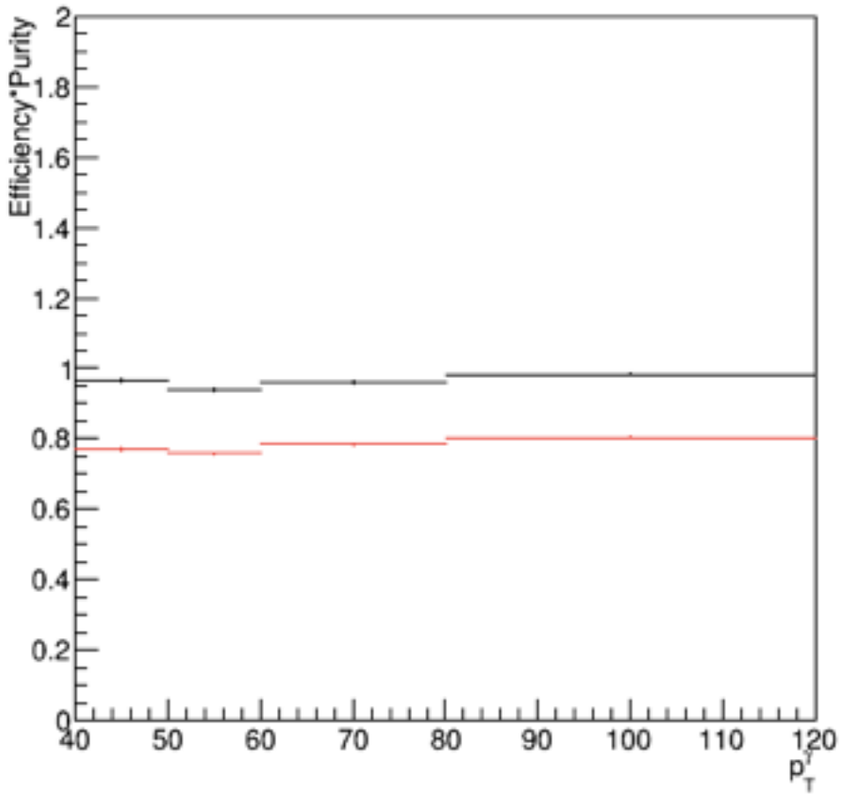
R_AA comparison b/w sumIso 1GeV vs. 5GeV

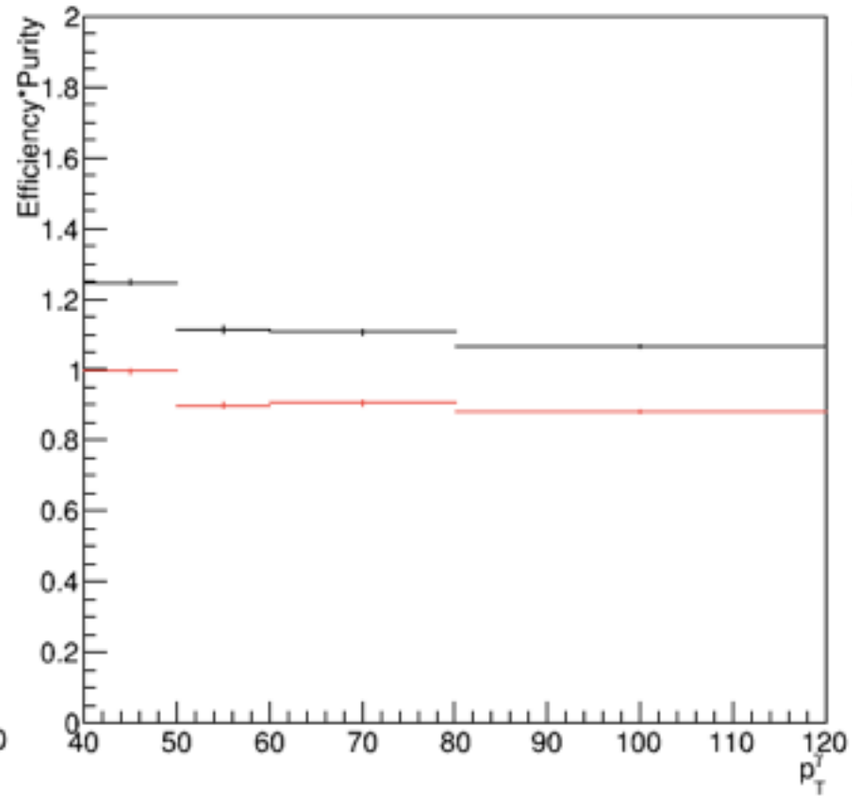
03 Jun 2016
Yeonju Go

Purity*Efficiency comparison

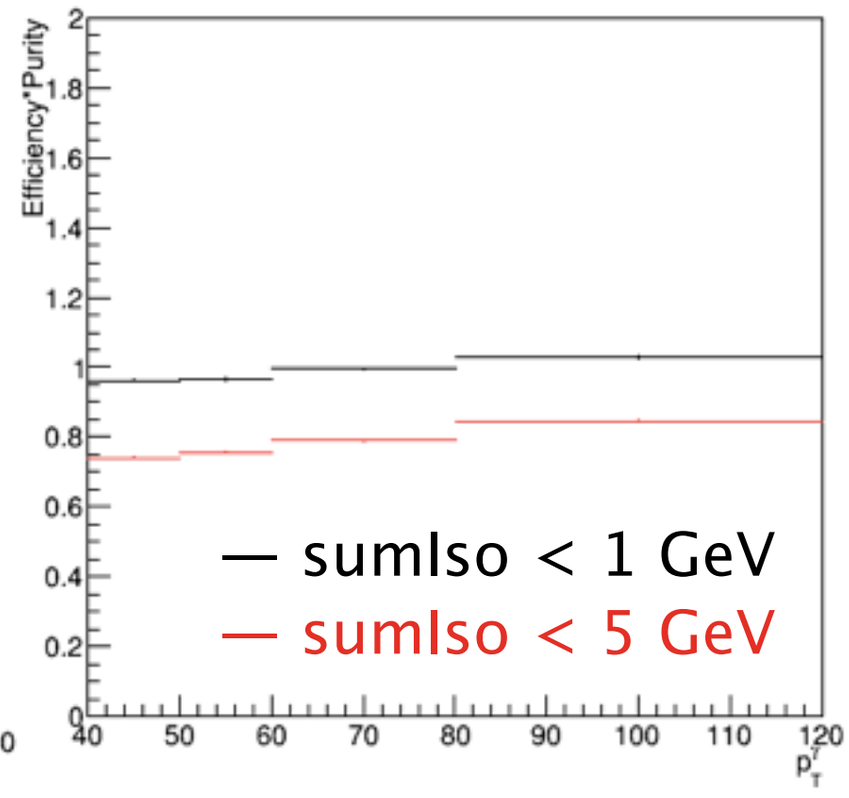
0-100 %



0-30 %



30-100 %



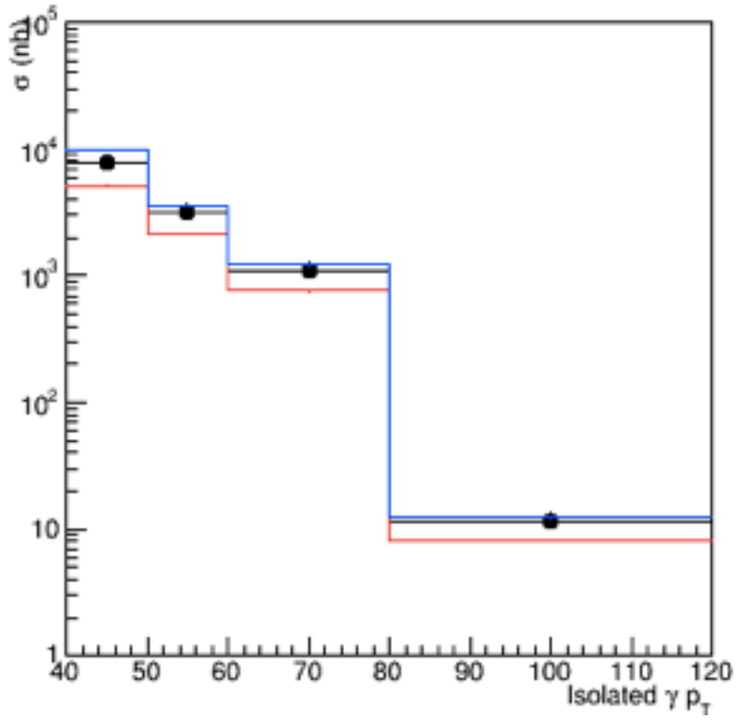
- **Todo : variate sumIso finer (1, 2, 3, 4, 5 …)**

