

Embedding des événements PYTHIA dans les données PbPb

Introduction

Application de la méthode de soustraction du bruit de fond aux événements PYTHIA *embedded* dans les données PbPb pour différentes tailles du cône d'isolation.

Événements PYTHIA:

- gamma-jet (GJ);
- jet-jet (JJ).

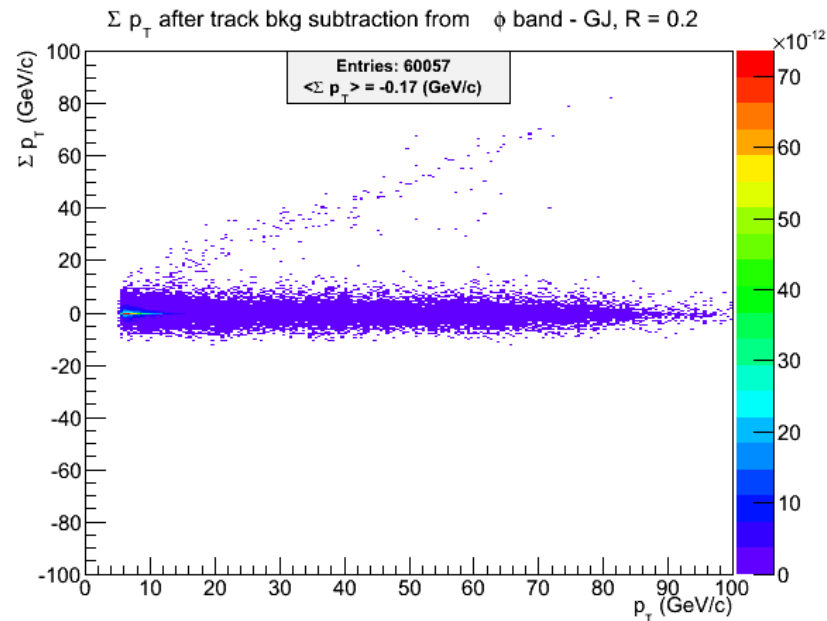
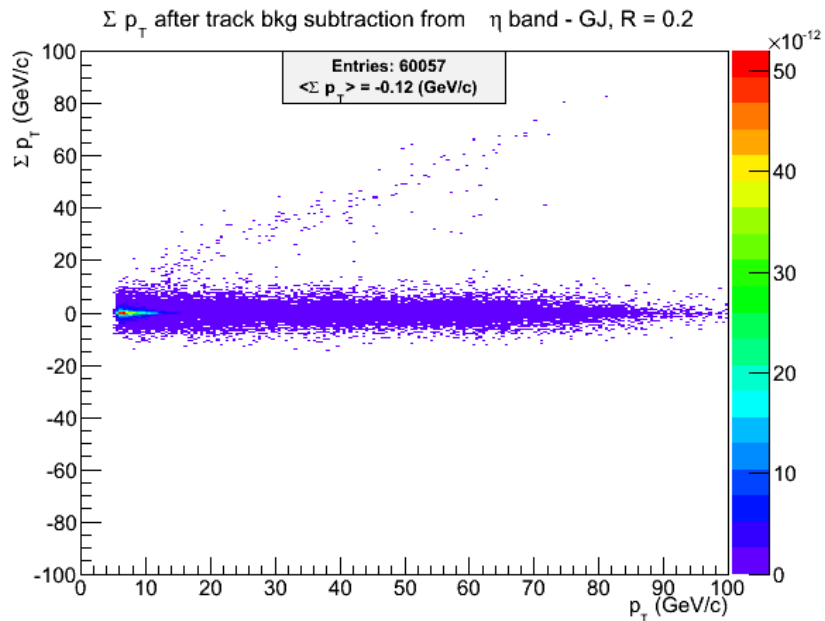
Tailles du cône: $R = 0.2$, $R = 0.4$.

Coupure fiduciaire: $-0.2 < \eta < 0.2$, $1.8 < \phi < 2.9$

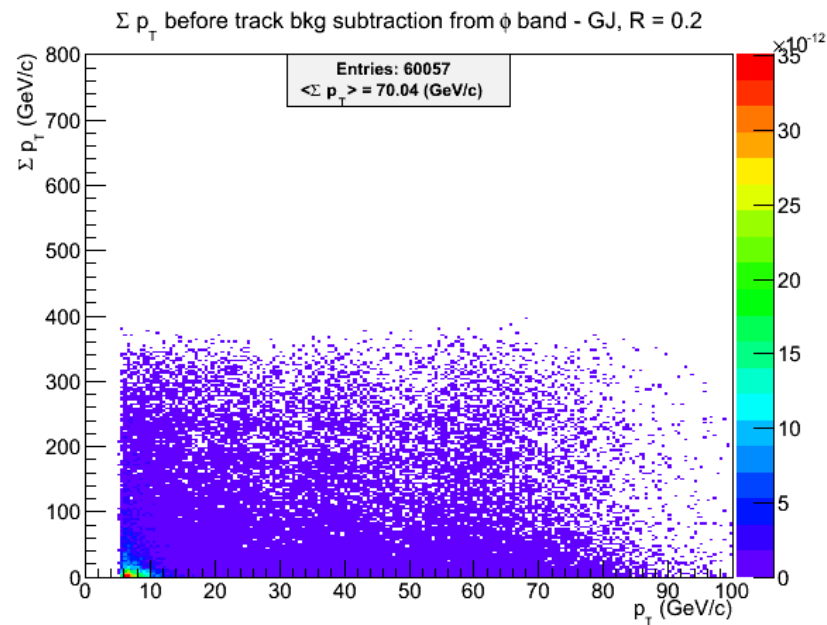
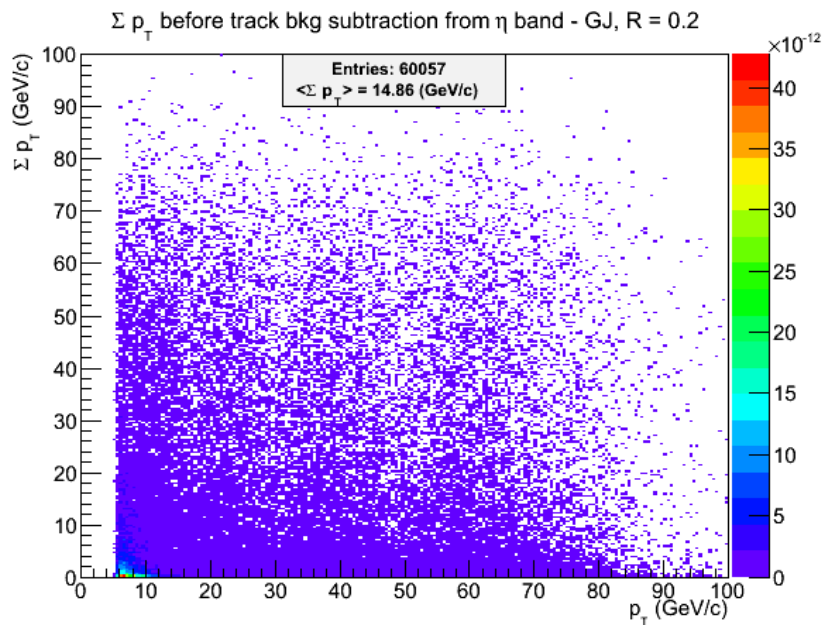
Seuil sur l'énergie des clusters: $E = 300 \text{ MeV}$

