Figure: Four panels showing $e^+p \rightarrow \bar{\nu}X$ (CC) at $Q^2 = 2000$, 3000, 5000, and 8000.

Figure showing $e^+p \rightarrow e^+X$ (NC), $E_p = 820$ GeV for four values of Q^2 (6.5, 8.5, 10, 12). Each panel plots σ_{red} and Theory/Data versus x, comparing HERA1+2 Data, HERAPDF, CTEQ14NLO and NNPDF3.0_nlo, with δ uncorrelated, δ total, and Theory + shifts bands.

Top-left panel:
σ_{red}

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

HERA1+2 Data $Q^2 = 35$
δ uncorrelated
δ total
Theory + shifts
HERAPDF
CTEQ14NLO
NNPDF3.0_nlo

Theory/Data

x

Top-right panel:
σ_{red}

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

HERA1+2 Data $Q^2 = 45$
δ uncorrelated
δ total
Theory + shifts
HERAPDF
CTEQ14NLO
NNPDF3.0_nlo

Theory/Data

x

Bottom-left panel:
σ_{red}

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

HERA1+2 Data $Q^2 = 60$
δ uncorrelated
δ total
Theory + shifts
HERAPDF
CTEQ14NLO
NNPDF3.0_nlo

Theory/Data

x

Bottom-right panel:
σ_{red}

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

HERA1+2 Data $Q^2 = 70$
δ uncorrelated
δ total
Theory + shifts
HERAPDF
CTEQ14NLO
NNPDF3.0_nlo

Theory/Data

x

Figure: Four panels showing $e^+p \rightarrow e^+X$ (NC), $E_p = 820$ GeV for HERA1+2 Data at $Q^2 = 250$, 300, 400, and 500, comparing σ_{red} and Theory/Data against x for HERAPDF, CTEQ14NLO, and NNPDF3.0_nlo.

Top-left panel:
$e^+p \rightarrow e^+X$ (NC)
HERA1+2 Data $Q^2 = 3000$
δ uncorrelated
δ total
Theory + shifts
HERAPDF
CTEQ14NLO
NNPDF3.0_nlo

Top-right panel:
$e^+p \rightarrow e^+X$ (NC)
HERA1+2 Data $Q^2 = 5000$
δ uncorrelated
δ total
Theory + shifts
HERAPDF
CTEQ14NLO
NNPDF3.0_nlo

Bottom-left panel:
$e^+p \rightarrow e^+X$ (NC)
HERA1+2 Data $Q^2 = 8000$
δ uncorrelated
δ total
Theory + shifts
HERAPDF
CTEQ14NLO
NNPDF3.0_nlo

Bottom-right panel:
$e^+p \rightarrow e^+X$ (NC)
HERA1+2 Data $Q^2 = 12000$
δ uncorrelated
δ total
Theory + shifts
HERAPDF
CTEQ14NLO
NNPDF3.0_nlo

Axis labels: σ_{red}, Theory/Data, x

Figure showing $e^+p \rightarrow e^+X$ (NC), $E_p = 460$ GeV at four Q^2 values.

Top left panel: HERA1+2 Data $Q^2 = 6.5$, δ uncorrelated, δ total, Theory + shifts, HERAPDF, CTEQ14NLO, NNPDF3.0_nlo.

Top right panel: HERA1+2 Data $Q^2 = 8.5$.

Bottom left panel: HERA1+2 Data $Q^2 = 12$.

Bottom right panel: HERA1+2 Data $Q^2 = 15$.

Axes: σ_{red} (upper), Theory/Data (lower), x (horizontal).

Figure showing $e^+p \rightarrow e^+X$ (NC), $E_p = 460$ GeV reduced cross section σ_{red} and Theory/Data ratios versus x for $Q^2 = 20$, $Q^2 = 25$, $Q^2 = 35$, and $Q^2 = 45$. Data from HERA1+2 with δ uncorrelated and δ total uncertainties, compared with HERAPDF, CTEQ14NLO, NNPDF3.0_nlo, and Theory + shifts.

Top-left panel:
σ_{red} vs x

$e^+p \rightarrow e^+X$ (NC), $E_p = 575$ GeV

- HERA1+2 Data $Q^2 = 5$
- δ uncorrelated
- δ total
- Theory + shifts
- HERAPDF
- CTEQ14NLO
- NNPDF3.0_nlo

Theory/Data

Top-right panel:
σ_{red} vs x

$e^+p \rightarrow e^+X$ (NC), $E_p = 575$ GeV

- HERA1+2 Data $Q^2 = 6.5$
- δ uncorrelated
- δ total
- Theory + shifts
- HERAPDF
- CTEQ14NLO
- NNPDF3.0_nlo

Theory/Data

Bottom-left panel:
σ_{red} vs x

$e^+p \rightarrow e^+X$ (NC), $E_p = 575$ GeV

- HERA1+2 Data $Q^2 = 8.5$
- δ uncorrelated
- δ total
- Theory + shifts
- HERAPDF
- CTEQ14NLO
- NNPDF3.0_nlo

Theory/Data

Bottom-right panel:
σ_{red} vs x

$e^+p \rightarrow e^+X$ (NC), $E_p = 575$ GeV

- HERA1+2 Data $Q^2 = 12$
- δ uncorrelated
- δ total
- Theory + shifts
- HERAPDF
- CTEQ14NLO
- NNPDF3.0_nlo

Theory/Data

Figure: Four panels showing $e^+p \rightarrow e^+X$ (NC), $E_p = 575$ GeV reduced cross section σ_{red} versus x for HERA1+2 Data at $Q^2 = 150$, 200, 250, and 300, with HERAPDF, CTEQ14NLO, and NNPDF3.0_nlo theory comparisons. Each panel includes a Theory/Data ratio subplot. Legend entries: δ uncorrelated, δ total, Theory + shifts.