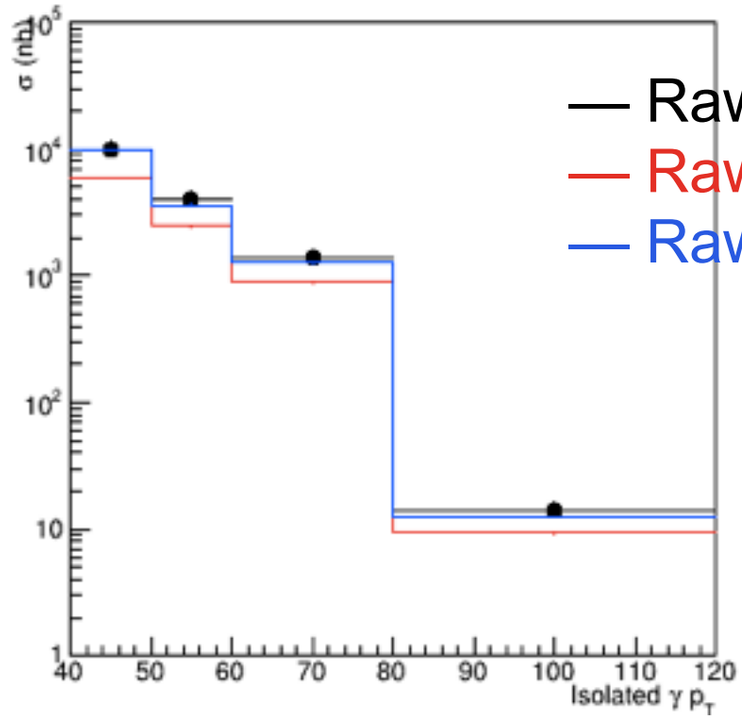
Cross Section

SumIso < 1 GeV

SumIso < 5 GeV

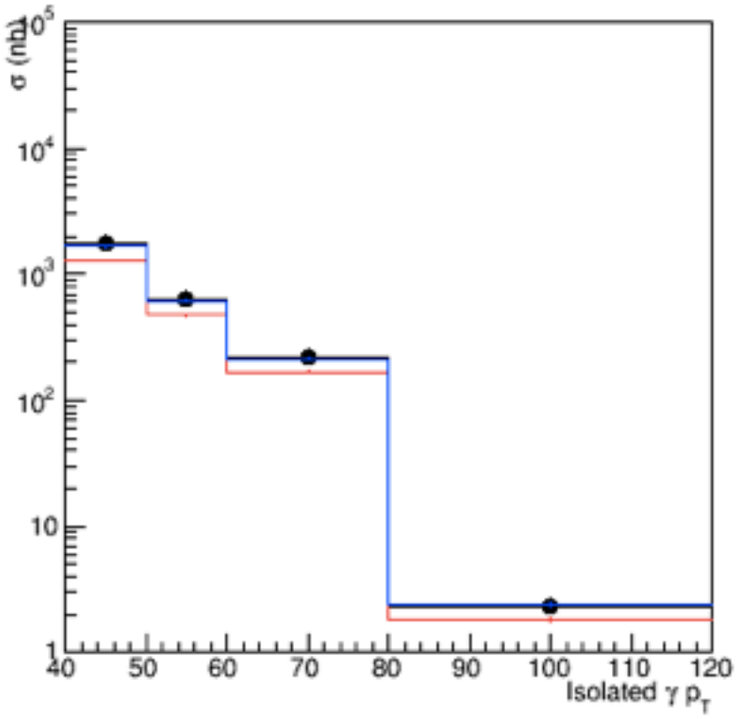
0-30 %

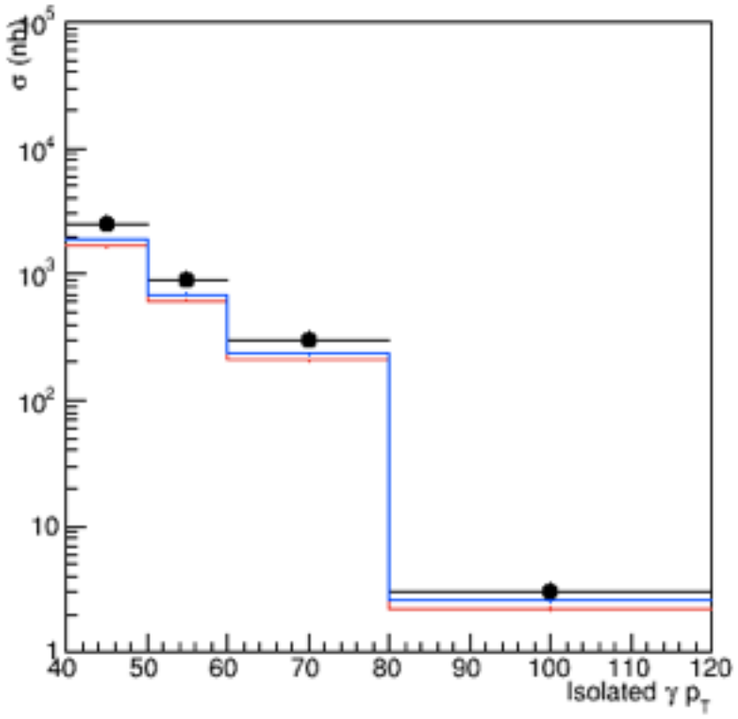




— Raw
— Raw*purity
— Raw*purity*efficiency

30-100 %



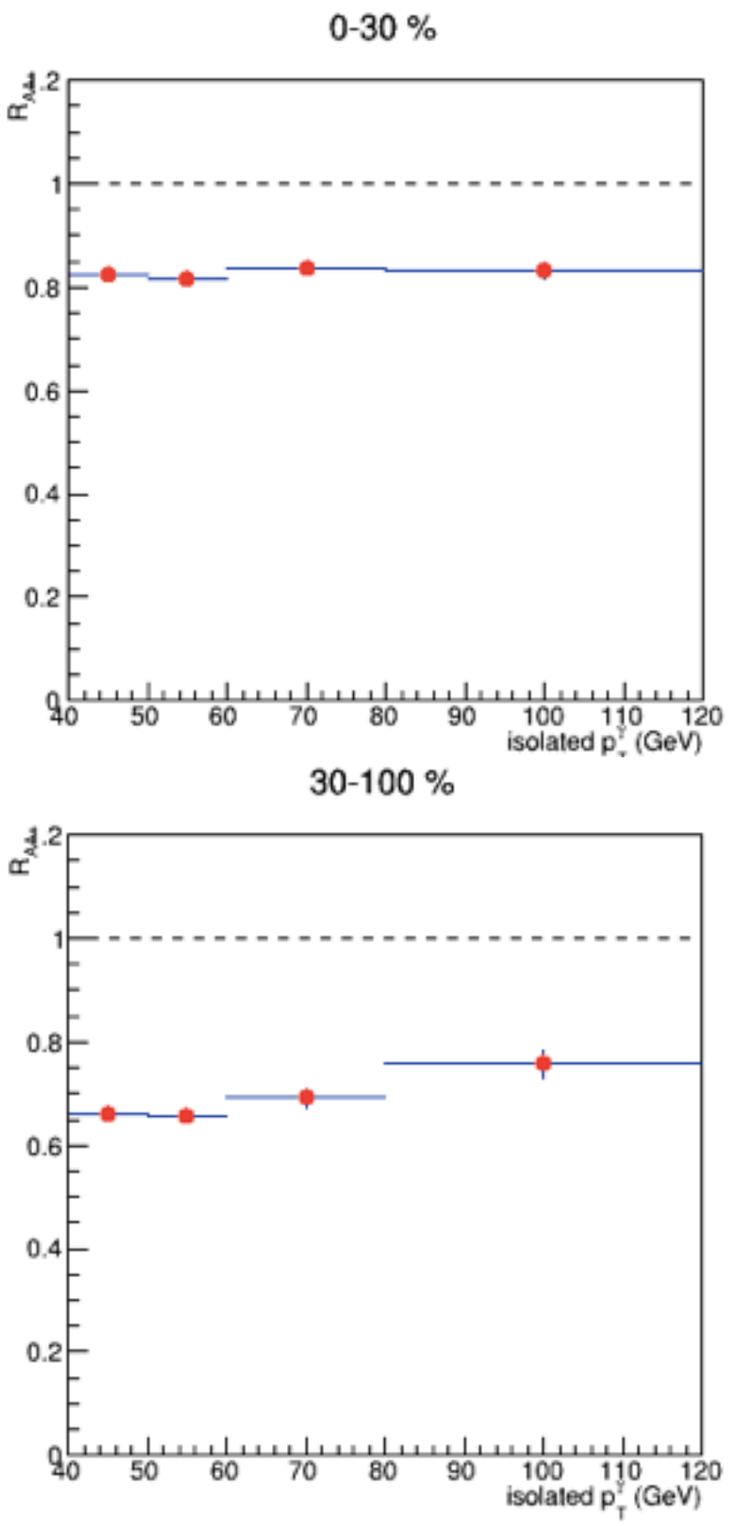


