

Status Report

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Table of contents

- Comparison of PGS and Delphes
- I tried to make $H \rightarrow cc$ sample but failed (MadGraph)
 - I tried just a same way when I made $H \rightarrow bb$ sample
 - Any other setups are needed?

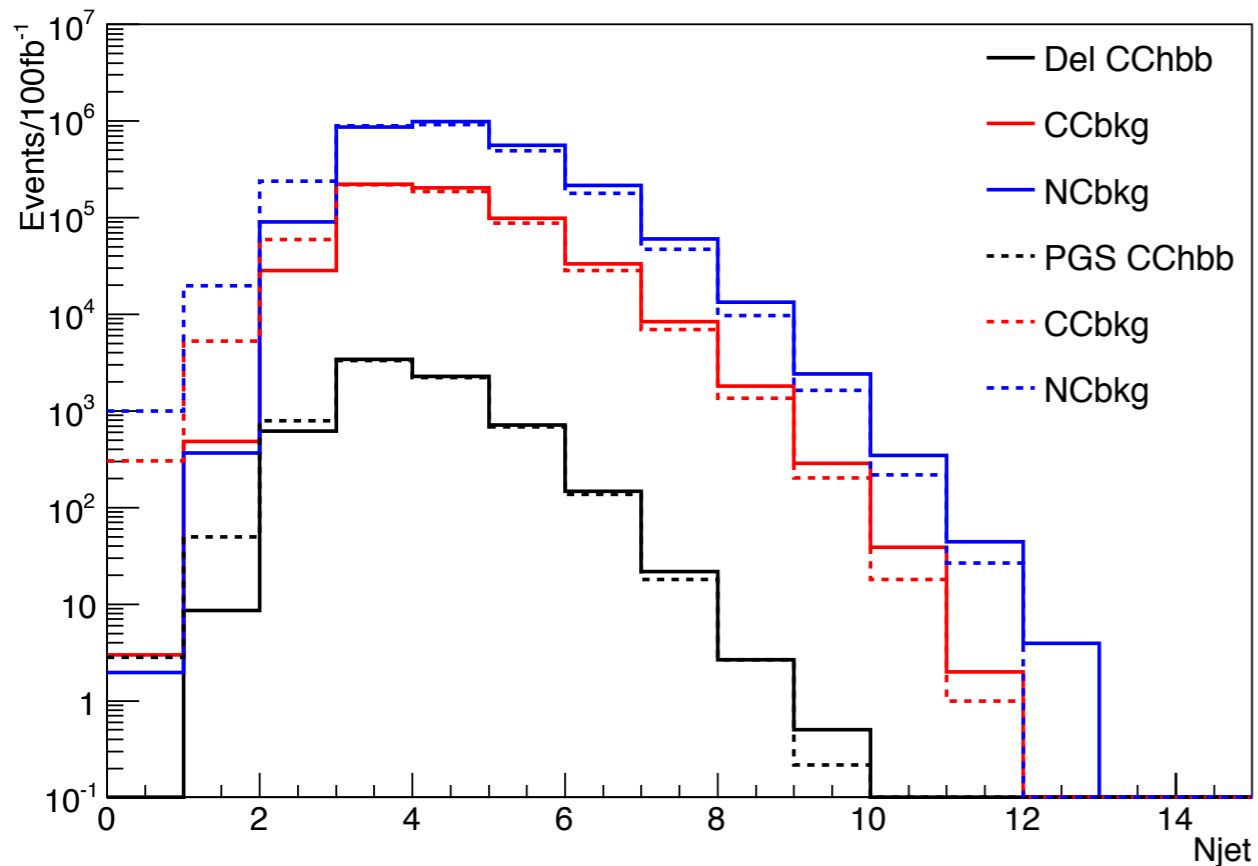
Setups

- Setups of calorimeter resolution and coverage are same
- Jet reconstruction
 - kt algorithm, $\Delta R=0.9$
 - minPT=5 GeV
 - ▶ PGS does not have this parameter for jet reconstruction, but trigger cluster finding seed threshold is 5 GeV
- B-tag
 - $|\eta| < 3$
 - b : 60%, c : 10%, light : 1%
 - minPT=0 (may be 0 for PGS)
 - $\Delta R=0.7$ (parameter only for Delphes, what about PGS?)