Gamma-jet - R = 0.2 - Traces

Après soustraction

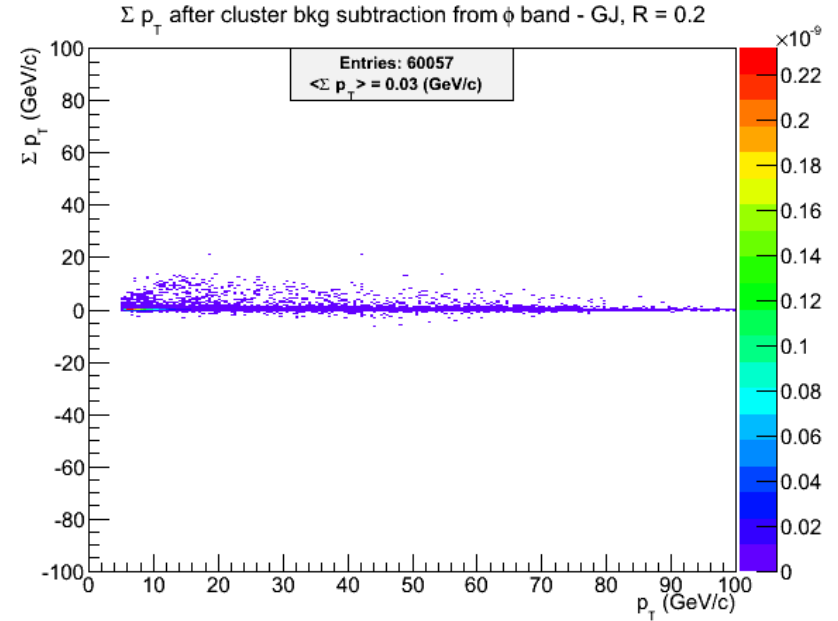
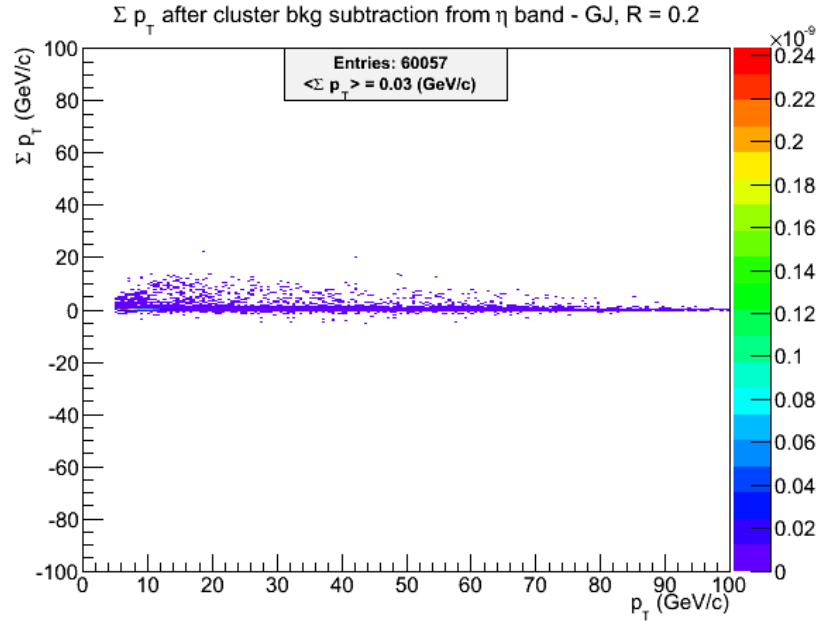


Avant soustraction

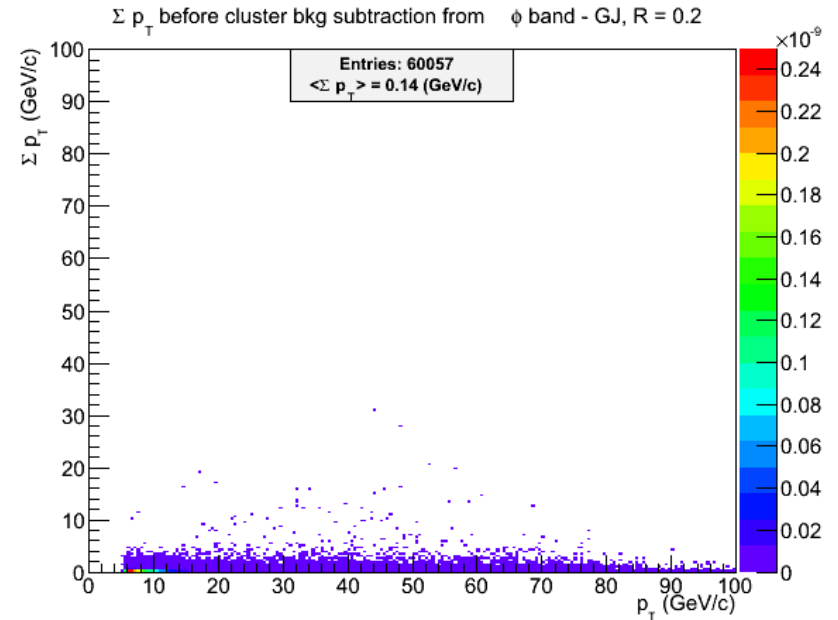
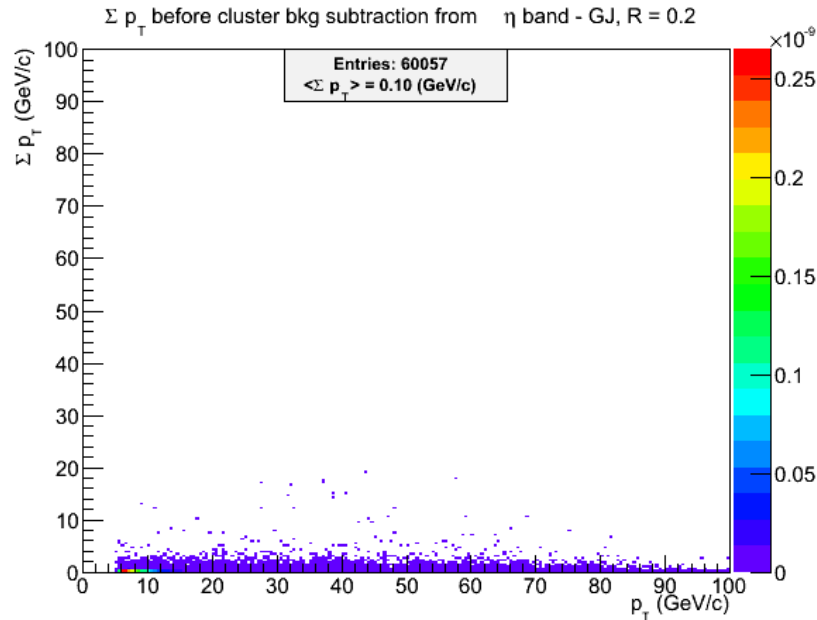


Gamma-jet - R = 0.2 - Clusters

Après soustraction

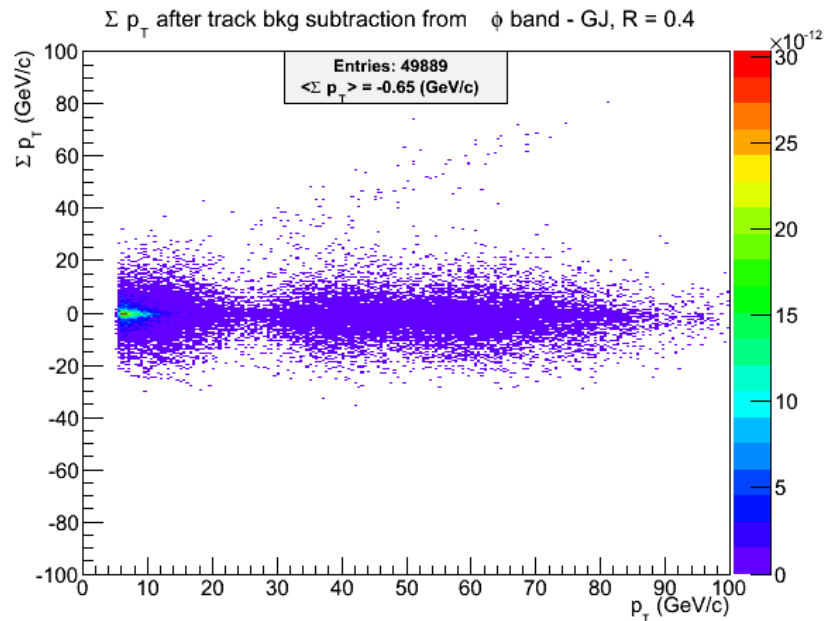
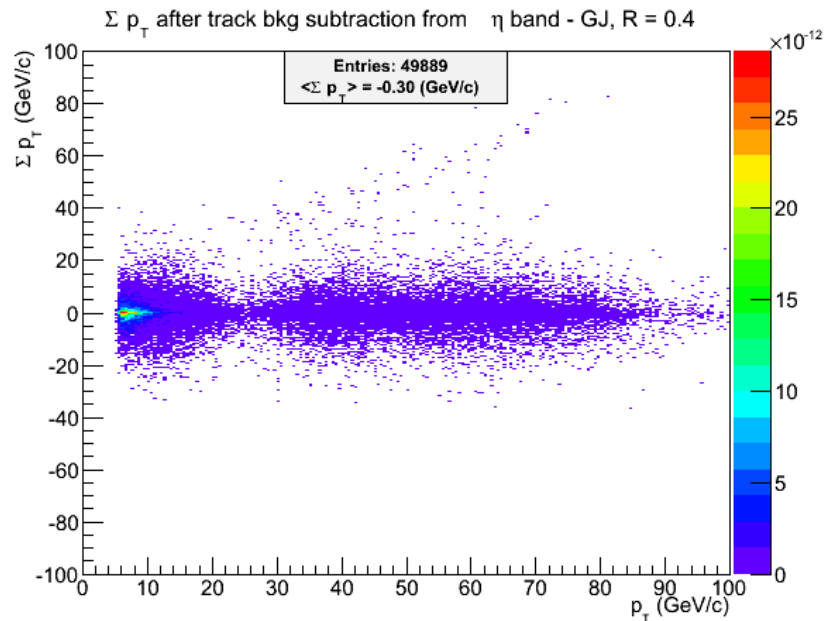