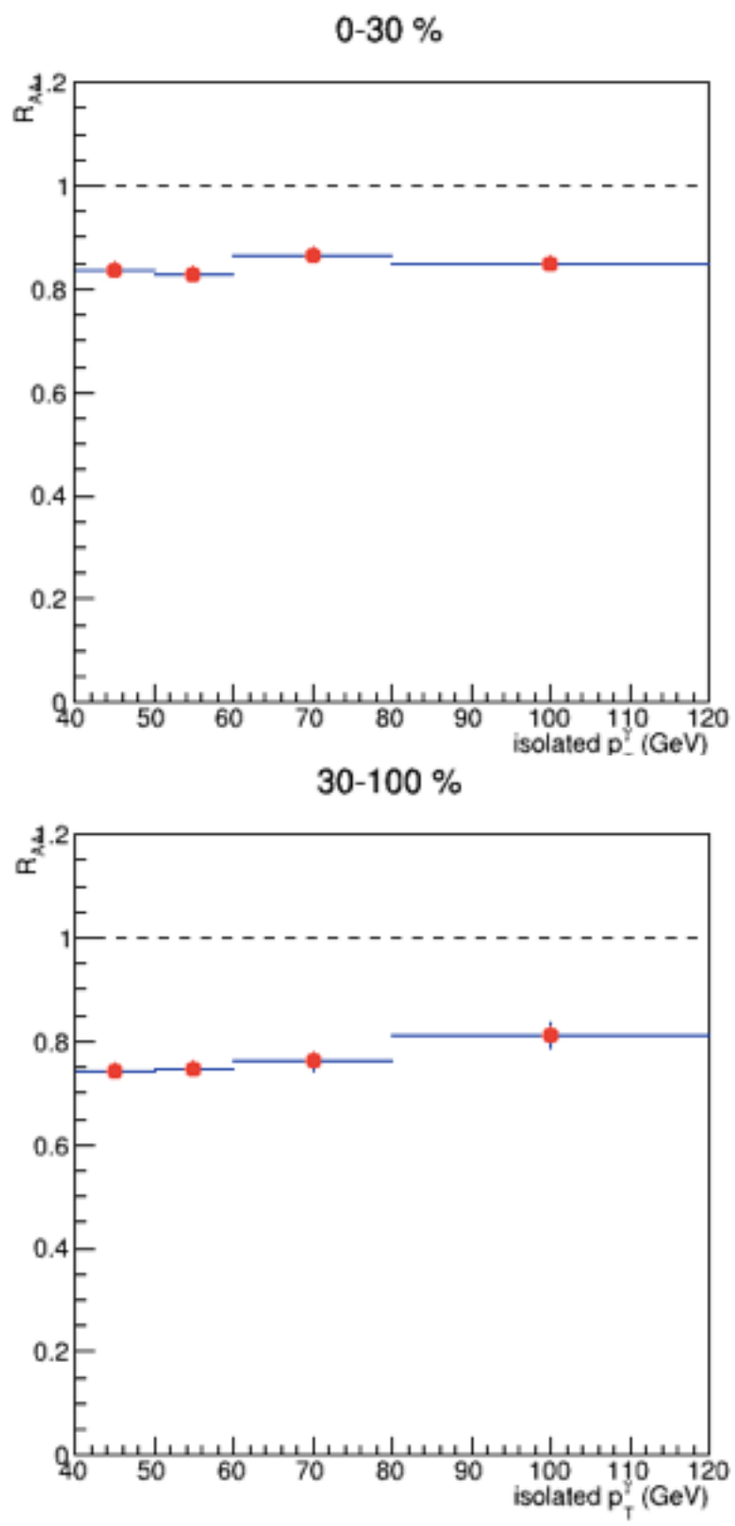
Raa

SumIso < 1 GeV

SumIso < 5 GeV

0-30 %

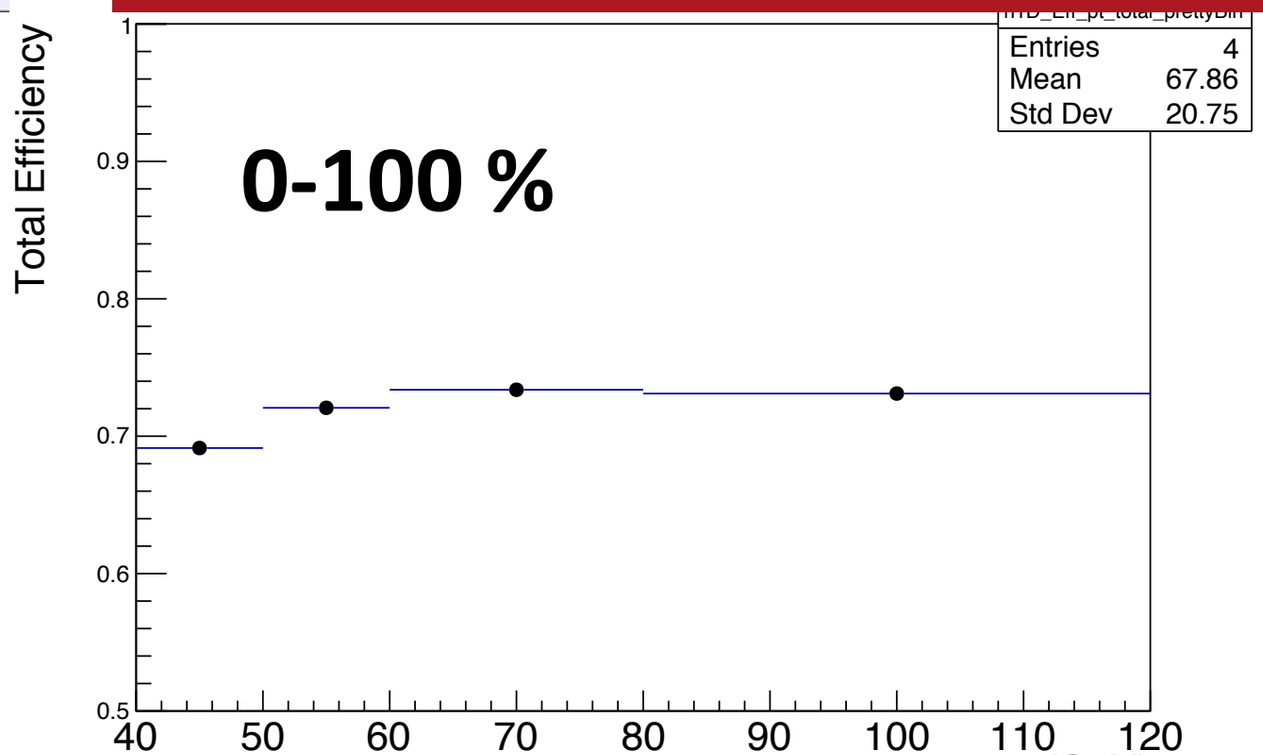


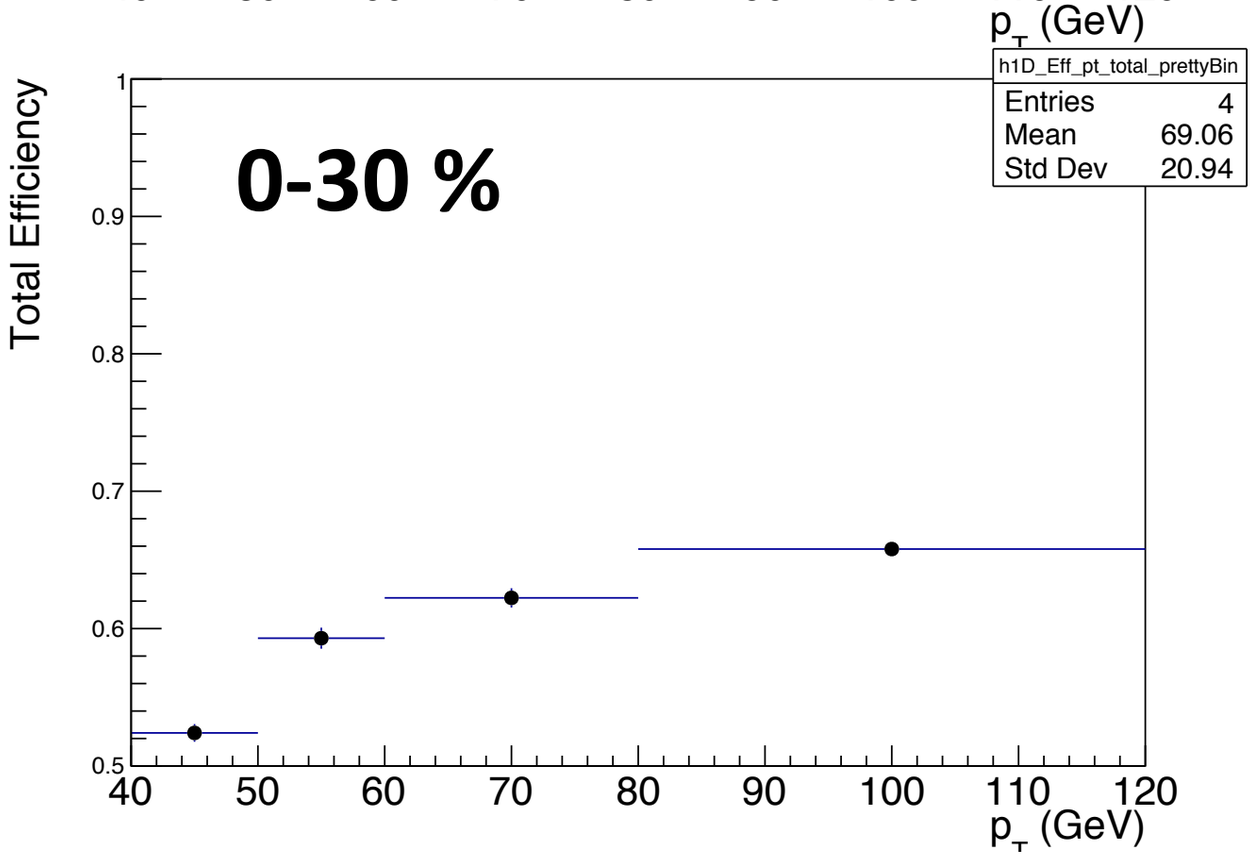


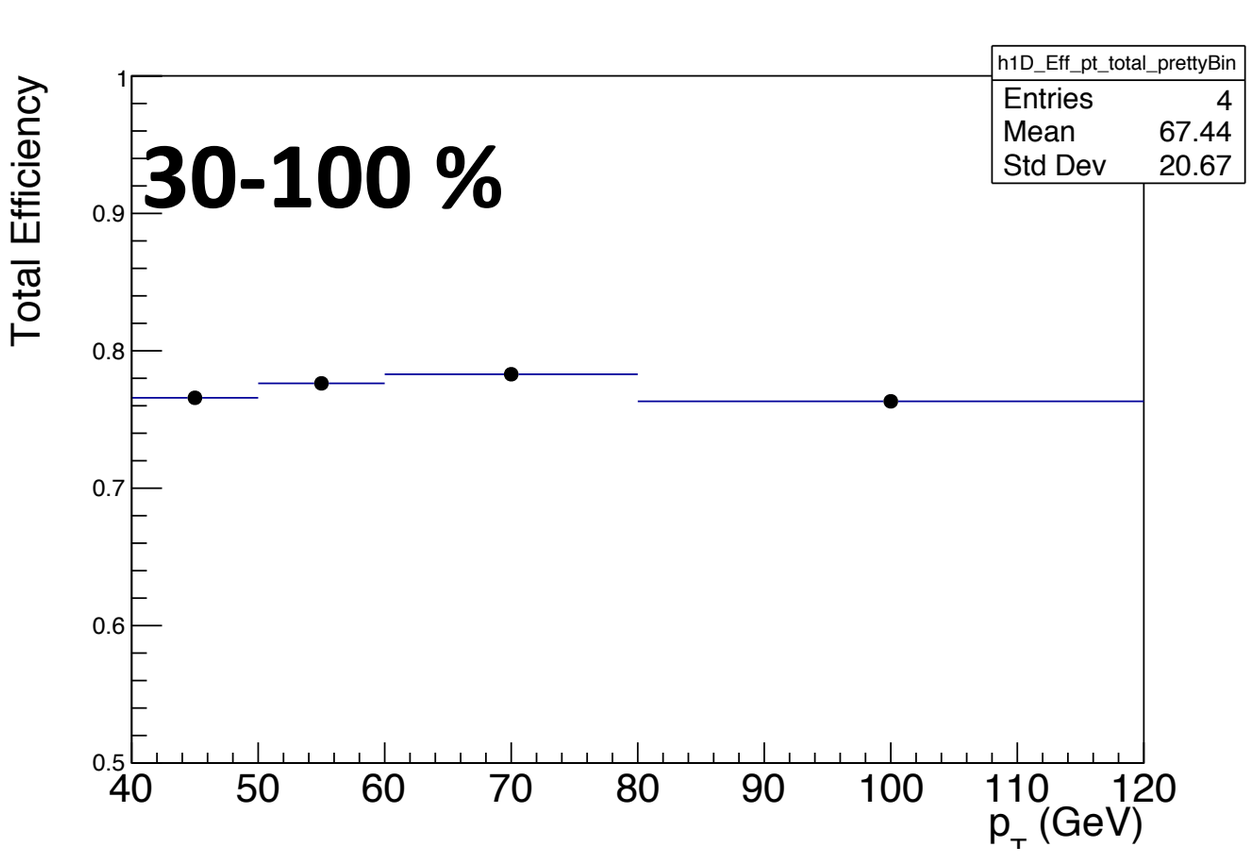
30-100 %

BACKUP

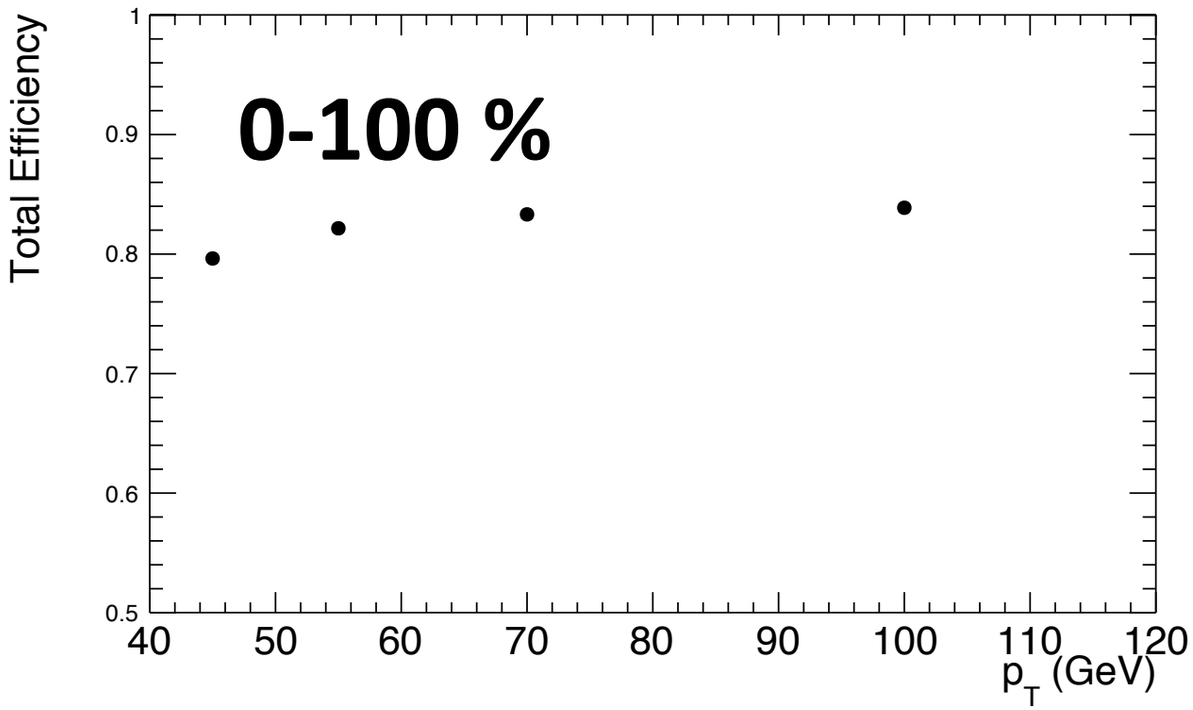
Efficiency (sumIso<1GeV)

