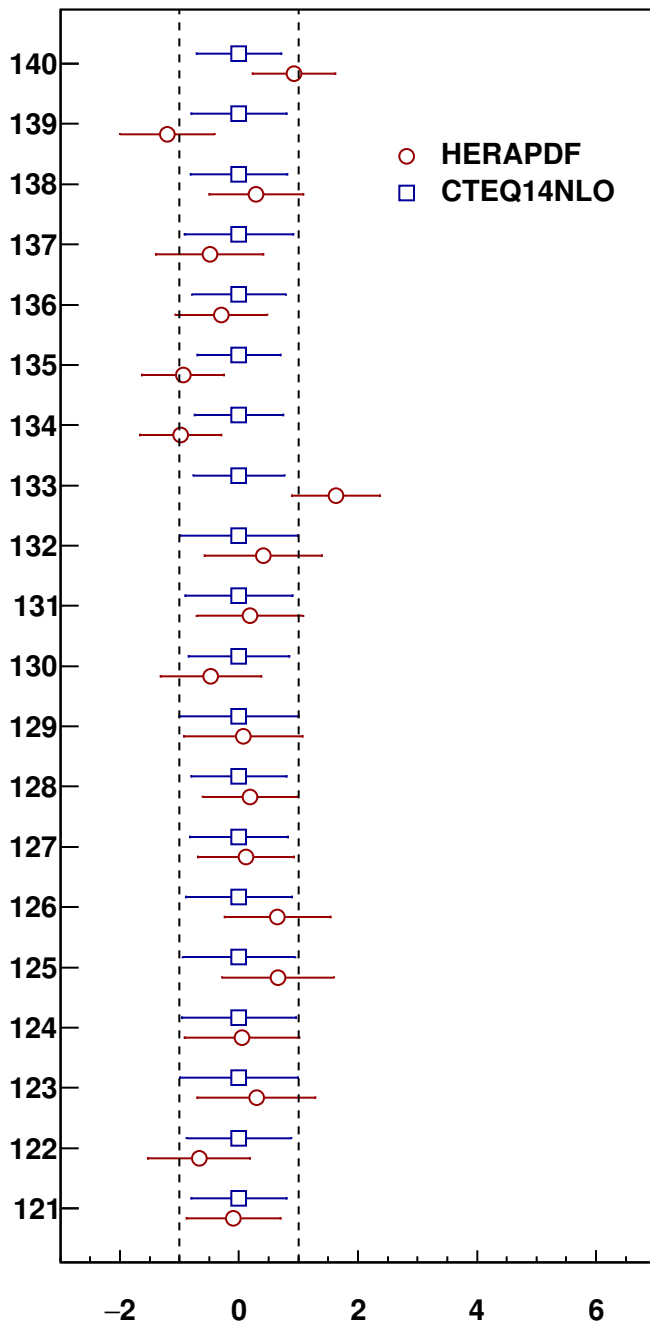
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138	**sysHZComb1103**
137	**sysHZComb1102**
136	**sysHZComb1101**
135	**sysHZComb1100**
134	**sysHZComb1099**
133	**sysHZComb1098**
132	**sysHZComb1097**
131	**sysHZComb1096**
130	**sysHZComb1095**
129	**sysHZComb1094**
128	**sysHZComb1093**
127	**sysHZComb1092**
126	**sysHZComb1091**
125	**sysHZComb1090**
124	**sysHZComb1089**
123	**sysHZComb1088**
122	**sysHZComb1087**
121	**sysHZComb1086**

