$WW\gamma\gamma \to l\nu qq\gamma\gamma$

Qi Li

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Limits

Fitting	MediumID	TightID	$pT_{\gamma\gamma} >$ 100 GeV	$pT_{\gamma\gamma} > 80$ GeV	$pT_{\gamma\gamma} > 50$ GeV
Limits	5.97512	5.96095	5.52188	5.21579	5.15602

Counting	Mh500	Mh400	Nonres
$pT_{\gamma\gamma} < 100$	86.1994	34.7166	38.2322
$pT_{\gamma\gamma} > 100$	3.93155	5.38366	4.80337
Combined	3.92481	5.27853	4.73899
No $pT_{\gamma\gamma}$ cut	6.99968	8.4209	7.77684

Expected limits/counting	Medium ID leptons	Tight ID leptons
mh500	8.26744	7.46967

Limits with all the sys

Fitting	MediumID	TightID	$pT_{\gamma\gamma} >$ 100 GeV	$pT_{\gamma\gamma} > 80$ GeV	$pT_{\gamma\gamma} > 50$ GeV
Limits	5.97512	5.96095	5.52188	5.21579	5.15602

Spurious signal: pseudo ones
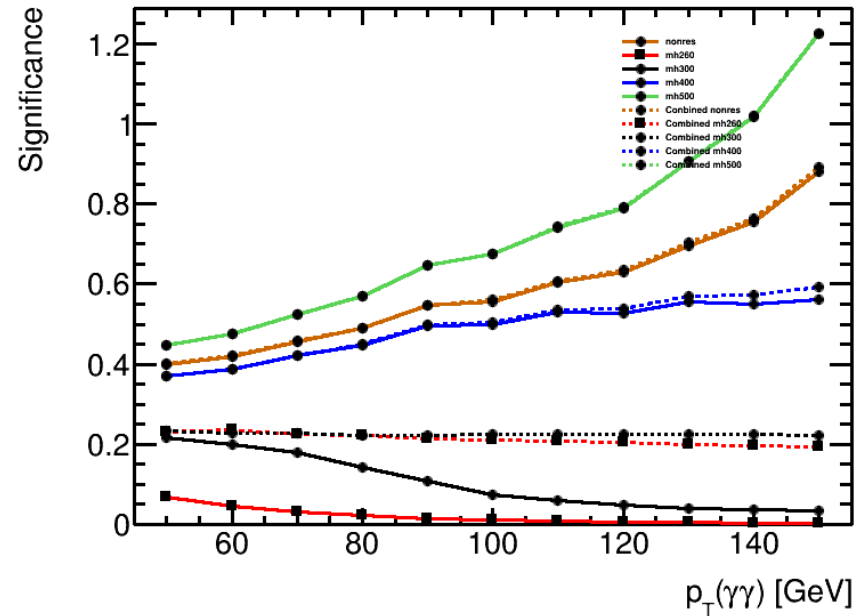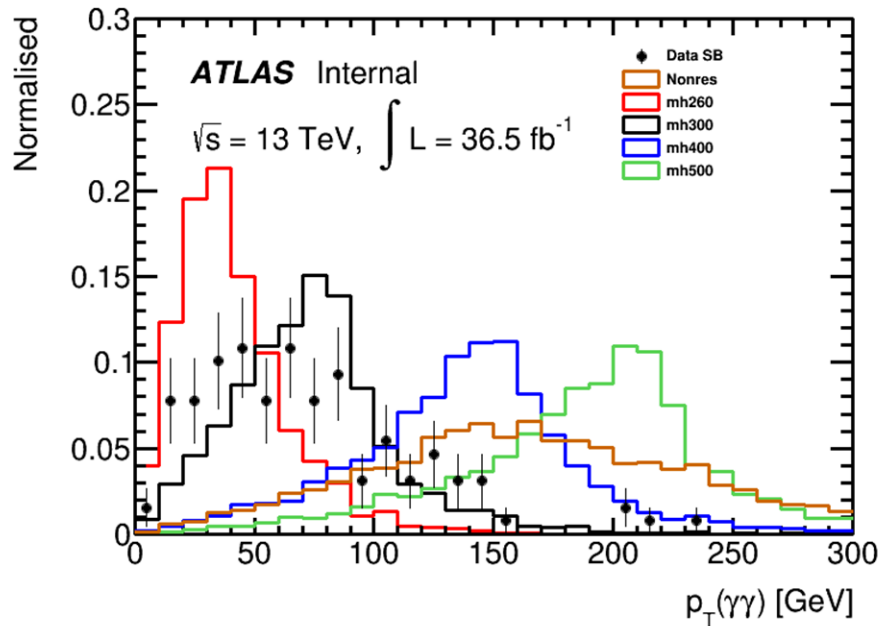Wh, Zh, ggh, VBF: shapes are same as tth, few events to fit

Expected limits/counting	Medium ID leptons	Tight ID leptons
mh500	8.26744	7.46967

Rescaled the number of events in the SB without all the statistics
Not so reliable

Problem

Look from the plots below, the 100 GeV has the best sensitivity.
Why limits for 100 GeV is the worst?

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Limits	5.97512	5.96095	5.52188	5.21579	5.15602

End