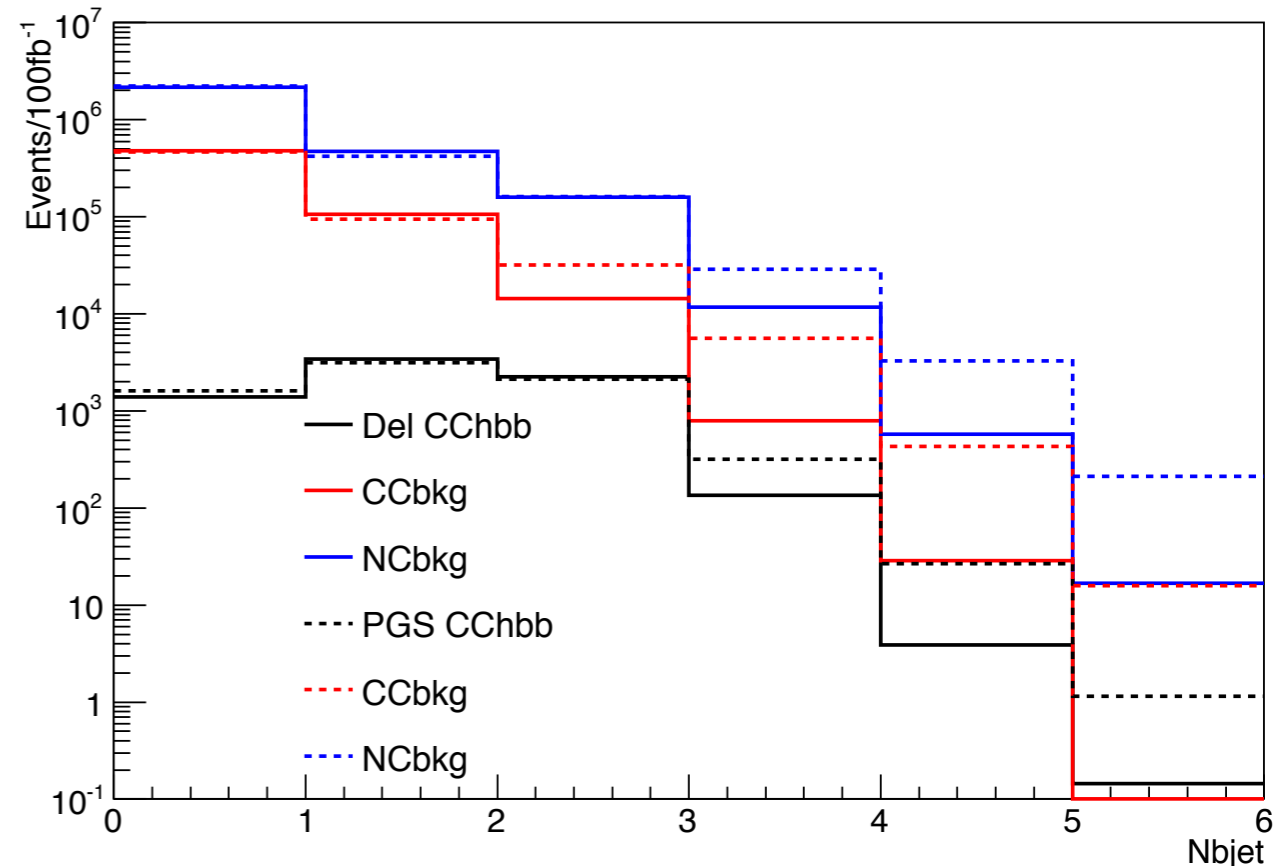
Number of jet and b-jet

- Comparison between PGS and Delphes
- For Njet, they are different in small Njet region
- For Nbjet, they are different in large Nbjet region
 - Due to ΔR in b-tag setup?(now $\Delta R=0.7$ for Delphes, but PGS?)