Avant soustraction

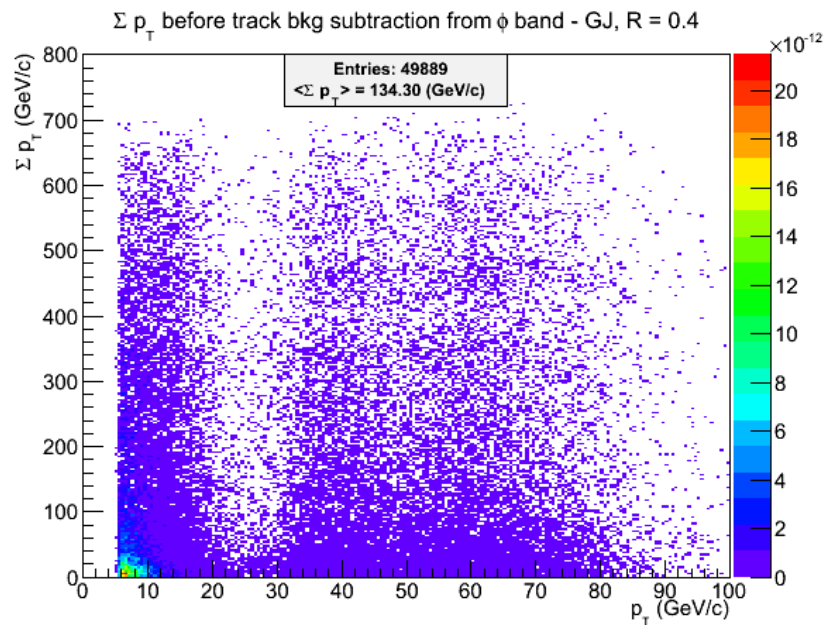
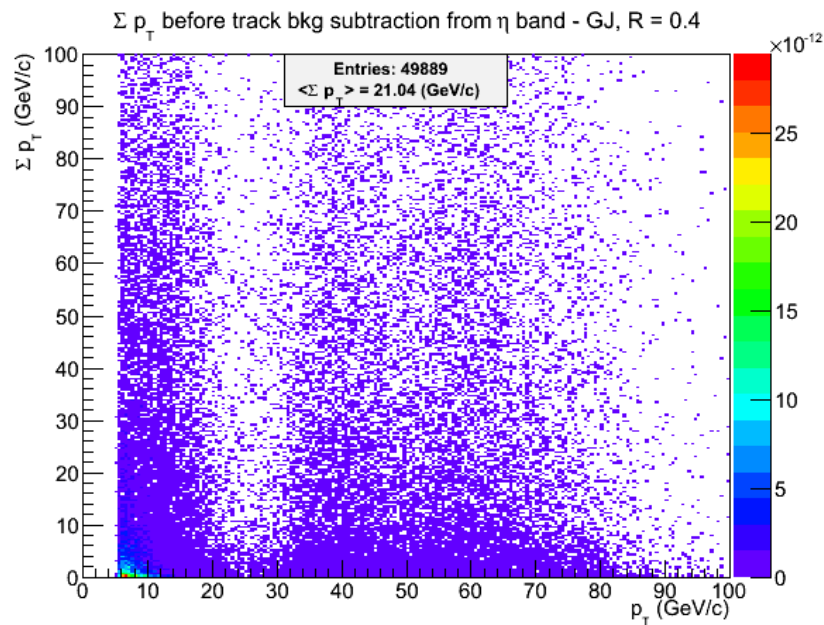


Gamma-jet - R = 0.4 - Traces

Après soustraction

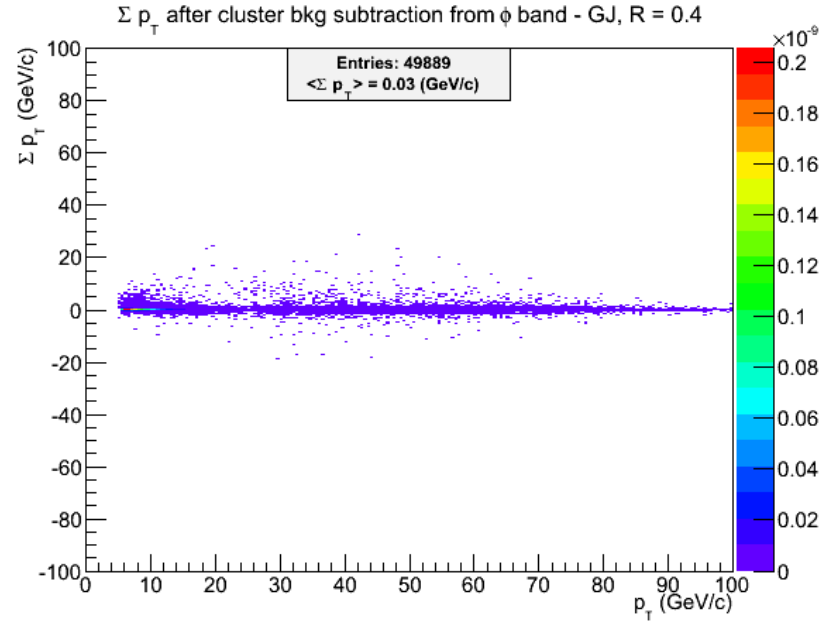
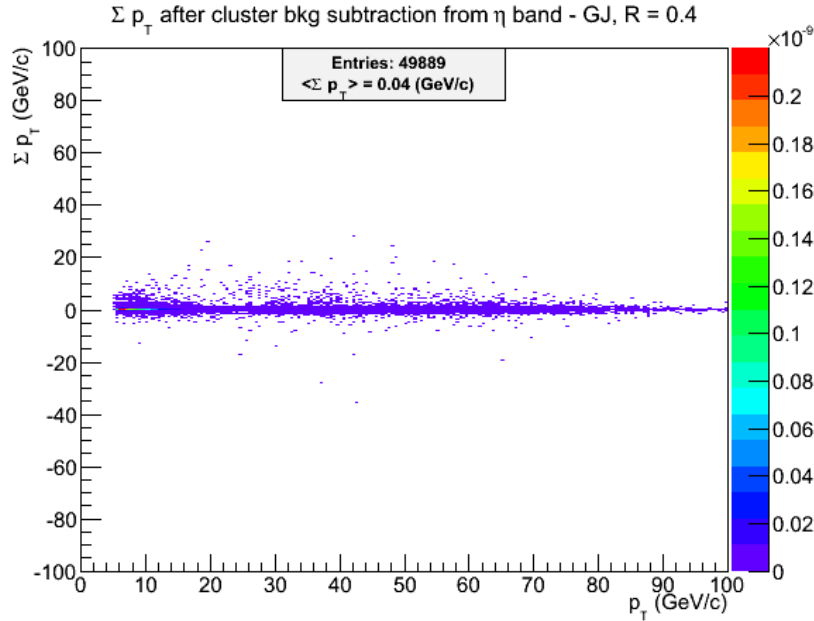


Avant soustraction

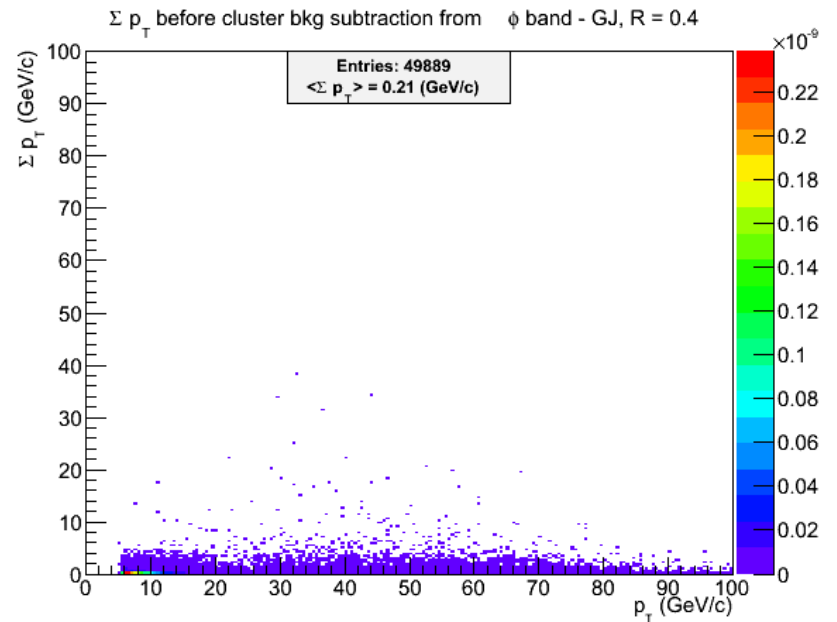
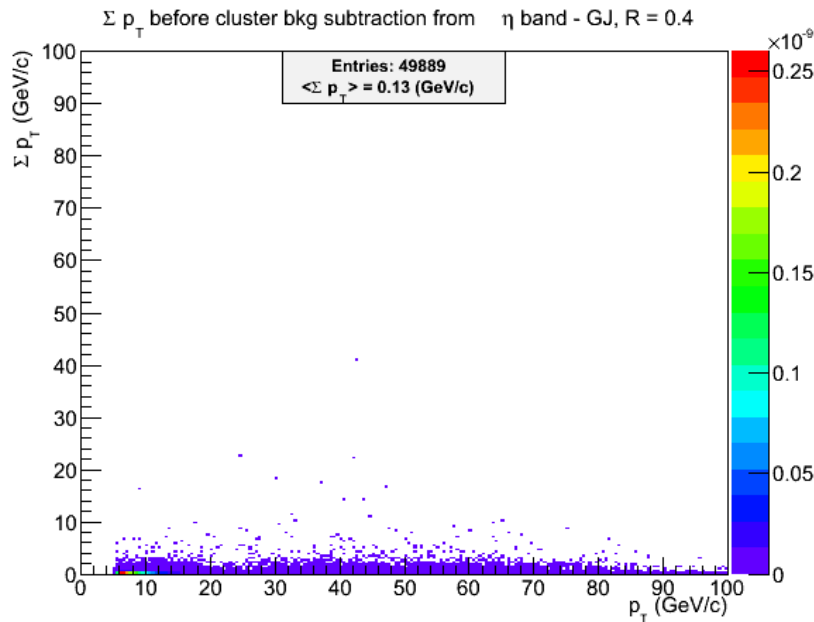


