

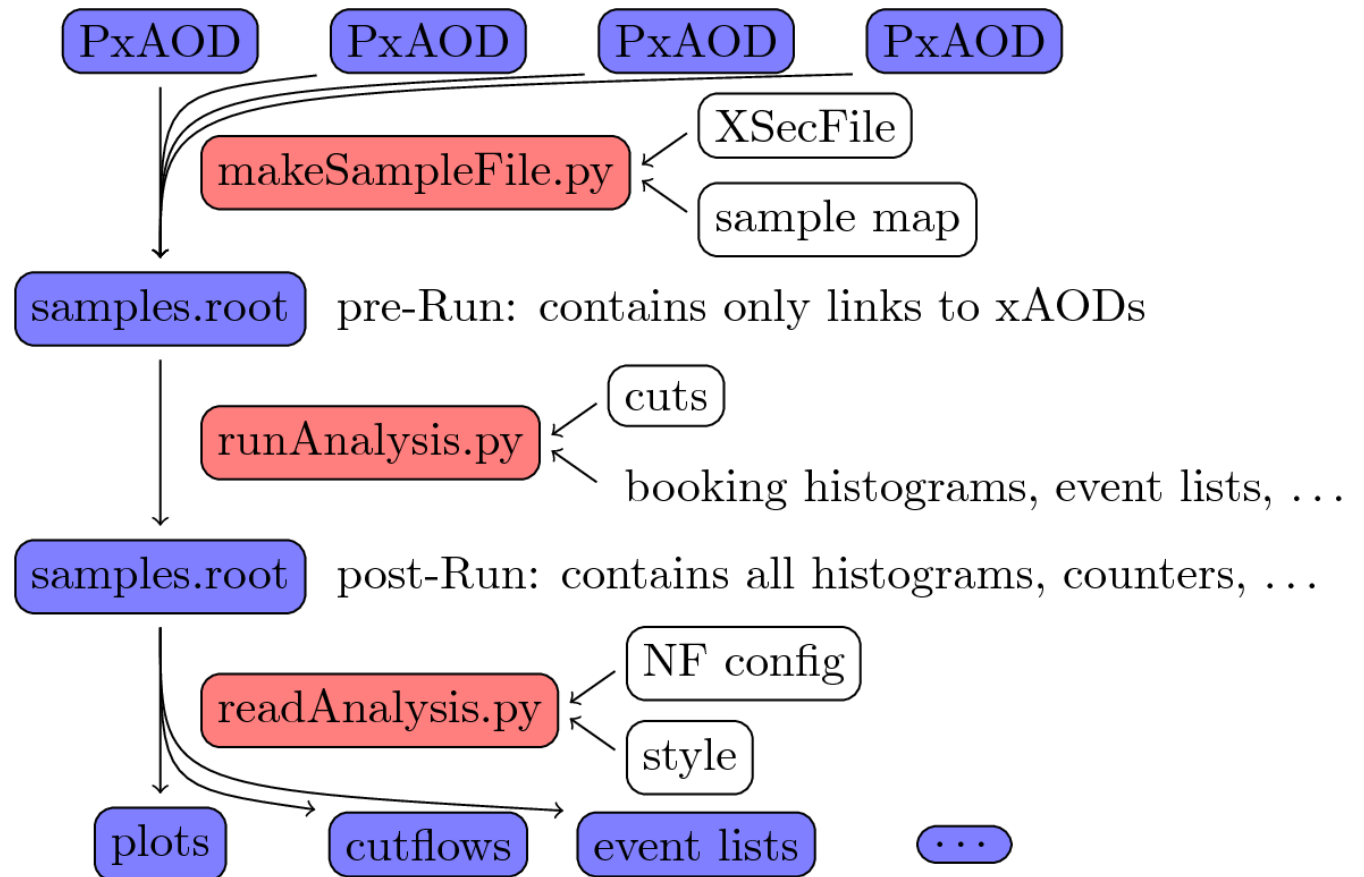
# HL-LHC effect on VBF H using HSG3AnalysisCode