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

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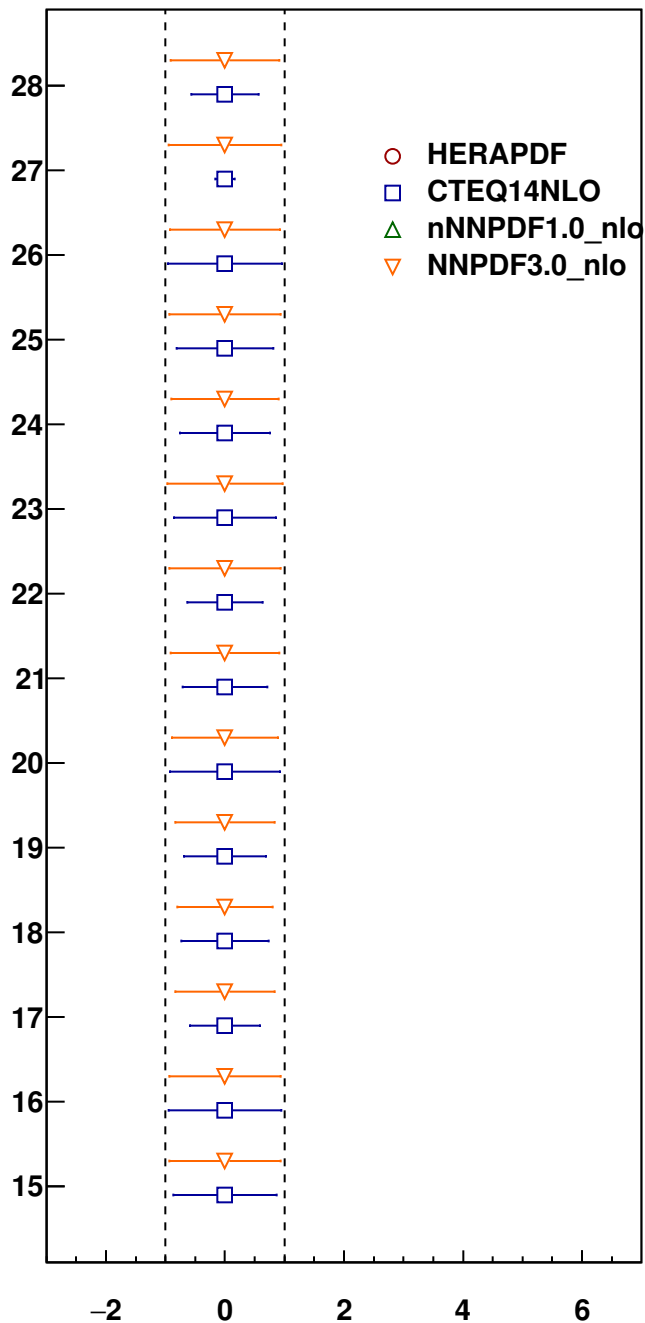
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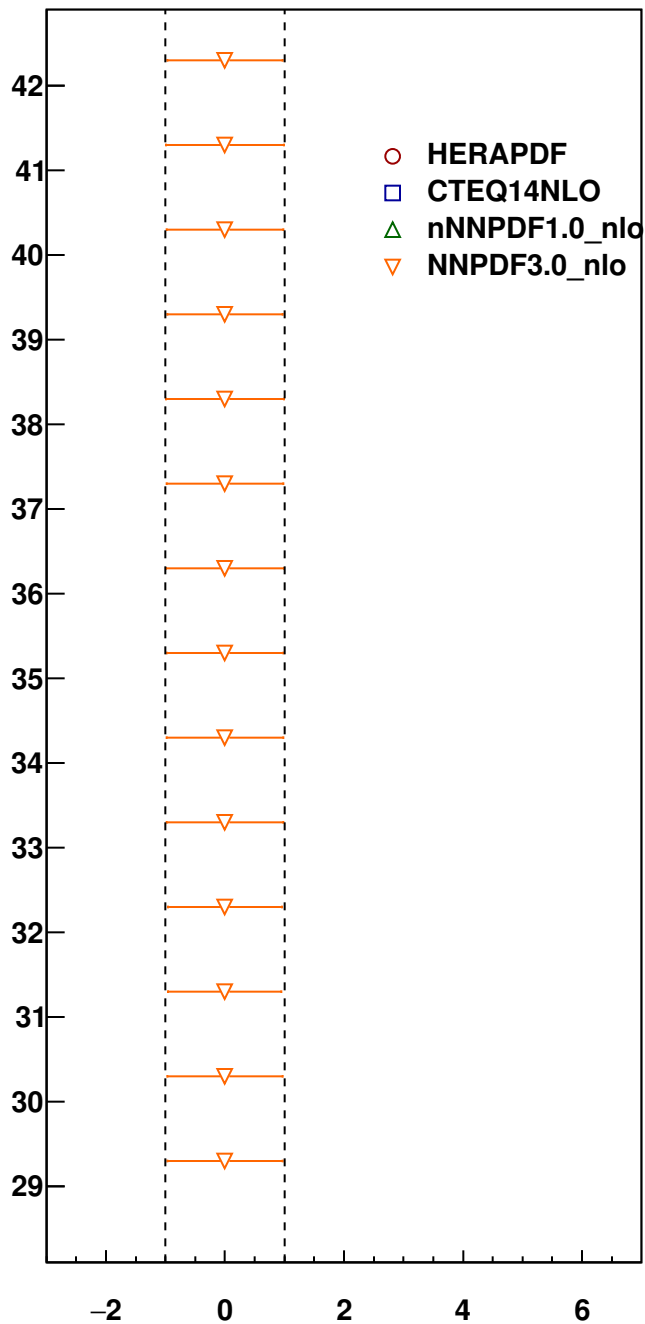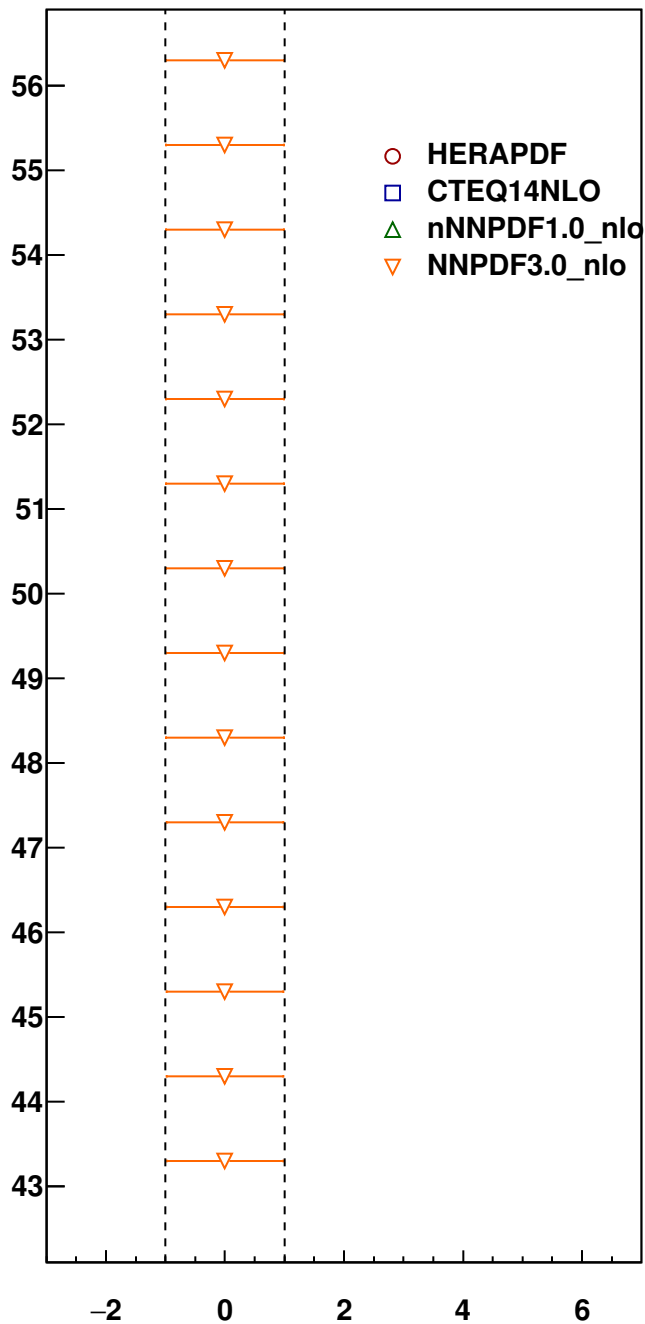