Gamma-jet - R = 0.4 - Clusters

Après soustraction

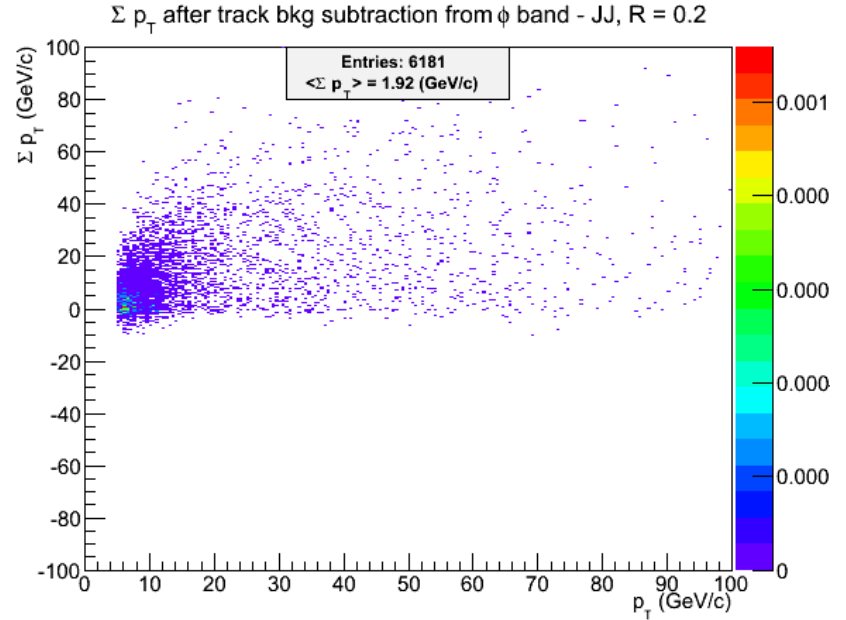
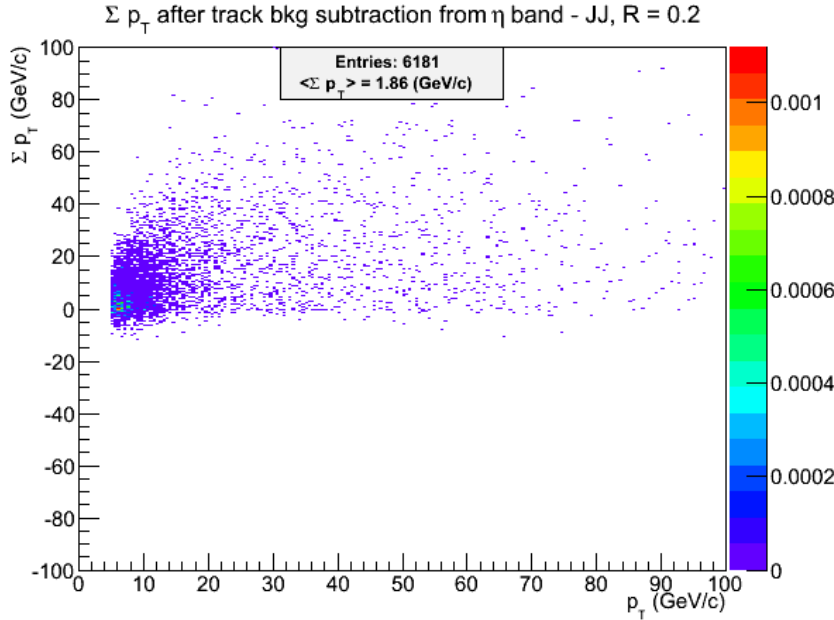


Avant soustraction

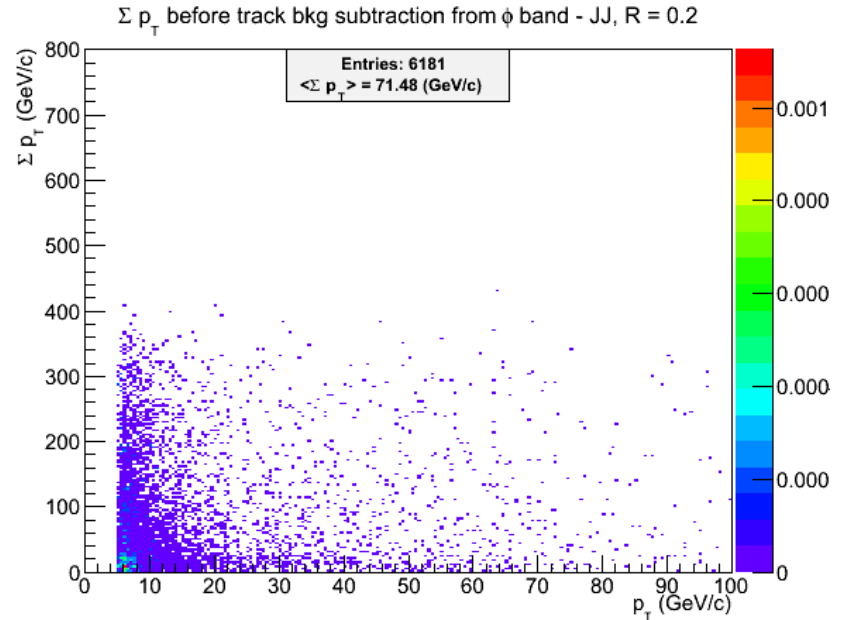
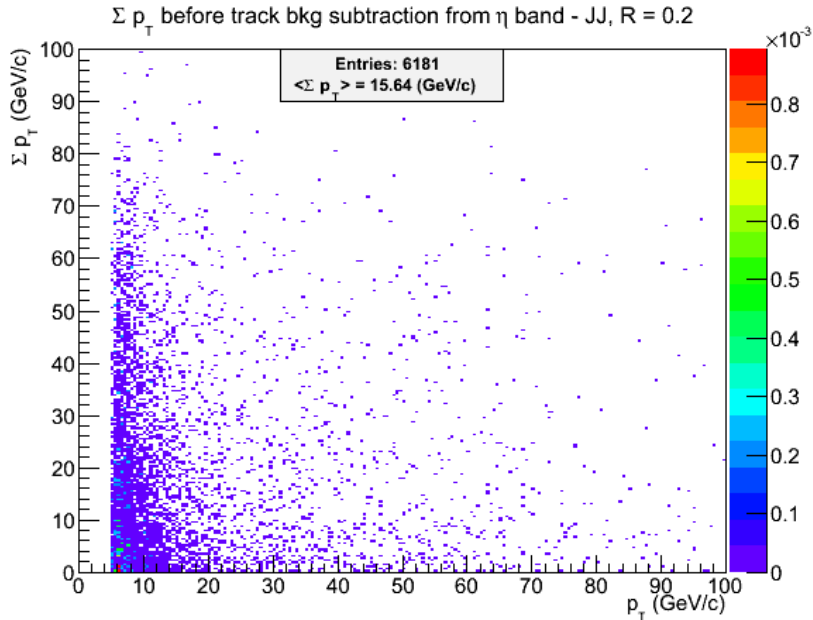


