

Weekly Report

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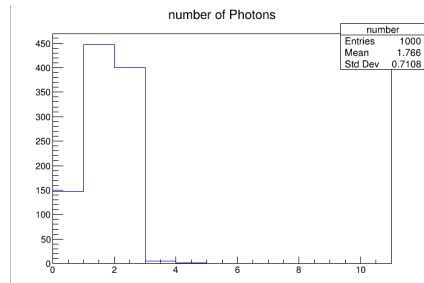
Issues with Delphes truth-level information

Objects	Fiducial definition
Photons	$ \eta < 2.37$ (excluding $1.37 < \eta < 1.52$), $\sum p_T^i / p_T^\gamma < 0.05$
Jets	anti- k_t , $R = 0.4$, $p_T > 30$ GeV, $ y < 4.4$
Diphoton	$N_\gamma \geq 2$, $105 \text{ GeV} < m_{\gamma\gamma} < 160 \text{ GeV}$, $p_T^{\gamma_1} / m_{\gamma\gamma} > 0.35$, $p_T^{\gamma_2} / m_{\gamma\gamma} > 0.25$

- Should Start with particle level, but Delphes calculate $\sum p_T$ by using reco-level
- Smearing and photons efficiency didn't turn off.
- Switch off Photon efficiency and Ecal resolution, change isolation parameters

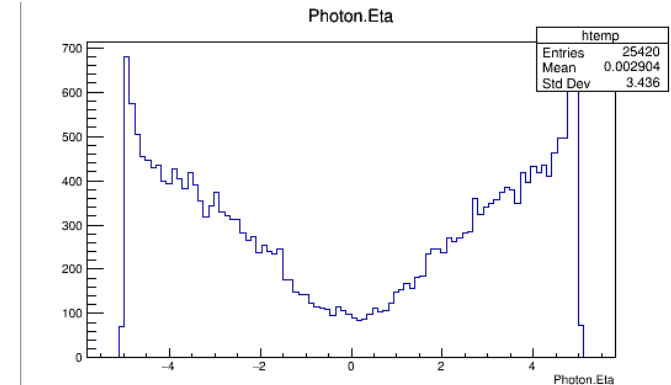
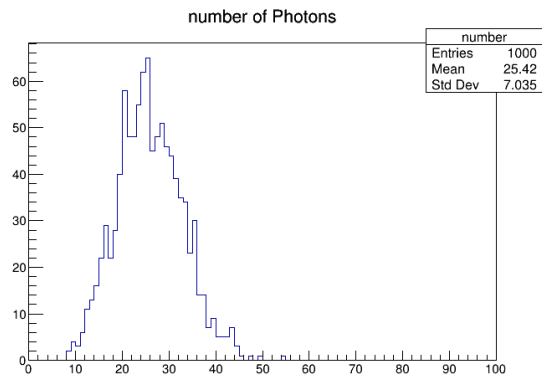
set EfficiencyFormula {

```
(abs(eta) <= 1.5) * (pt > 10.0) * (0.95) +  
(abs(eta) > 1.5 && abs(eta) <= 2.5) * (pt > 10.0) * (0.85) +  
(abs(eta) > 2.5) * (0.00)}
```



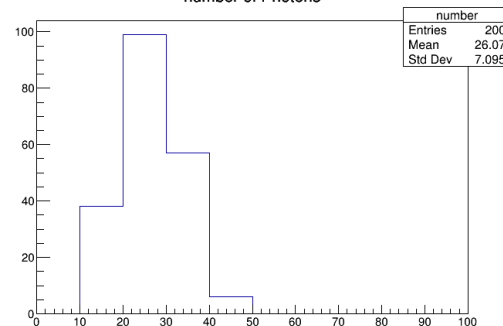
Tune photons efficiency to 1

Before fiducial cut



shower photons from pi decays, and lepton radiation

After fiducial cut



Need to figure out the right way access truth photons