

# $f(e \rightarrow \gamma)$ - Fakerate Analysis

- used sample:

/store/mc/Summer09/Zee/GEN-SIM-RECO/MC\_31X\_V3-v1

Events total = 33465

- used collections:

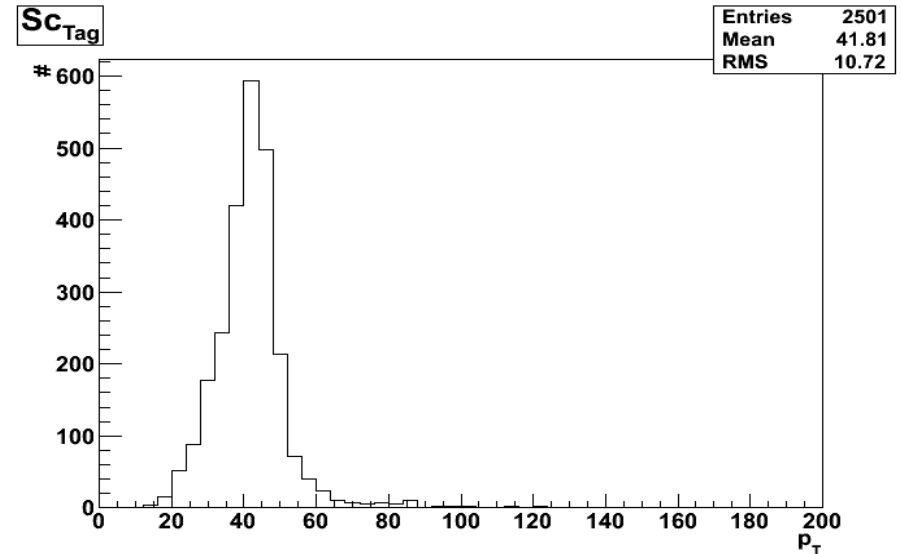
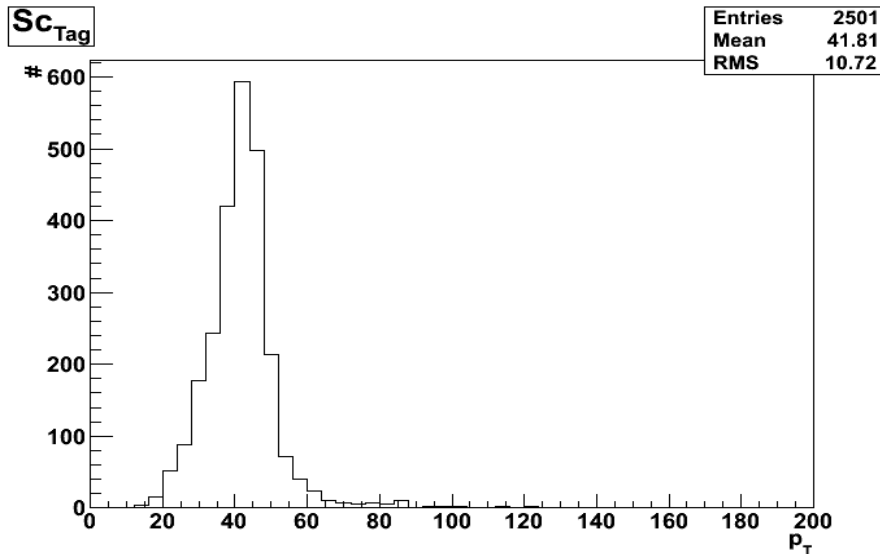
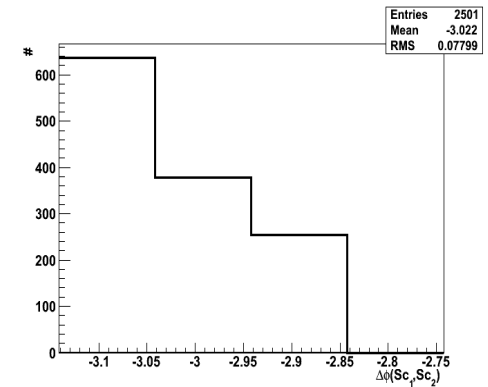
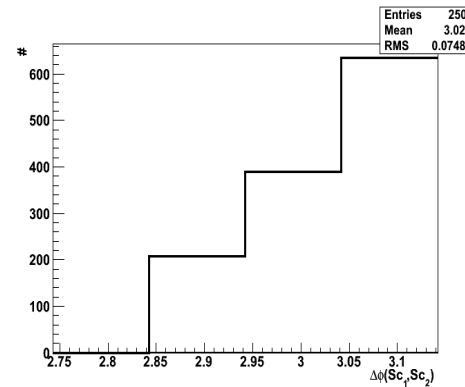
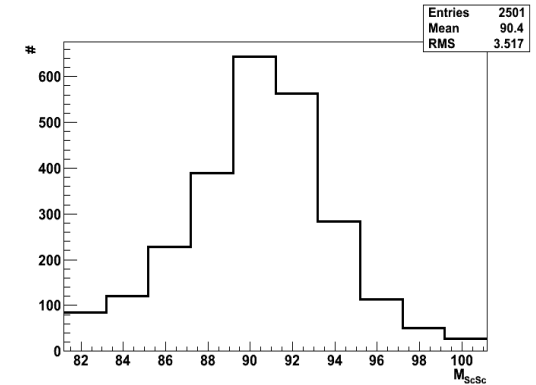
```
<reco::PhotonCollection>          photons;  
<reco::GsfElectronCollection>      gsfElectrons;  
<reco::SuperClusterCollection>     correctedHybridSuperClusters;  
<reco::CaloJetCollection>          antikt5CaloJets;  
JetCorrectionService = 'L2L3JetCorrectorSC5Calo';
```

# Z-→ee Eventselection

- 2 EM-SuperCluster with:
  - $|\eta| < 1.479$  (EB)
  - $\text{SumMass} = M_Z \pm 10 \text{ GeV}$

