Weekly Meeting

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Monday, June 13, 2016

Outline

- Moved to mc15c
- abandon the jets in forward region
- Compare the different WPs for b-tagger, MV2c10
- Function to fit sideband-CR

central and forward jets

B-tagger: MV2c10
Default WP: MV2c10_FixedCutBEff_70

$\Delta = 10.6\%$

	Mc15c		mc15a
Cuts	$\|\eta\| < 2.5$	$\|\eta\| < 4.4$	$\|\eta\| < 4.4$
At least two jets	31.68%	35.43%	34.8%
B-veto	30.13%	33.82%	26.5%
At least one lepton	12.90%	14.72%	13.4%
Tight mass window	10.36%	11.96%	12.1%
MET significance	8.5%	9.89%	9.6%

Optimization

	ggH	VBF	WH	ZH	ttH	continuum	signal
$\|\eta\| < 4.4$	0.0033	0.0025	0.068	0.024	0.071	2.2	0.146
$\|\eta\| < 2.5$	0	0.0010	0.042	0.012	0.067		0.125

B-tagging WP	$\|\eta\| < 2.5$	$\|\eta\| < 4.4$
Continuum bkg	-	2.2
SM higgs bkg	0.12	0.17
Signal	0.125	0.146
Significance	-	0.094

$$Z = \sqrt{2[(S+B) \times ln\left(\frac{S+B}{B}\right) - S]}$$

B-tagger WP

B-tagger: MV2c10
Default WP: MV2c10_FixedCutBEff_70
Jets: $|\eta| < 2.5$

WP	ggH	VBF	WH	ZH	ttH	continuum	signal
60%	0	0.0010	0.042	0.016	0.093	-	-
70%	0	0.0010	0.042	0.012	0.067		0.125
77%	0	0.0010	0.042	0.012	0.050	-	-
85%	0	0.00099	0.039	0.012	0.035	-	-

B-tagging WP	60%	70%	77%	85%
Continuum bkg	-	-	-	-
SM Higgs bkg	0.152	0.12	0.10	0.087
Signal	-	0.125	-	-
Significance				

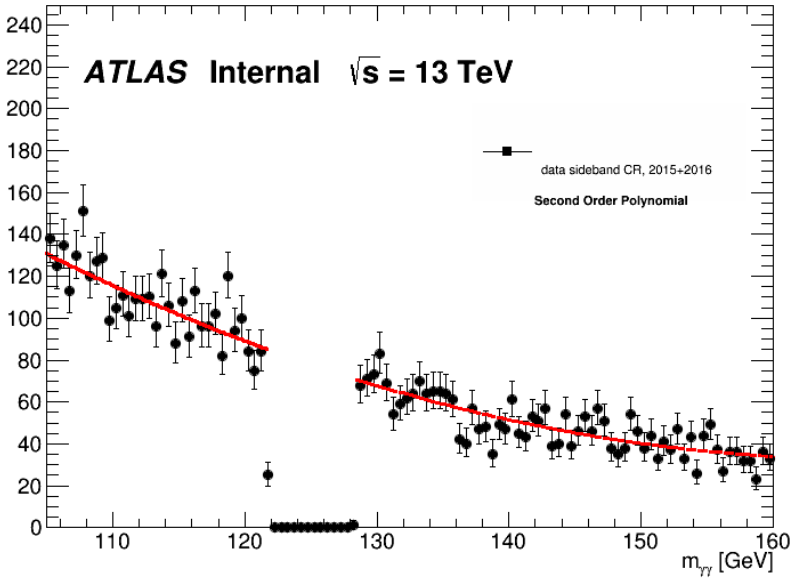
Fit to the data sideband CR

Data 2015(25ns)+2016(643ipb), the fits look good,

FIX the function to exponential?