- 1) Run2 code scheme
- 2) Example distributions
- 3) Cutflow and small output already

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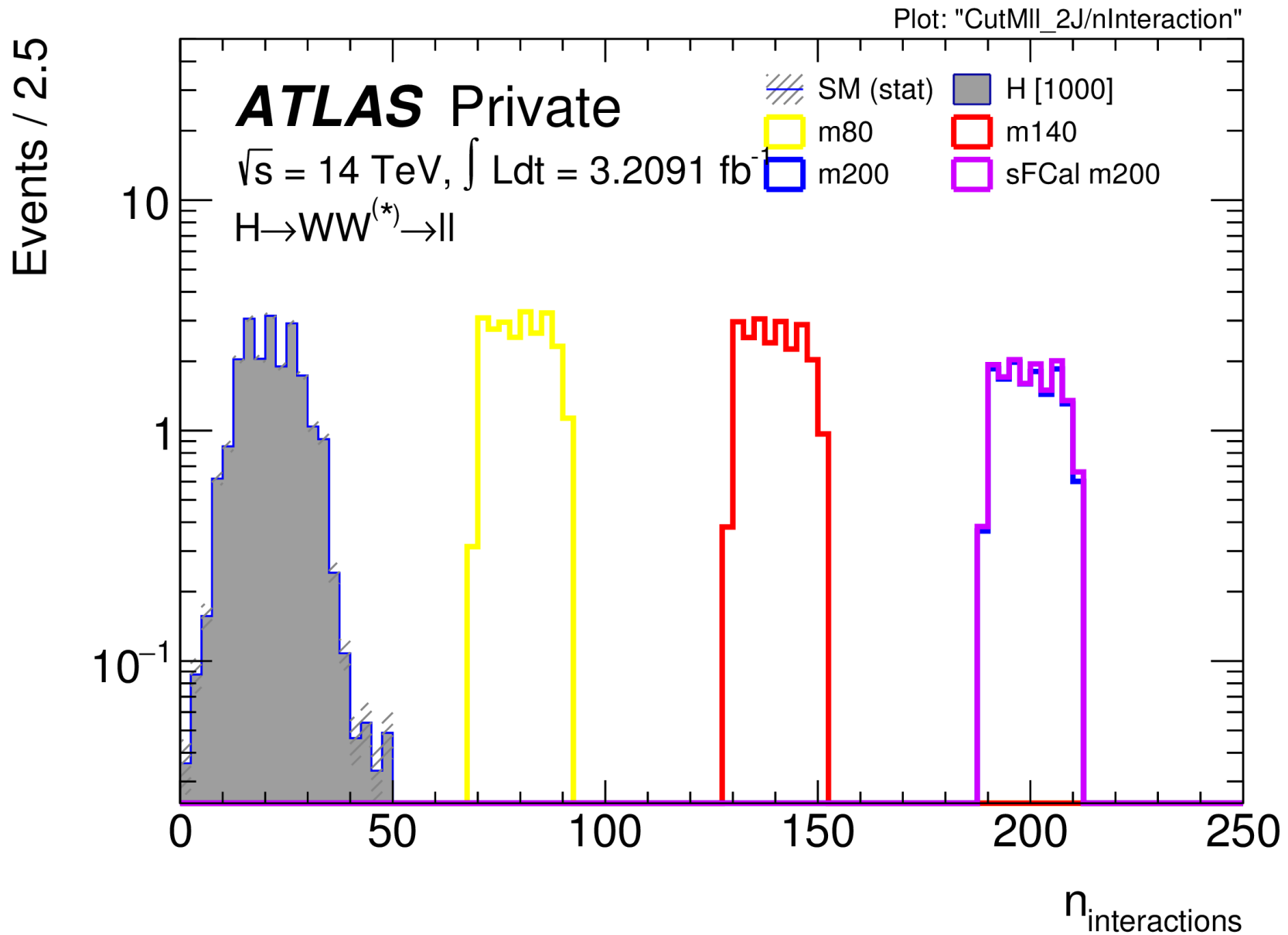
# Run2 HSG3AnalysisCode

