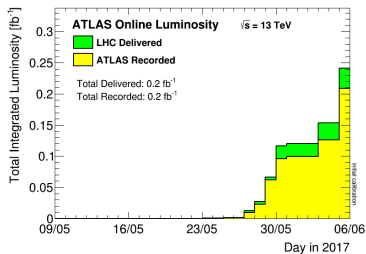


Weekly report

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cutflow of Wh and Zh

Selection	Wh	Zh	Selection	Wh	Zh
at least 1lep	0.182	0.085	at least 2jets	0.477	0.478
at least 2jets	0.099	0.156	at least 1lep	0.038	0.028

- The $\text{br}(W \rightarrow e\nu, \mu\nu)$ is about 20% and 10% of them have at least two jets.
- The $\text{br}(Z \rightarrow ee, \mu\mu)$ is about 10% and 16% of them have at least two jets.
- This problem is solved.

Table from Qi

Expected	Non-res	mh260	mh300	mh400	mh500
Case1	7.78	13.5	11.6	8.42	7.09
Case2	6.74	12.2	10.4	7.35	6.42
Case3	6.77	12.2	10.4	7.39	6.44
Case4	6.38	11.6	9.88	6.94	6.09
Case5	6.69	12.2	10.4	7.3	6.42

- Case 1: counting
- Case 2: fit to the 1Lep region with parameters c_1 and c_2 fixed in ExpPoly2
- Case 3: fit to the 1Lep region with floating parameters c_1 and c_2
- Case 4: fit to the 1Lep and 0Lep regions with $nConBkg$ (continuum BKG in 1Lep) constrained with $nConBkgCR$ (continuum BKG in 0Lep), $nConBkg = \text{Transfer factor} * nConBkgCR$
- Case 5: fit to the 1Lep and 0Lep regions with floating $nConBkg$ and $nConBkgCR$
- THE CASE4 HAS THE BEST LIMITS, CHOOSE THE METHOD IN CASE 4

Conclusion from last page

- From case 3 to case 5, simultaneous fit does not improve the limit very much, 1%
- This change means that simultaneous fit and direct fit to 1-lep SR are very similar.
- From case 5 to case 4, the constrain on normalization factor from 0-lep CR to 1-lep SR is very powerful.
- People want to compare the limit of different background function like poly1, poly2 and Exp.
- To be added into the note.

Comparison of parameters after independent fit

MC	parameter	value	error
SR	a1	-2.2482e+00	$\pm 2.30\text{e}+00$
	a2	3.1279e-01	$\pm 3.64\text{e}+00$
CR	a1	-2.1722e+00	$\pm 1.22\text{e}-01$
	a2	-7.0086e-01	$\pm 1.98\text{e}-01$

- The difference is covered by stat error.

Comparison of parameters after independent fit(2)

revID	parameter	value	error
SR	a1	-3.3355e+00	+/- 2.96e+00
	a2	1.8383e+00	+/- 4.63e+00
CR	a1	-4.2406e+00	+/- 1.40e-01
	a2	1.4973e+00	+/- 2.33e-01

- The difference is covered by stat error.

Comparison of parameters after independent fit(3)

revISO	parameter	value	error
SR	a1	-4.6782e+00	+/- 1.93e+00
	a2	1.4239e+00	+/- 3.24e+00
CR	a1	-3.5777e+00	+/- 9.78e-02
	a2	8.5102e-01	+/- 1.61e-01

- The difference is covered by stat error.

Comparison of parameters after independent fit(4)

revISO	parameter	value	error
SR	a1	-3.5107e+00	+/- 7.54e-01
	a2	1.5423e+00	+/- 1.22e+00
CR	a1	-3.5709e+00	+/- 3.23e-02
	a2	1.1725e+00	+/- 5.29e-02

- The difference is covered by stat error.

- ME/PS uncertainty of Z_h , Yu will calculate this with Maosen's number
- Zoom the correlation plot for highly correlated parameters, Qi?
- Signal injection (plot for $\mu=1$), Qi?
- Add the uncertainty of DSCB fit parameters, Qi?
- Add some words from limit comparison of Run1 and Run2, Yu
- I think we will not include ggZH, but Karsten's argument is that the uncertainty is different from this production mode.
- Explain the constrain of SBOverCR_continuum and EG_SCALE_ALL.
- Add the explanation of why at least one lepton is ok and the current strategy. Qi?
- large PRW uncertainty with limited stat of ggH? Check with other analysis. Yu