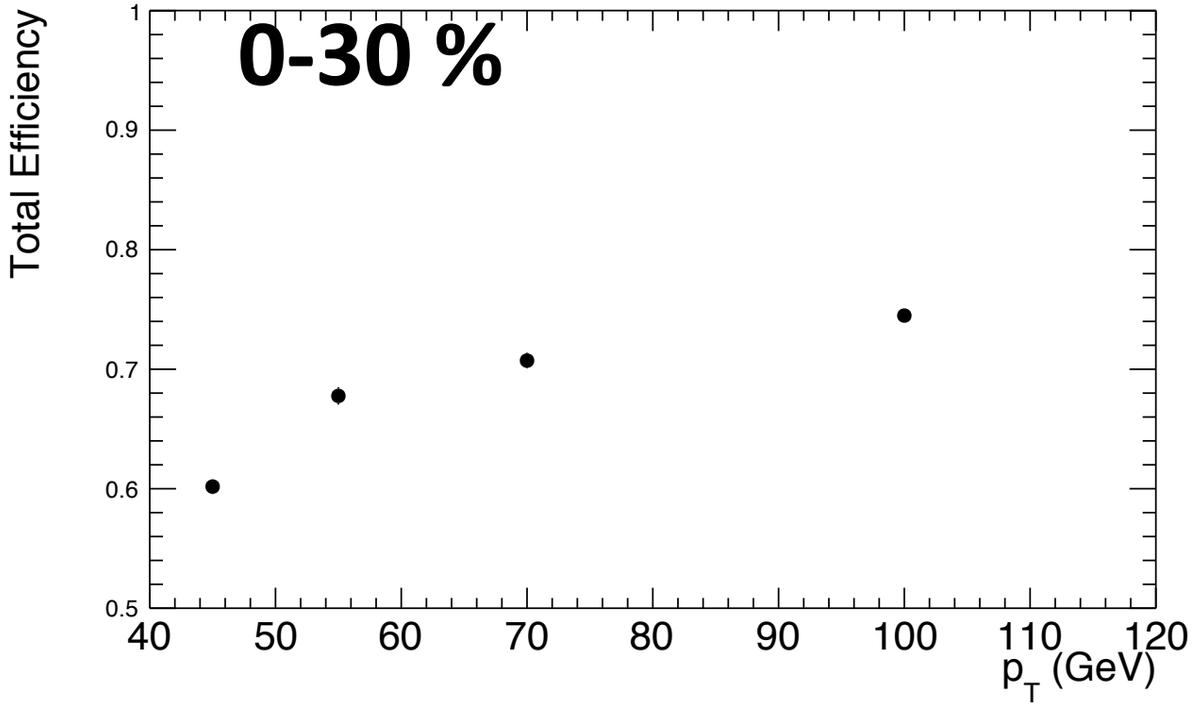


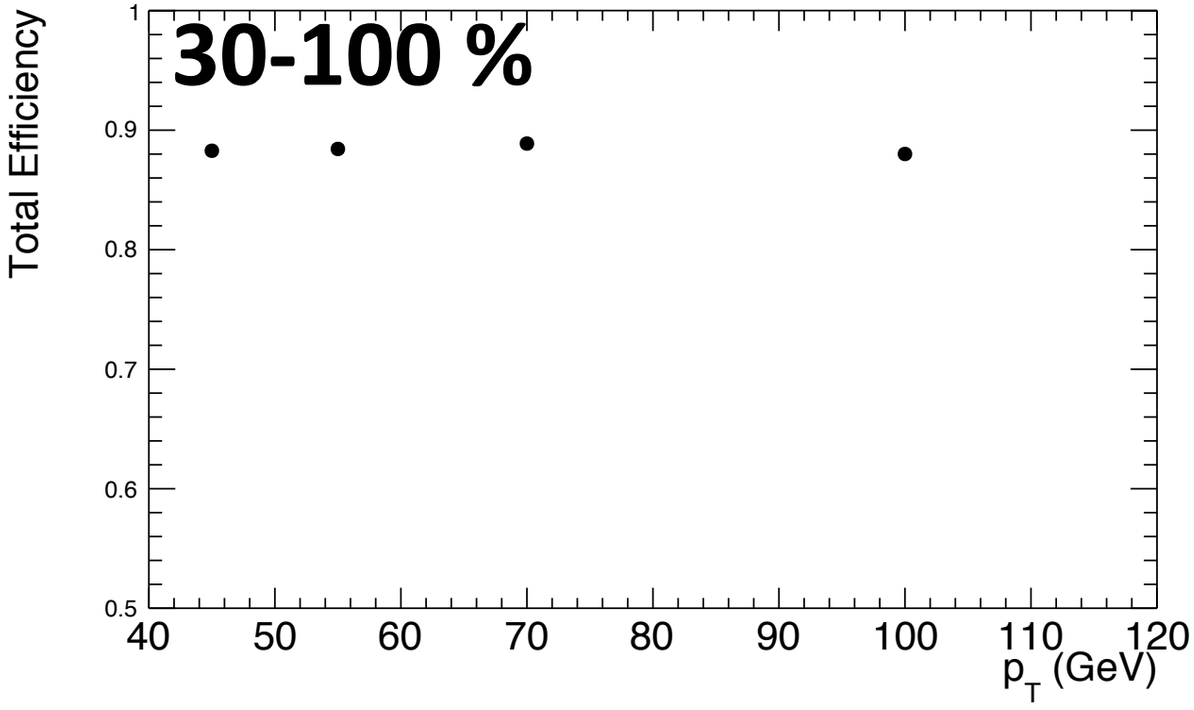




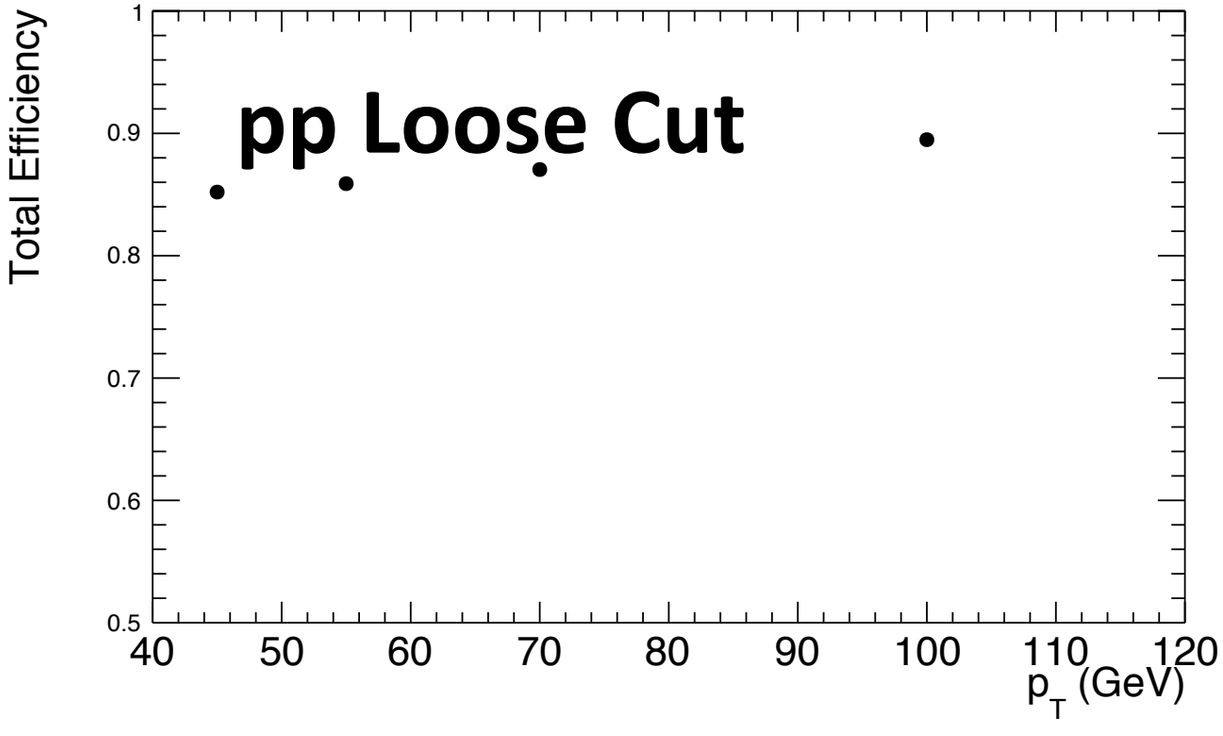
Efficiency (sumIso<5GeV)