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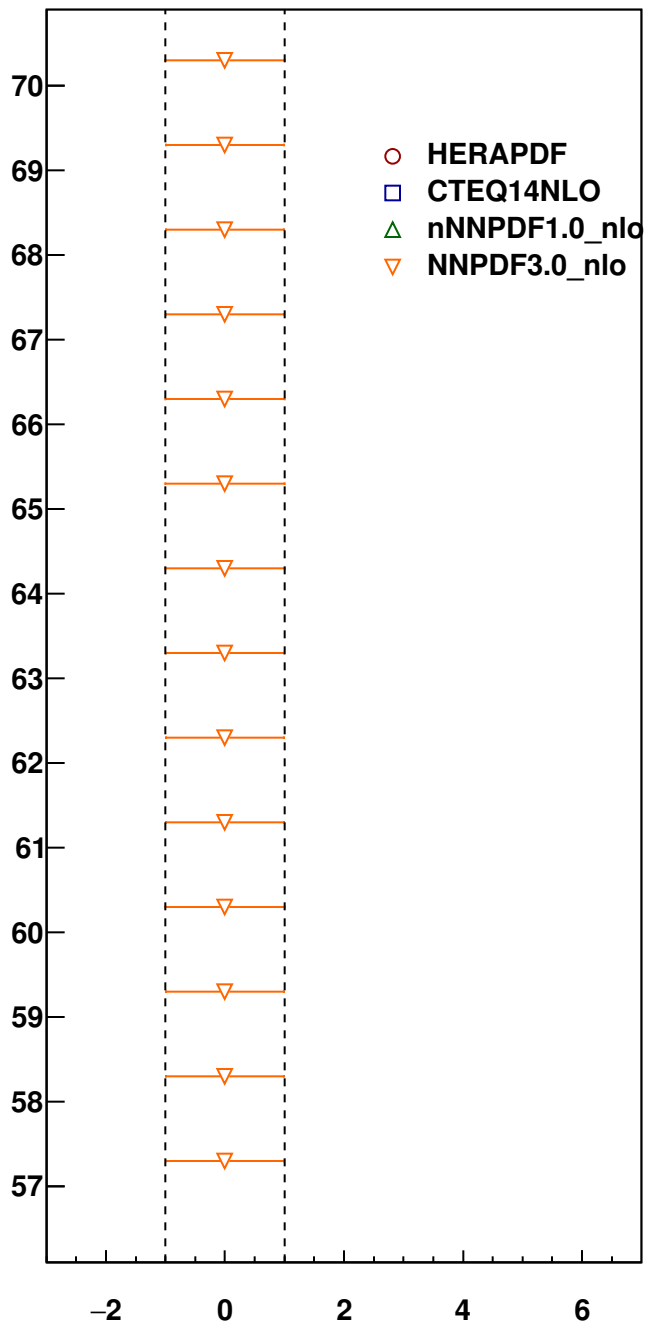
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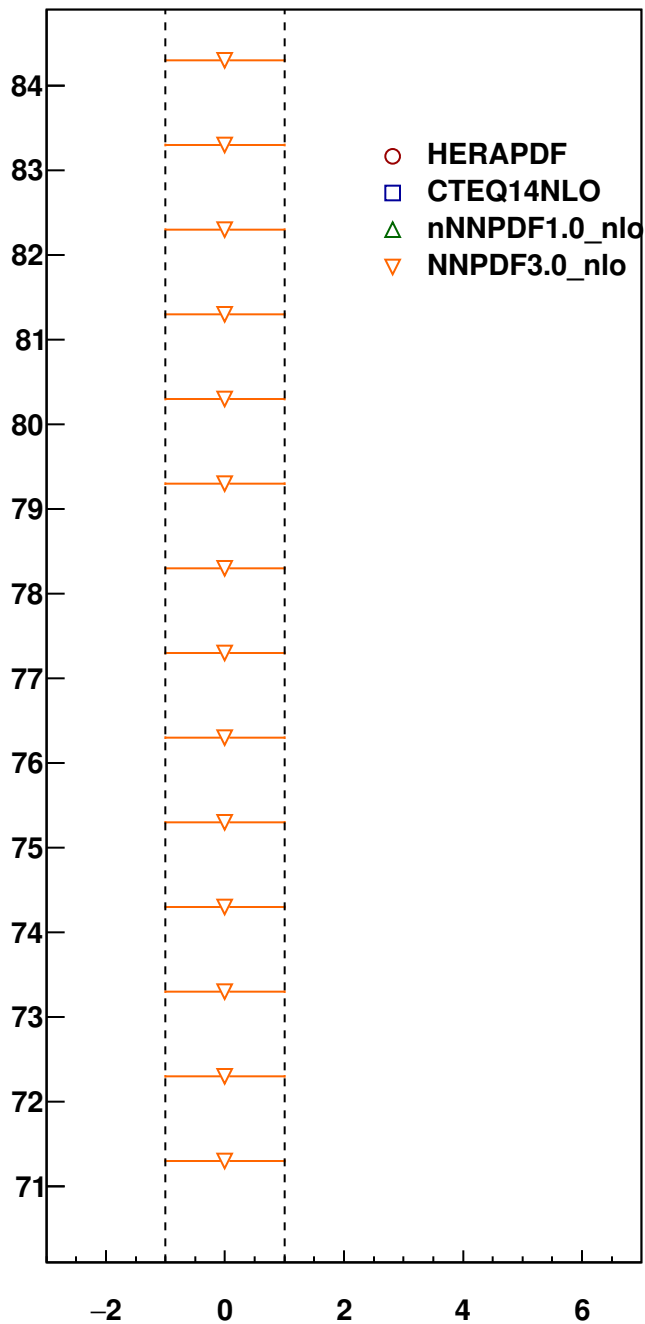
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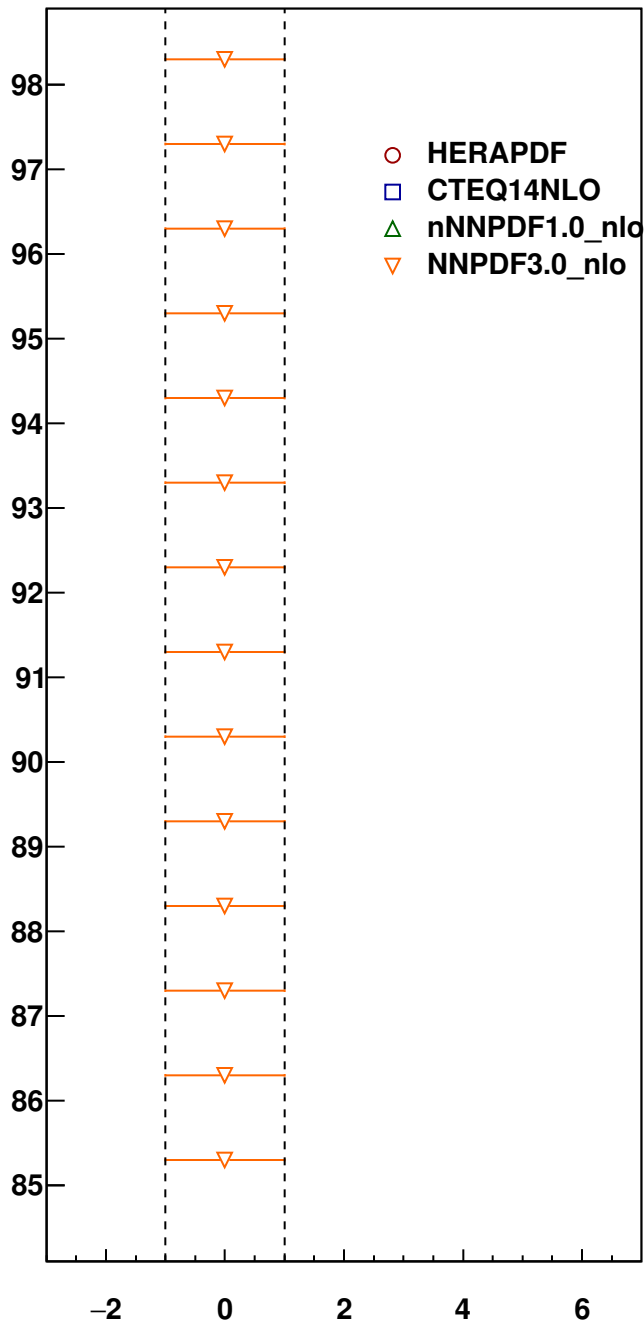
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90 **PDF_nuisance_param_90**