-  $\Delta\Phi = \pi \pm 0.3$

- SC-Tag has ElectronMatch\*



\*Matching:  $\Delta R(\text{Sc}, e/\gamma) < 0.2$

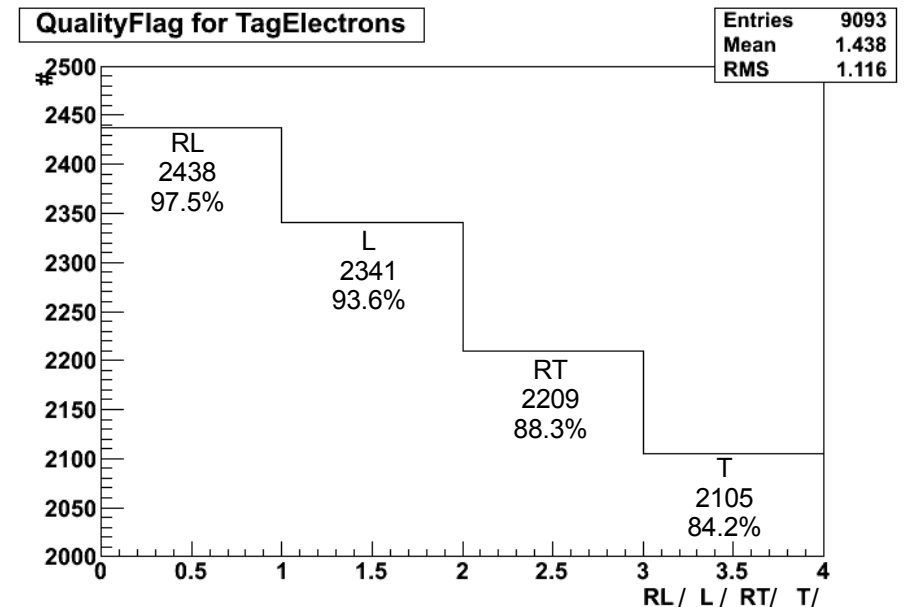
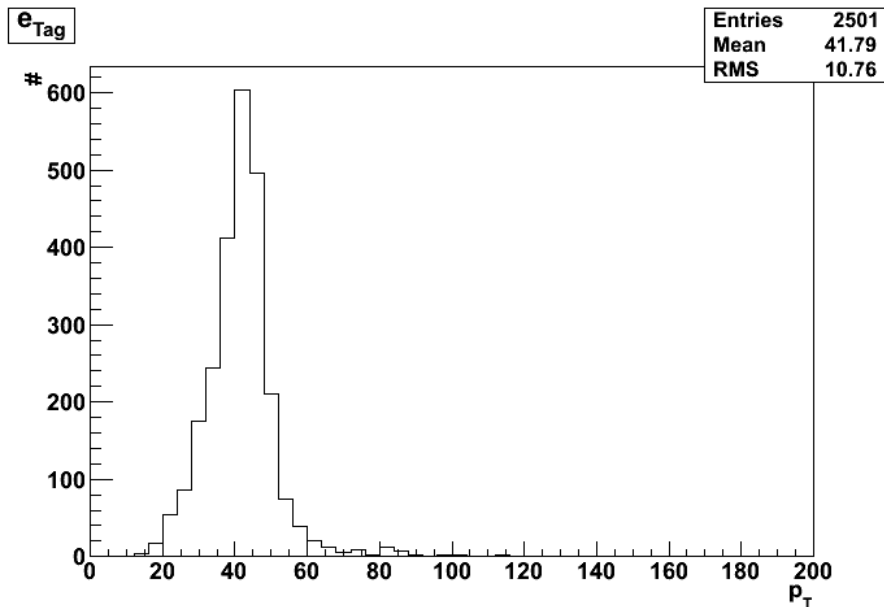
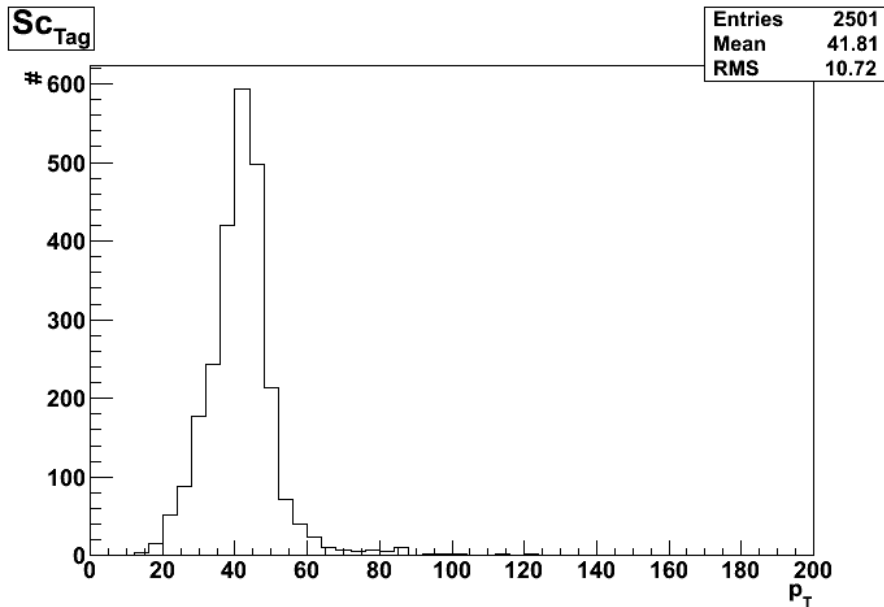
# ScTag – Electron matching

