Weekly Meeting

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Monday, May 30, 2016

Event Yields

Channel	ggh	VBF	Wh	Zh	tth
Events yields	negligible	negligible	0.078	0.018	0.054
Run 1 results	negligible	negligible	0.14	0.025	0.08

Table: Event yields for SM Higgs productions

S = 0.15

Z = 0.15

$B_{sb}^{continuum} = 0.79$

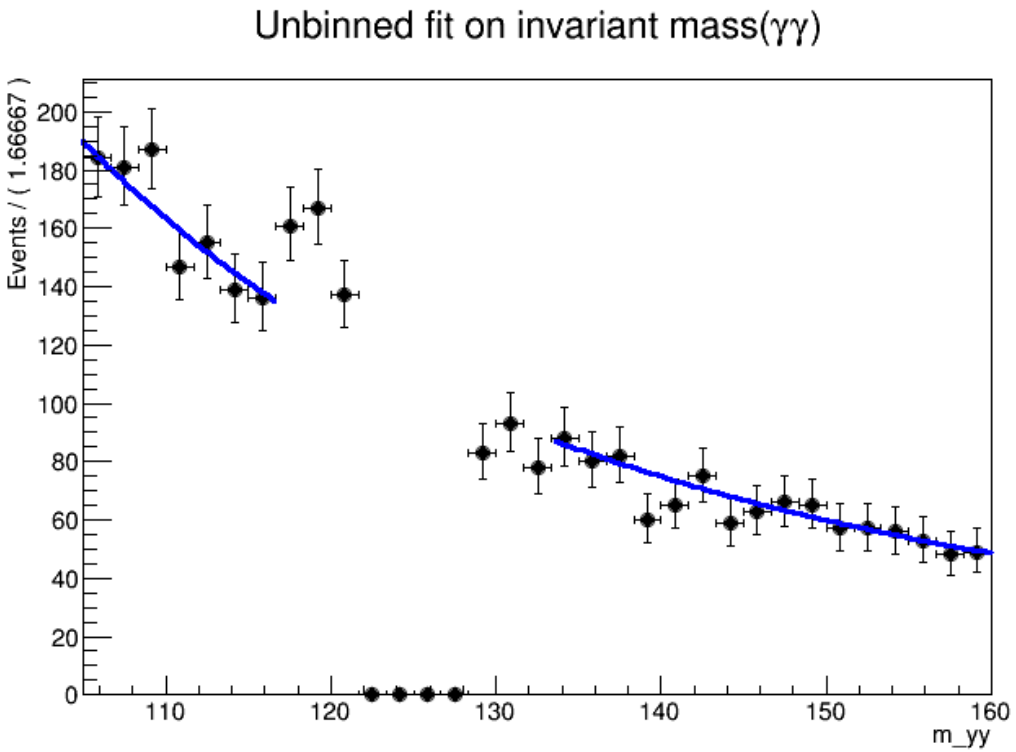
All cuts	SM Higgs pair
all	100.0%
Trigger	73.9%
GRL	73.9%
Detector Quality	73.9%
has PV	73.9%
2 loose photons	60.3%
$e-\gamma$ ambiguity	59.8%
Tight ID	50.4%
Isolation	44.7%
Rel.Pt cuts	40.9%
$105 < m_{\gamma\gamma} < 160$ GeV	40.7%
At least 2 jets	34.6%
At least 1 lepton	16.1%
b-veto	14.1%
Tight mass window	11.4%
MET Significance	9.9%

Table: Cut efficiencies for non-resonance

Fitting to the sideband

Fit range: 5σ centered around sm higgs mass

Model: $(m_{\gamma\gamma}/13000)\hat{}x$



Systematic

Second round of obj sys

EG Res, PRW, PH ID, PH ISO

Others are 0

MUON_ISO_STAT__1up	0
MUON_ISO_SYS__1down	0
MUON_ISO_SYS__1up	0
MUON_TTVA_STAT__1down	0
MUON_TTVA_STAT__1up	0
MUON_TTVA_SYS__1down	0
MUON_TTVA_SYS__1up	0
PH_EFF_ID_Uncertainty__1down	-2.32107
PH_EFF_ID_Uncertainty__1up	2.34865
PH_EFF_TRKISO_Uncertainty__1down	-3.44946
PH_EFF_TRKISO_Uncertainty__1up	3.50873
PH_Iso_DDonoff	-0.156201
PRW_DATASF__1down	-4.20512
PRW_DATASF__1up	2.10507

Table 28: Systematics uncertainties for non-resonance process

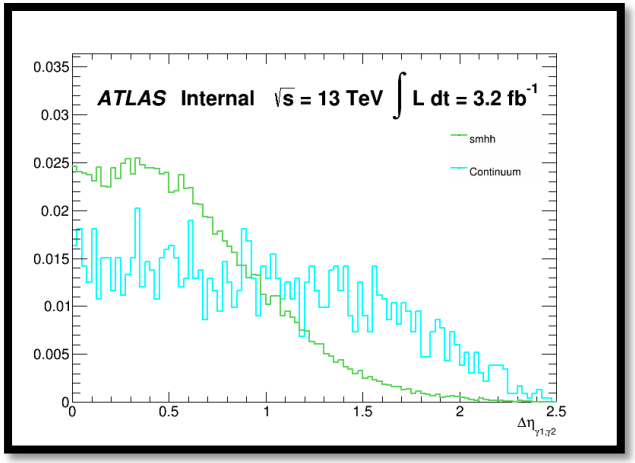
The theoretical uncertainties: check [CERN YELLOW REPORT 4]