89 **PDF_nuisance_param_89**

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87 **PDF_nuisance_param_87**

86 **PDF_nuisance_param_86**

85 **PDF_nuisance_param_85**

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- □ CTEQ14NLO
- △ nNNPDF1.0_nlo
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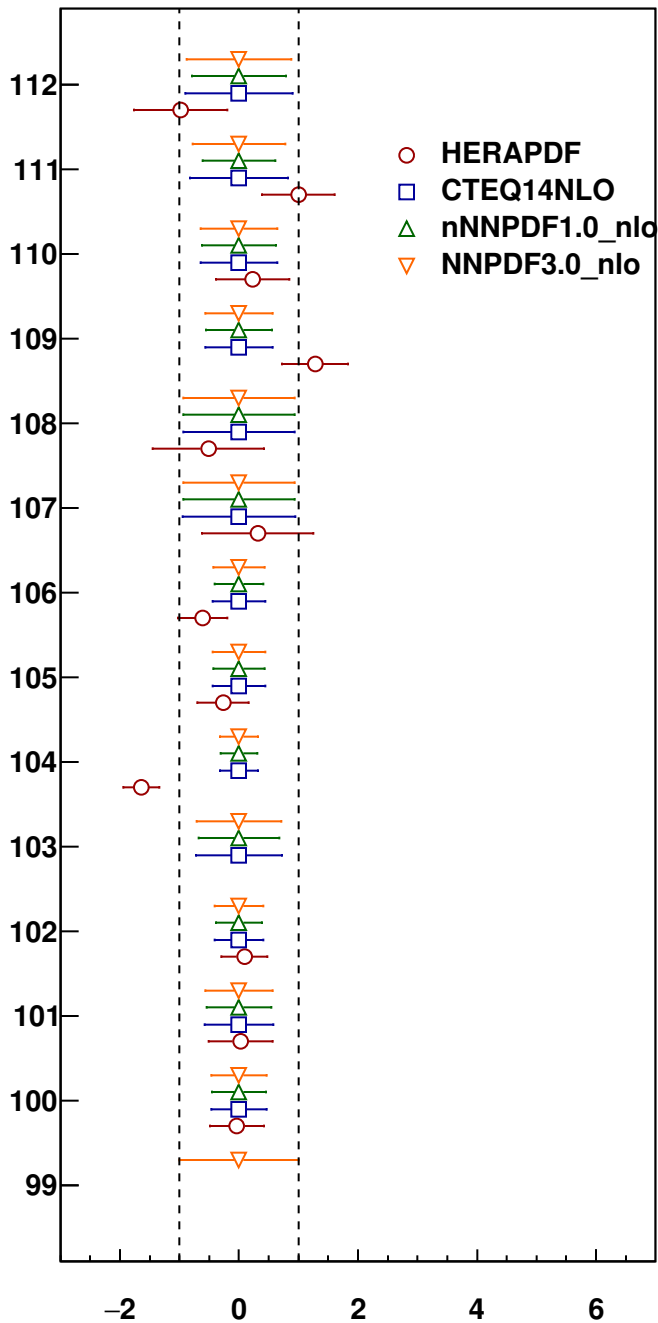
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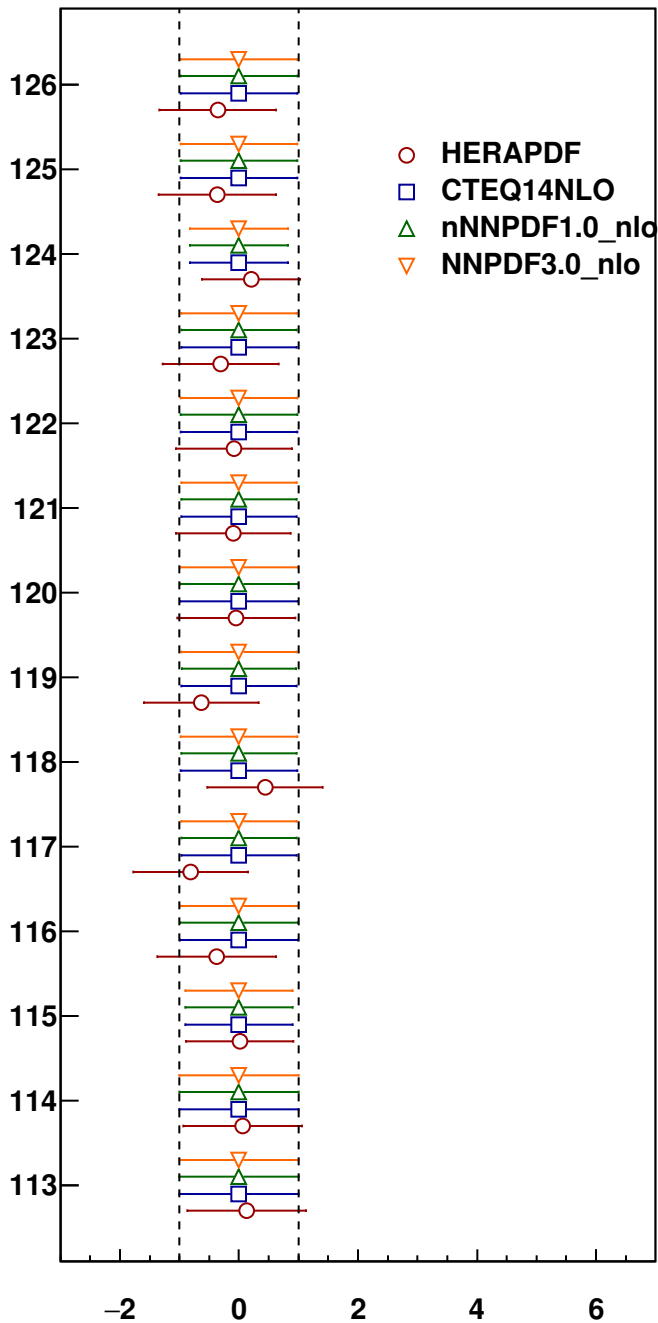