ElectronMatching -  $\Delta R(\text{Sc}, e) < dR$

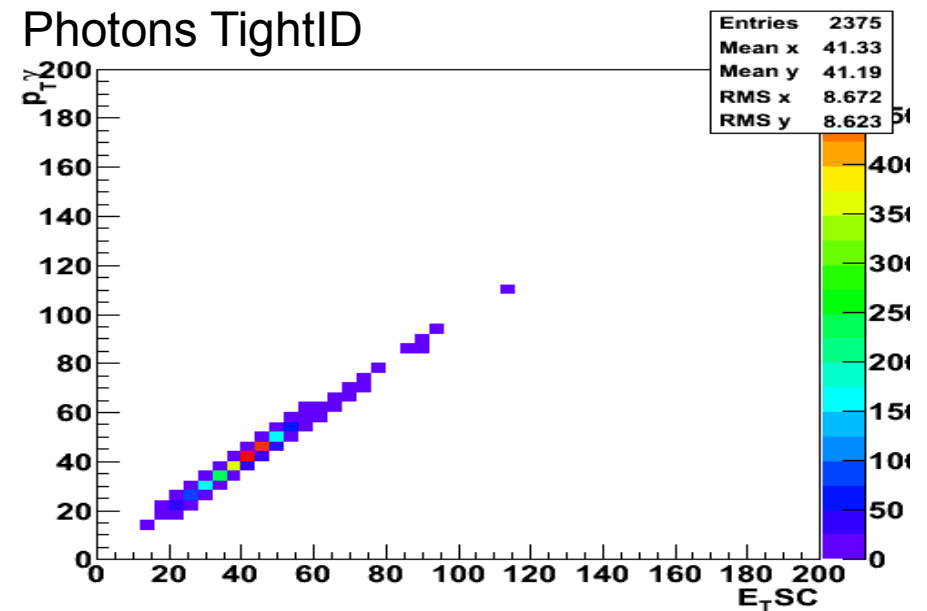
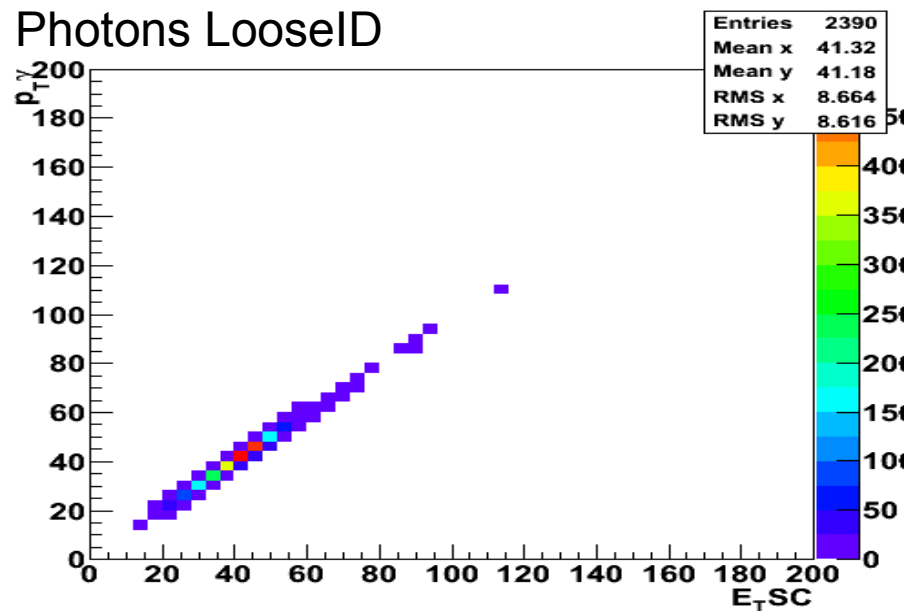
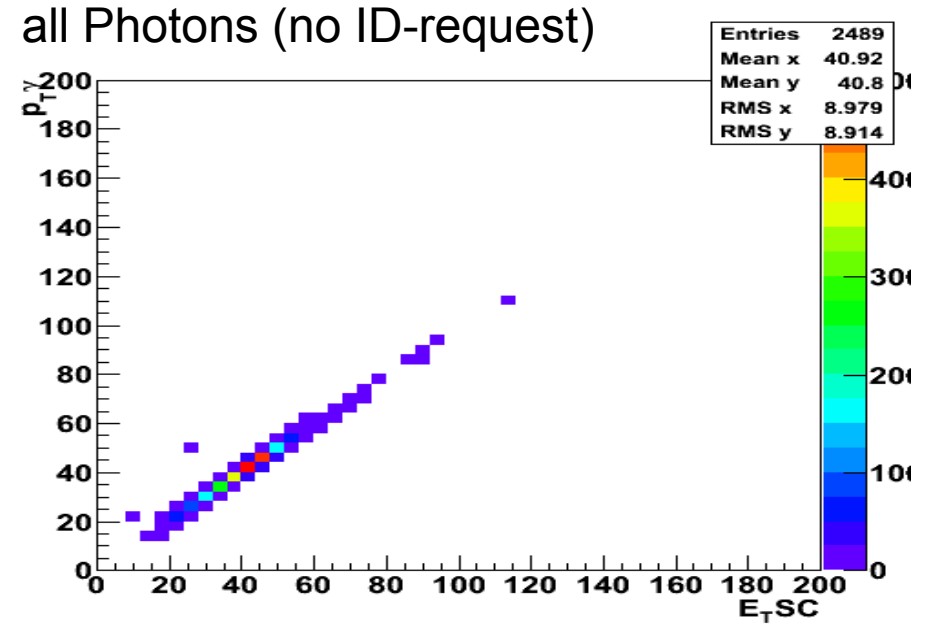
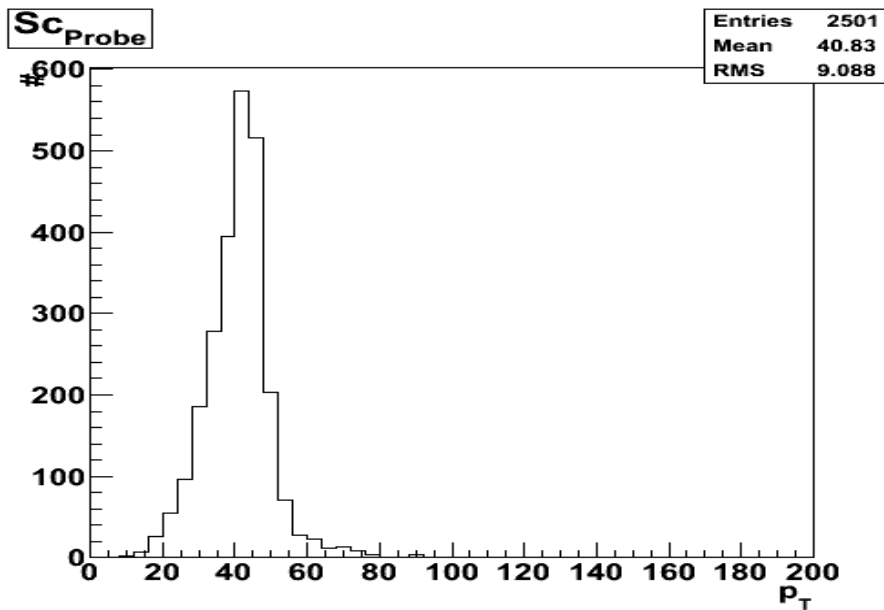
–  $dR = 0.2$