Njet



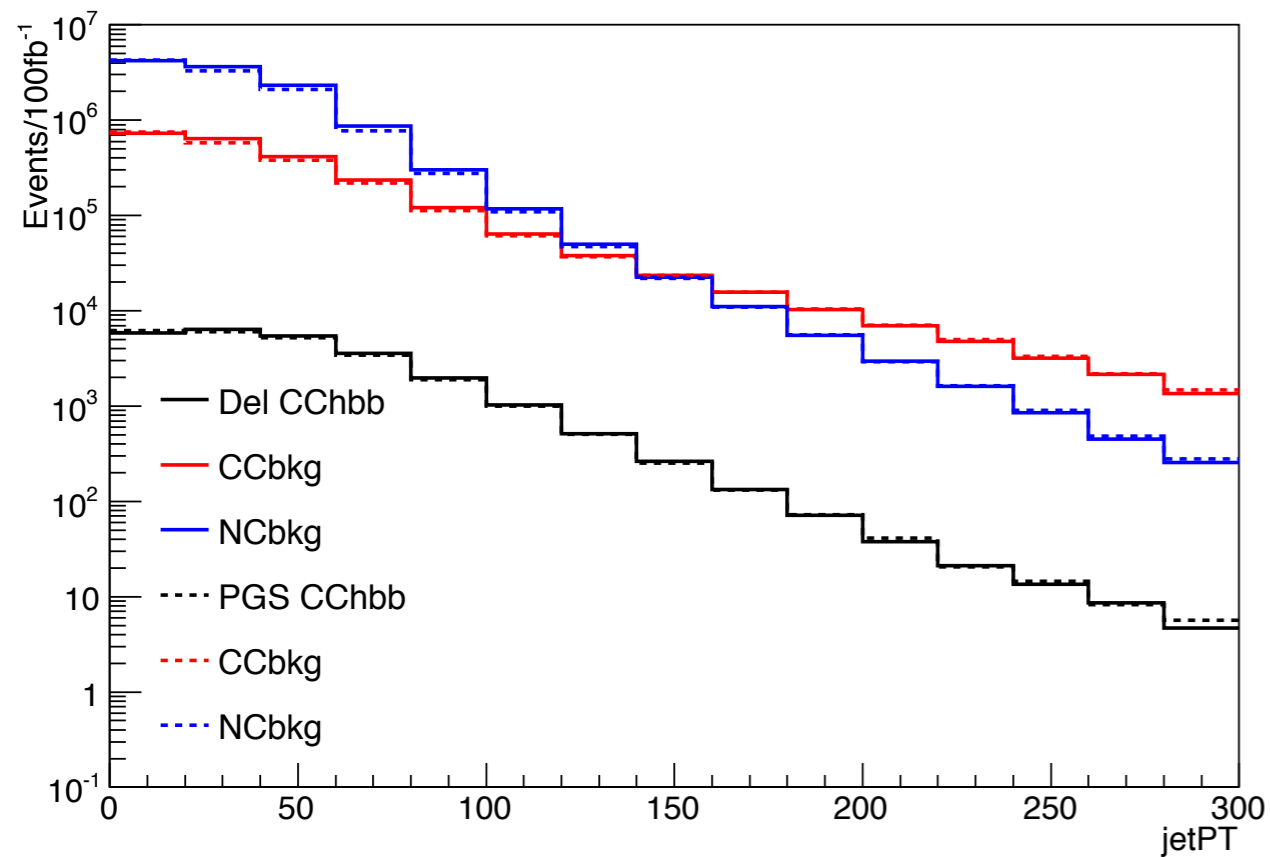
Nbjet



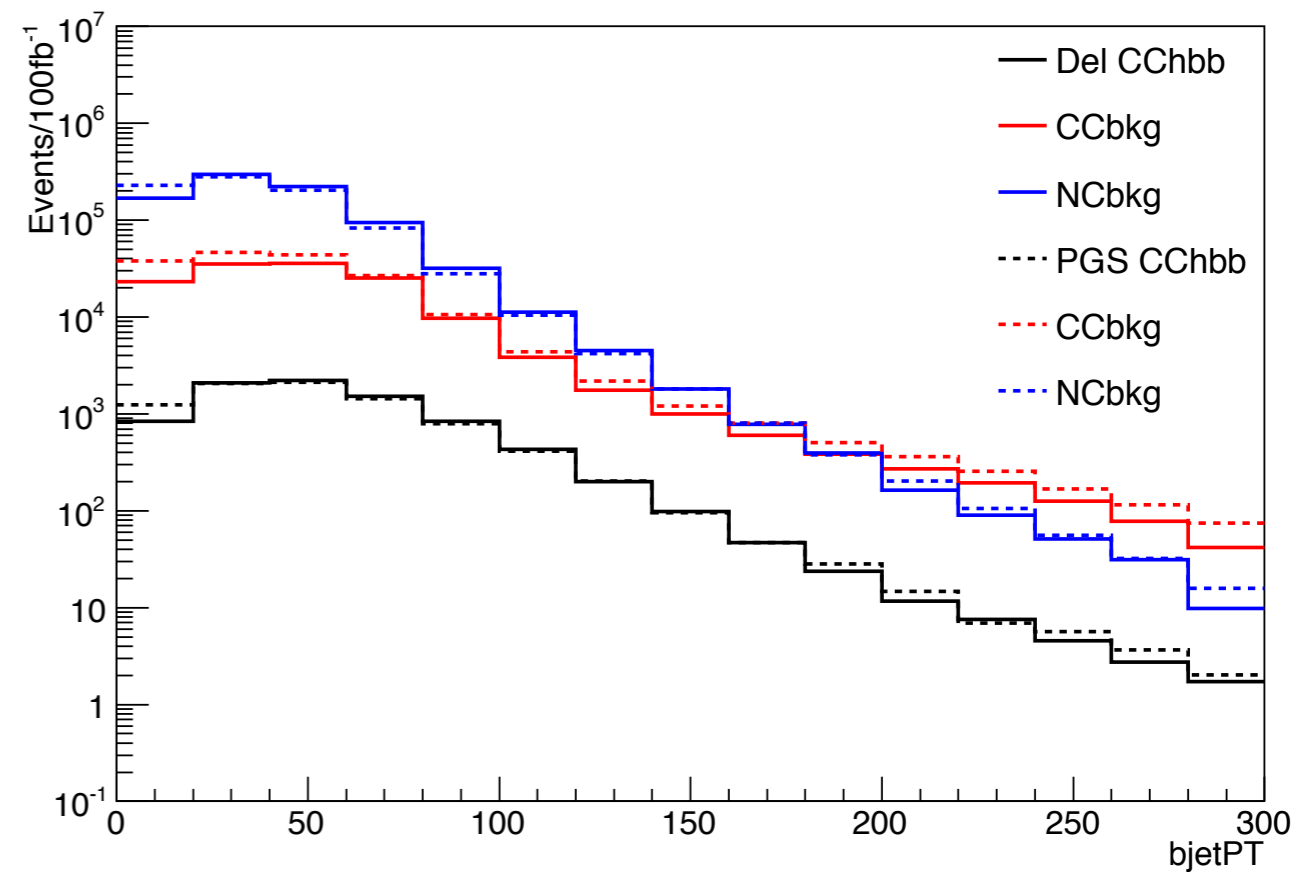
Jet and b-jet PT

- They are good agreement