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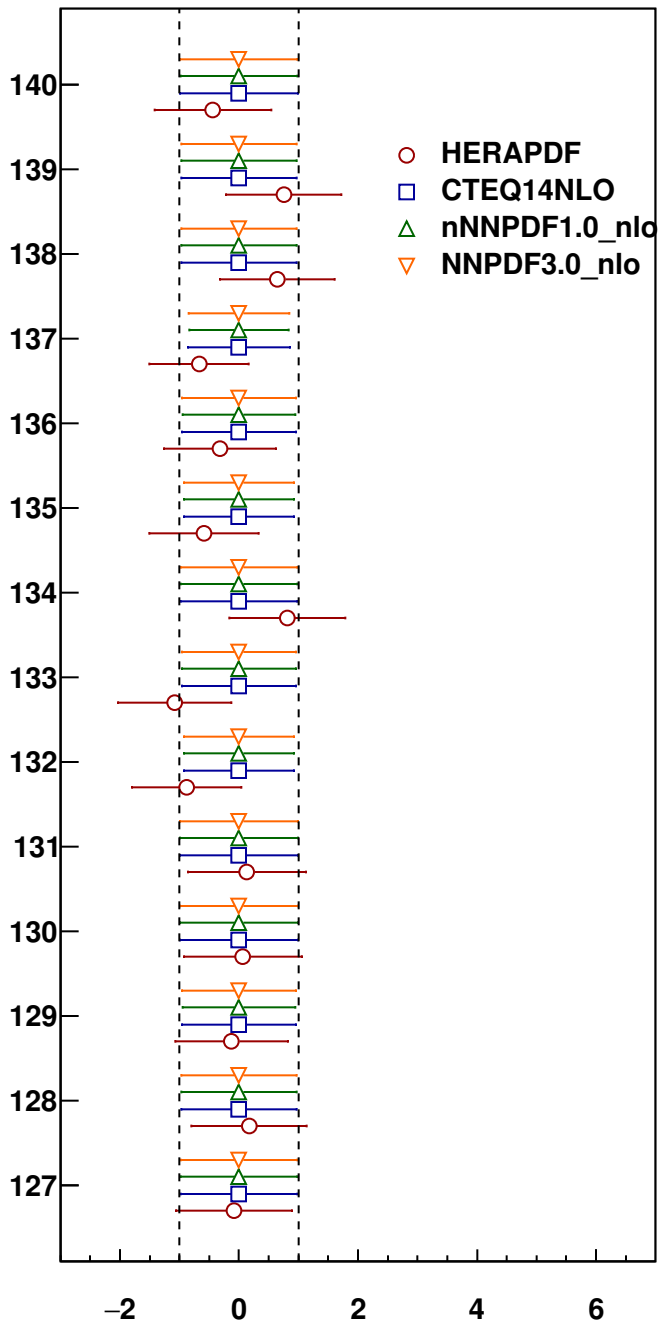
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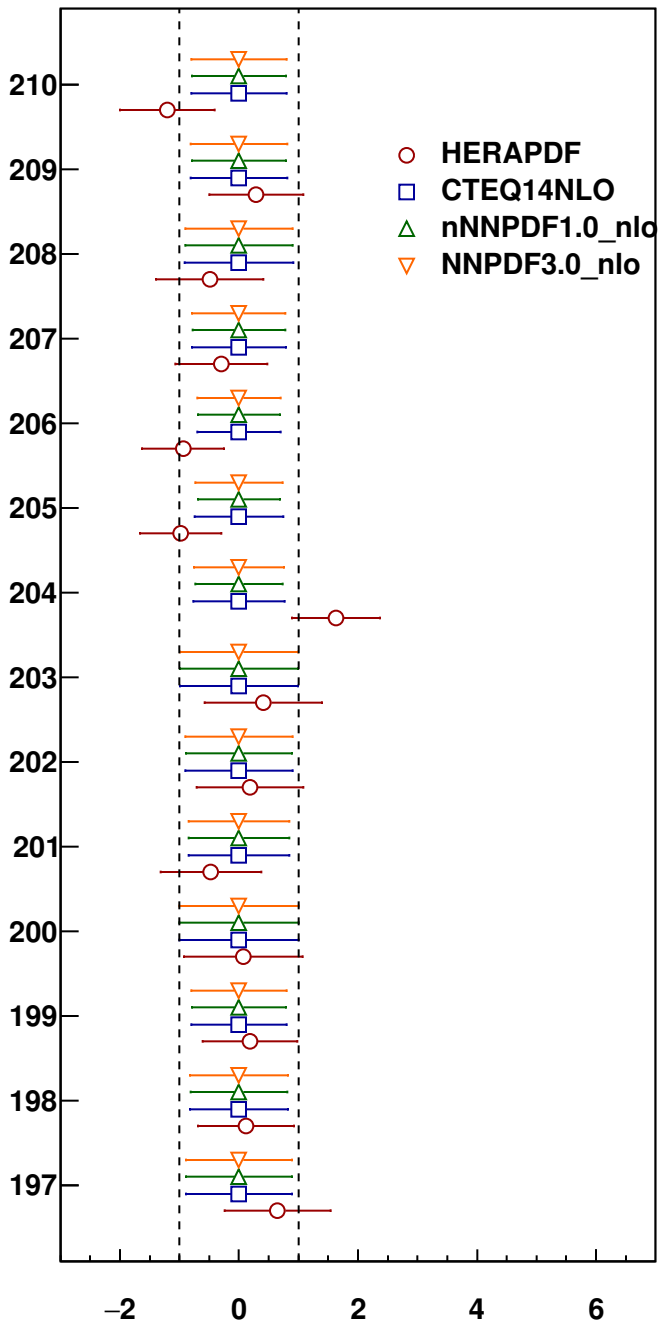130 sysHZComb1024
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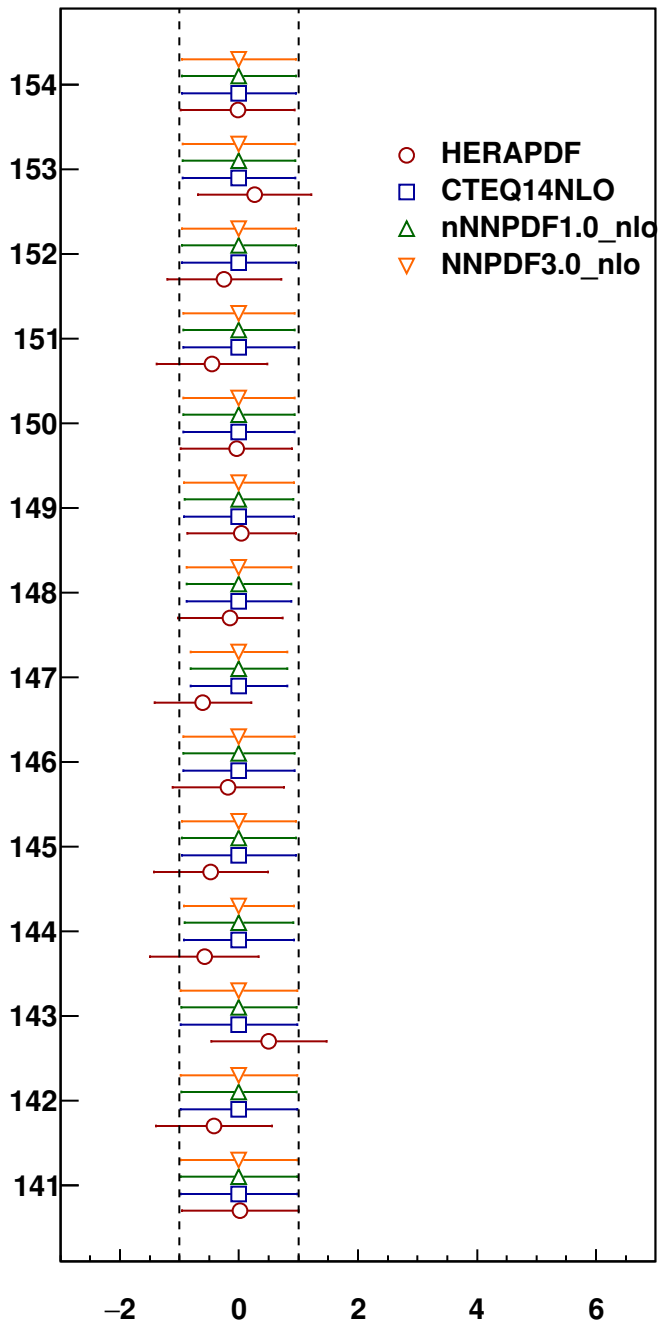
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146	sysHZComb1040
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144	sysHZComb1038
