



Higgs Searches: Weekly report

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- The cutFlow table is done by considering pre-selection;

	Non-Res	$qq \rightarrow ZZ$	ttZ	tt	VVV	Total background
4ℓ	0.15 ± 0.01	1272.87 ± 4.05	74.56 ± 0.62	400.04 ± 5.74	10.49 ± 0.10	1757.96 ± 10.52
Total charge = 0	0.14 ± 0.01	1238.84 ± 3.99	66.10 ± 0.58	317.33 ± 5.12	9.79 ± 0.10	1632.06 ± 9.79
Trigger Match	0.14 ± 0.01	1202.70 ± 3.94	65.56 ± 0.58	296.34 ± 4.95	9.75 ± 0.10	1574.36 ± 9.57
Iso FixedCutLoose	0.11 ± 0.00	1023.85 ± 3.70	51.04 ± 0.50	11.89 ± 1.00	8.95 ± 0.10	1095.73 ± 5.29
$m_{\ell^+\ell^-}(\text{SFOS}) > 4 \text{ GeV}$	0.10 ± 0.00	846.44 ± 3.44	46.97 ± 0.48	11.21 ± 0.97	8.18 ± 0.09	912.80 ± 4.98

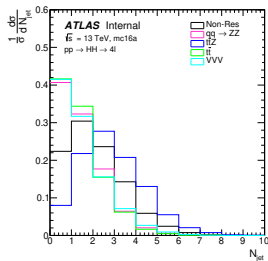
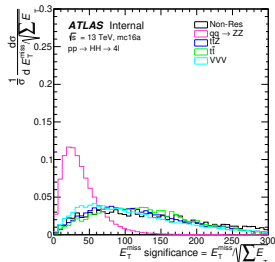
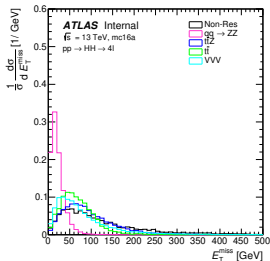
Table: The expected yields for non-resonant di-Higgs boson signal, and the total background calculated from the state-of-the-art MC simulation with an integrated luminosity of 36.2 fb^{-1} . The uncertainties included on the table are statistical uncertainty.

- But still need to add some ID cuts for the electrons and muons;
- Then add b-veto as a second set of selection.

Update on $pp \rightarrow HH \rightarrow 4\ell$ analysis

Events categorisation; with b-veto

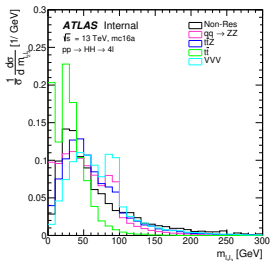
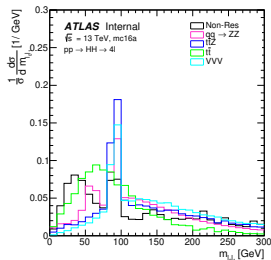
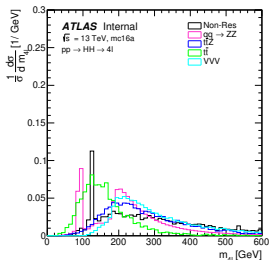
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Update on $pp \rightarrow HH \rightarrow 4\ell$ analysis

Events categorisation, with bveto

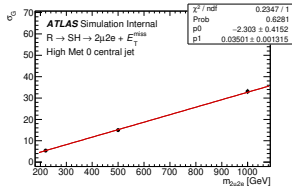
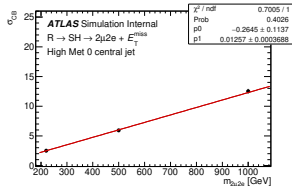
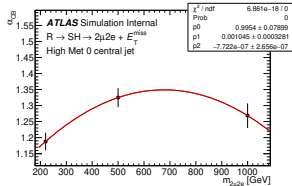
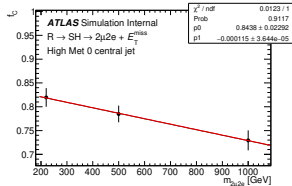
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Update on $R \rightarrow SH \rightarrow 4\ell + E_T^{miss}$ analysis

A solution might work

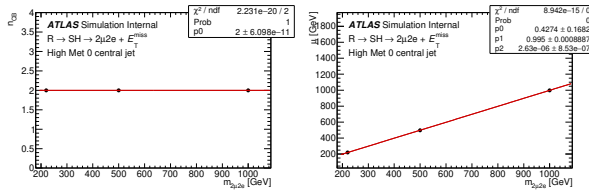
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Update on $R \rightarrow SH \rightarrow 4\ell + E_T^{miss}$ analysis

