

VBF Higgs to Invisible

HIG-14-038, AN-14-243

Overview

- ▶ Asymmetric errors included in plots
- ▶ $t\bar{t}$ BF reweighting added
- ▶ New lighttrees in production
 - needed for studies suggested by ARC
 - some issues with lepton weight errors
- ▶ We were waiting for new results and studies to start on PAS update

Top estimate

- ▶ As stated last Monday top to come from MC
 - Add top pt reweighting errors to systematic
 - Add a further systematic to account for variation in control regions
- ▶ Reweight Madgraph ttbar samples according to recipe from Pedro to correct BF
 - 67.41% hadronic 10.86% for each lepton

New weights and top from MC

- ▶ Top as described in previous slide
- ▶ Lepton weights updated to rereco values
- ▶ Table shows final background and signal estimate
 - Stat error only shown due to lepton efficiency error problems

Background	New $N_{est} \pm (stat)$	Old $N_{est} \pm (stat)$
$Z \rightarrow \nu\nu$	158.1 ± 37.3	158.1 ± 37.3
$W \rightarrow \mu\nu$	103.1 ± 6.3	101.8 ± 6.1
$W \rightarrow e\nu$	57.9 ± 7.4	57.3 ± 7.3
$W \rightarrow \tau\nu$	94.6 ± 13.1	97.7 ± 13.1
top	5.5 ± 0.0	4.5 ± 1.0
VV	3.9 ± 0.0	3.9 ± 0.0
QCD multijet	17 ± 0	17 ± 0
Total Background	440.0 ± 40.7	440.2 ± 40.6
Signal(VBF)	273.1 ± 0.0	273.1 ± 0.0
Signal(ggH)	23.1 ± 0.0	23.1 ± 0.0

To do

- ▶ Fix lepton scale factor errors
- ▶ Produce gen lepton in/outside acceptance plots
- ▶ Look at different splits for control plots
- ▶ Make twiki page with relevant links:
 - Dacard SVN, preapproval talk etc.
- ▶ Redraft PAS

Backup