

每周小结

Weekly Summary

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2025年11月5日星期三



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● Finished

- **Same sign WW Polarization**

- ✓ Updated the MC23 sample list;
- ✓ Add the ssWW-MC23 to pipeline;
- ✓ Adjusted the trigger list based on the latest recommendation;

- **Xbb Calibration**

- ✓ Produced the full MC samples with the full systematics;
- ✓ Tried to add the systematics production codes for Zbb+jets;

- **$H \rightarrow \gamma^* \gamma$ Run-2 + partial Run-3 combination**

- ✓ Reproduced the results using the modified ws;
- ✓ Combined the Run 2 and Run 3 workspace using workspaceCombiner;

- **$H \rightarrow WW$ Quantum Entanglement**

- ✓ Began to look the DNN codes for legacy Run 2 HWW analysis;

● ssWW - Samples List

Rel 22 samples for ssWWjj Polarization:

Process	DSID	Sample Name
^[1] Polarised WW	561751~561753	MGPY8_ssWWjj lep_XX_EW6_LO (XX: TT, LL, TL)
ssWW INT	545685	MGH7EG_LO_INT_ssWWjj
ssWW QCD	545686	MGH7EG_LO_EW4_ssWWjj
WZ EW	364739 ~ 364742	MGPY8EG_NNP30NLO_A14NNPDF23LO_IvlljEW6
WZ QCD	^[2] 701045	Sh_IIIv
V + jets	506193 ~ 506198 512198 ~ 512200	See backup
Top V	410658, 410659, 601353, 601354, 410644,	See backup
V + γ	700398~700400 700402~700404	Sh_2211_lgamma Sh_2211_lmugamma
ZZ	364250, 364283, 363356	Sherpa_222_NNP30NNLO Sherpa_221_NNP30NNLO

^[1] For Sherpa3 samples, they still cannot be produced. ^[2] Updated according to the PMG twiki;

● ssWW - Samples List

Rel 25 samples for ssWWjj Polarization:

Process	DSID	Sample Name
^[1] Polarised WW	561751~561753	MGPY8_ssWWjjlep_XX_EW6_LO (XX: TT, LL, TL)
ssWW INT	545685	MGH7EG_LO_INT_ssWWjj
ssWW QCD	545686	MGH7EG_LO_EW4_ssWWjj
WZ EW	-	MGPY8EG_NNP30NLO_A14NNPDF23LO_IvlljjEW6
WZ QCD	^[2] 701045	Sh_IIIv
^[3] V + jets	513105~513113	See backup
^[4] Top V	601350~601353 522024, 522028, 522032	See backup
V + γ	700770~ 700775	Sh_2211_lgamma Sh_2211_lmugamma
ZZ	701000, 701040, 701085	Sherpa_2214_NNP30NNLO Sherpa_221_NNP30NNLO

^[1] For Sherpa3 samples, they still cannot be produced. ^[2] Updated according to the PMG twiki;

^[3] mc23e are not found; ^[4] tW,tWW, ttWW samples are not found currently;

● ssWW - Trigger List

- **Single lepton trigger** for Run-3:

Tigger year	Electron trigger	Muon trigger
2022	HLT_e26_lhtight_ivarlose_L1EM22VHI HLT_e60_lhmedium_L1EM22VHI HLT_e140_lhlose_L1EM22VHI	HLT_mu24_ivarmedium_L1MU14FCH HLT_mu50_L1MU14FCH
2023	HLT_e26_lhtight_ivarlose_L1eEM26M HLT_e60_lhmedium_L1eEM26M HLT_e300_etcut_L1eEM26M HLT_e140_lhlose_L1eEM26M	HLT_mu24_ivarmedium_L1MU14FCH HLT_mu50_L1MU14FCH
2024	HLT_e26_lhtight_ivarlose_L1eEM26M HLT_e60_lhmedium_L1eEM26M HLT_e140_lhlose_L1eEM26M	HLT_mu24_ivarmedium_L1MU14FCH HLT_mu50_L1MU14FCH ^[2]

[1] Trigger for Ele

Trigger for Moun

[2] No recommendation for 2024 currently

● ssWW - Summary for Run 3

Scale factor status:

- Available:
 - Electron ID/reconstruction efficiency SFs; (same setting with rel 22 Run 2)
 - Muon ID/ISO/reconstruction efficiency SFs; (same setting with rel 22 Run 2)
 - GN2 b-tagging SFs;
 - **Global trigger SFs;**
- Missing:
 - Electron ISO/ECIDS efficiency SFs;

Background samples status:

- Missing:
 - ttZ(mm,ee,tautau) process;
 - tW, tWW, ttW process;
- The rest samples are available now;

● Hyy* - Run 2 Reproduction

- **WS is provided by Stefano shown in Oct 30th**

- Full fitting:

- $\mu = 1.47422^{+0.499077}_{-0.469822}$

- Statistics:

- $\mu = 1.47422^{+0.460644}_{-0.45136}$

Results from Stefano:

$$\mu_{yy^*} = 1.474 \pm (-0.470, 0.499) = 1.474 \pm (-0.451, 0.461) \text{ stat } \pm (-0.130, 0.192) \text{ syst}$$

- **For combination of Run 3, the full NPs WS is in progress by Danning, after that the Asimov dataset would be considered first;**

- **Dark SHINE**

- Do rough hyper-parameter scans;

- **ssWW Polarization**

- Derive the final results for the significance and provide this to Yi for the next week's discussion;
- Modify the DSID sample list (for both MC20 and MC23);
- Push the MC23 related codes to the main branch;

- **Xbb Zbbj Calibration**

- Edited the systematics process in our Ntuple processing program;
- Checked the latest fitting framework;

- **$H \rightarrow WW$ Quantum Entanglement**

- Talk with Danning for the following tasks;

- **$H \rightarrow \gamma^* \gamma$**

- Waiting for Danning to provide the full sysys workspace;



—— 谢 谢 ! ——