–  $dR_{\min}$

- (o.l.) ScTag (randomly chosen)
- (u.l.) Electron match
- (u.r.) ElectronIDFlag

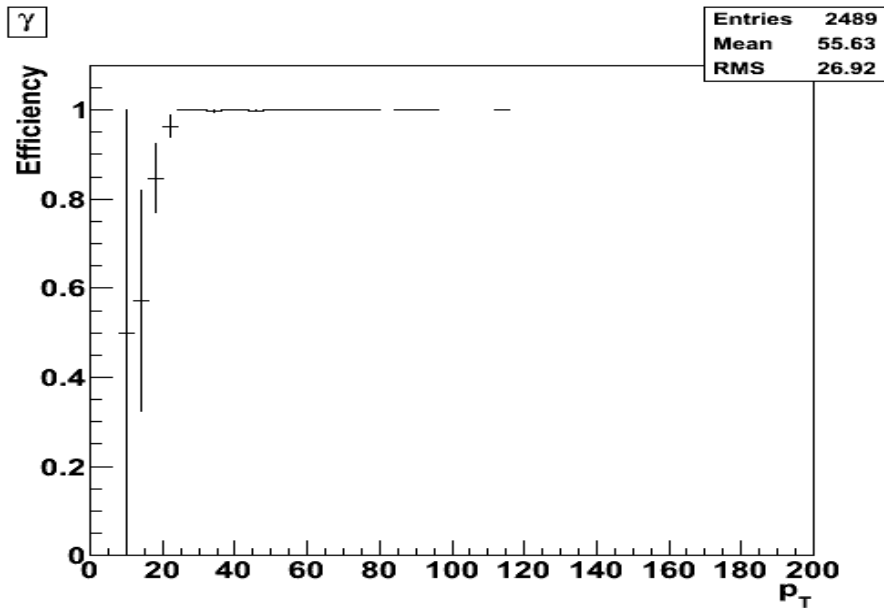


# ScProbe – Photon matching\*

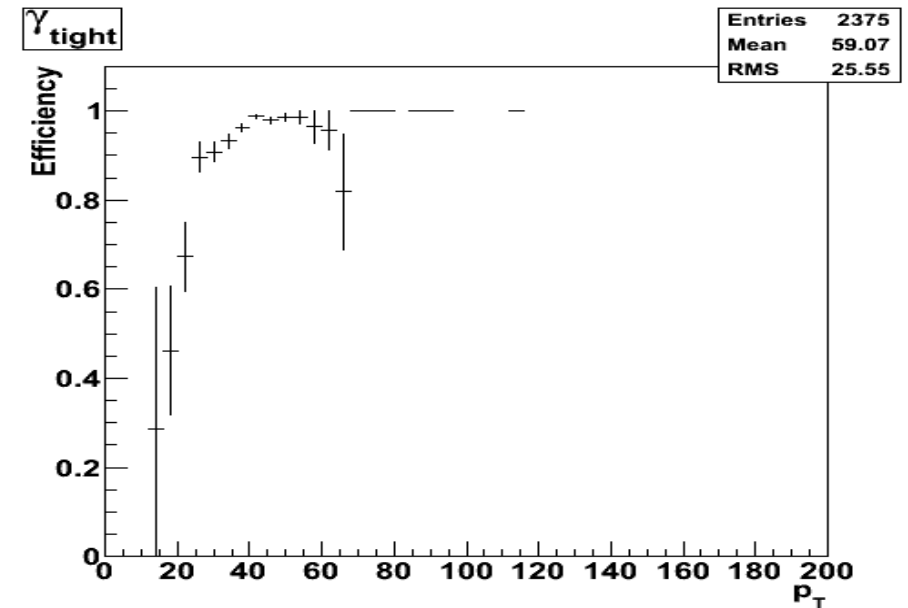
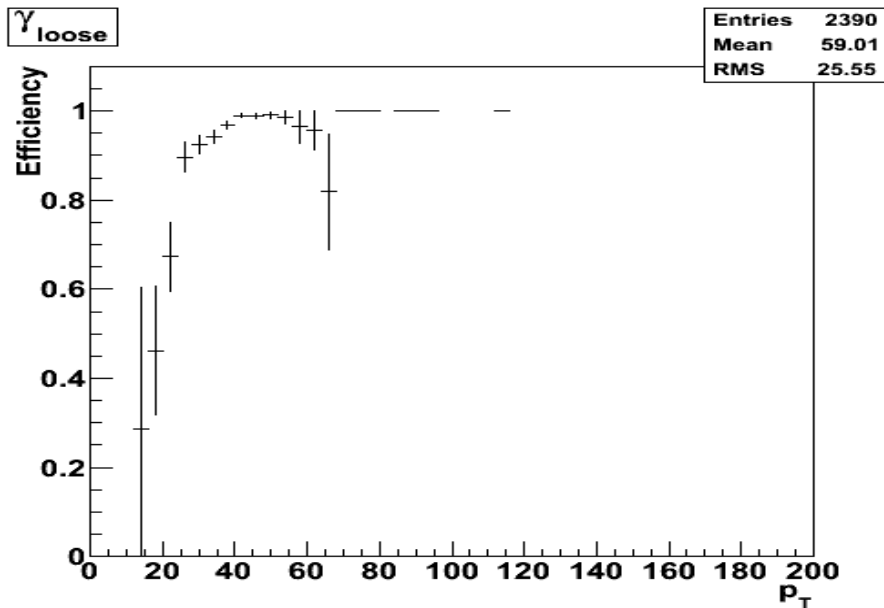


\*Matching:  $\Delta R(\text{Sc}, e/\gamma) < 0.2$

# Efficiency – SC matched with Photons in Pt

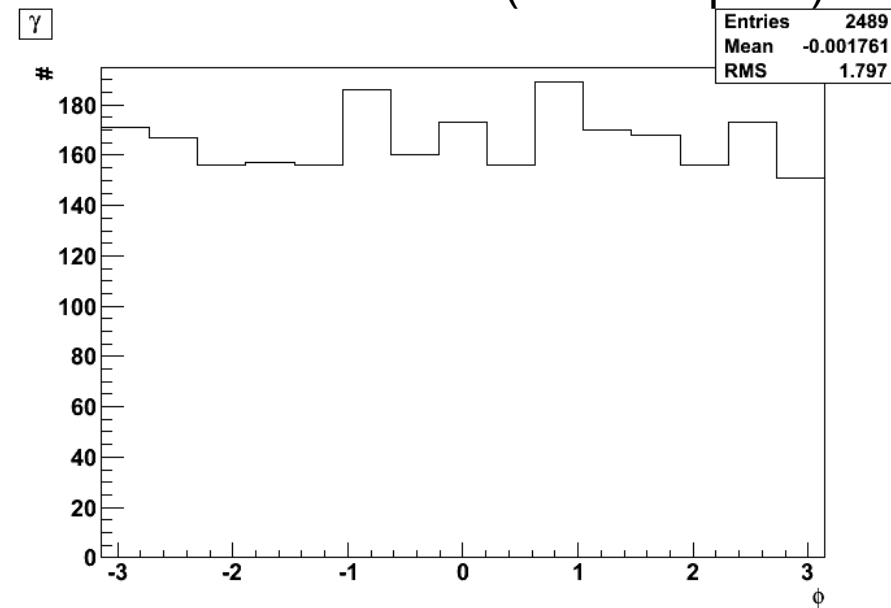
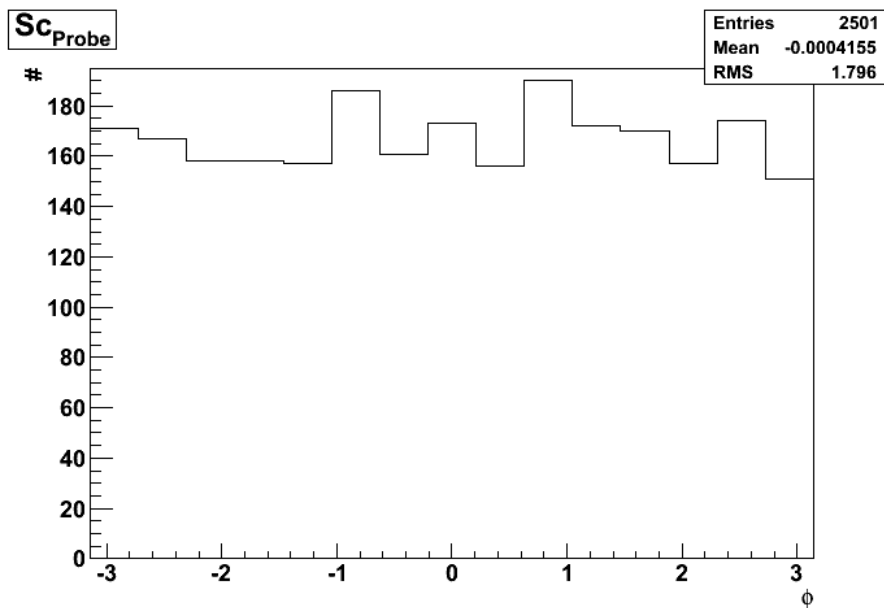


- (o.l.) all Photons (no ID-request)
- (u.l.) LoosePhotonID
- (u.r) TightPhotonID

