

8 and 13 TeV Powheg-ew predictions
status report

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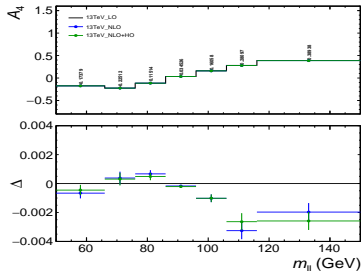
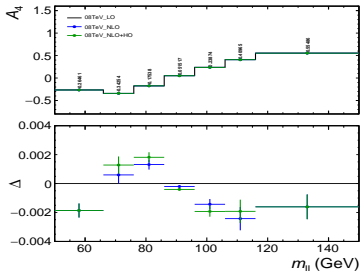
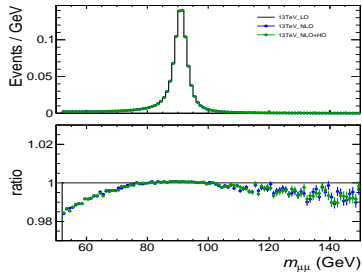
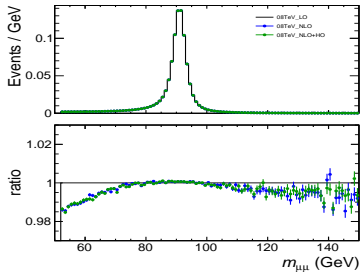
Nominal Setup (reminder)

- Observable: Born level $A_4(m, y)$
- (LO, NLO, NLO+HO) EW Powheg + NLO QCD generated with Powheg Z(_ew) + Pythia8
- $\sin^2 \theta_{\text{eff}}^\ell : 0.23150(\pm 0.00050)$
- NNPDF31_nnlo_hessian_pdfas
- 6 equal $y_{\ell\ell}$ bins with width of 0.4
- 7 $m_{\ell\ell}$ bins: **52,66,76,86,96,106,116,150**

- 08 and 13 TeV
- Muon and electron channels
- NLO QCD and LO, NLO, or NLO-HO EW corrections
- Total of about 5B 8TeV and 10B 13 TeV events in two channels

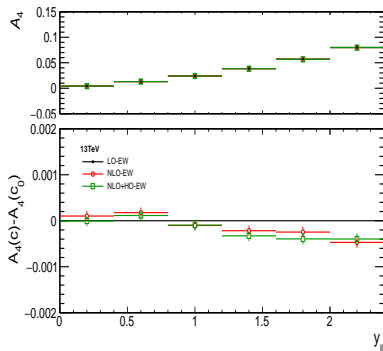
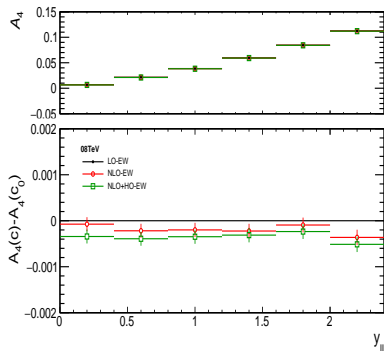
Mass and A_4 at different orders

- $m_{\ell\ell}(\text{top})$ and $A_4(m_{\ell\ell})$ for $y_{\ell\ell} < 2.4$ (bottom) for 8 TeV (left) & 13 TeV (right)



ΔA_4 at Z peak

- $\Delta A_4(y_{\ell\ell})$ for $86 < m_{\ell\ell} < 96$ GeV for 8 TeV (left) & 13 TeV (right)



ΔA_4 at Z peak (numerical values)

- All central values for 8 and 13 TeV are uploaded to the agenda
- $\sin^2 \theta_{\text{eff}}^\ell$ -variations are also included in the root file
- Here only showing Z peak region

bin	08TeV_L0-EW_23150	08TeV_NL0-EW_23150	08TeV_NL0+H0-EW_23150
04	0.00686 +/- 0.00011	0.00678 +/- 0.00011	0.00651 +/- 0.00011
11	0.02150 +/- 0.00011	0.02128 +/- 0.00011	0.02111 +/- 0.00011
18	0.03862 +/- 0.00011	0.03842 +/- 0.00011	0.03827 +/- 0.00011
25	0.05950 +/- 0.00011	0.05928 +/- 0.00011	0.05919 +/- 0.00011
32	0.08444 +/- 0.00011	0.08435 +/- 0.00011	0.08421 +/- 0.00011
39	0.11248 +/- 0.00012	0.11212 +/- 0.00012	0.11197 +/- 0.00012

bin	13TeV_L0-EW_23150	13TeV_NL0-EW_23150	13TeV_NL0+H0-EW_23150
04	0.00410 +/- 0.00008	0.00420 +/- 0.00008	0.00410 +/- 0.00008
11	0.01293 +/- 0.00008	0.01311 +/- 0.00008	0.01304 +/- 0.00008
18	0.02413 +/- 0.00008	0.02402 +/- 0.00008	0.02403 +/- 0.00008
25	0.03857 +/- 0.00008	0.03835 +/- 0.00008	0.03824 +/- 0.00008
32	0.05709 +/- 0.00008	0.05684 +/- 0.00008	0.05670 +/- 0.00008
39	0.08010 +/- 0.00009	0.07963 +/- 0.00009	0.07970 +/- 0.00009

- Produced $A_4(m, y)$ predictions for
 - LO, NLO, and NLO+HO EWK + NLO QCD
 - 8 and 13 TeV
- Next: plan to do another version when different resonance schemes are available in svn