- User-controllable via set of configs
- Flexible enough to study HLLHC samples
- Take ~1min per higgs sample

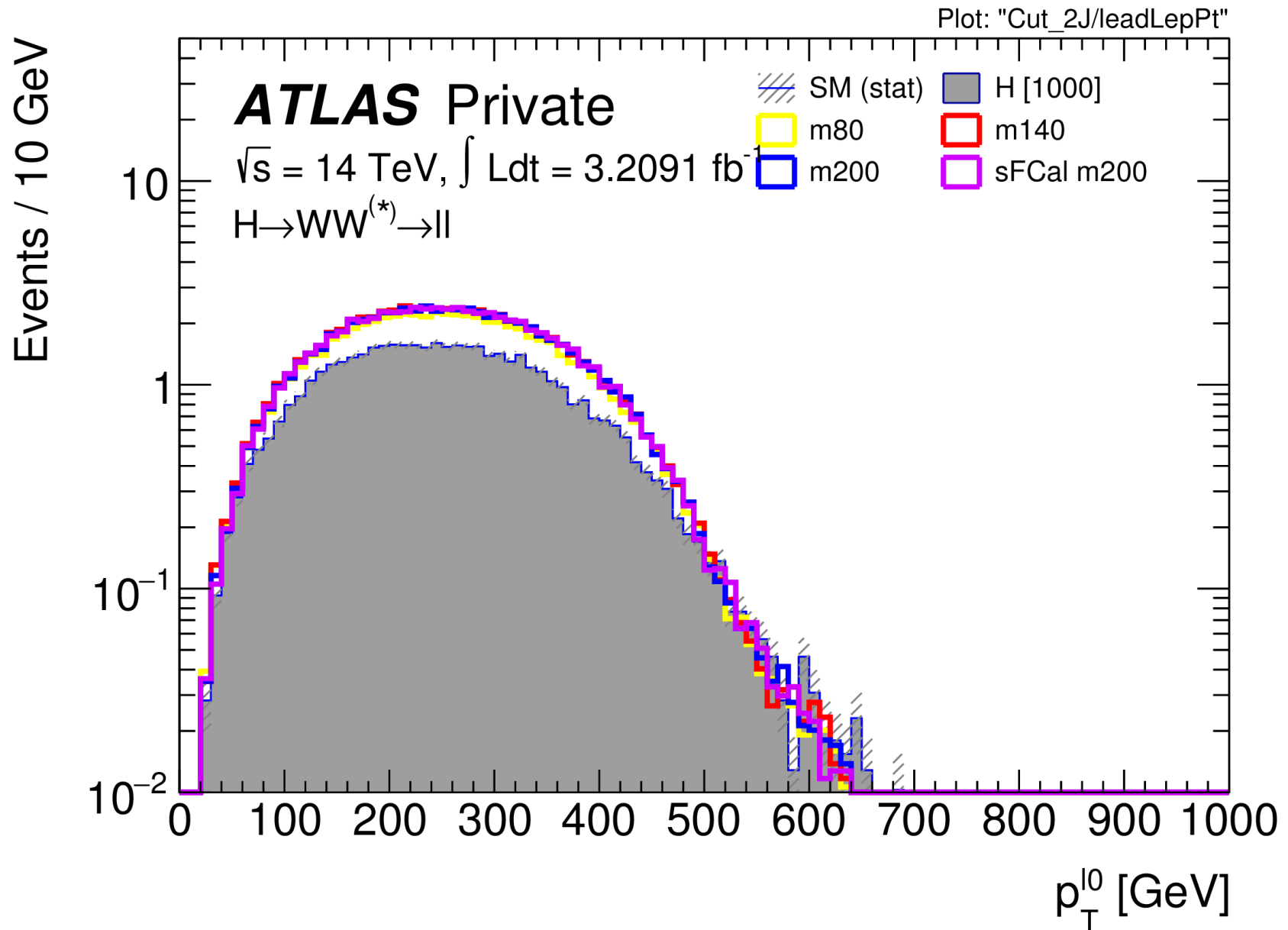