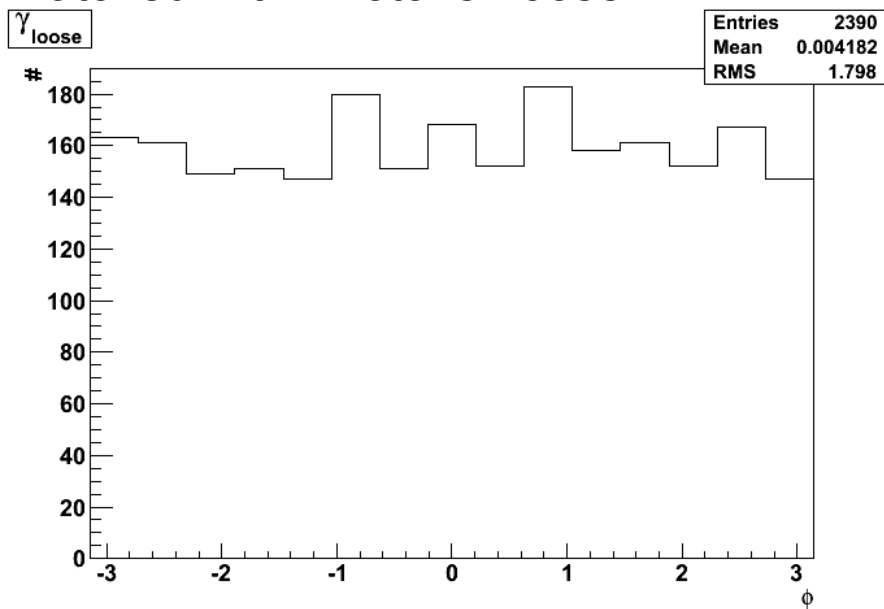


# Phi-Distributions of Probe-Sc

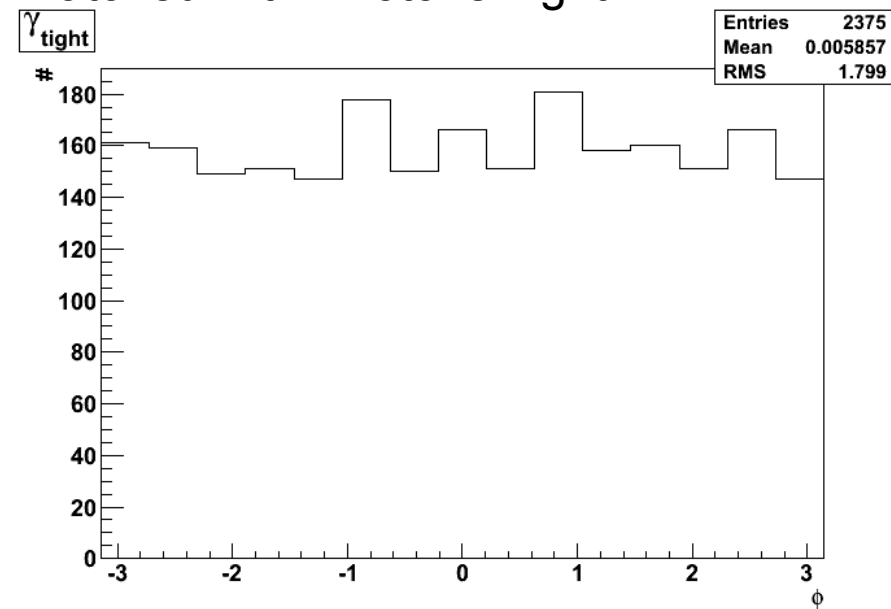
matched with Photons (no ID-request)



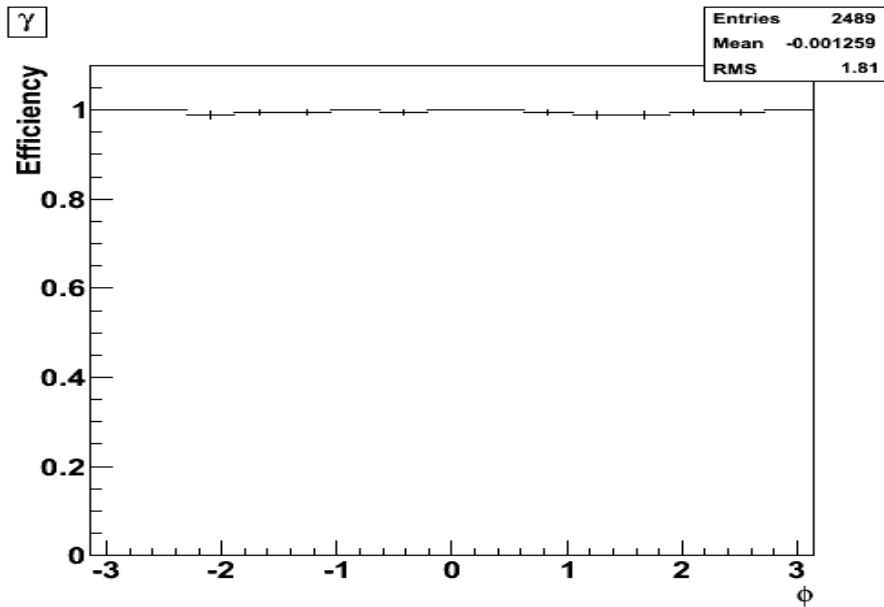
matched with Photons LooseID



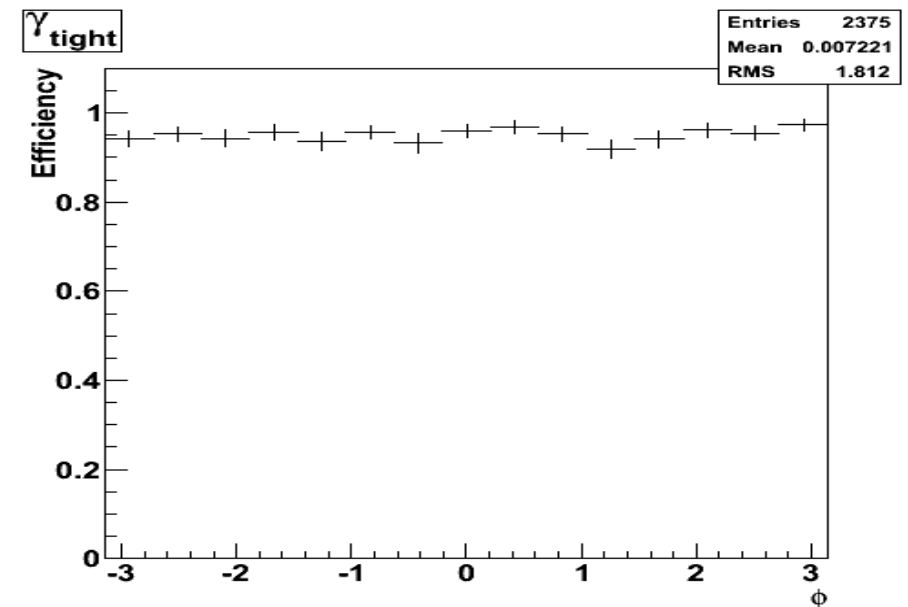
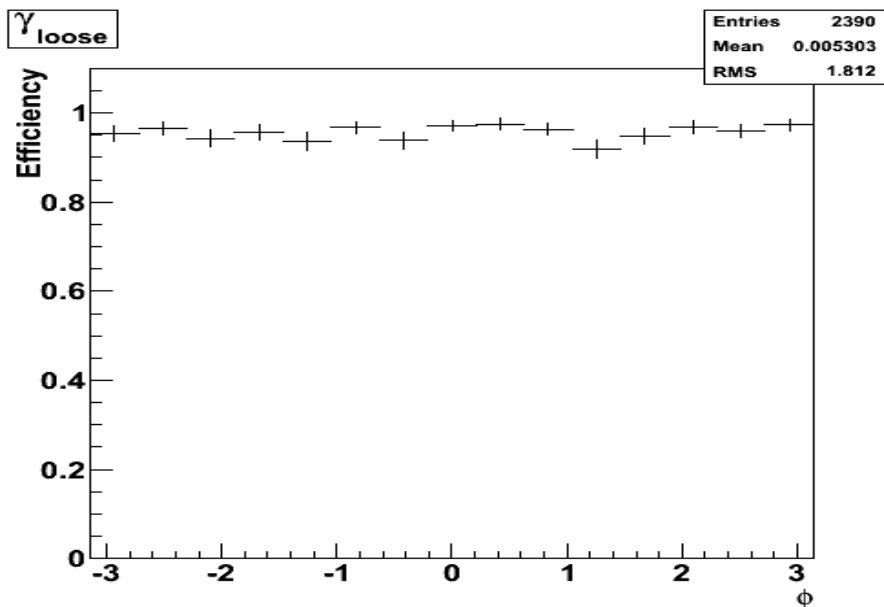
matched with Photons TightID