Jet PT



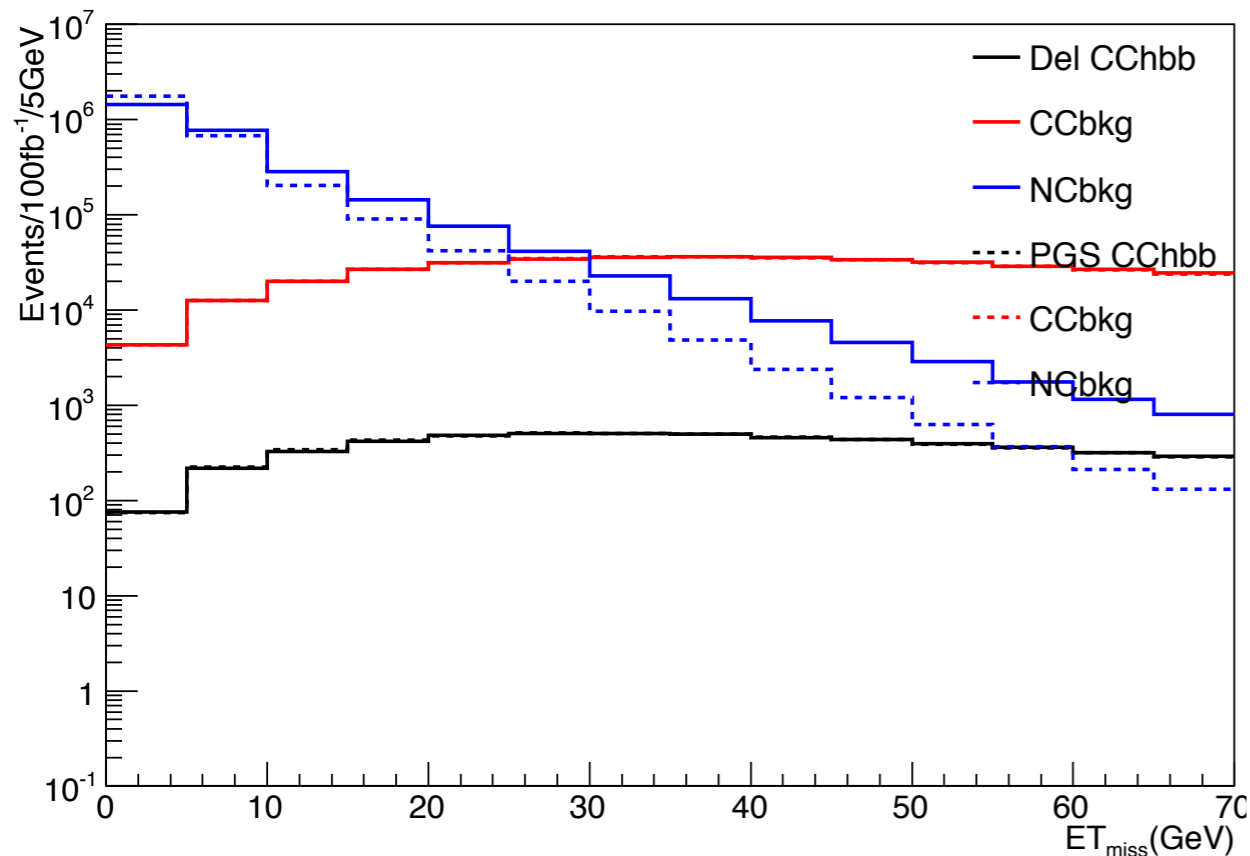
Bjet PT



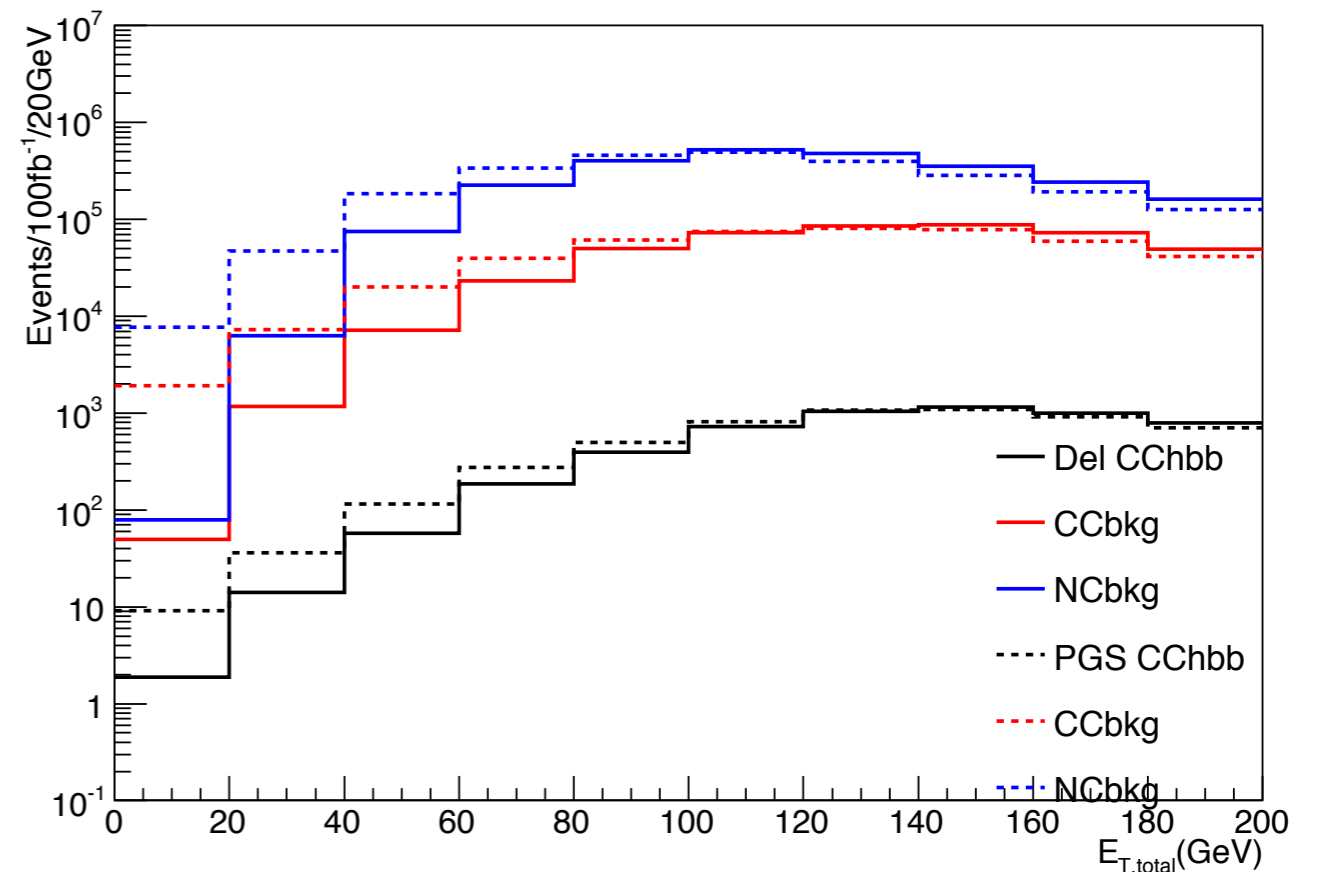
Missing ET and Total ET

- For missing ET, distributions of NCbkg are different
 - PGS has setup for smearing missing ET, but Delphes does not
- For missing ET, distributions of NCbkg are different