- Usage in 3 steps: collect file samples, run analysis, produce plots&cutflows

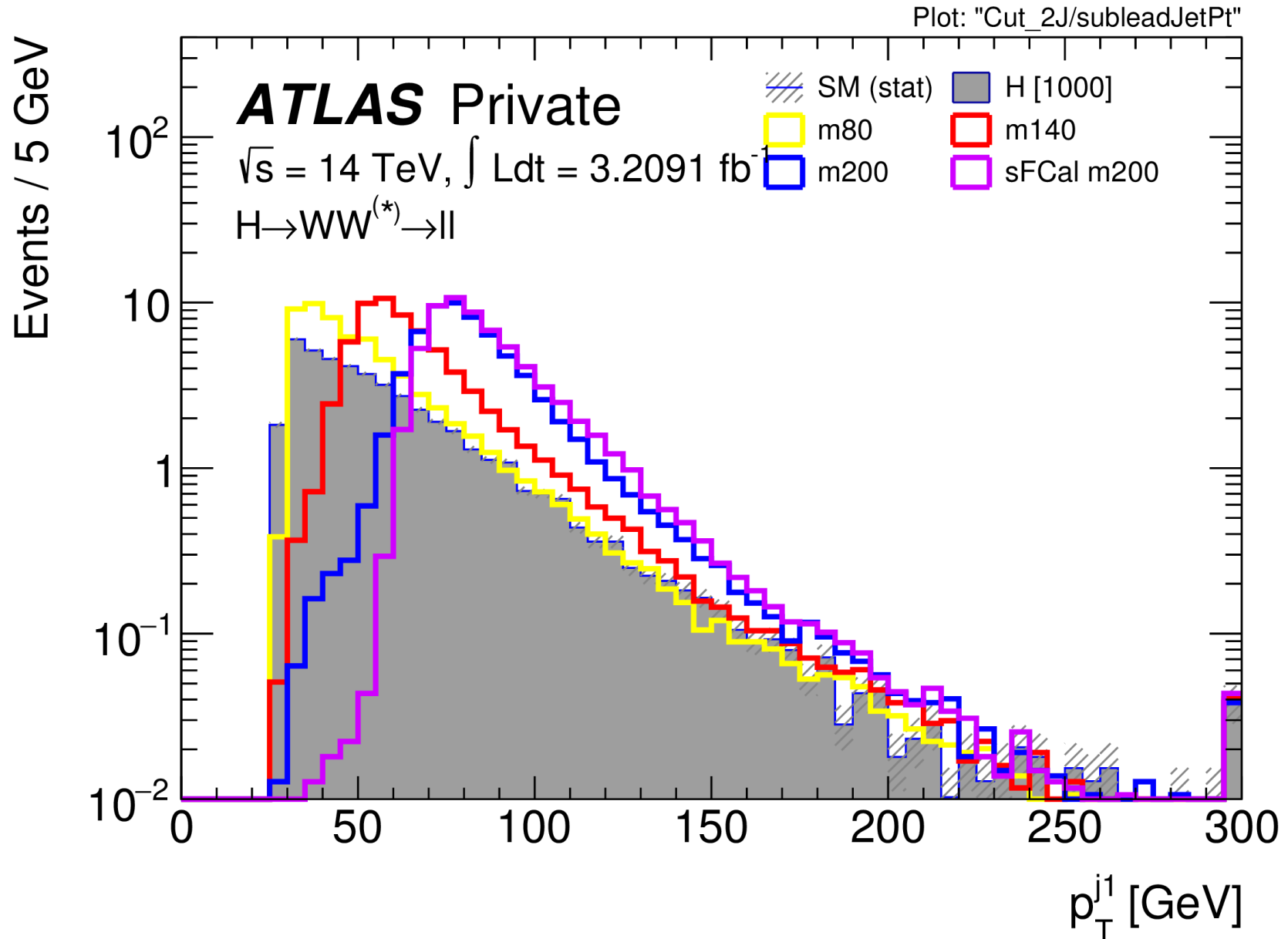
# Number of interactions ( $\mu$ )