Jet-jet - R = 0.2 - Traces

Après soustraction

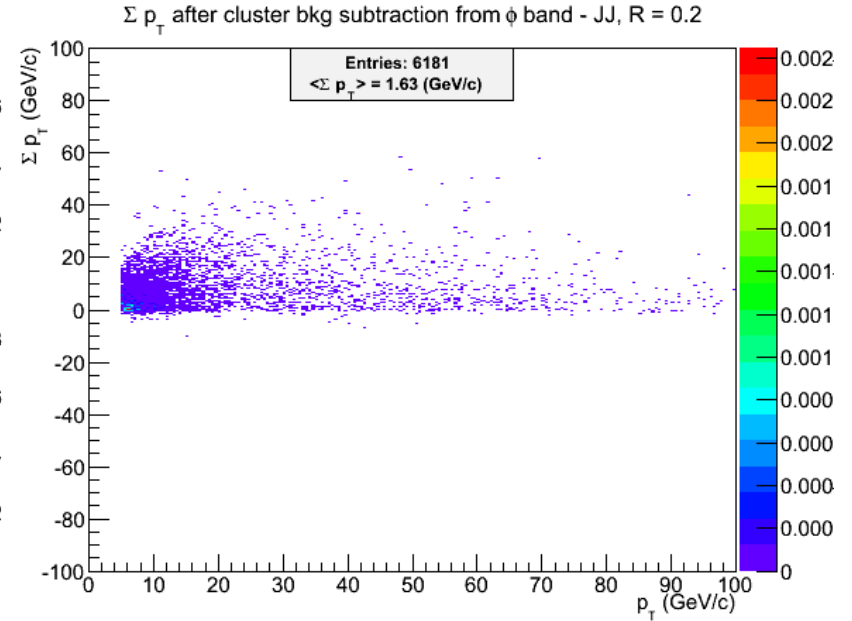
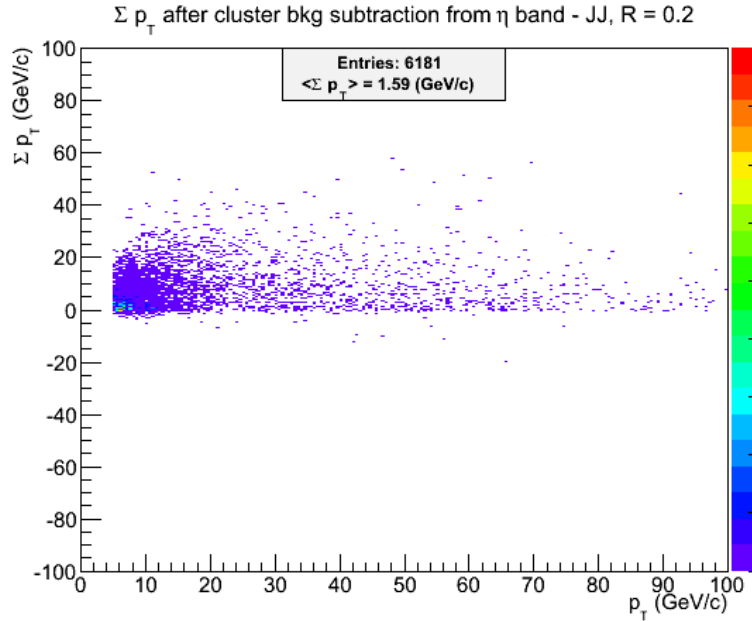


Avant soustraction

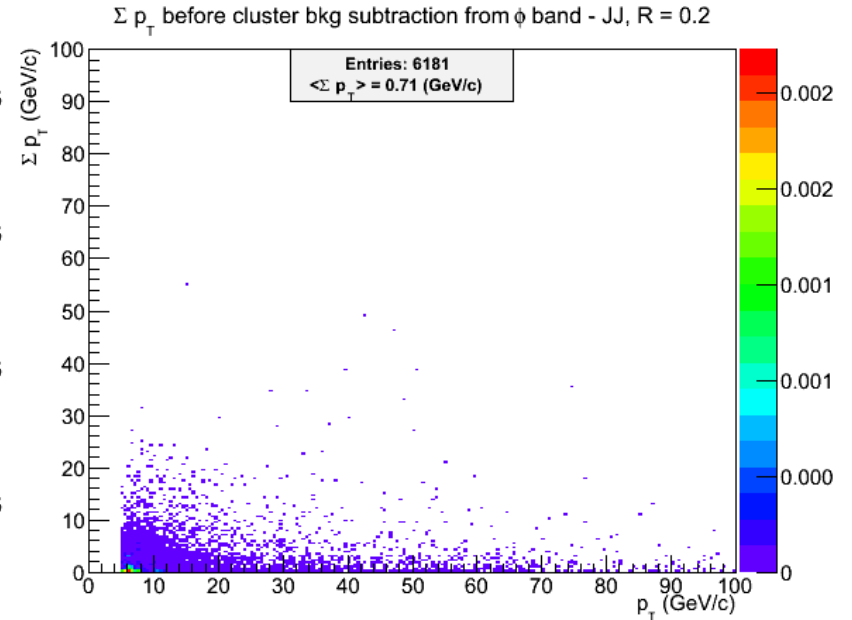
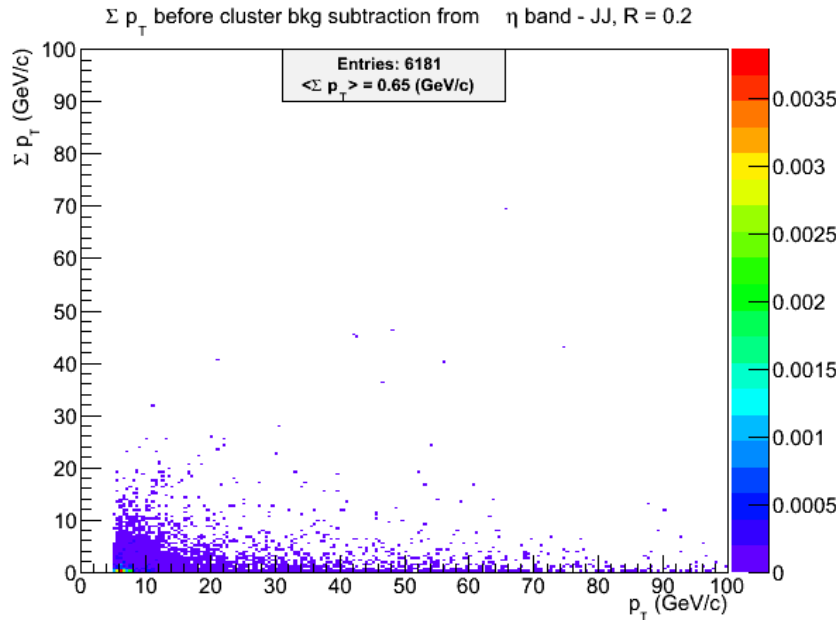


Jet-jet - R = 0.2 - Clusters

Après soustraction

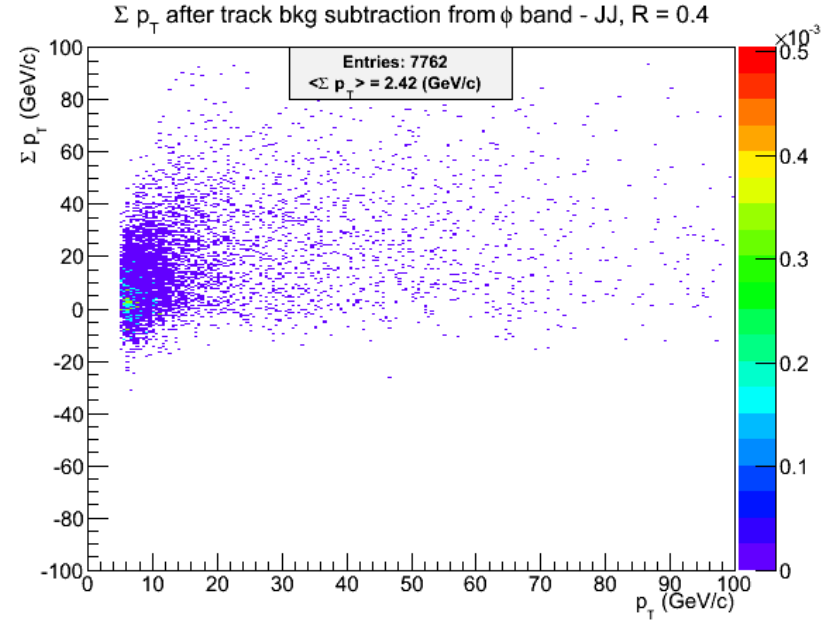
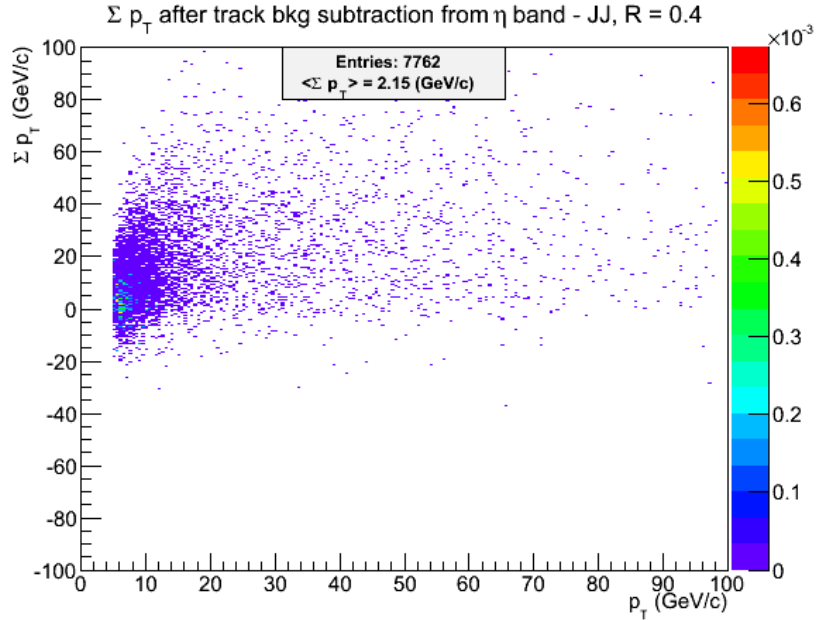