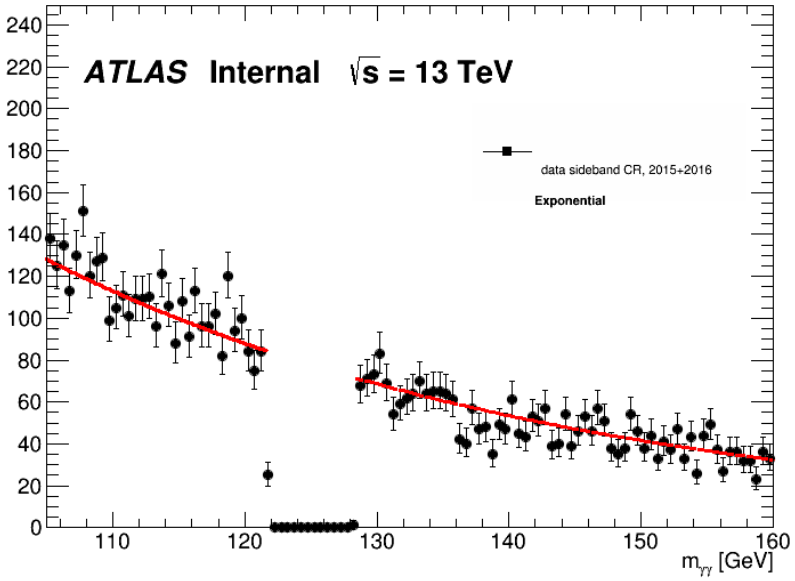
polynomial

$\epsilon_{m_{\gamma\gamma}} = 13.81\%$

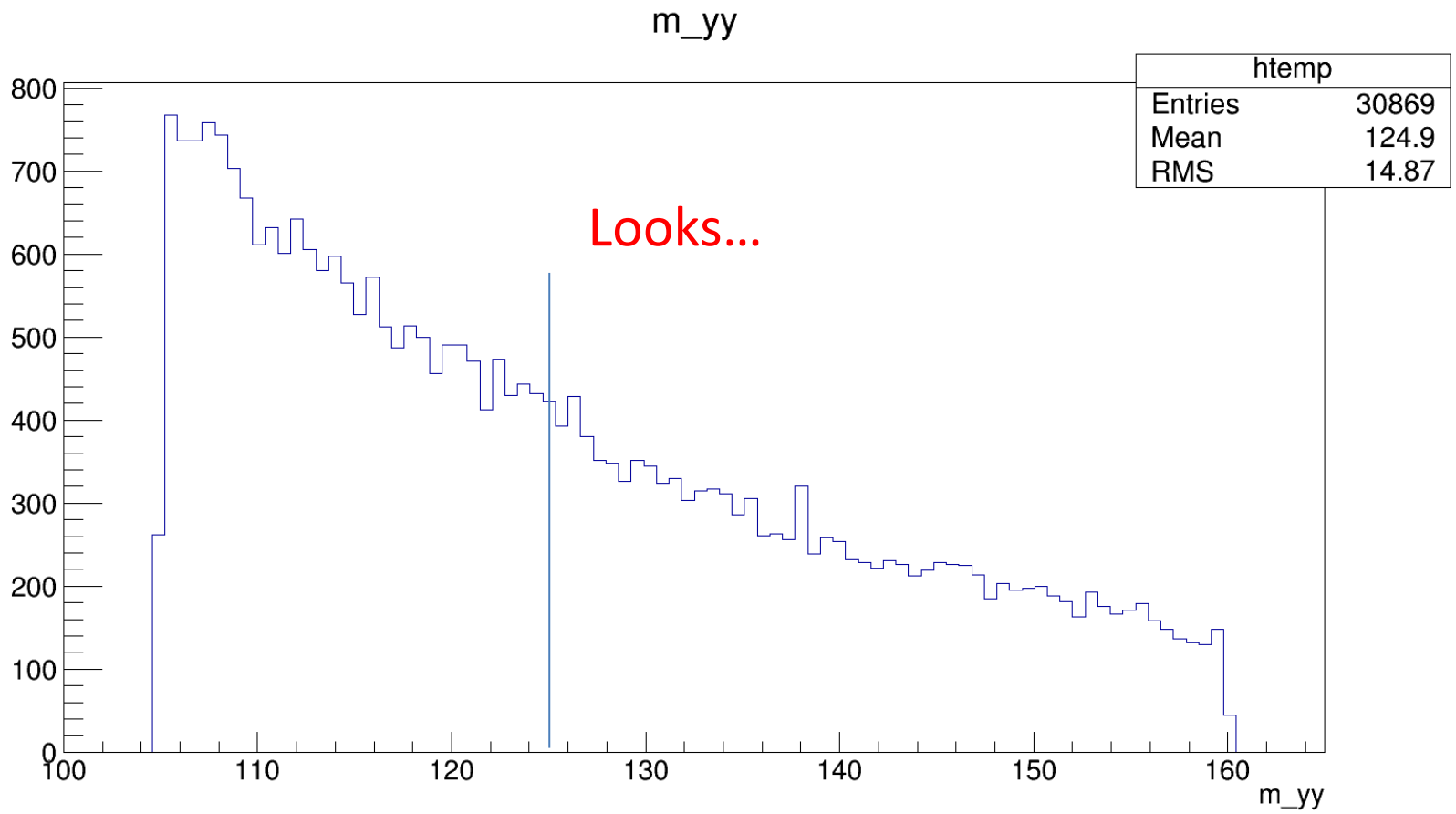


exponential

$\epsilon_{m_{\gamma\gamma}} = 13.79\%$



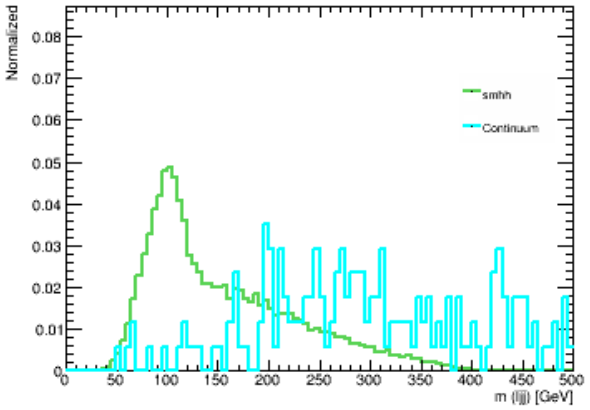
HGam inclusive $m_{\gamma\gamma}$ distribution

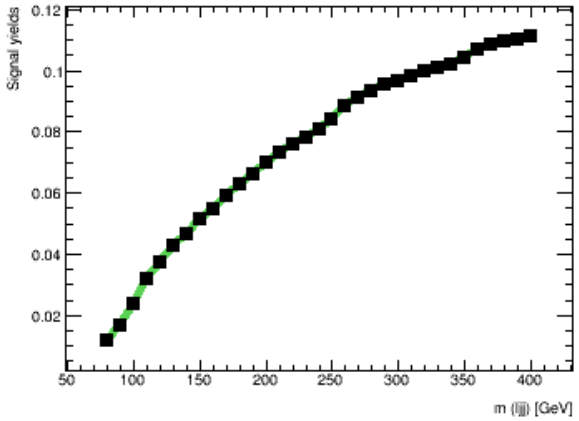