143	sysHZComb1037
142	sysHZComb1036
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- □ CTEQ14NLO
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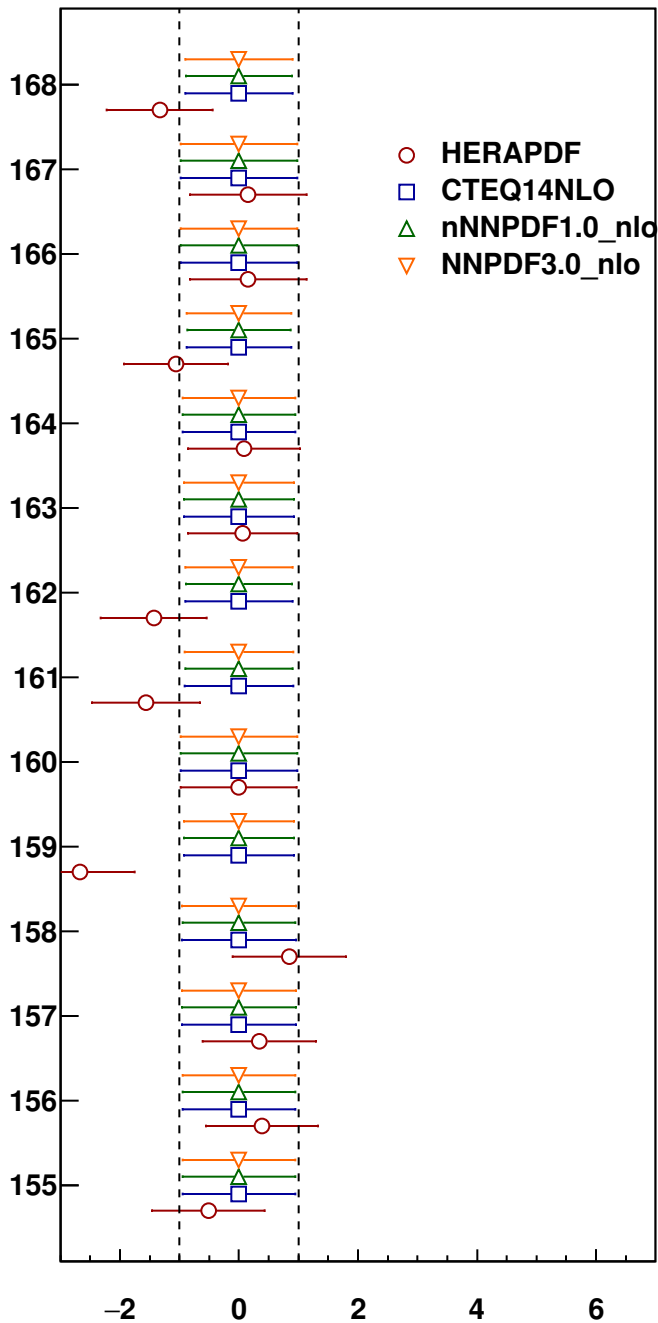
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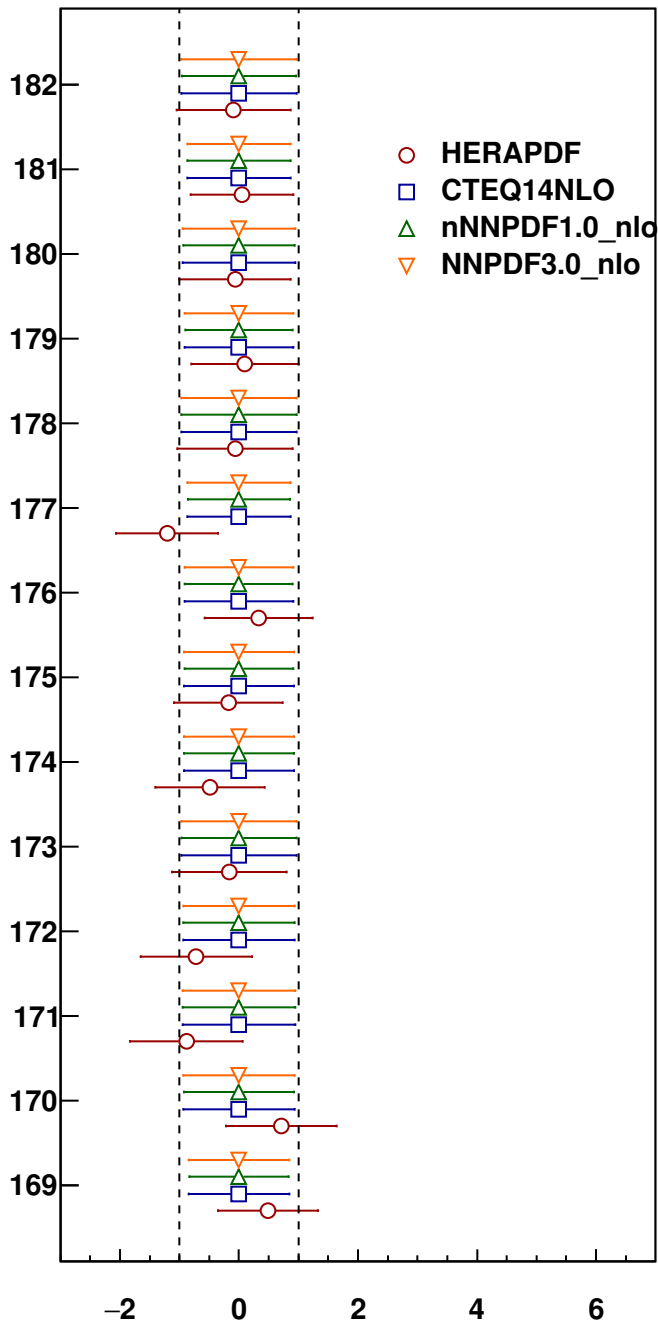
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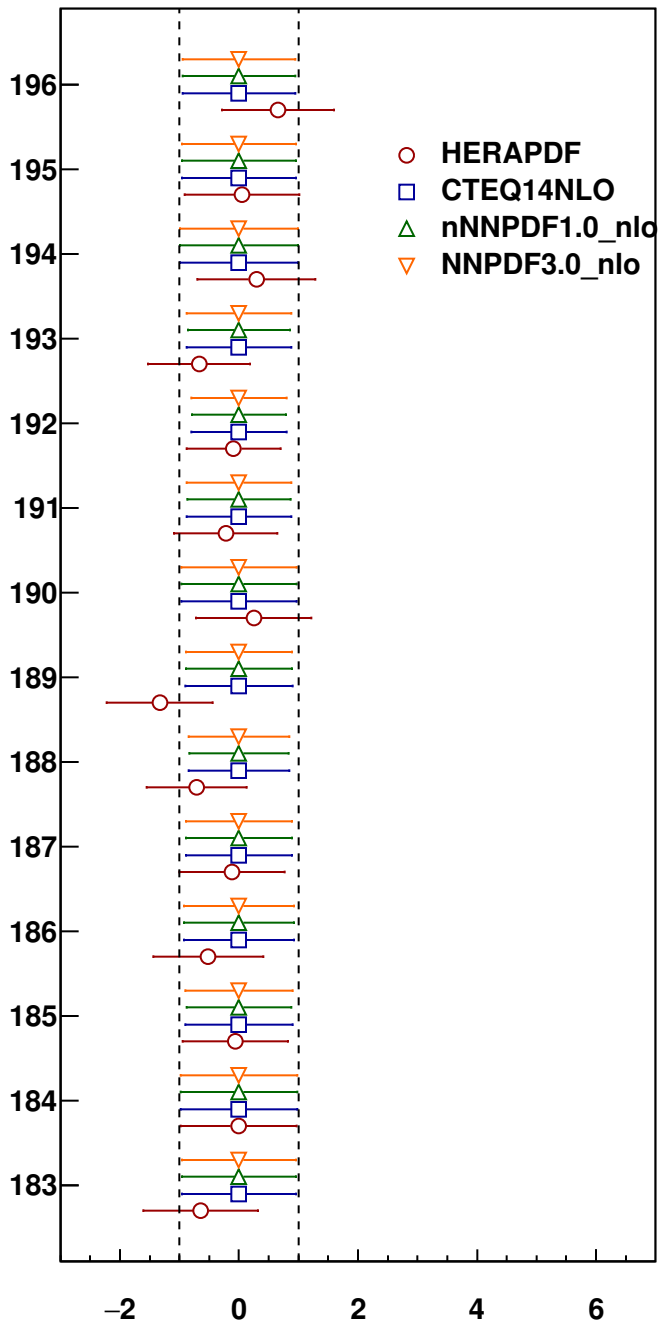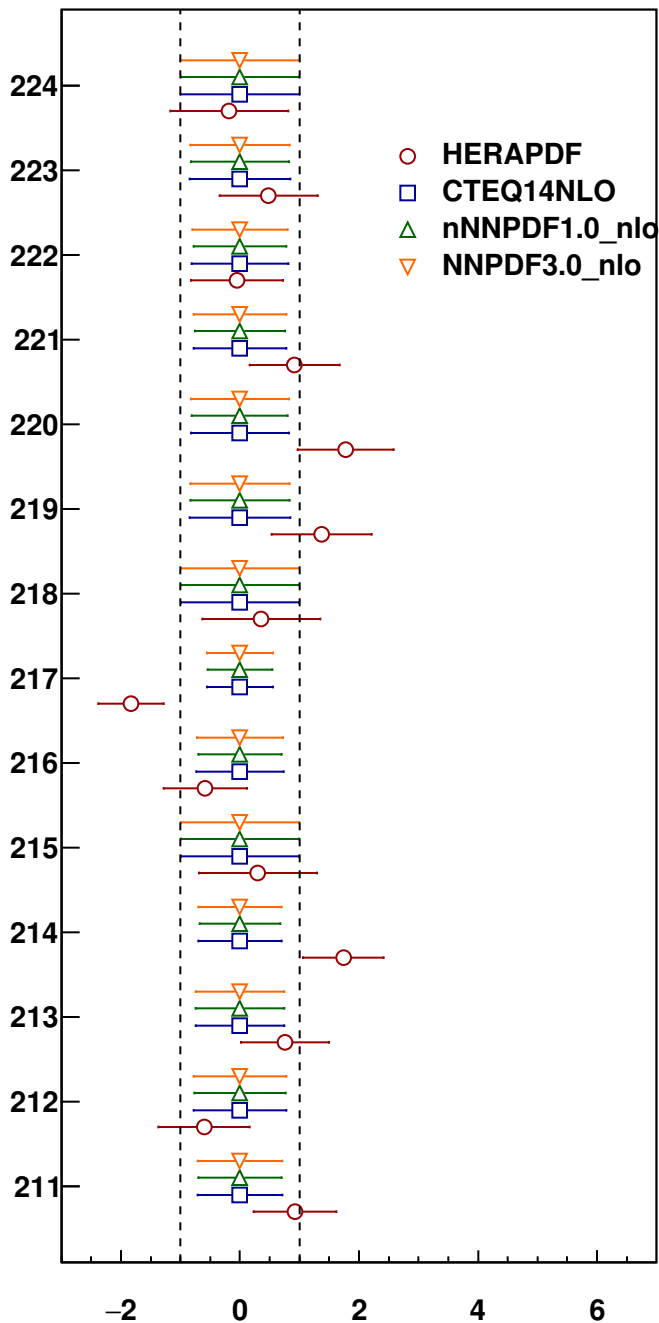