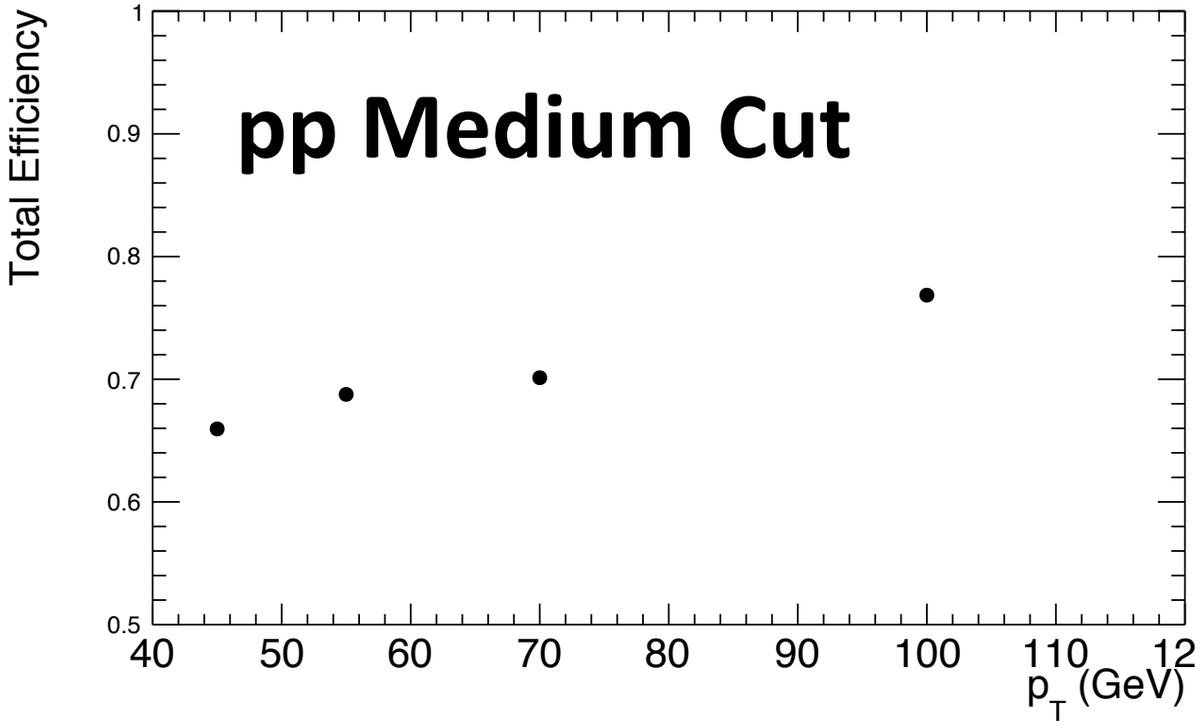


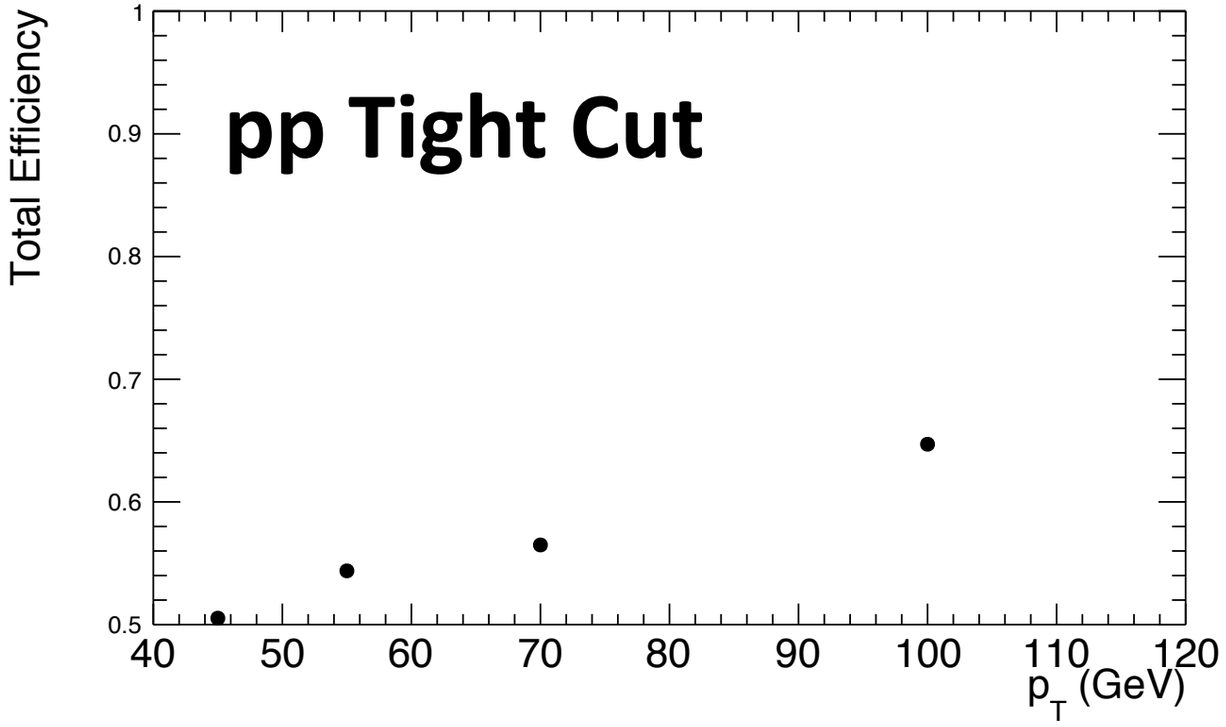




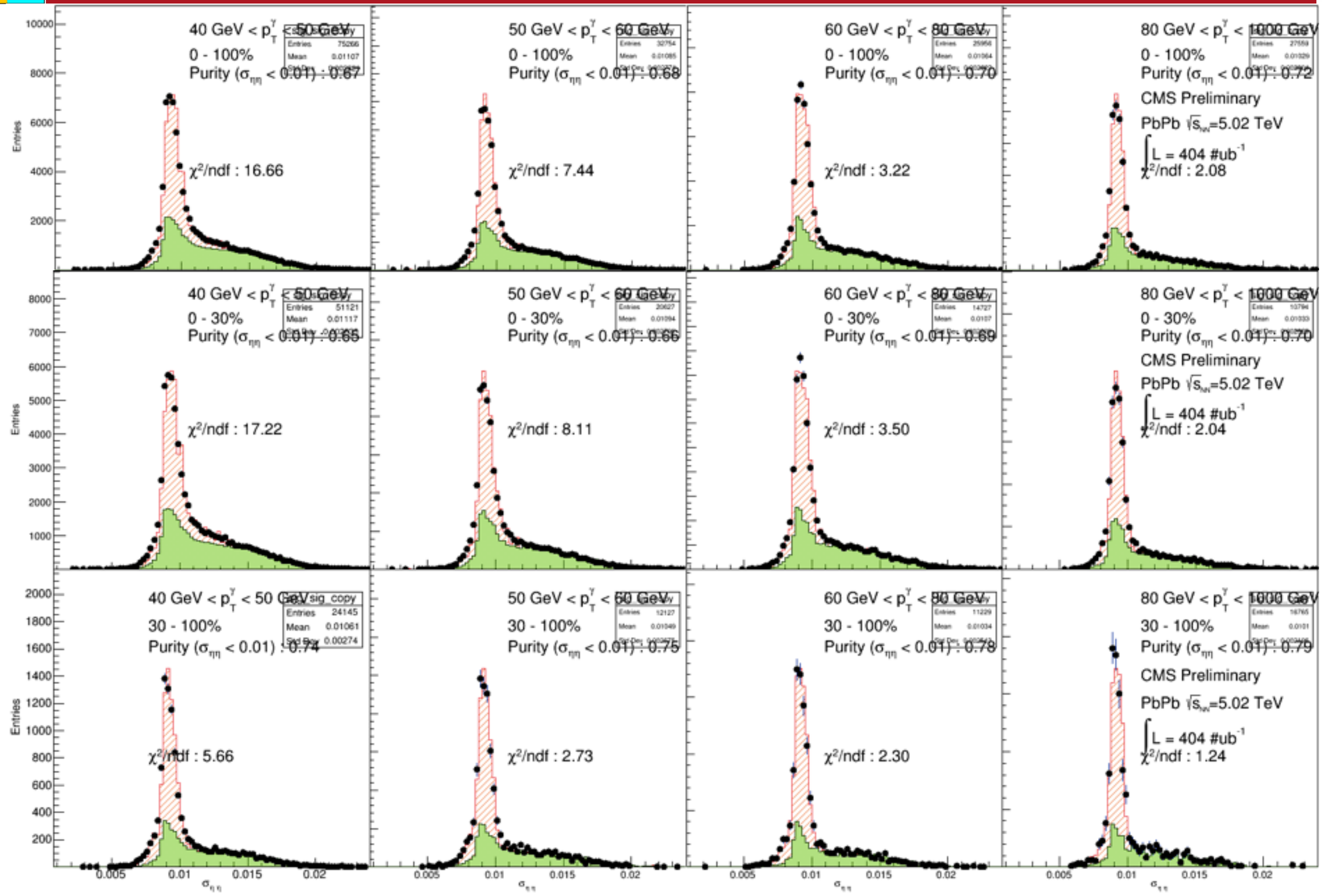
Efficiency (pp)





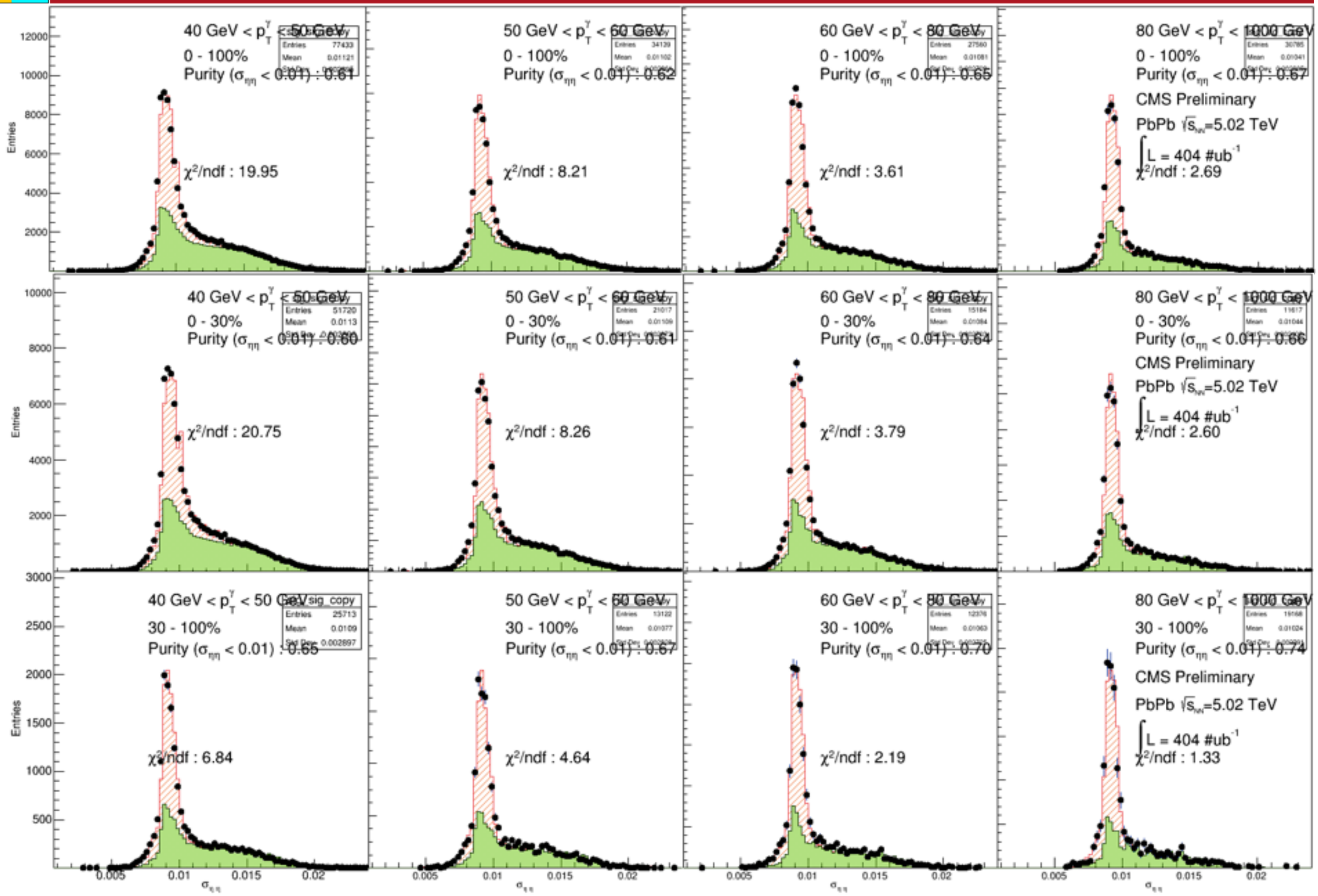


Purity (sumIso<1GeV)



