

Some update for yesterday's
meeting

The efficiency issue

- the low efficiency is mainly due to the dumper efficiency
- Only 1.8% electron efficiency in dumper
- 35% in Pt cut
- 16% in **PID cut**

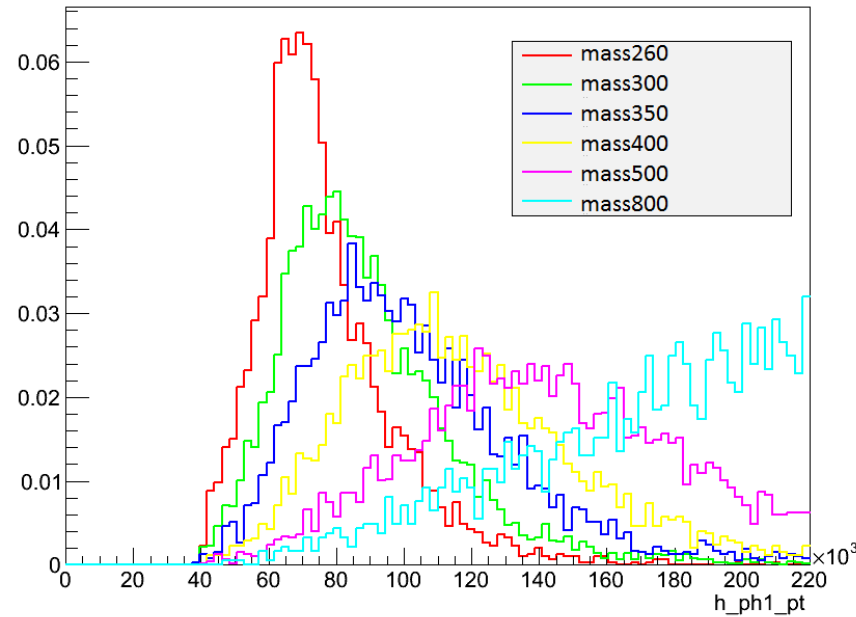
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.....
Electron cut-flow (unweighted) (weighted)
.....
el_initial          406785  4.08796e+08
el_author           173421  1.74079e+08
el_eta              172545  1.73195e+08
el_pt               60974   6.12318e+07
el_quality          60879   6.11414e+07
el_mediumPP_ID      9798    9.86626e+06
el_isolation        8338    8.40237e+06
el_overlap_remove   7443    7.4925e+06
      0      0
      0      0
| 406785 | 173421 | 172545 | 60974 | 60879 | 9798 | 8338 | 7443 | 0 | 0