Avant soustraction

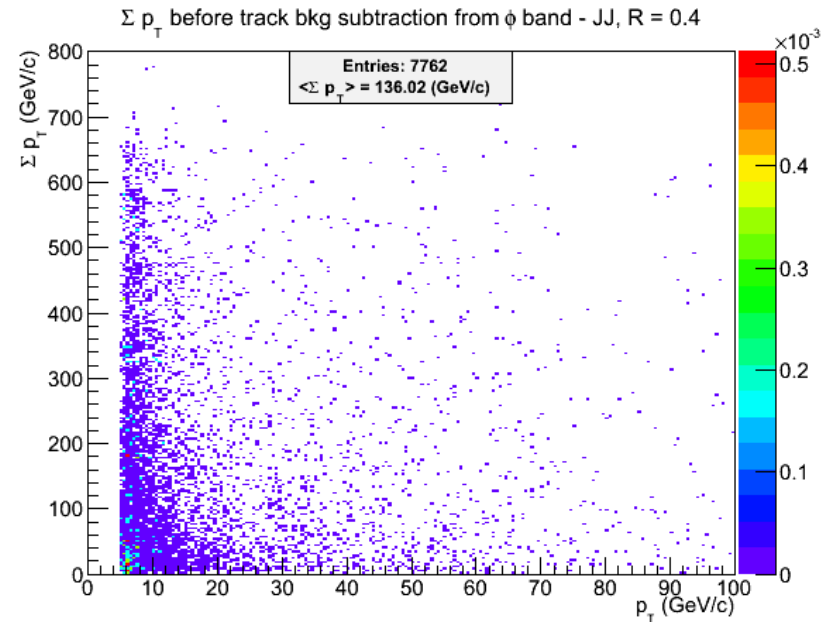
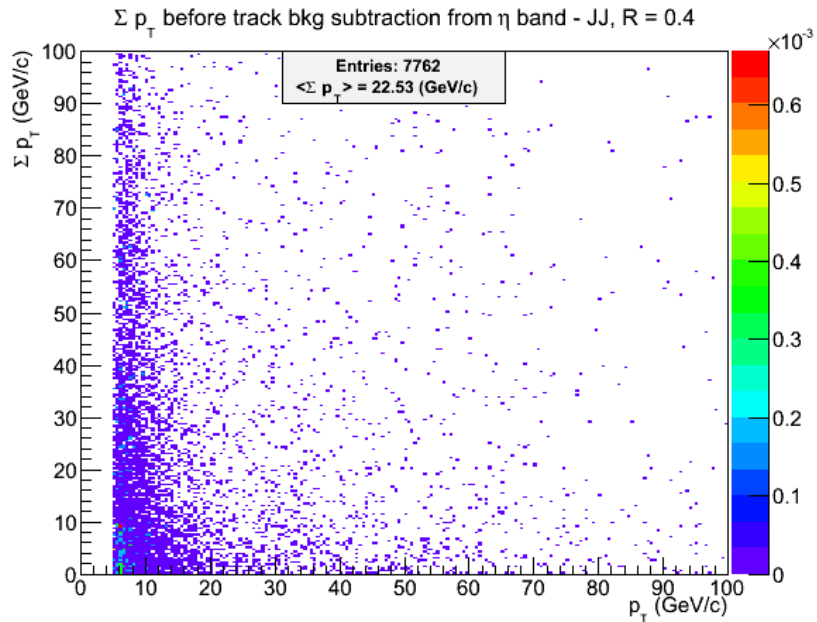