Missing ET

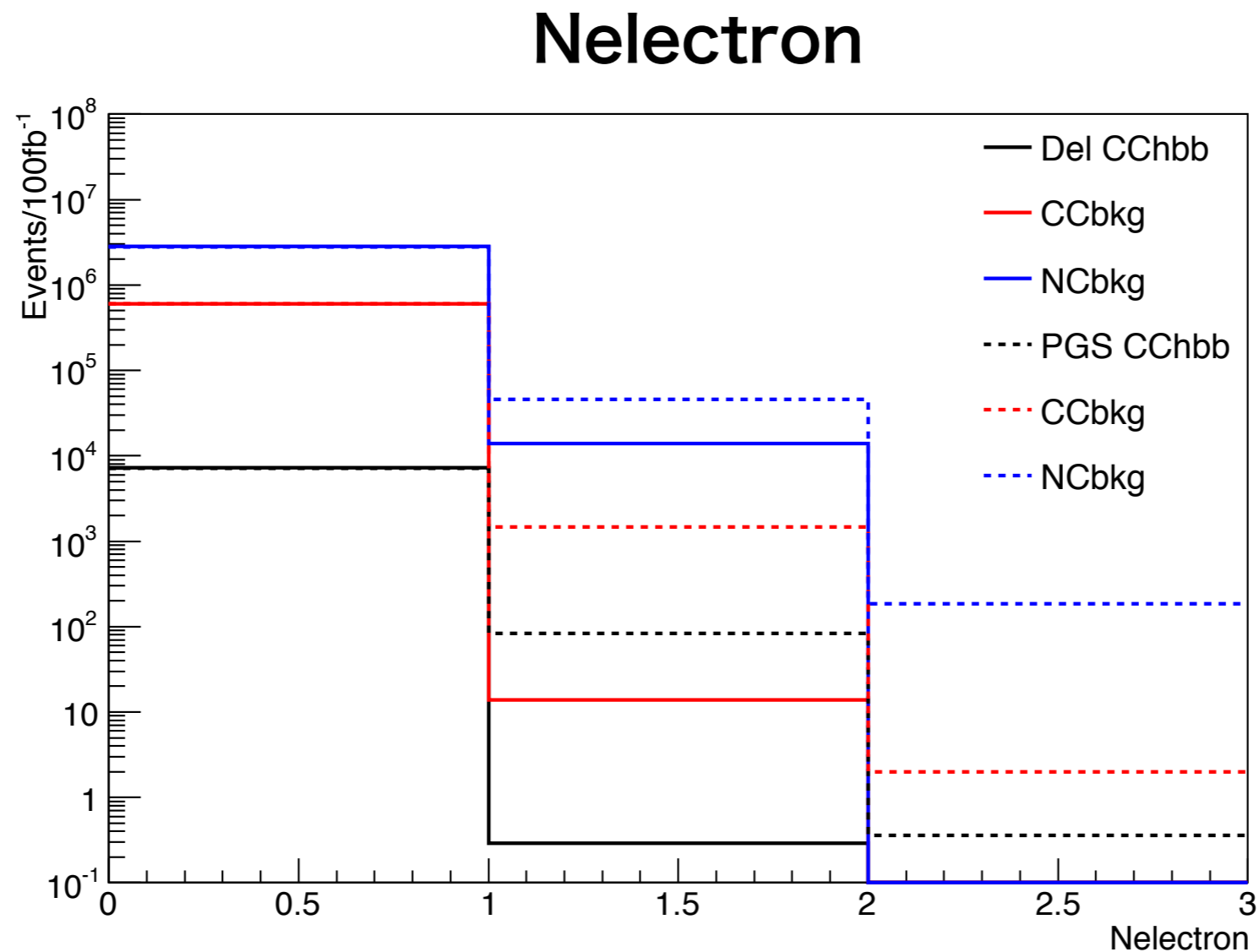


Total ET



Number of Electron

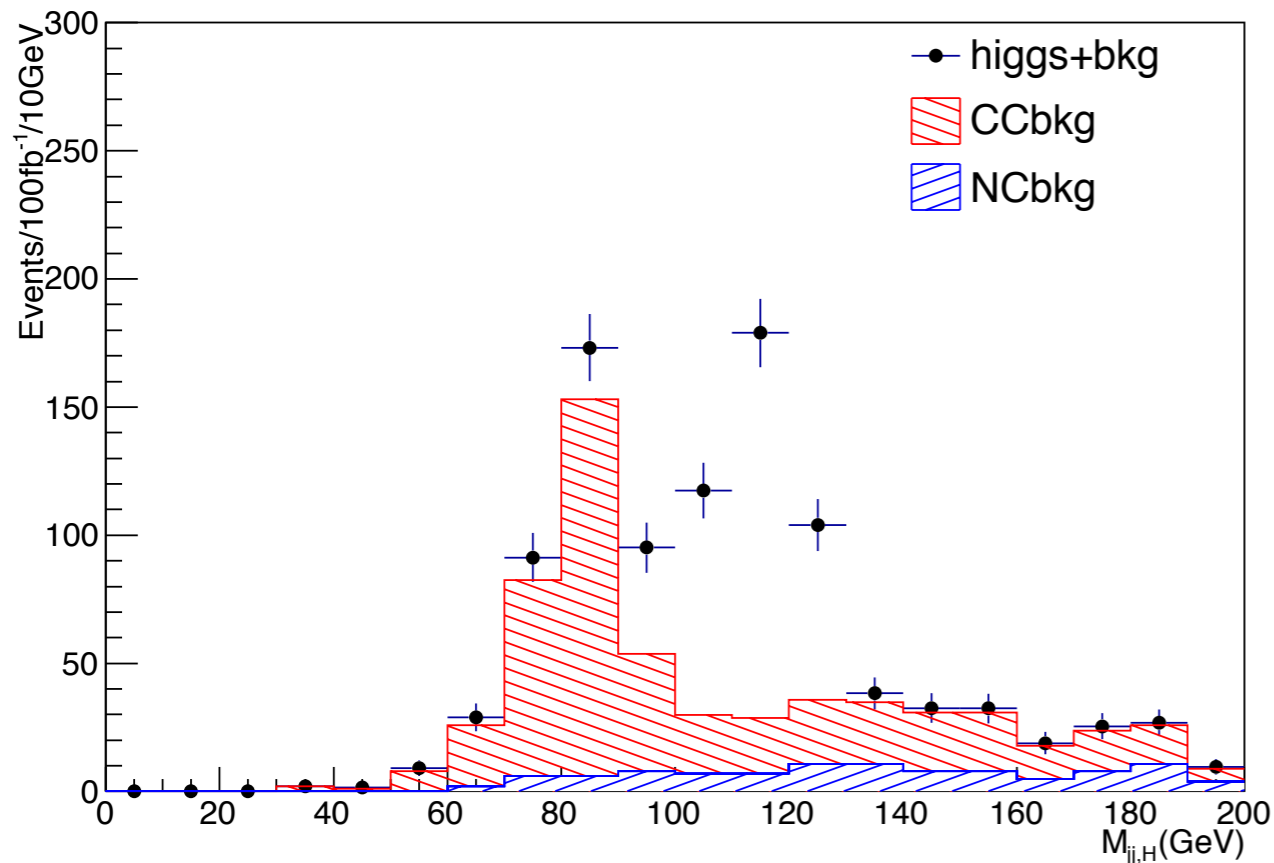
- Since I do not change setup for electron reconstruction (default CMS), they are large difference between PGS and Delphes



Result

- Weights of PGS and Delphes background samples are almost same (~1) so I just calculate errors as square root of events