.....
Muon cut-flow (unweighted) (weighted)
.....
mu_initial          20894   2.10718e+07
mu_author           17135   1.72762e+07
mu_pt-eta           11609   1.16691e+07
mu_vertexD0Z0       11573   1.16354e+07
mu_comb+segtag      11573   1.16354e+07
mu_hits             11461   1.15221e+07
mu_looseID           11461   1.15221e+07
mu_isolation        8777    8.83259e+06
mu_overlap_remove   8583    8.63971e+06
      0      0
| 20894 | 17135 | 11609 | 11573 | 11573 | 11461 | 11461 | 8777 | 8583 | 0
```

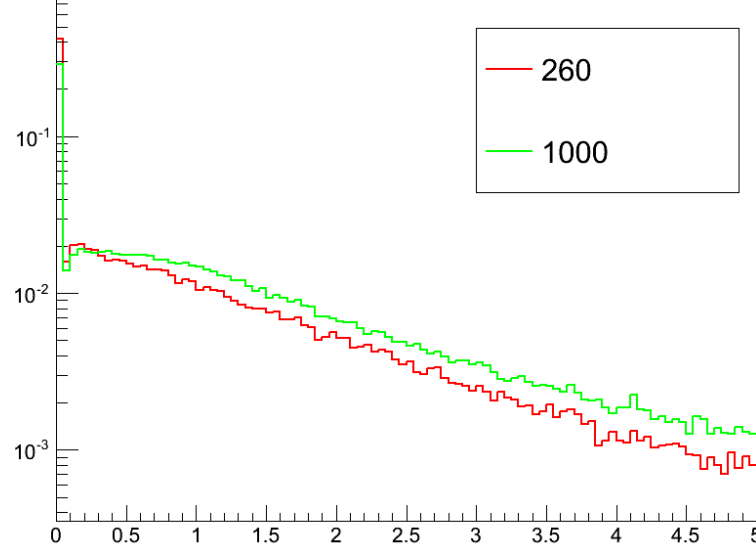
Why it increase

- The rise in the efficiency is mainly due to at high mass point, we have more high pt photon which can give out better photon selection
- The drop of the efficiency is due to at high mass region, the isolation of electron and muon became much worse, we save less leptons than before

Leading photon pt for different mass points