Legend: HERAPDF, CTEQ14NLO
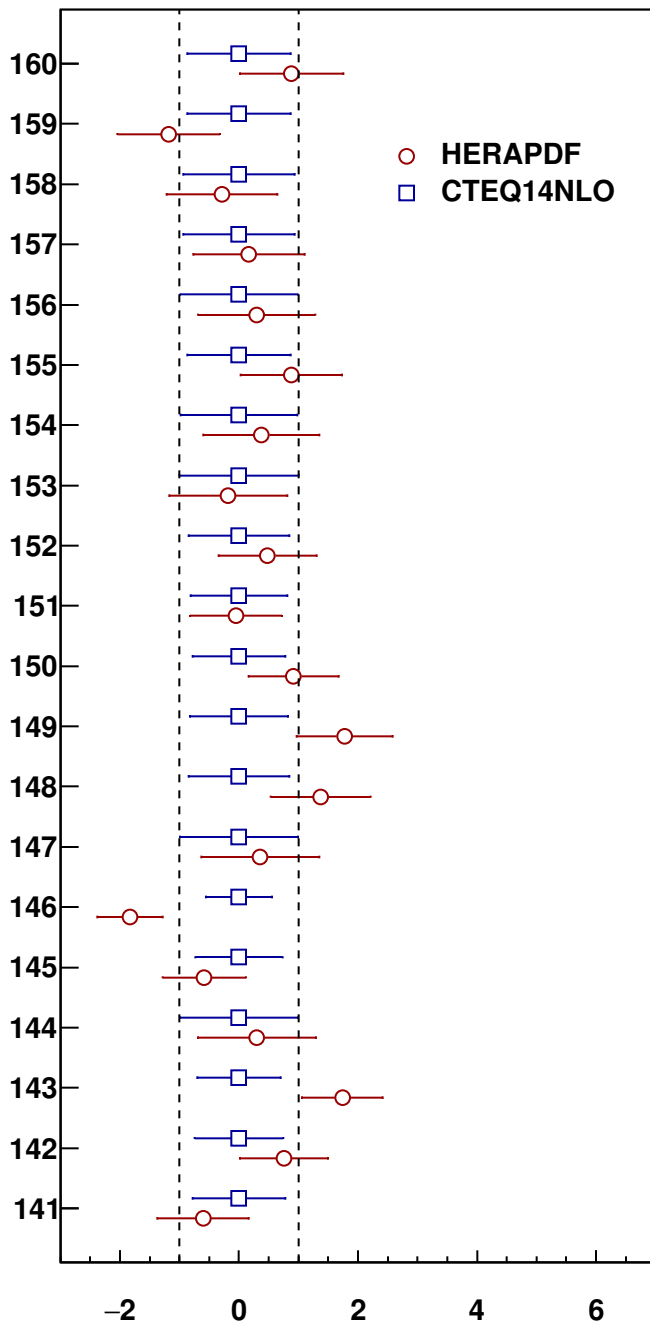
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155 sysHZComb1120