Jet-jet - R = 0.4 - Traces

Après soustraction



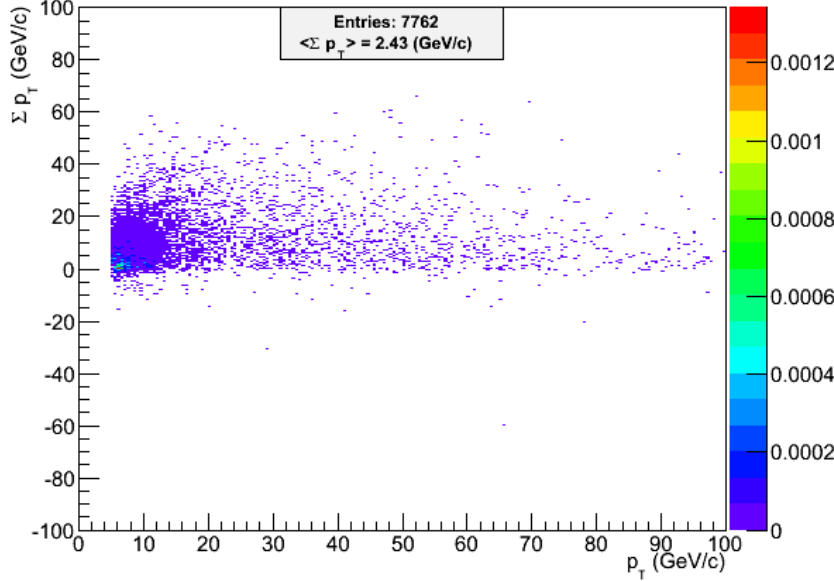
Avant soustraction



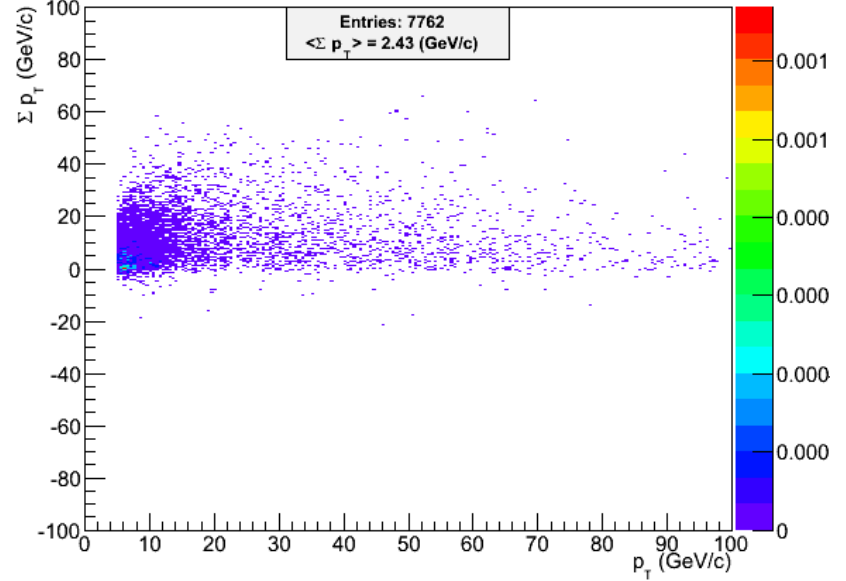
Jet-jet - R = 0.4 - Clusters

Après soustraction

Σp_T after cluster bkg subtraction from η band - JJ, R = 0.4

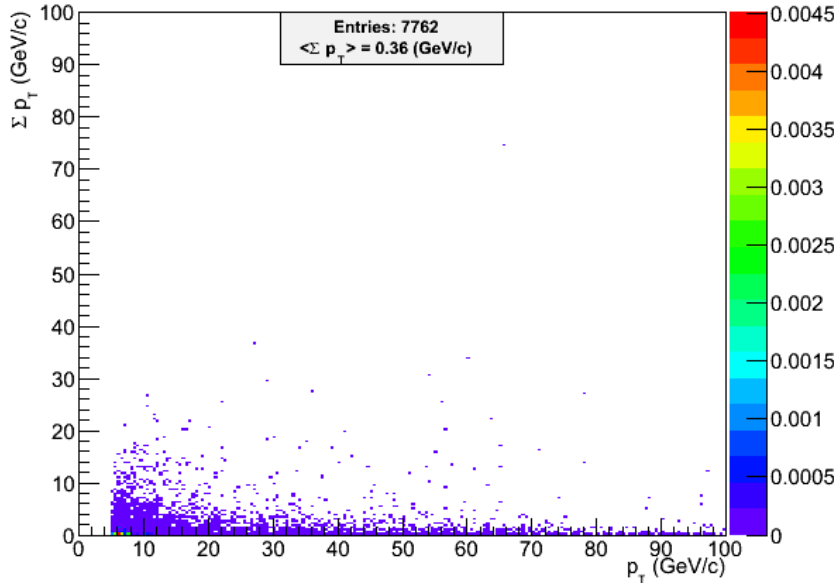


Σp_T after cluster bkg subtraction from ϕ band - JJ, R = 0.4

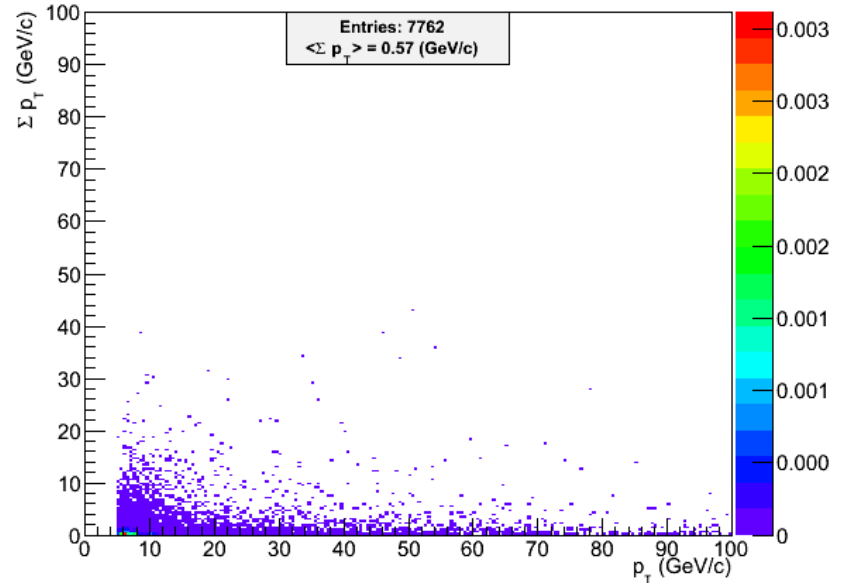


Avant soustraction

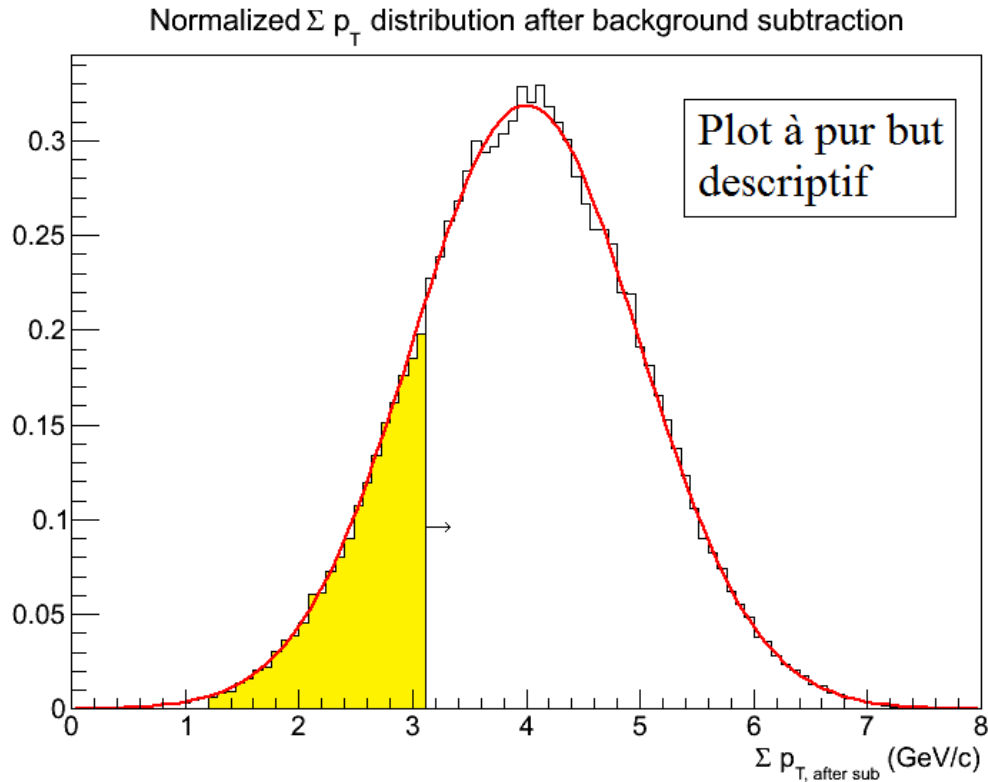
Σp_T before cluster bkg subtraction from η band - JJ, R = 0.4



Σp_T before cluster bkg subtraction from ϕ band - JJ, R = 0.4

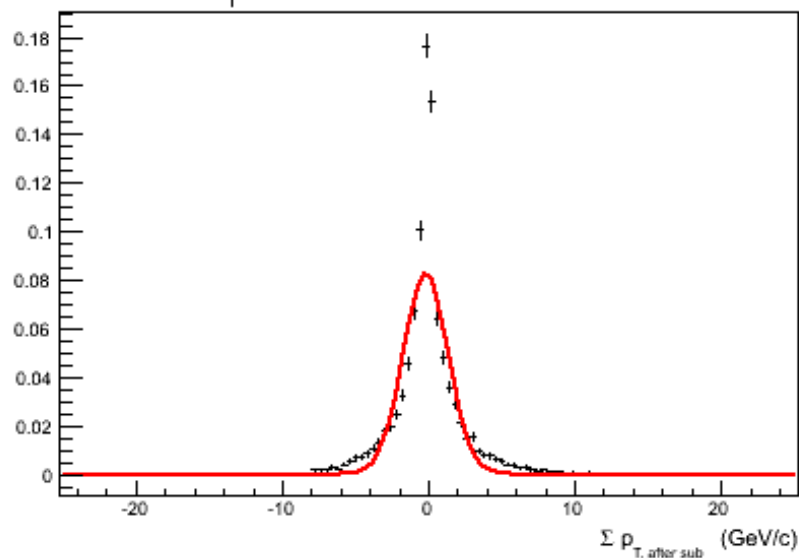


Estimation de l'efficacité

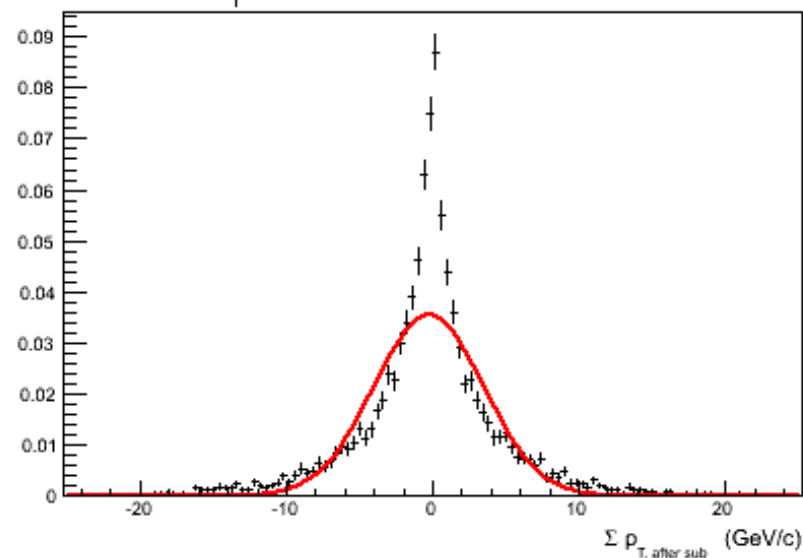


- On projette les histogrammes vus en précédente sur l'axe y de façon à obtenir la distribution de Σp_T après soustraction dans la bande η
- On normalise l'histogramme obtenu
- On estime l'efficacité d'isolation des photons en calculant le rapport entre la surface colorée et la surface totale et on augmente la surface colorée en ajoutant un bin à la fois.