- **SumIso < 1 GeV**

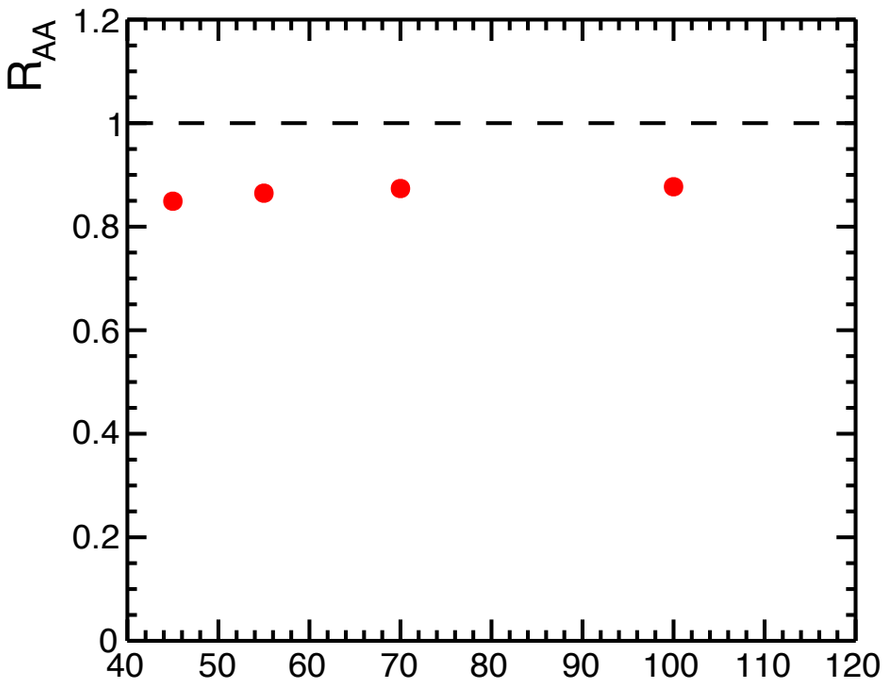
Purity (sumIso<5GeV)



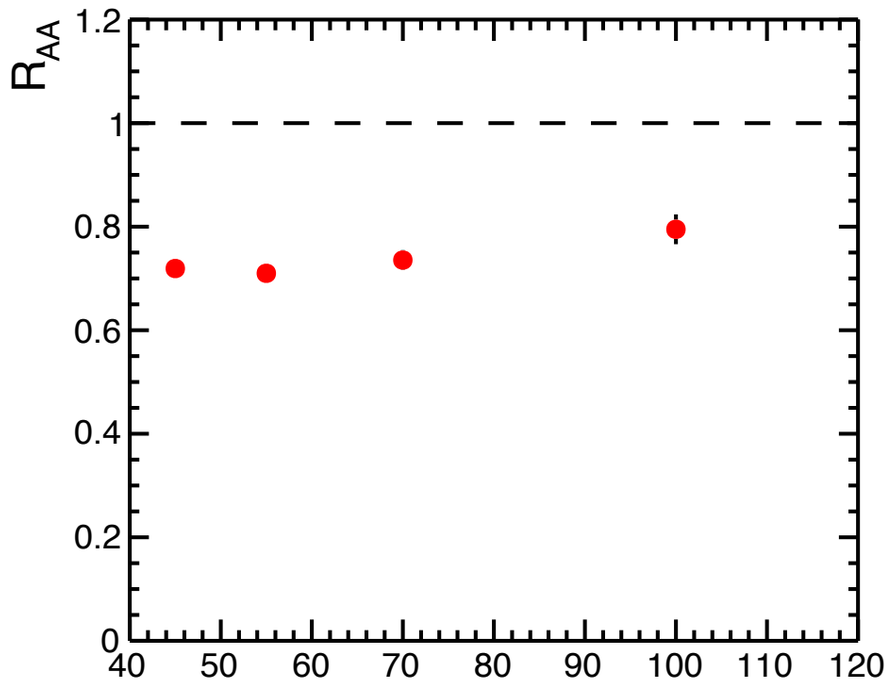
- **SumIso < 5 GeV**

First look at photon R_AA

0-30 %



30-100 %



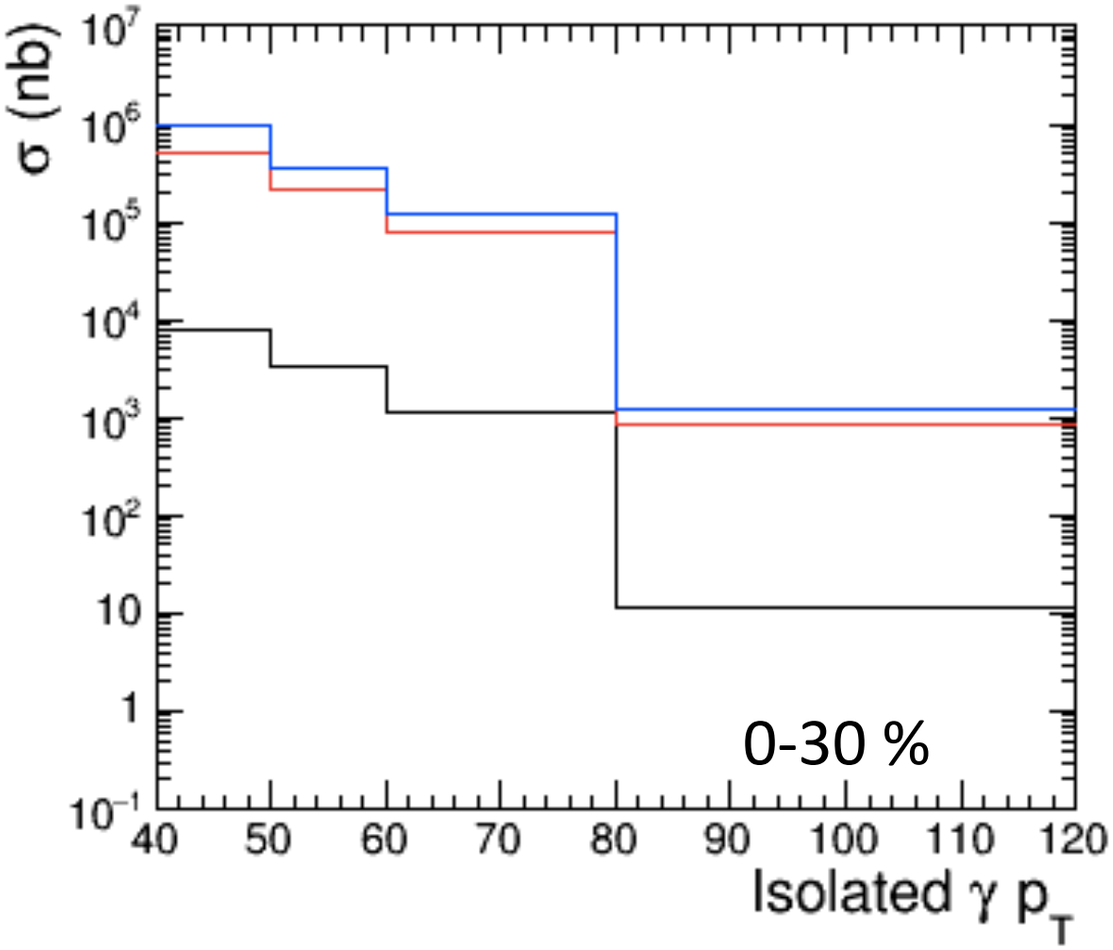
$$R_{AA} = \frac{d^2N_{AA}/dp_T d\eta}{\langle T_{AA}\rangle d^2\sigma_{pp}/dp_T d\eta}$$

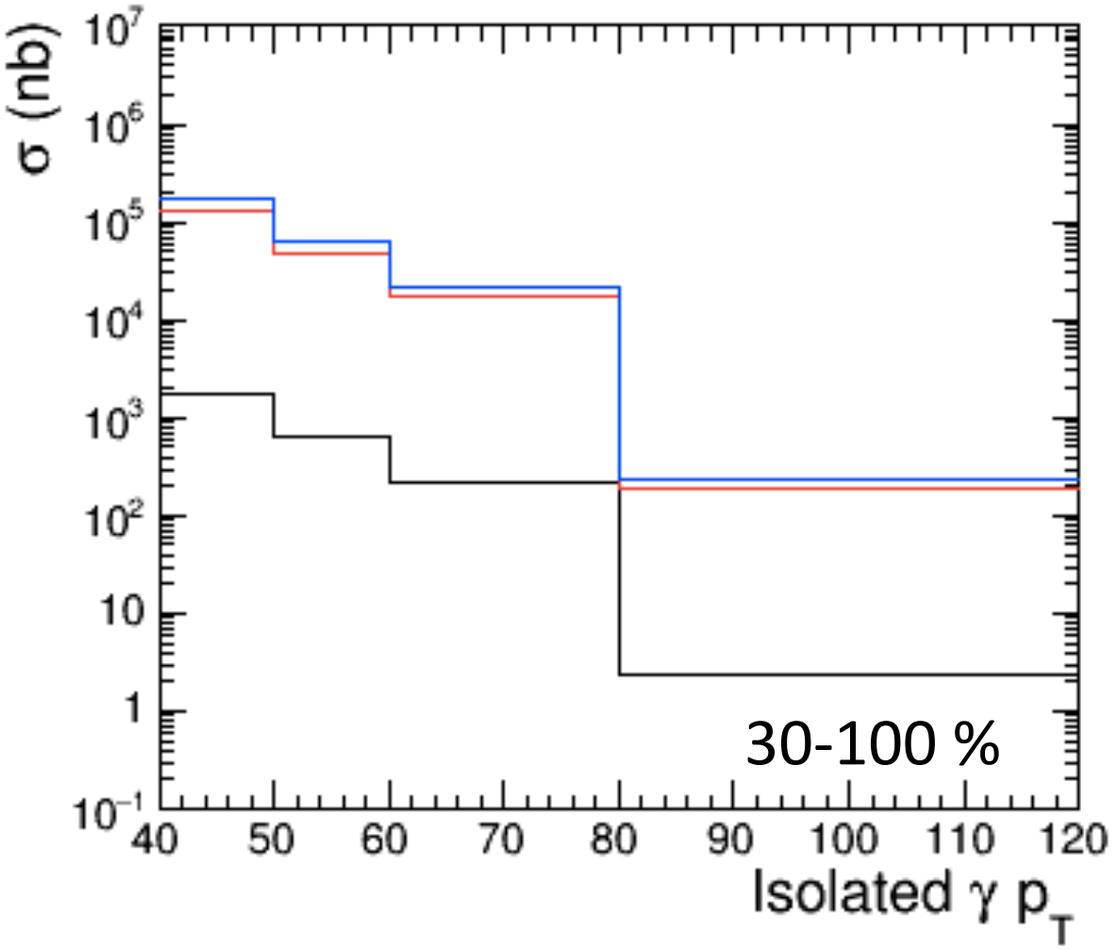
$$\langle T_{AA}\rangle = \langle N_{coll}\rangle / \sigma_{pp}^{inel}$$