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153 sysHZComb1118

152 sysHZComb1117

151 sysHZComb1116

150 sysHZComb1115

149 sysHZComb1114
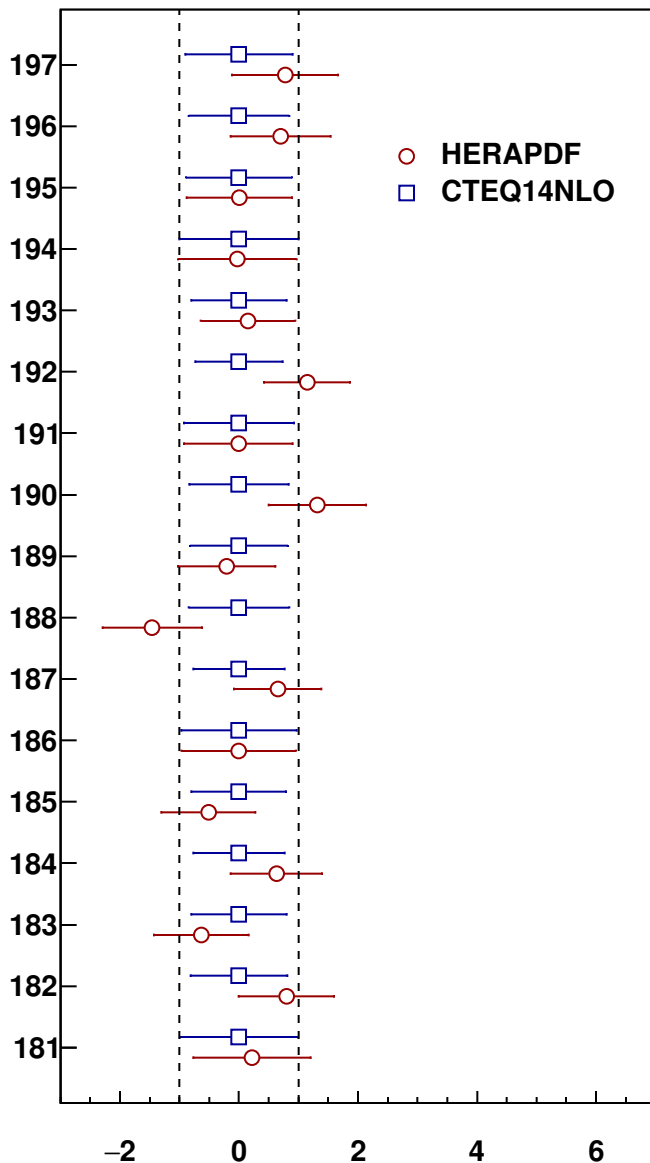
148 sysHZComb1113

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141 sysHZComb1106
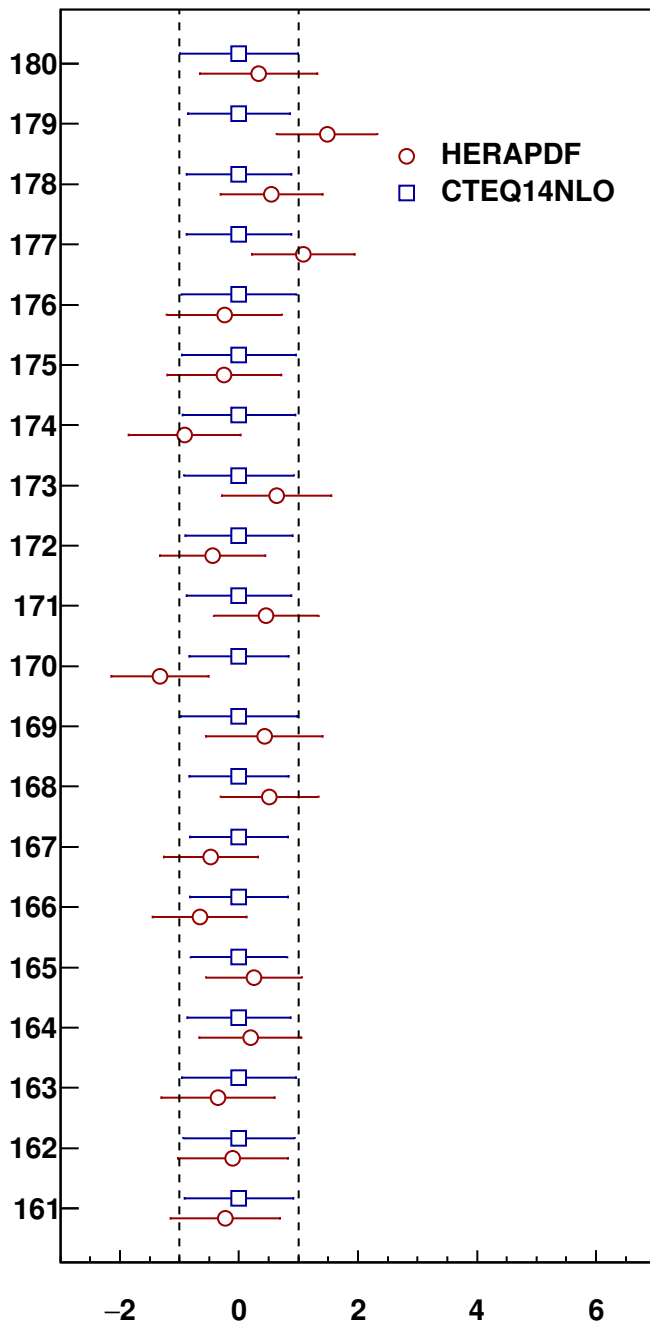
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169	sysHZComb1134
168	sysHZComb1133
167	sysHZComb1132
166	sysHZComb1131
165	sysHZComb1130
164	sysHZComb1129
163	sysHZComb1128
162	sysHZComb1127
161	sysHZComb1126

197 **sysHZComb1162**

196 **sysHZComb1161**

195 **sysHZComb1160**

194 **sysHZComb1159**

193 **sysHZComb1158**

192 **sysHZComb1157**

191 **sysHZComb1156**

190 **sysHZComb1155**

189 **sysHZComb1154**

188 **sysHZComb1153**

187 **sysHZComb1152**

186 **sysHZComb1151**

185 **sysHZComb1150**

184 **sysHZComb1149**

183 **sysHZComb1148**

182 **sysHZComb1147**

181 **sysHZComb1146**

Dataset	HERAPDF	CTEQ14NLO
HERA1+2 CCep	45 / 39	0 / 39
HERA1+2 CCem	56 / 42	0 / 42
HERA1+2 NCem	219 / 159	0 / 159
HERA1+2 NCep 820	66 / 70	0 / 70
HERA1+2 NCep 920	443 / 377	0 / 377
HERA1+2 NCep 460	218 / 204	0 / 204
HERA1+2 NCep 575	219 / 254	0 / 254
Correlated χ^2	92	0
Log penalty χ^2	+5.9	+0.00
Total χ^2 / dof	1363 / 1131	0 / 1145
χ^2 p-value	0.00	1.00

Parameter	HERAPDF	CTEQ14NLO
'Bg'	-0.06 ± 0.24	-
'Cg'	5.6 ± 2.1	-
'Aprig'	0.17 ± 0.21	-
'Bprig'	-0.383 ± 0.017	-
'Cprig'	25.00	-
'Buv'	0.811 ± 0.040	-
'Cuv'	4.824 ± 0.087	-
'Euv'	9.9 ± 1.8	-
'Bdv'	1.030 ± 0.088	-
'Cdv'	4.85 ± 0.39	-
'CUbar'	7.1 ± 2.2	-
'DUbar'	1.5 ± 3.1	-
'ADbar'	0.269 ± 0.020	-
'BDbar'	-0.127 ± 0.011	-
'CDbar'	9.6 ± 2.5	-
'alphas'	0.1180	-
'fs'	0.4000	-
Fit status	converged	not-a-fit
Uncertainties	migrad-hesse	not-a-fit