# Efficiency – SC-Probe/Photons in Phi

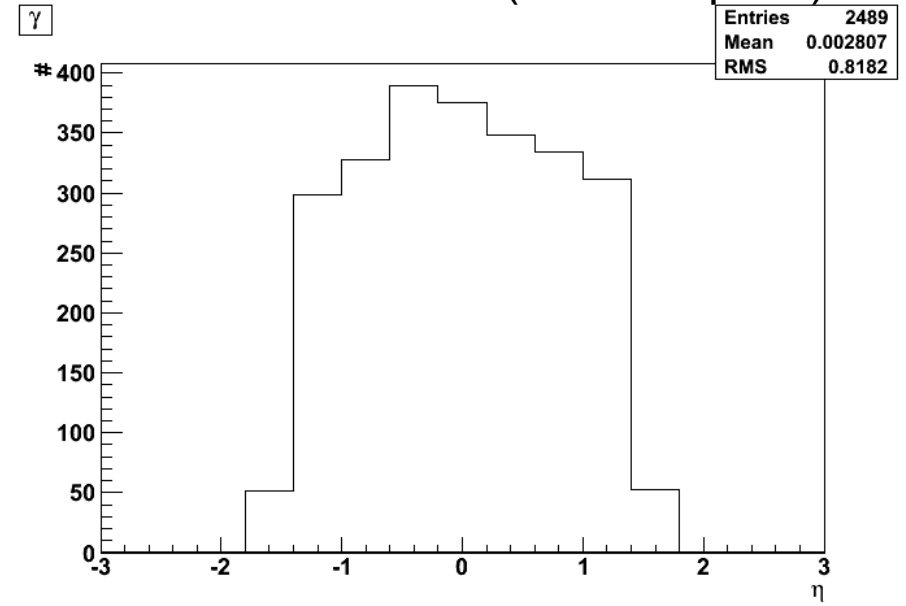
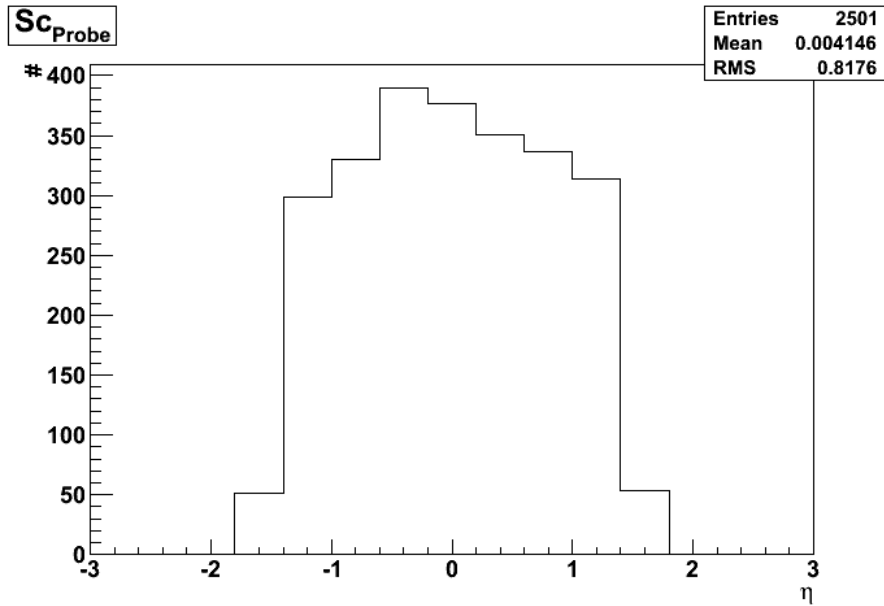


- (o.l.) all Photons (no ID-request)
- (u.l.) LoosePhotonID
- (u.r) TightPhotonID