PGS

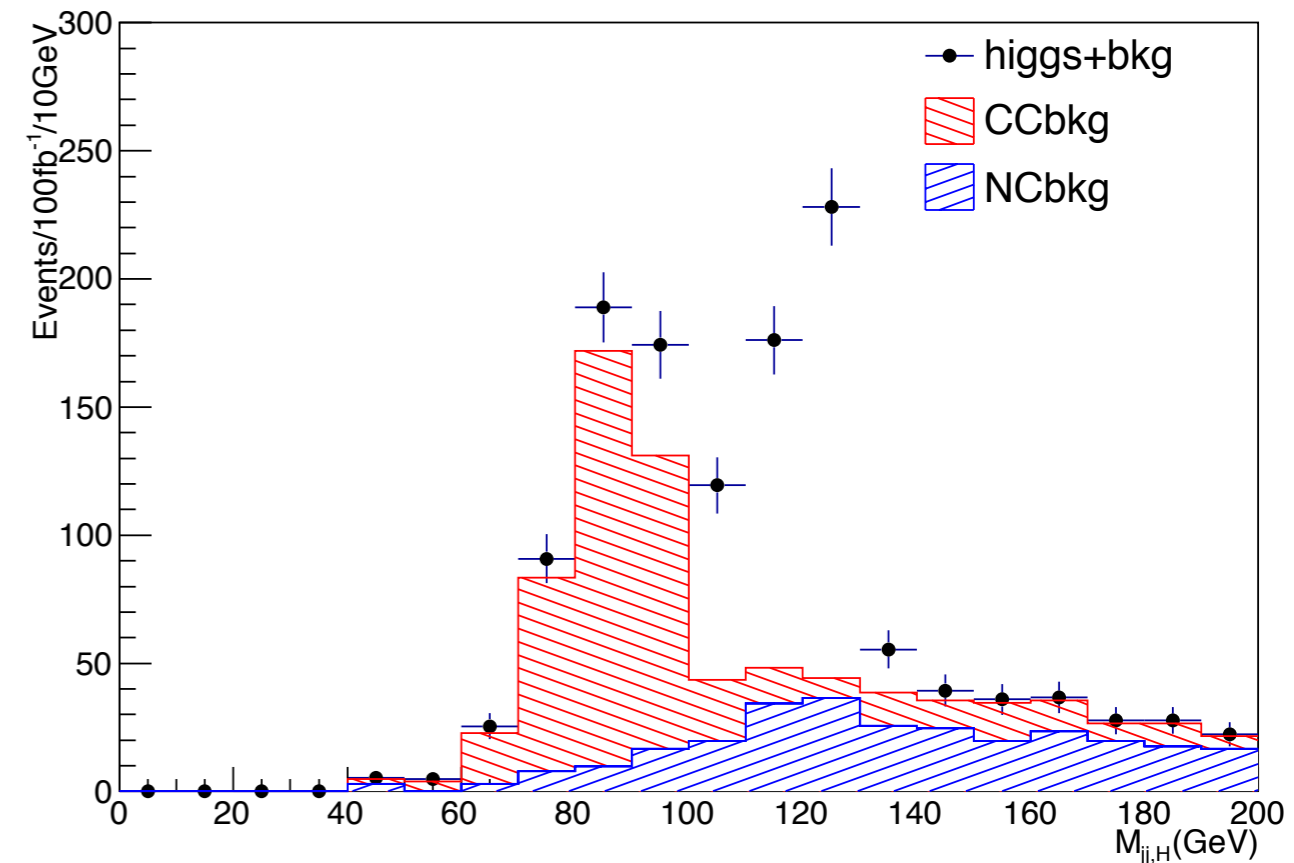


CChbb : 306 ± 17.5

CCbkg : 69.7 ± 8.3

NCbkg : 24.6 ± 5.0

Delphes



CChbb : 379 ± 19

CCbkg : 51.8 ± 7.2

NCbkg : 68.8 ± 8.3

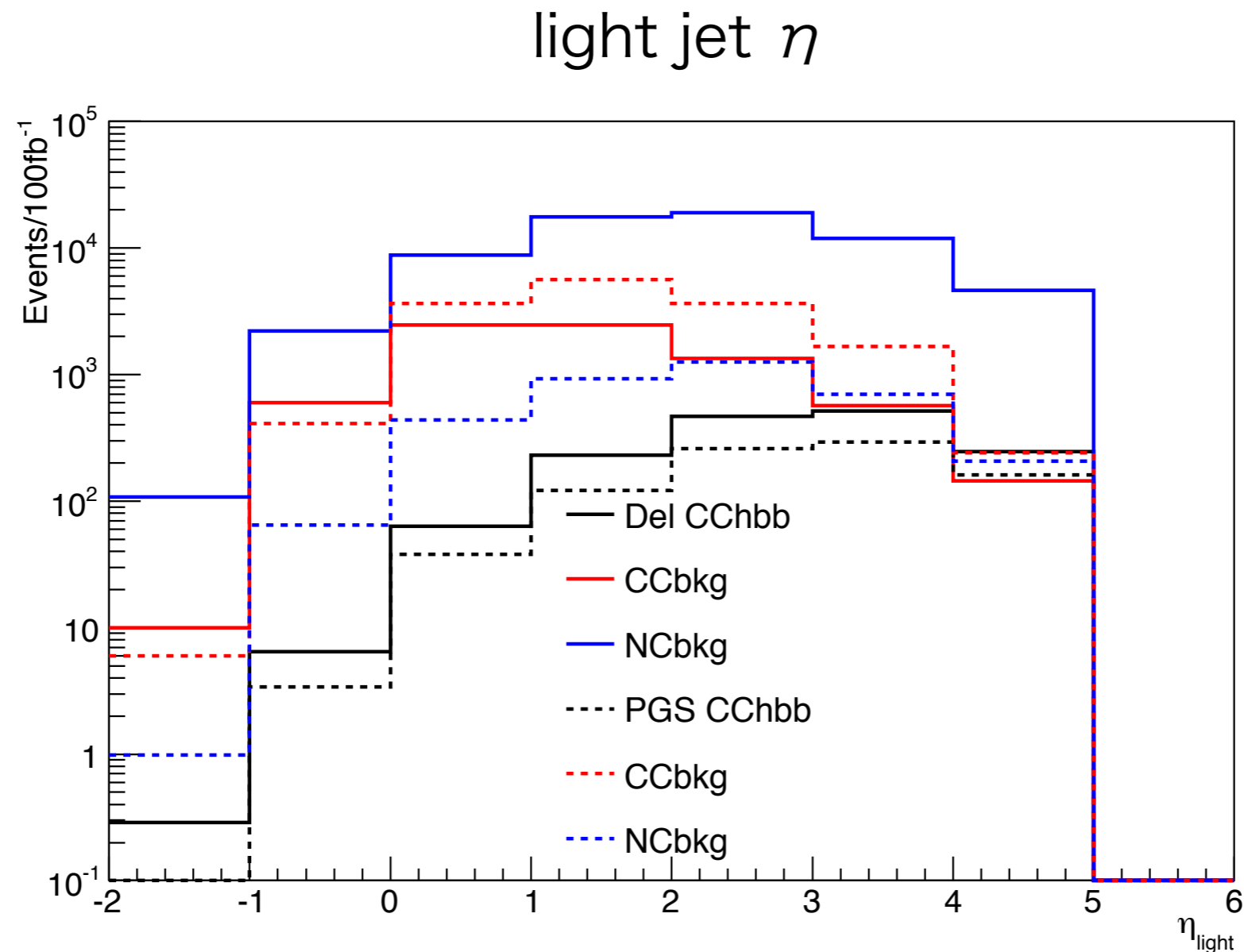
Summary

- Comparison of PGS and Delphes
- Setup of b-tag may be different (due to ΔR)