- **0-30 %**
  - $\langle T_{AA}\rangle$ = 15.41
  - N_{MB} = 7.75 mb * 404 μb^{-1} * 0.3
  - L_{pp} = 25.775 pb^{-1}
- **30-100 %**
  - $\langle T_{AA}\rangle$ = 1.405
  - N_{MB} = 7.75 mb * 404 μb^{-1} * 0.7
  - L_{pp} = 25.775 pb^{-1}

- **T_{AA} from centrally group**
- **Purity values from Alex**

Cross section

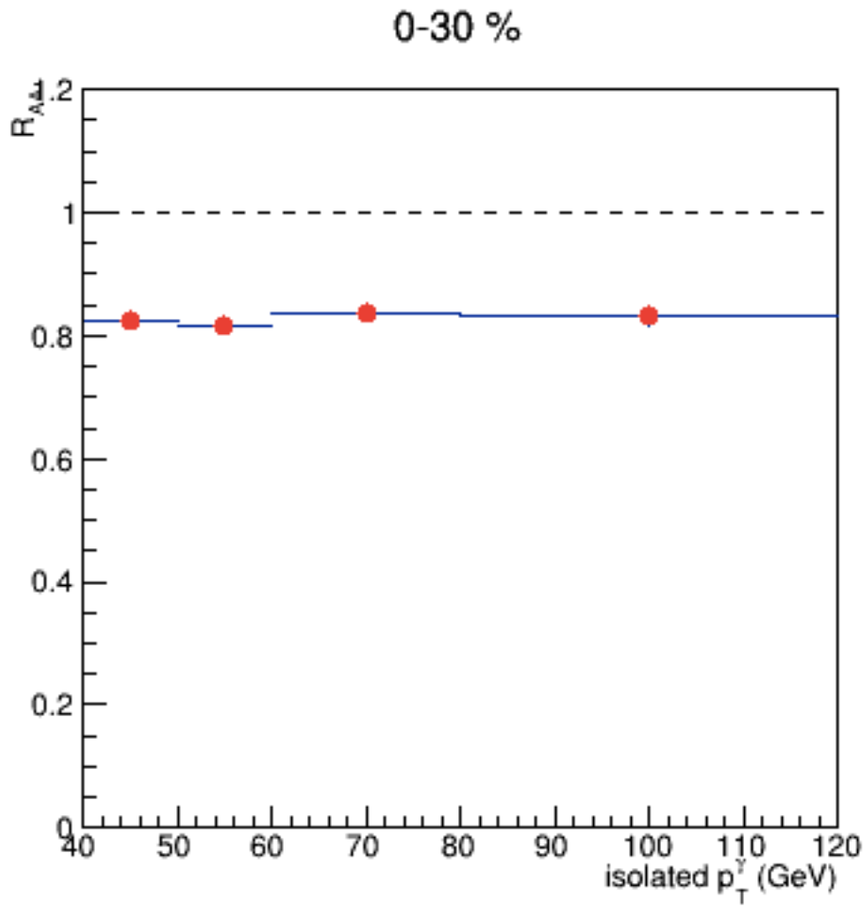


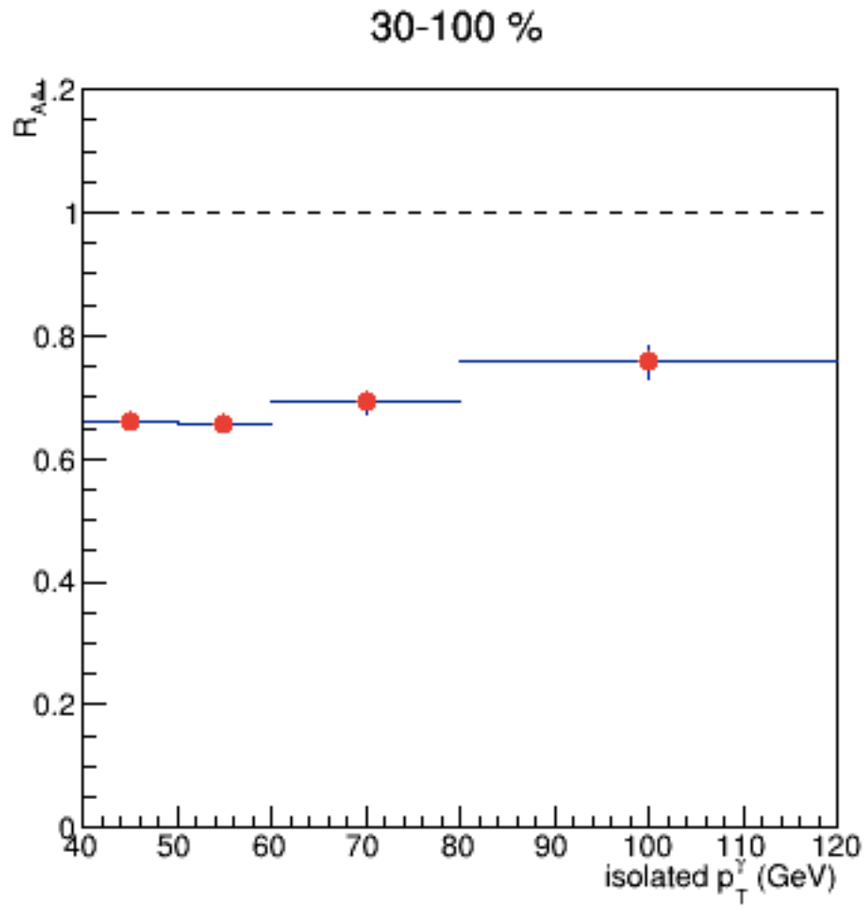


— Raw
— Raw*purity
— Raw*purity*efficiency

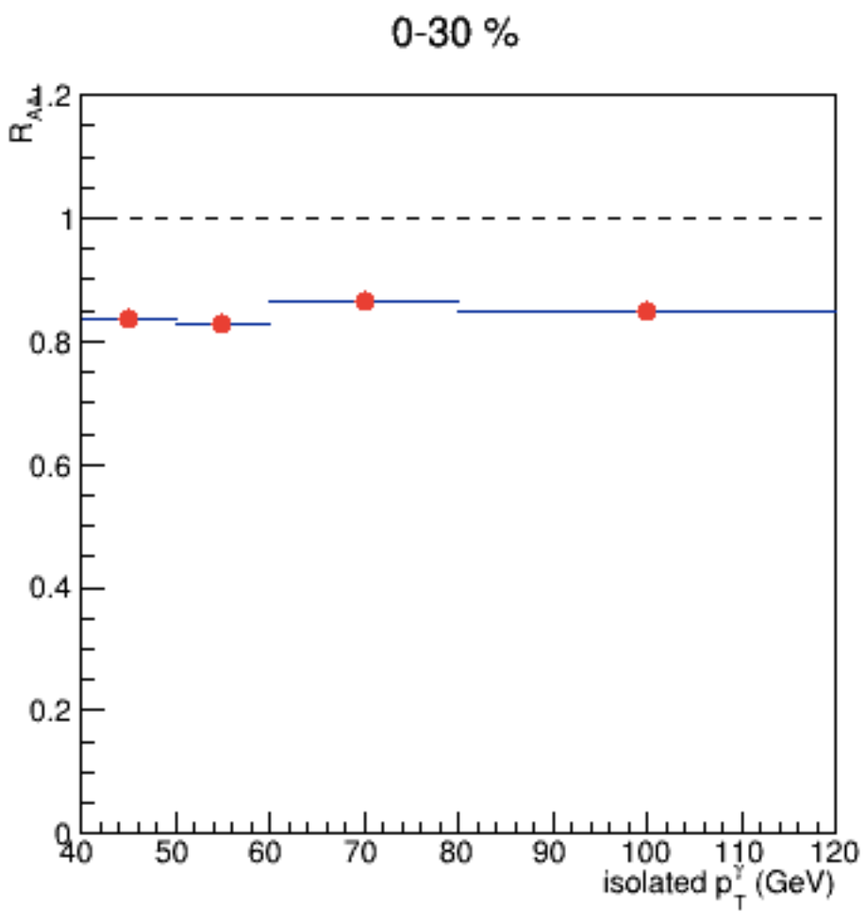
- **It has bug. Purity should be divided by 100**
- **SumIso < 1 GeV**

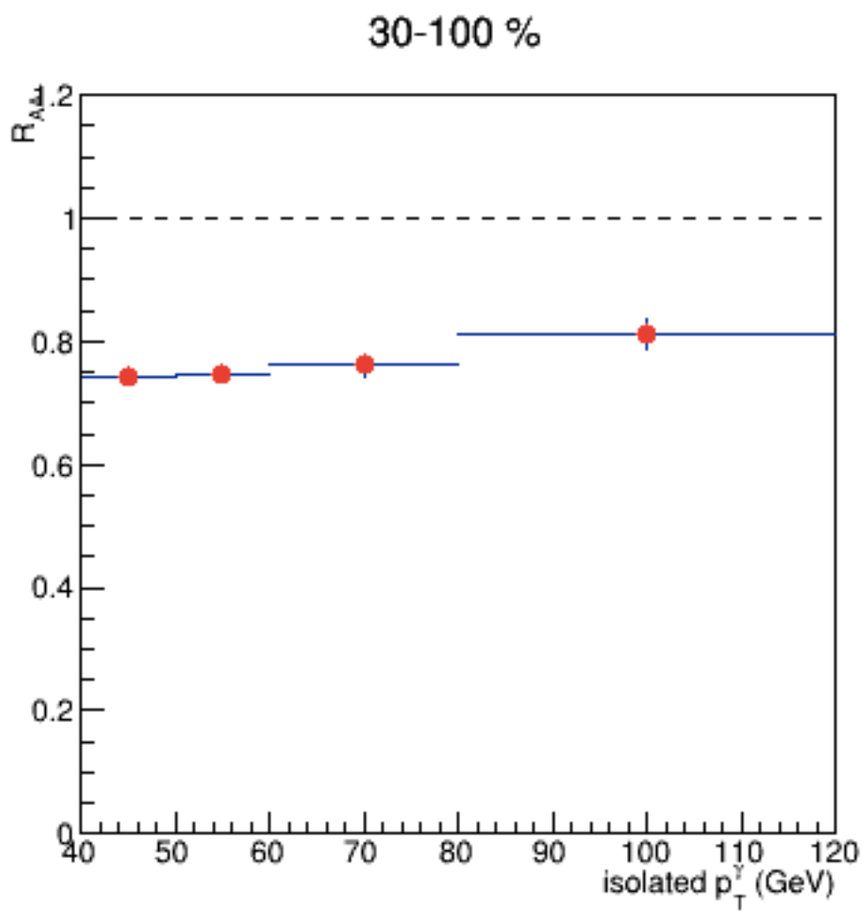
Raa (sumIso<1GeV)