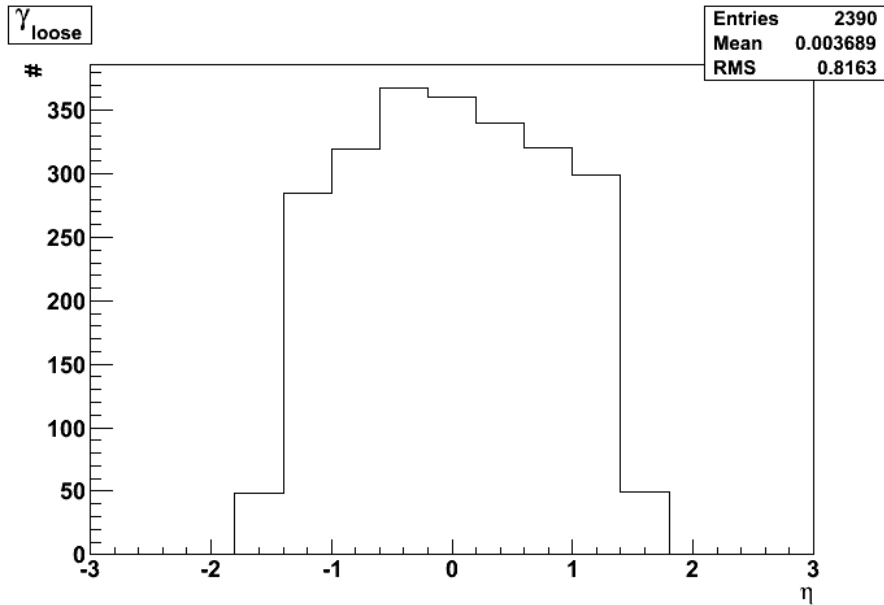


# Eta-Distributions of Probe-Sc

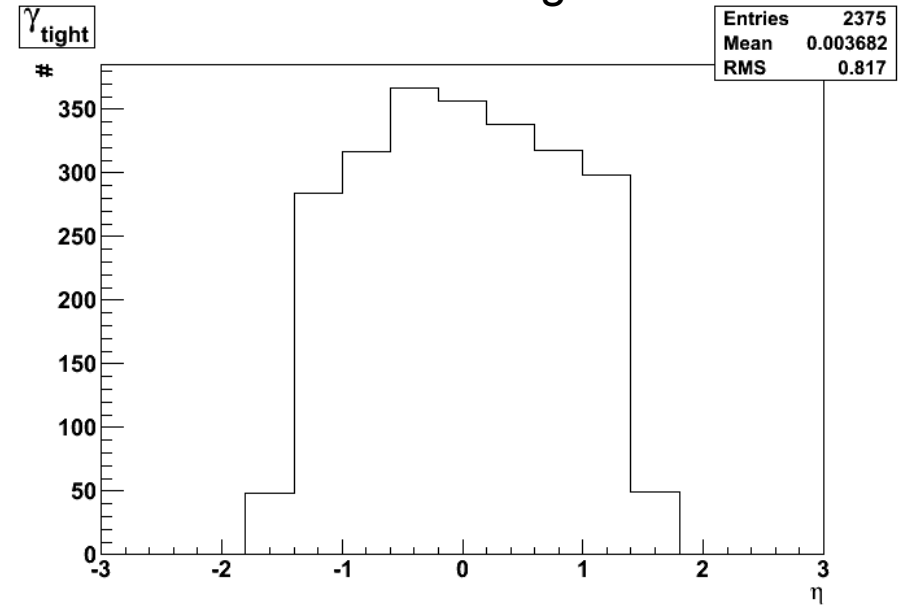
matched with Photons (no ID-request)



matched with Photons LooseID



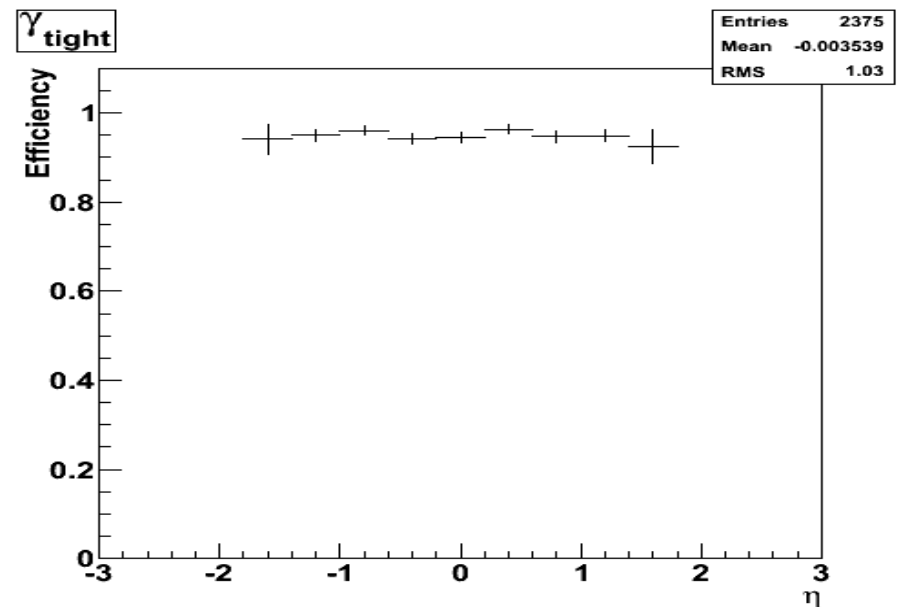
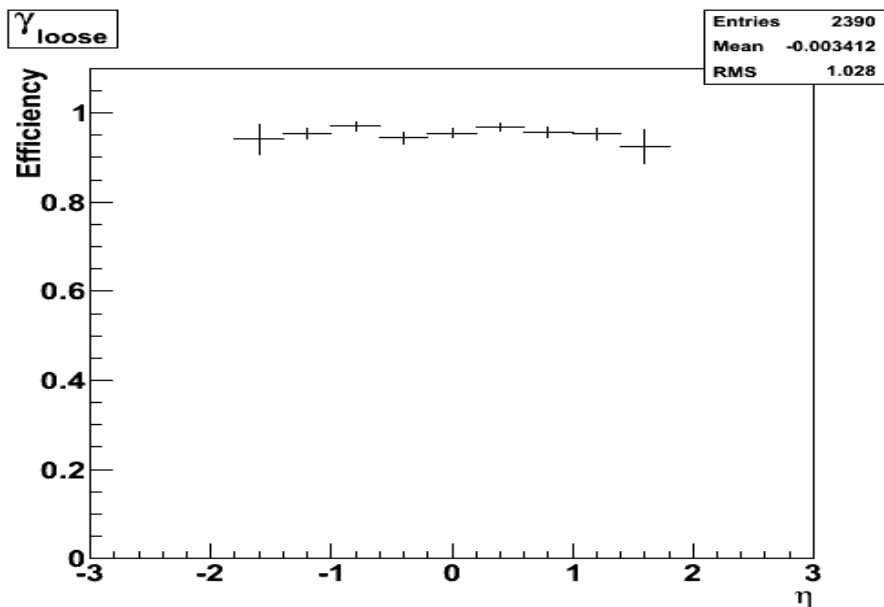
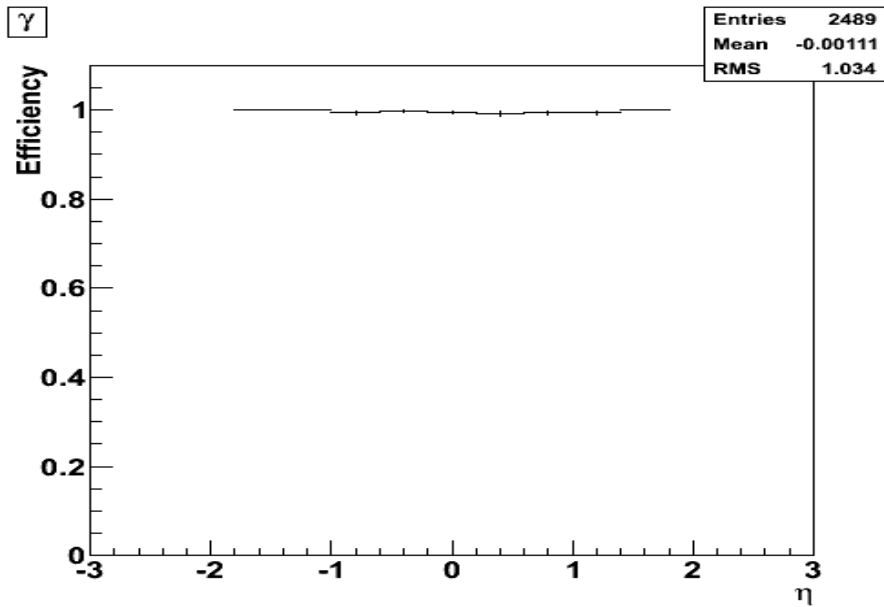
matched with Photons TightID