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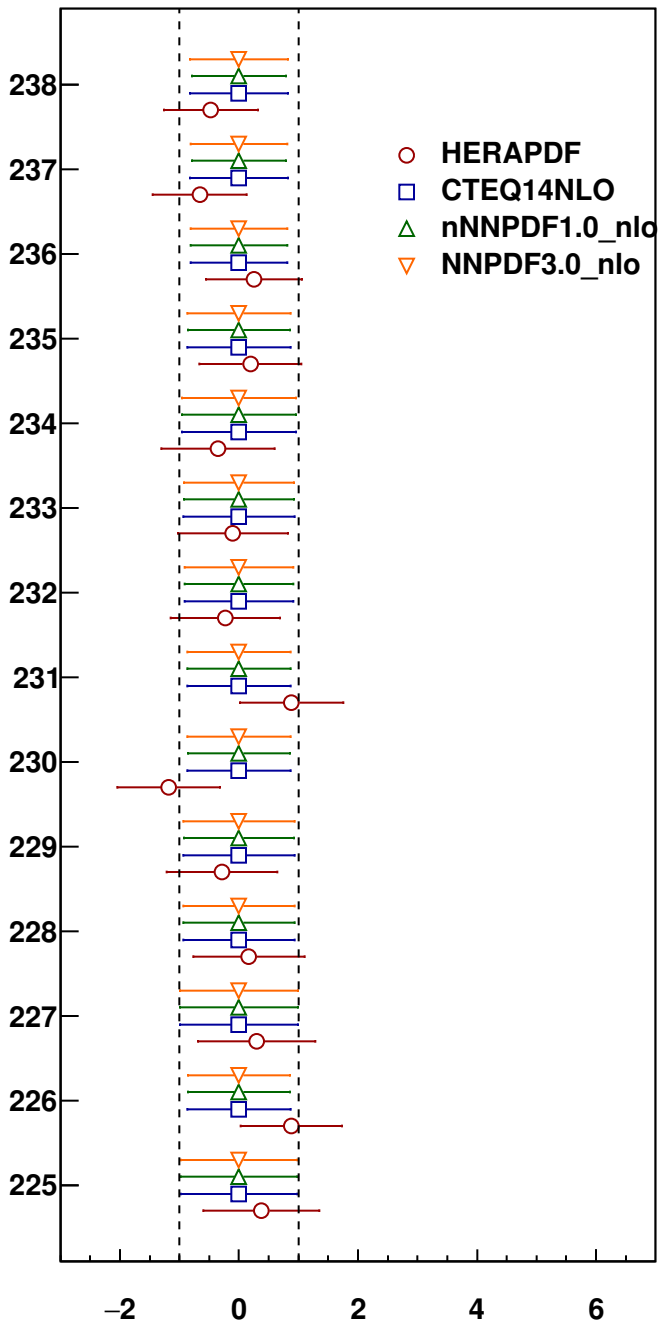
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227	sysHZComb1121
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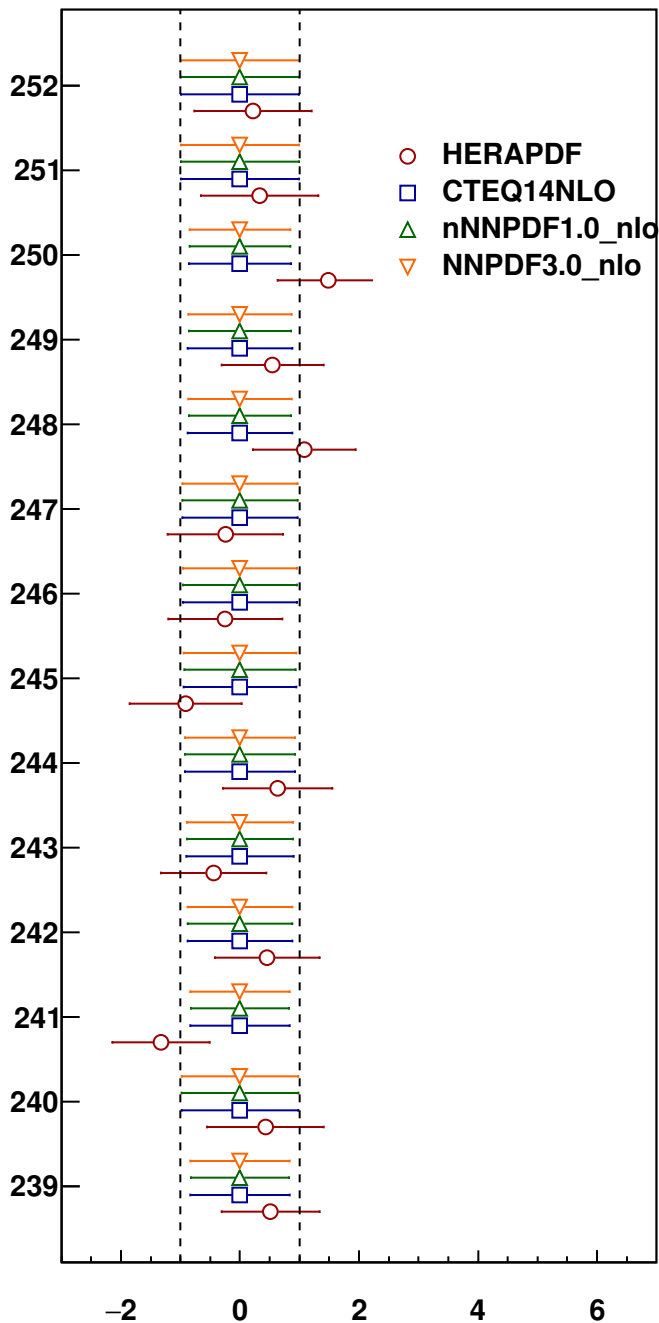
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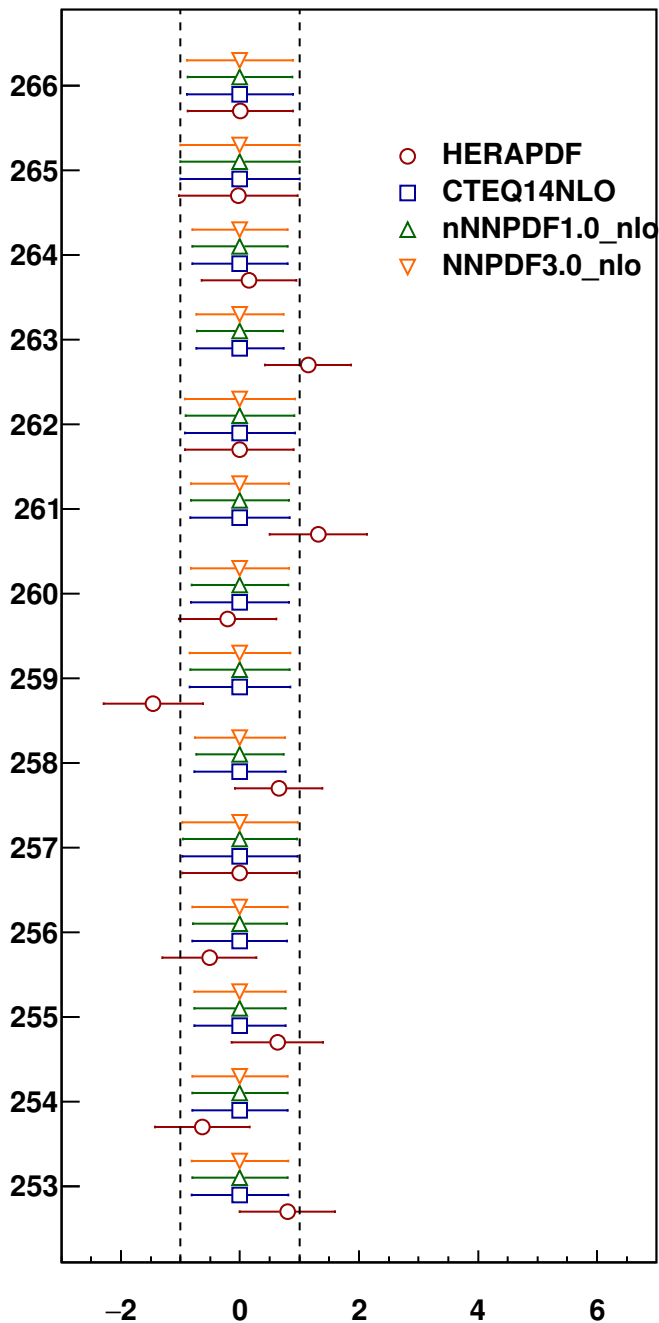
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Legend:
- ○ HERAPDF
- □ CTEQ14NLO
- △ nNNPDF1.0_nlo
- ▽ NNPDF3.0_nlo