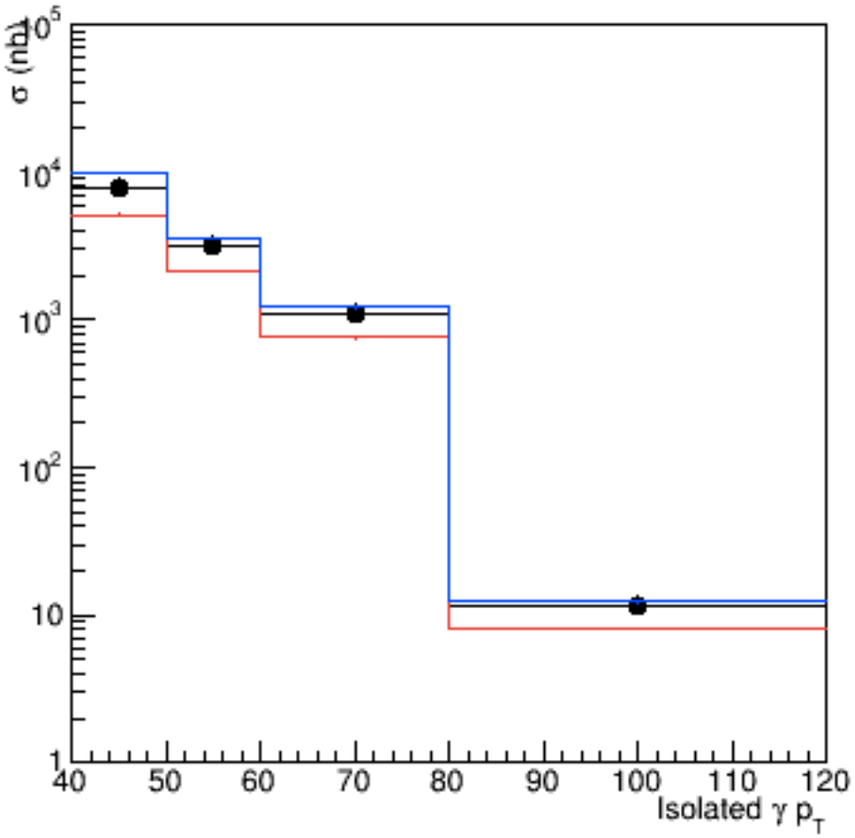


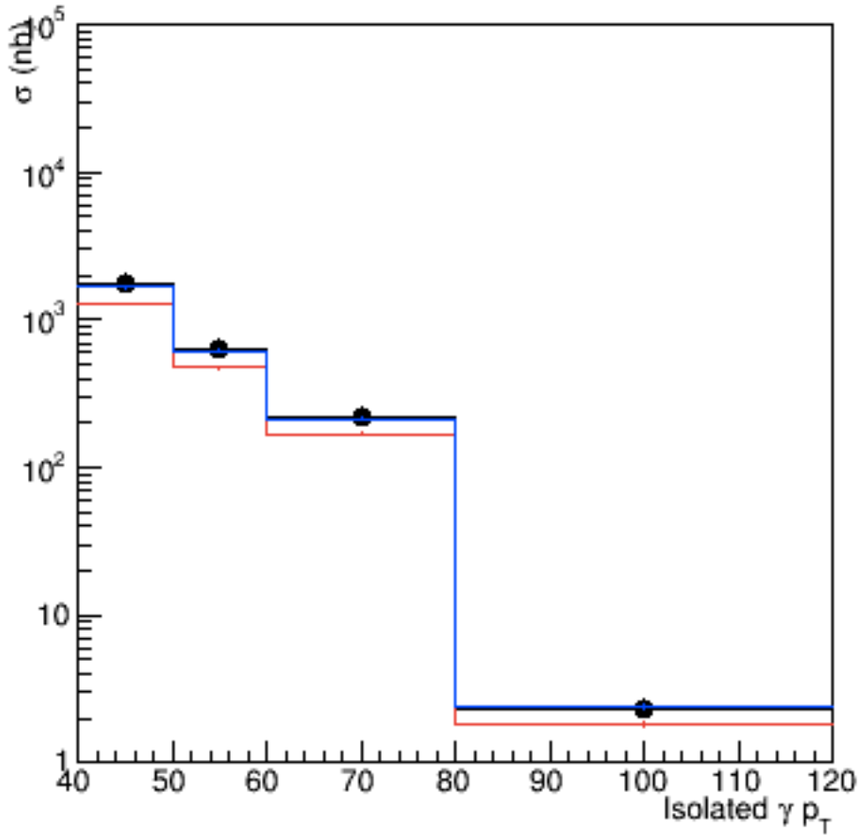
Raa (sumIso<5GeV)





Cross Section (sumIso<1GeV)

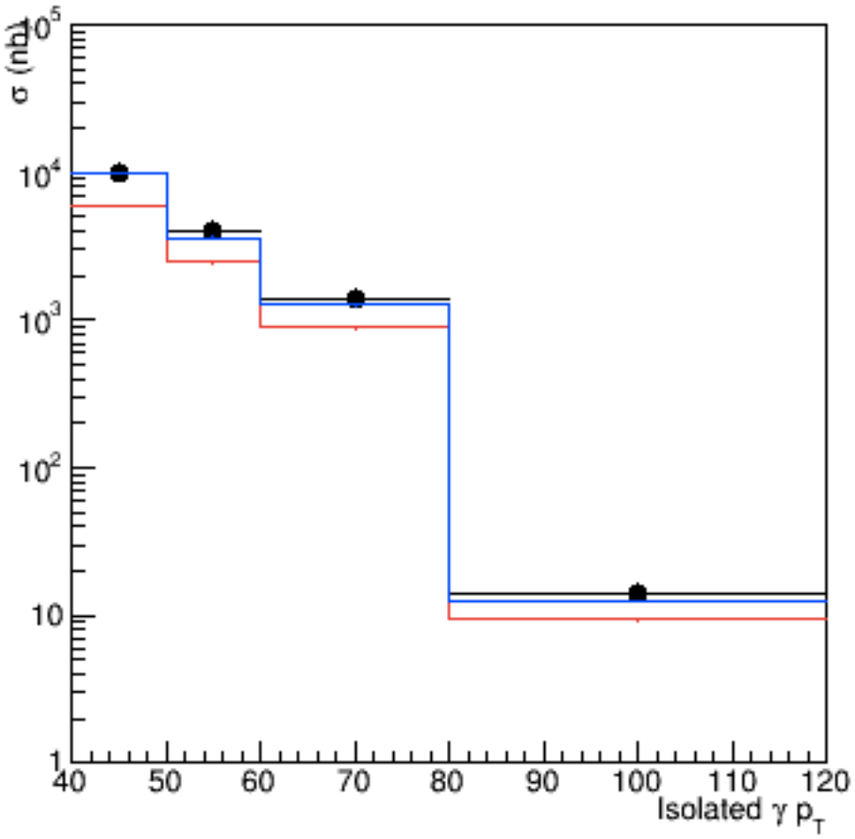


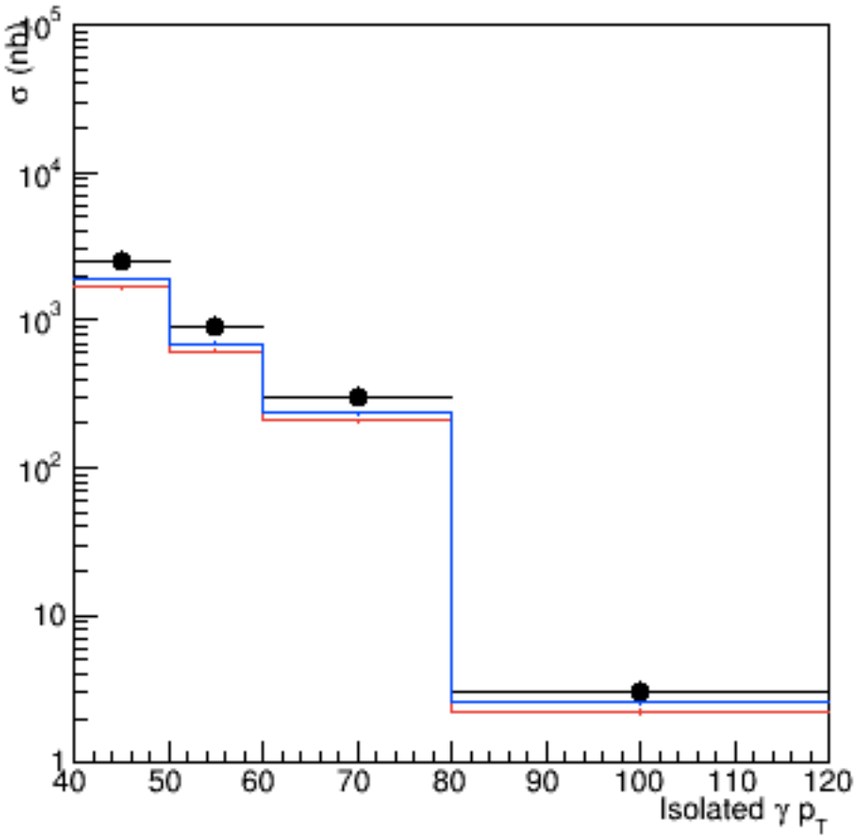


— Raw
— Raw*purity
— Raw*purity*efficiency

- **SumIso < 1 GeV**

Cross Section (sumIso<5GeV)





— Raw
— Raw*purity
— Raw*purity*efficiency

- **SumIso < 5 GeV**

Command Sets

- **efficiency**

- **purity**
  - gc quickPhotonPurity_yj.exe quickPhotonPurity_yj.C
  - (pbpb)./quickPhotonPurity_yj.exe ../ElectroWeak-Jet-Track-Analyses/CutConfigurations/photonRaa.conf /home/goyeonju/CMS/Files/photon2016/photonRaaSkimed_pbpbDATA_5Apr2016.root /home/goyeonju/CMS/Files/photon2016/photonRaaSkimed_pbpbAllQCD_18Apr2016.root output/pbpb_purity_v3_0to200.root pbpb
  - (pp) ./quickPhotonPurity_yj.exe ../ElectroWeak-Jet-Track-Analyses/CutConfigurations/photonRaa.conf /home/goyeonju/CMS/Files/photon2016/photonRaaSkimed_ppDATA_GED_7Apr2016.root /home/goyeonju/CMS/Files/photon2016/photonRaaSkimed_ppAllQCD_18Apr2016.root test_pp_purity.root pp
- **purity**

Status

- **Gamma-jet Analysis aim to Hard Probes**
  - could be possible to give a poster presentation in ISMD with the new Gamma-jet results
  - man power : Yeonju, Alex, Bi Ran

Analysis

- Centrality-dependent plots
- MC centrality/vertex reweighting
- Use recent high-stats MC
- I_AA plots (jet spectra ratio)
- Fitting of dphi “bulk”

Jets

- pt cut on jets? (30 now)
- alpha->0 correction
- R= 0.3 or 0.4?
- Pu or Cs?
- residual JEC or inclusive for gamma-jet?
- needed: Smearing parameters for other centrality bins
- needed: L2L3 correction tables?

Photons

- Z->ee energy correction
- ECAL noise source
- Endcap investigation