Mc15a

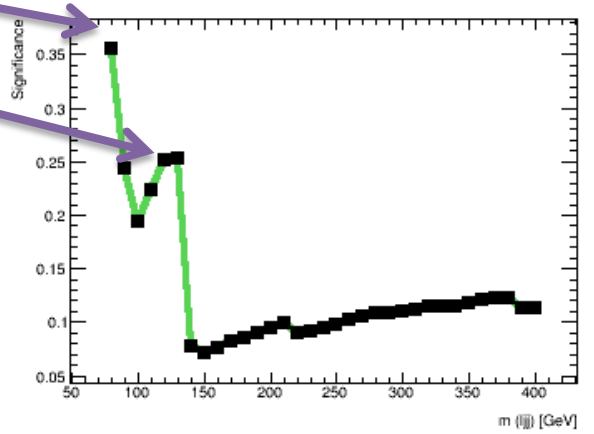
$m\,(ljj)$

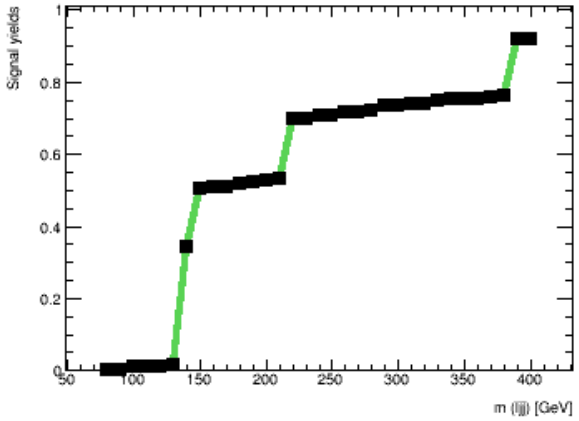
Didn't plot all the bkg as the continuum one is the dominant





80GeV
Z =0.35
120 or 130GeV
Z =0.25





$\Delta\,\eta\,(\gamma 1, \gamma 2\,)$

Didn’t plot all the bkg as the continuum one is the dominant