Analysis on XXX XXX

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Introduction

Object Definition

- photons
- Muons
- Electrons
- Jets
- Missing ET
- Overlap Removal

Event Selection

Begin with $h \to \gamma\gamma$ selections. The additional cuts follow as:

- At least one lepton
- At least two jets
- B-veto
- Tight mass window
- Missing ET significance

Signal Yields

All cuts	SM Higgs pair	260 GeV	300 GeV	400 GeV	500 GeV
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

Signal yields = 0.15

Background 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

- The Continuum bkg estimated from sideband: $N_{\text{sb}}^{\text{continuum}} = 0.79$

Sensitivities

$$\mathrm{Z} = 0.15$$

Summary

Schdule