A solution might work

6

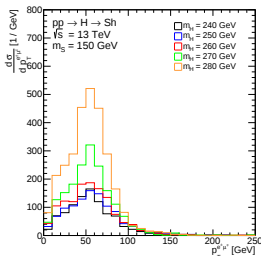
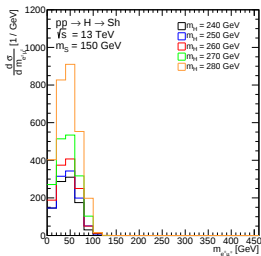
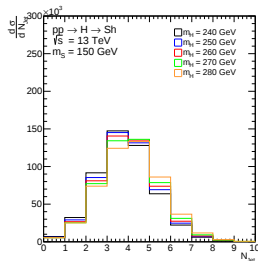
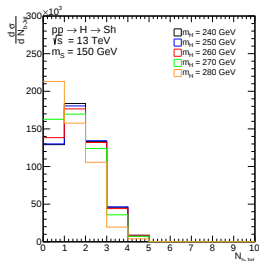


□ Now working on the stats, so still trying to get everything on place

Phenomenology of the Dilepton final states

Validation plots

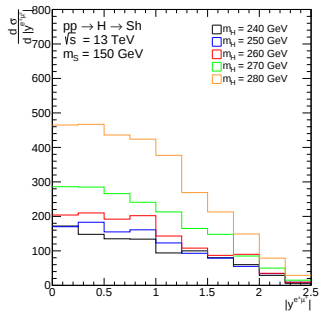
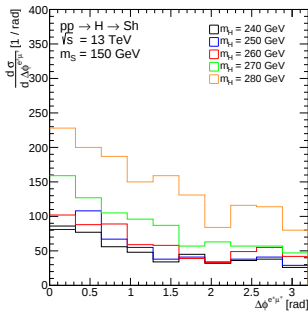
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Phenomenology of the Dilepton final states

Validation plots

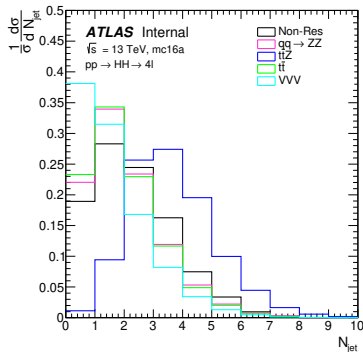
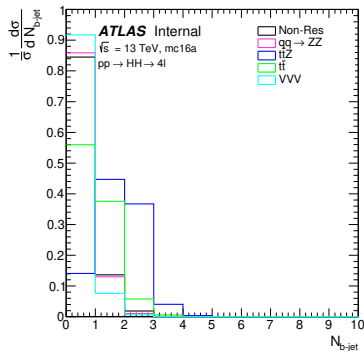
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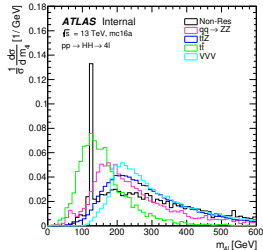
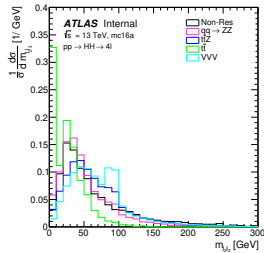
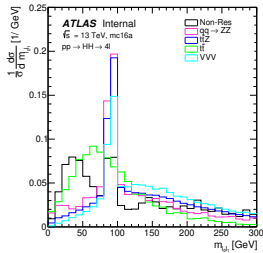
Thank you!



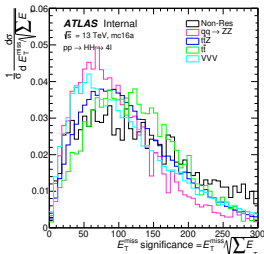
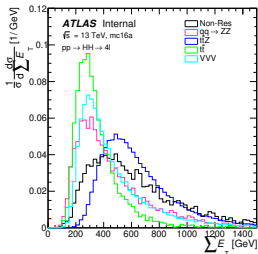
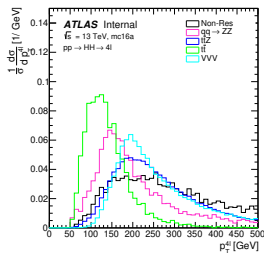
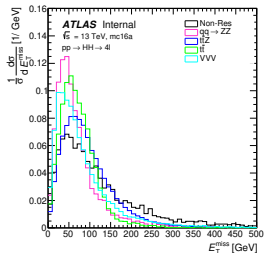


- ☐ $N_{b\text{-jet}} = 0$
- ☐ $N_{\text{jet}} = 0$ and $N_{\text{jet}} \geq 1$

Additional slides



Additional slides



Additional slides