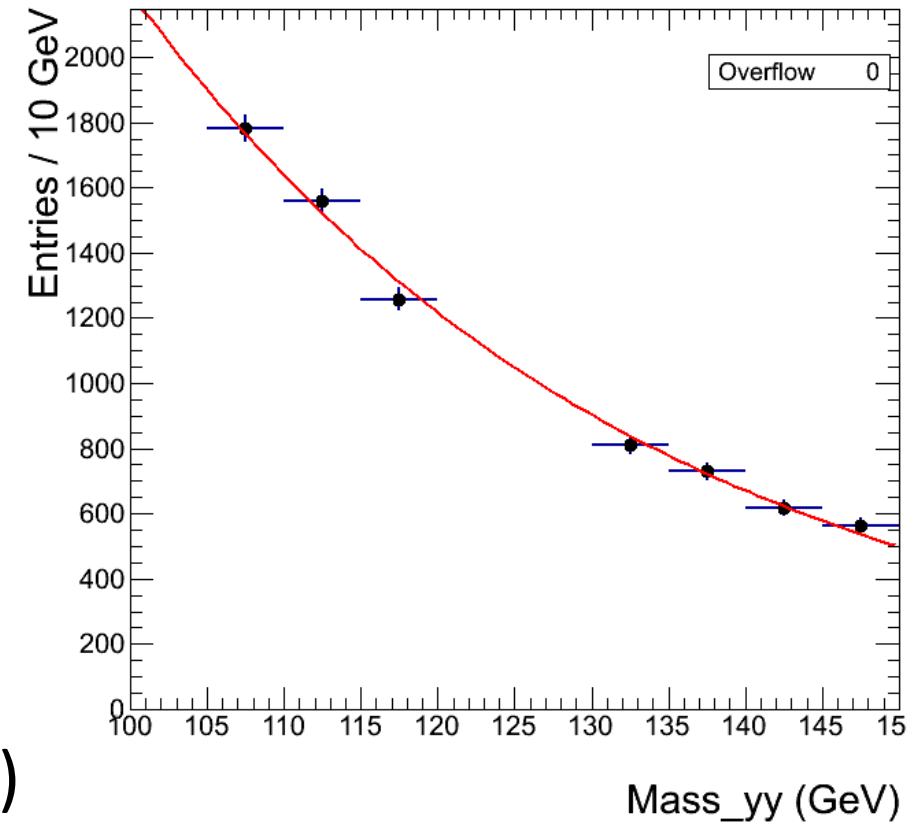


el_ptcone20/el_pt for different mass points



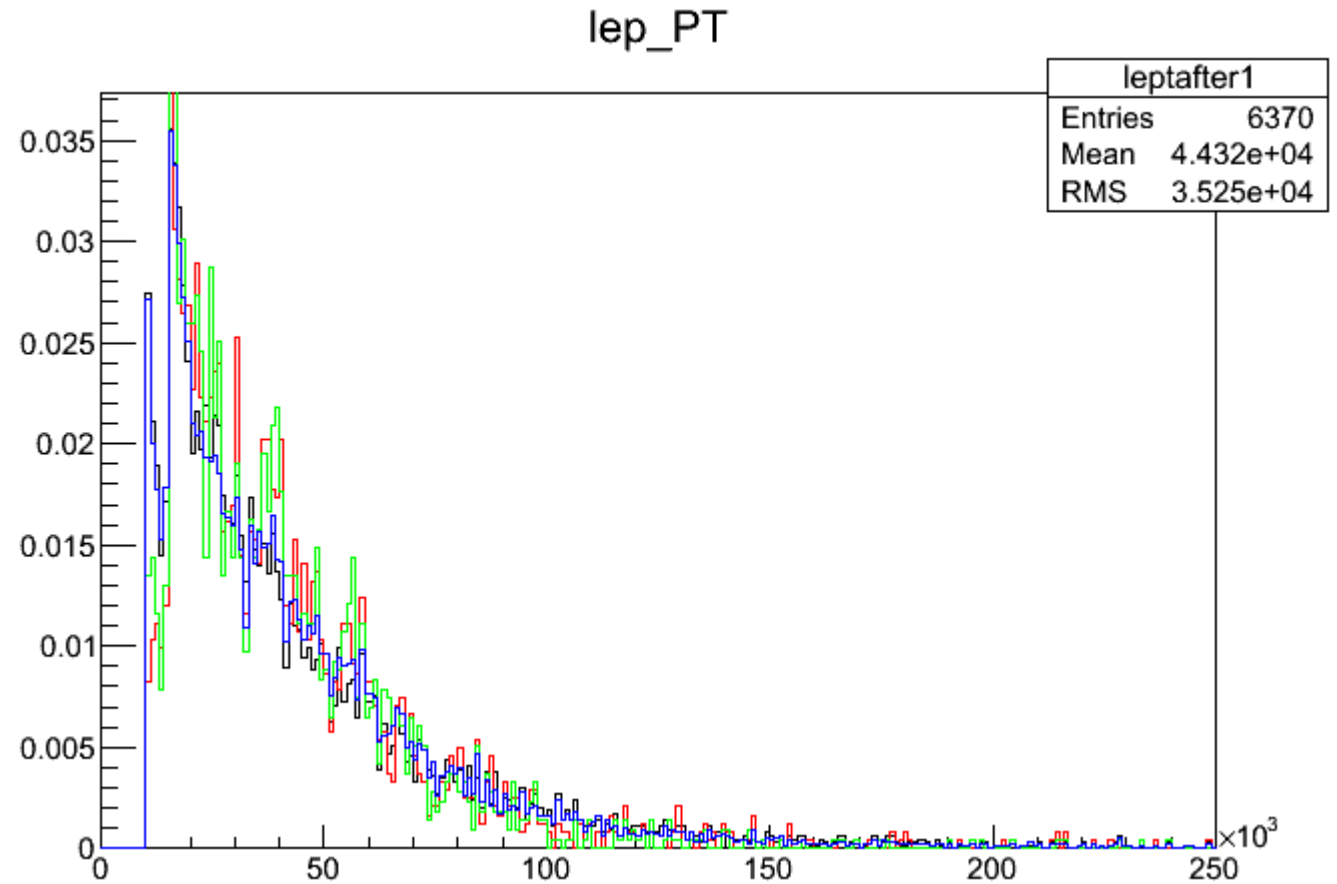
Background estimation

- ~~mass sideband~~
- ~~Reverse isolation~~
- Use inclusive electron events ----->
- Standard model Higgs background is estimated from MC in signal region(120 – 130 GeV)
TTH: 0.2
VH : 0.06



To validate

- Assume the electrons and photons act independently
- Photon cut wouldn't effect the shape of electron
- To check the lep_pt, shape flag by flag maybe works
- The four guys are flag_pre, flag_pt, flag_PID, flag_iso



When divide signal into different categories

- Two categories are defined by M_{jj}
hard: $M_{jj} (60,100)$
lep : $M_{jj} < 60 \ \&\& \text{lep_Pt} > 20 \text{ GeV}$
- Roughly 2/3 signal events will fall in hardronic category and 1/3 in leptonic category
- In background will have 15 events and 10 in hardronic category and 1/3 in leptonic category