# Efficiency – SC/Photons in Eta

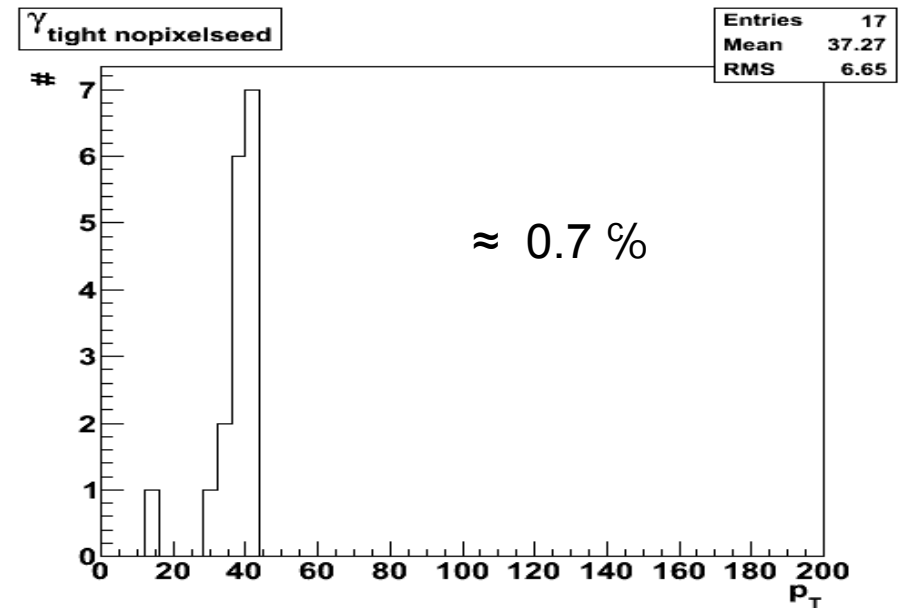
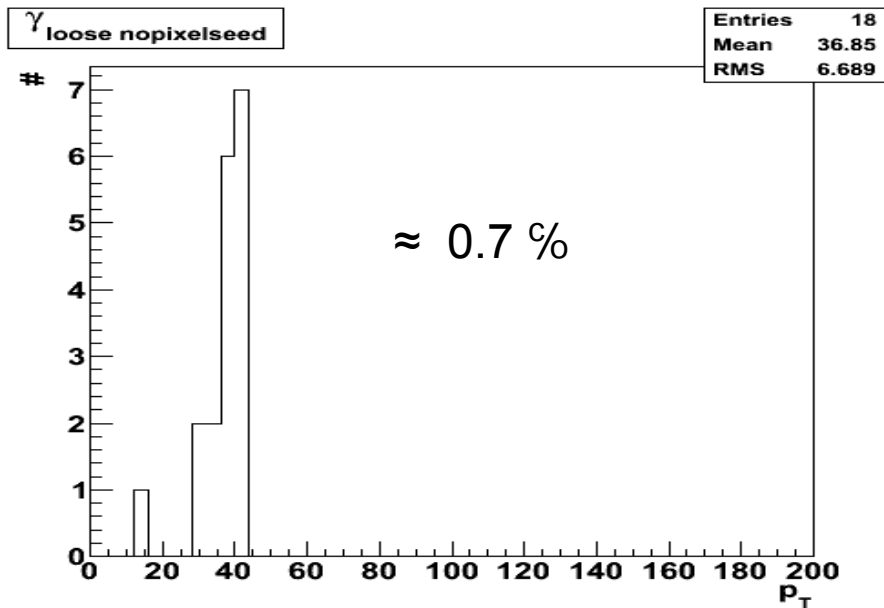
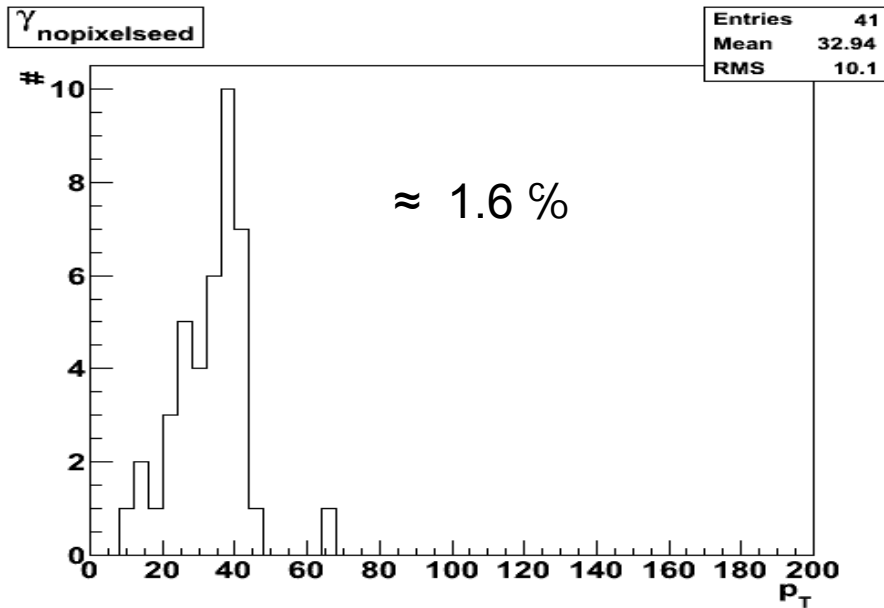
- (o.l.) all Photons (no ID-request)
- (u.l.) LoosePhotonID
- (u.r) TightPhotonID



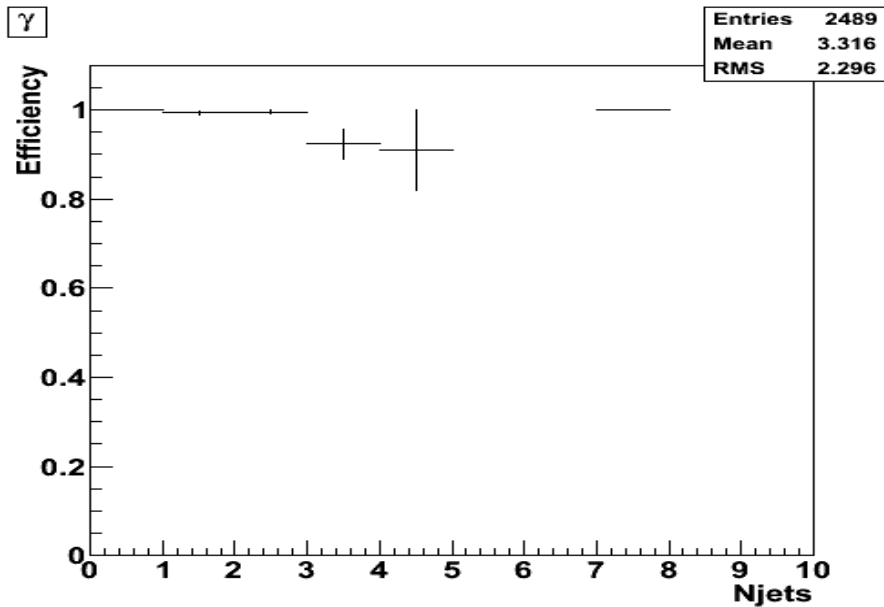
# Photon->hasPixelSeed

Photons with no PixelSeed+ID:

- (o.l.) all Photons (no ID-request)
- (u.l.) LoosePhotonID
- (u.r) TightPhotonID



# Efficiency – SC/Photons in Njet



- Cuts for jets:
  - $|\eta| < 3$
  - CorrectedJetEnergy > 20 GeV
  - EmEnergyFraction < 1
- (o.l.) all Photons (no ID-request)
- (u.l.) LoosePhotonID
- (u.r) TightPhotonID