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268

267

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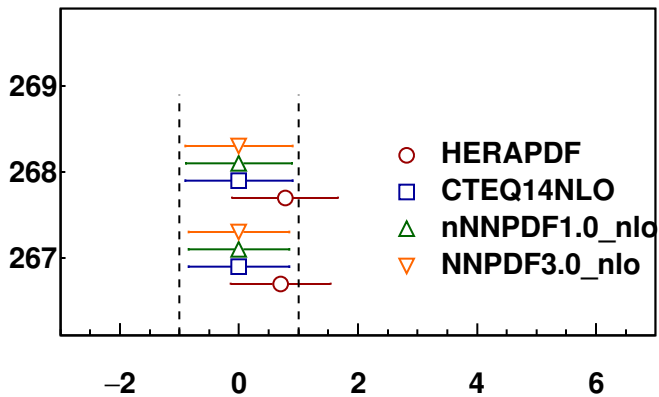
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Dataset	HERAPDF	CTEQ14NLO	nNNPDF1.0 nlo	NNPDF3.0 nlo
HERA1+2 CCep	45 / 39	0 / 39	0 / 39	0 / 39
HERA1+2 CCem	56 / 42	0 / 42	0 / 42	0 / 42
HERA1+2 NCem	219 / 159	0 / 159	0 / 159	0 / 159
HERA1+2 NCep 820	66 / 70	0 / 70	0 / 70	0 / 70
HERA1+2 NCep 920	443 / 377	0 / 377	0 / 377	0 / 377
HERA1+2 NCep 460	218 / 204	0 / 204	0 / 204	0 / 204
HERA1+2 NCep 575	219 / 254	0 / 254	0 / 254	0 / 254
Correlated χ^2	92	0	0	0
Log penalty χ^2	+5.9	+0.00	+0.00	+0.00
Total χ^2 / dof	1363 / 1131	0 / 1145	0 / 1145	0 / 1145
χ^2 p-value	0.00	1.00	1.00	1.00

Parameter	HERAPDF	CTEQ14NLO	nNNPDF1.0 nlo	NNPDF3.0 nlo
'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	not-a-fit	not-a-fit
Uncertainties	migrad-hesse	not-a-fit	not-a-fit	not-a-fit