- Setup of electron reconstruction need to be change
- I want to make $H \rightarrow cc$ samples

Backup

Light jet η

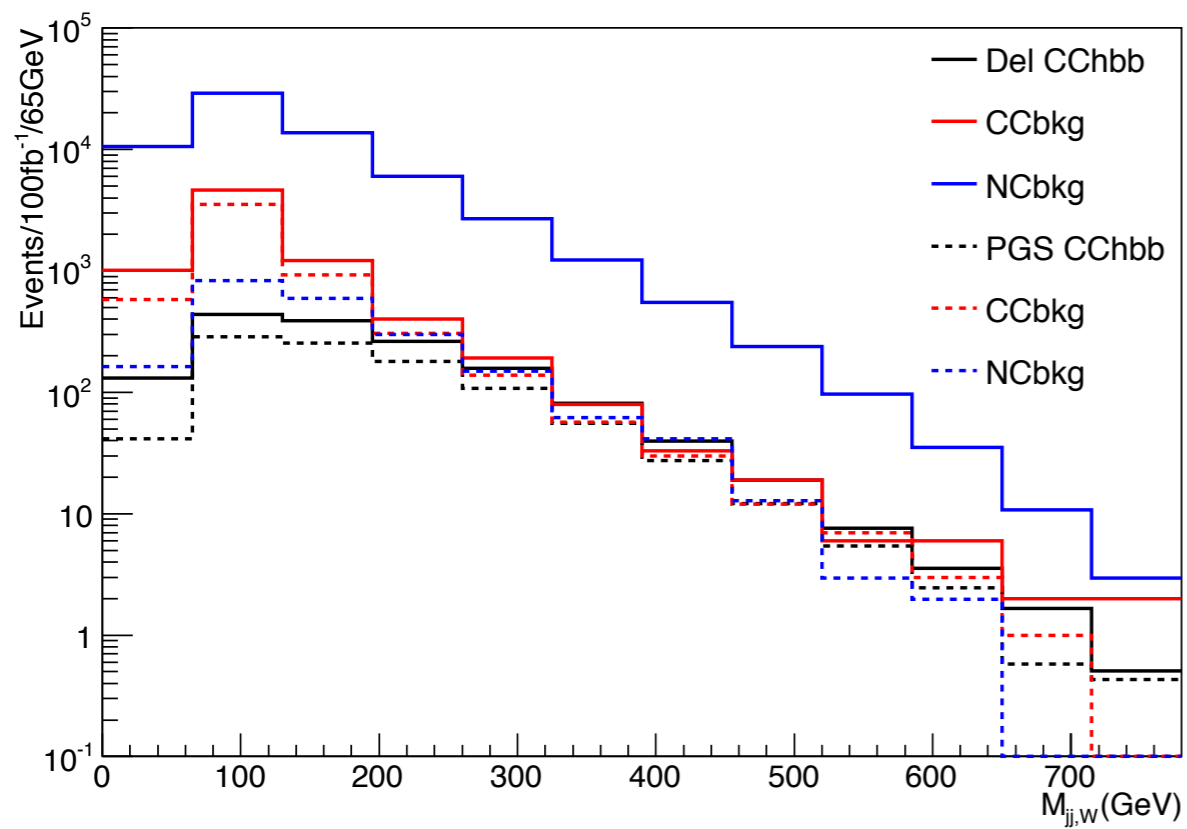
- After basic cut
- Basically number of inputs are different



Top and W mass

- After light jet η cut

W mass



Top mass