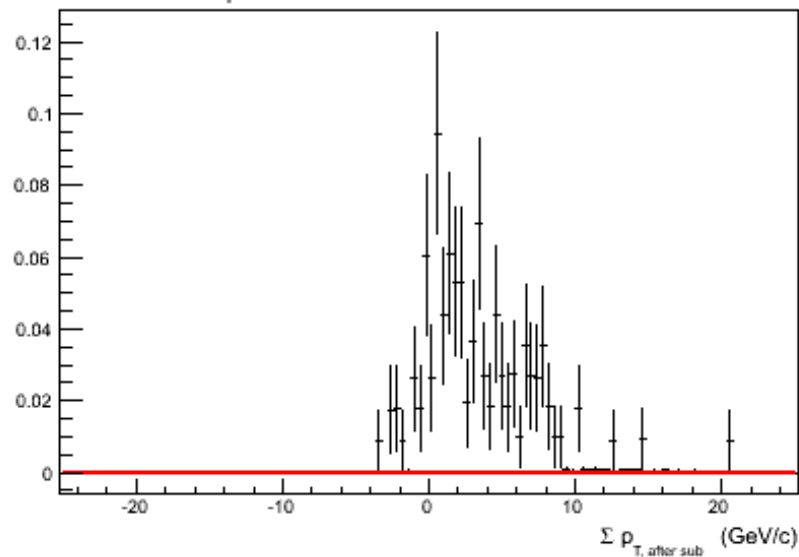
Σp_T after bkg sub - γ -jet, R=0.2



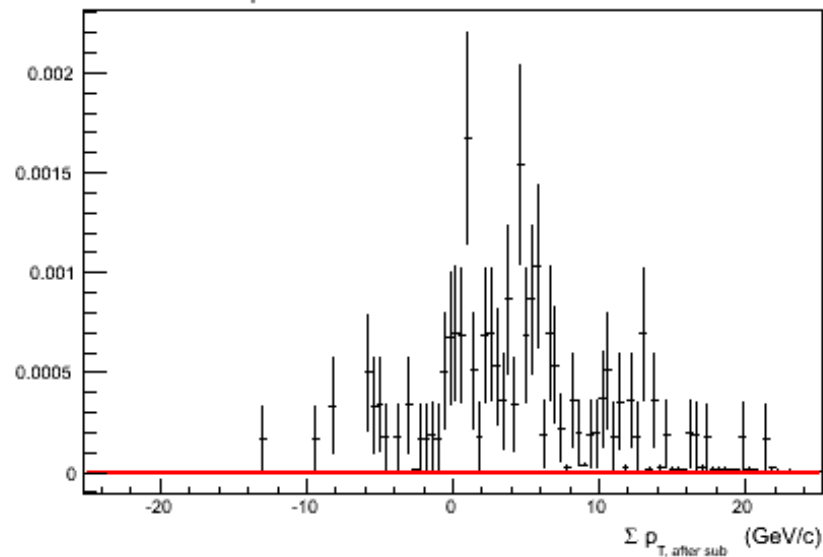
Σp_T after bkg sub - γ -jet, R=0.4



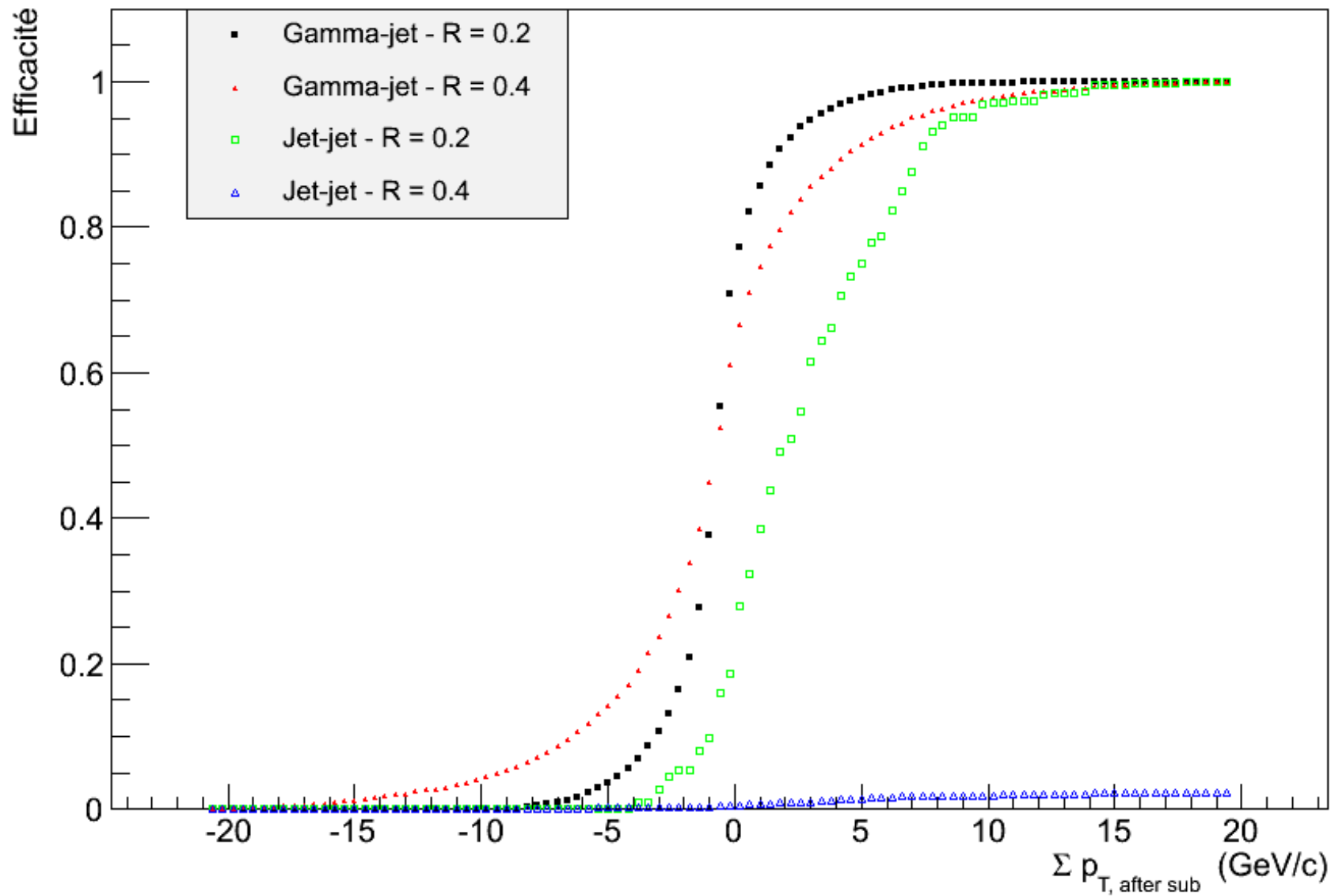
Σp_T after bkg sub - Jet-jet, R=0.2



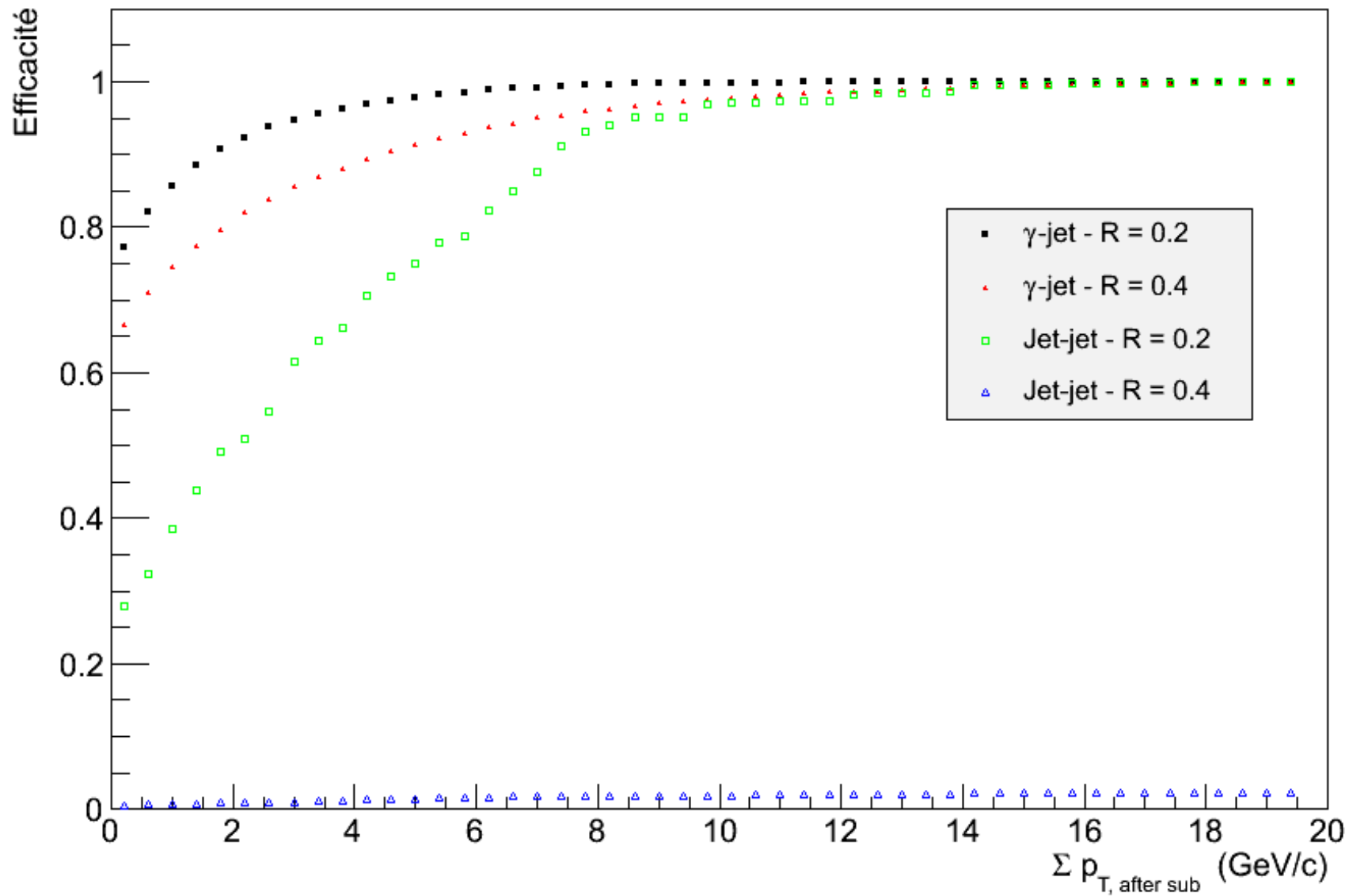
Σp_T after bkg sub - Jet-jet, R=0.4



Efficacité d'isolation



Efficacité d'isolation



Prochaines étapes

- Répétition de l'analyse en changeant le seuil énergétique des clusters ($E = 500 \text{ MeV}, 1 \text{ GeV}$)
- Inclusion dans le code de la méthode d'isolation et étude de l'efficacité d'isolation dans le cas des fichiers root corrects