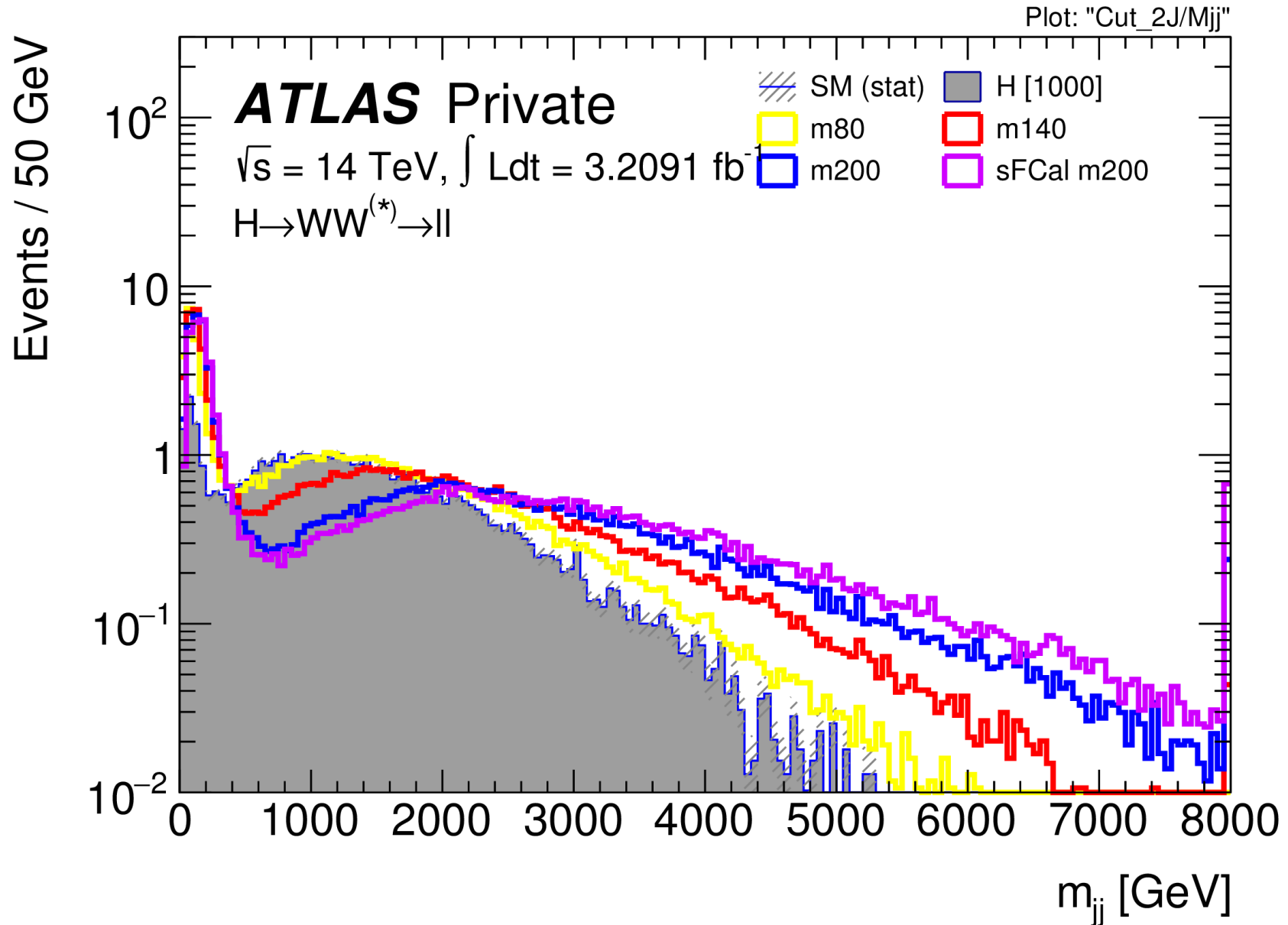
# Leading Lepton $p_T$



# Second Jet $p_T$



# Dijet invariant mass



# Cutflows (at 3.2 fb<sup>-1</sup> like current run2)

	m80	m140	m200	sFCal m200	run2
Preselec	69.95 +/- 0.27	68.84 +/- 0.27	67.73 +/- 0.27	67.82 +/- 0.27	85.17 +/- 0.47
0-jet	1.05 +/- 0.03	0.03 +/- 0.01	0.01 +/- 0.00	0.00 +/- 0.00	8.56 +/- 0.15
1-jet	5.04 +/- 0.07	0.20 +/- 0.01	0.05 +/- 0.01	0.01 +/- 0.00	30.69 +/- 0.28
b-jet veto	4.92 +/- 0.07	0.20 +/- 0.01	0.04 +/- 0.01	0.01 +/- 0.00	29.80 +/- 0.28
2-jet	63.86 +/- 0.26	68.61 +/- 0.27	67.67 +/- 0.27	67.81 +/- 0.27	45.92 +/- 0.34
b veto	59.30 +/- 0.25	56.70 +/- 0.25	37.34 +/- 0.20	36.94 +/- 0.20	42.71 +/- 0.33
Dn <sub>  </sub> < 1.8	46.51 +/- 0.22	44.55 +/- 0.22	29.38 +/- 0.18	29.05 +/- 0.18	33.32 +/- 0.29
p <sub>T</sub> <sup>l0</sup> > 120 GeV	44.34 +/- 0.22	42.51 +/- 0.21	28.05 +/- 0.17	27.75 +/- 0.17	31.62 +/- 0.29
p <sub>T</sub> <sup>l1</sup> > 40 GeV	42.08 +/- 0.21	40.36 +/- 0.21	26.70 +/- 0.17	26.40 +/- 0.17	29.84 +/- 0.28