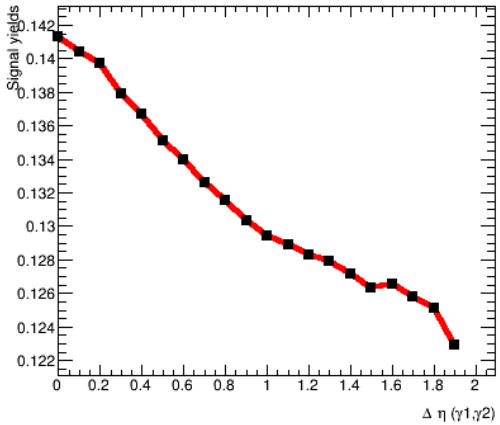
MUON_EFF_TrigStatUncertainty__1down	0
MUON_EFF_TrigStatUncertainty__1up	0
MUON_EFF_TrigSystUncertainty__1down	0
MUON_EFF_TrigSystUncertainty__1up	0
MUON_ISO_STAT__1down	0
MUON_ISO_STAT__1up	0
MUON_ISO_SYS__1down	0
MUON_ISO_SYS__1up	0
MUON_TTVA_STAT__1down	0
MUON_TTVA_STAT__1up	0
MUON_TTVA_SYS__1down	0
MUON_TTVA_SYS__1up	0
PH_EFF_ID_Uncertainty__1down	-2.47037
PH_EFF_ID_Uncertainty__1up	2.50214
PH_EFF_TRKISO_Uncertainty__1down	-3.63029
PH_EFF_TRKISO_Uncertainty__1up	3.69955
PH_Iso_DDonoff	0
PRW_DATASF__1down	4.3473
PRW_DATASF__1up	0.344508

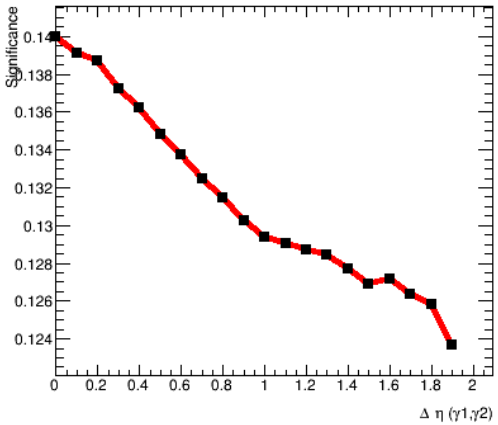
Table 26: Systematics uncertainties for SM WH mode

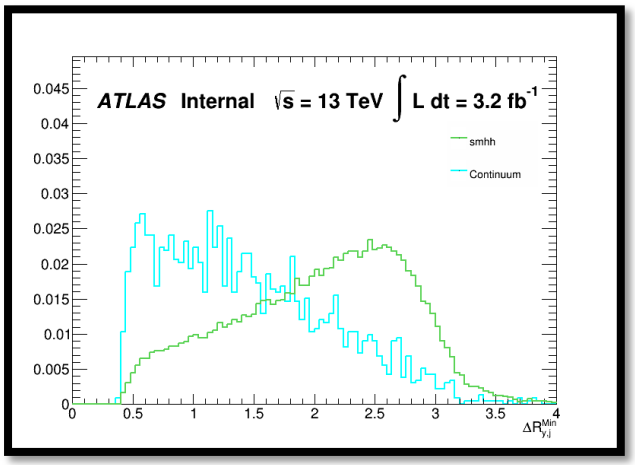
Minimum d_R (j,y)
D_eta(y1,y2)

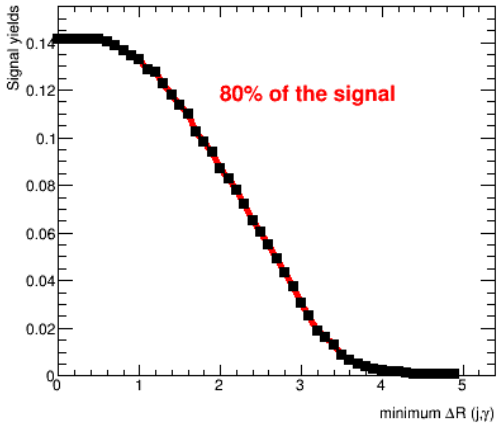
Optimization

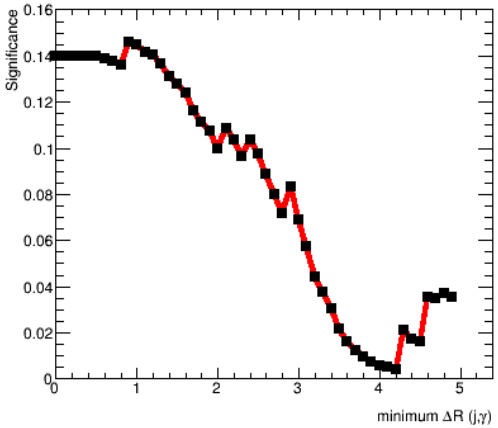












Plan

Move to the release 20.7/MC15c

If the fitting model is fixed, consider the uncertainty from model

The uncertainty due to the VH sample

Try other strategies to optimize the cuts

Cross check with others on the objects' systematic? If possible, no more that that