m <sub>jj</sub> > 650 GeV	25.44 +/- 0.16	23.59 +/- 0.16	15.22 +/- 0.13	15.83 +/- 0.13	22.34 +/- 0.24
DY <sub>jj</sub> > 4.25	24.27 +/- 0.16	22.46 +/- 0.15	14.49 +/- 0.12	15.12 +/- 0.13	21.10 +/- 0.23
2J: M <sub>  </sub> > 150 GeV	24.26 +/- 0.16	22.44 +/- 0.15	14.48 +/- 0.12	15.12 +/- 0.13	21.09 +/- 0.23

# Backup



# Cuts for highmass $H \rightarrow WW \rightarrow l\nu l\nu$ searches

preselection

0-jet

1-jet

2-jets

$$\Delta\eta_{ll} < 1.8$$

$$p_T^{\text{lead}} > 120 \text{ GeV}$$

$$p_T^{\text{miss}} > 40 \text{ GeV}$$

$$M_{ll} > 100 \text{ GeV}$$

b-jet veto

$$\Delta\eta_{ll} < 1.8$$

$$p_T^{\text{lead}} > 120 \text{ GeV}$$

$$p_T^{\text{sublead}} > 40 \text{ GeV}$$

$$p_T^{\text{miss}} > 40 \text{ GeV}$$

$$M_{ll} > 100 \text{ GeV}$$

b-jet veto

$$\Delta\eta_{ll} < 1.8$$

$$p_T^{\text{lead}} > 120 \text{ GeV}$$

$$p_T^{\text{sublead}} > 40 \text{ GeV}$$

$$m_{jj} > 650 \text{ GeV}$$

$$\Delta Y_{jj} > 4.25$$

$$M_{ll} > 150 \text{ GeV}$$