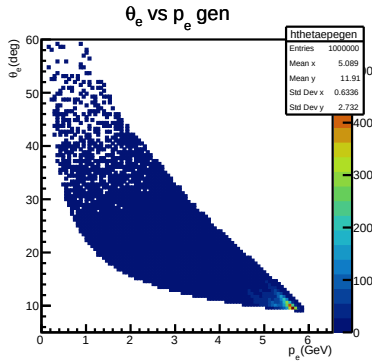
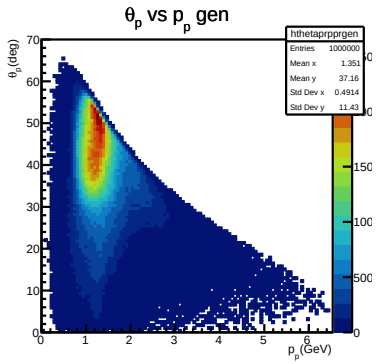
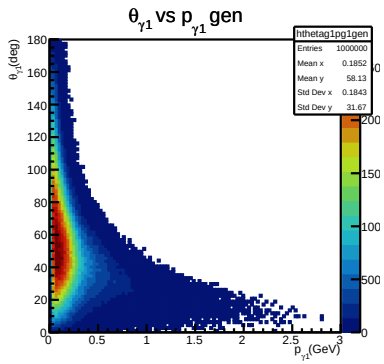
Generated particles ($ep \rightarrow ep\pi_0$)

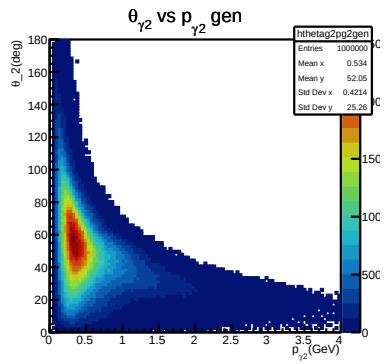
Ebeam=6.535 GeV
Data: Simulation (1 million events)
Coatjava: 6.5.3
Gemc: 4.3.2
Reaction: $ep \rightarrow ep\pi_0 \rightarrow ep\gamma\gamma$

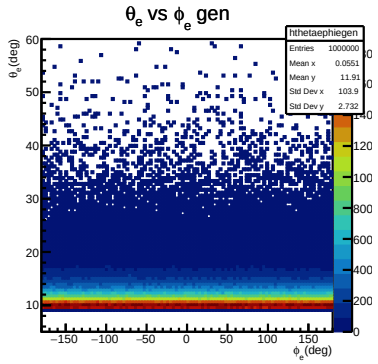
Generated particles ($ep \rightarrow ep\pi_0$)

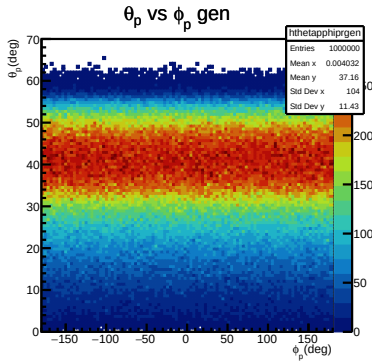


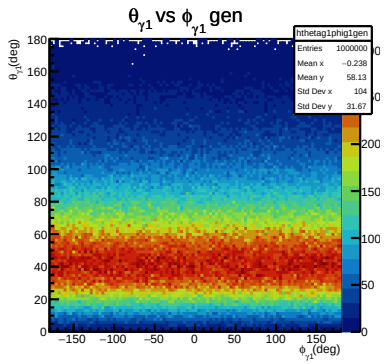


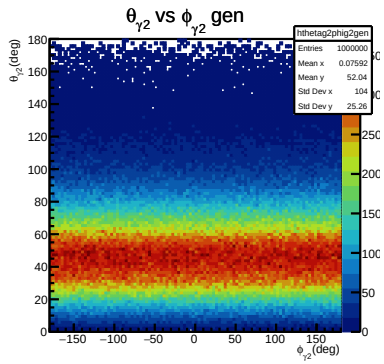


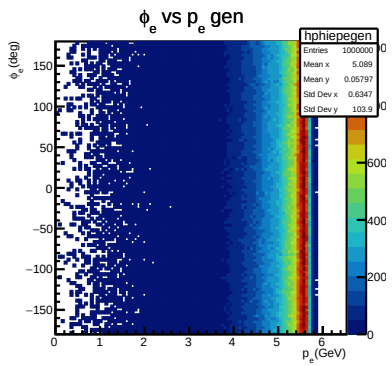


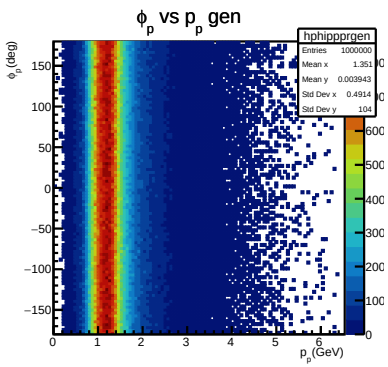


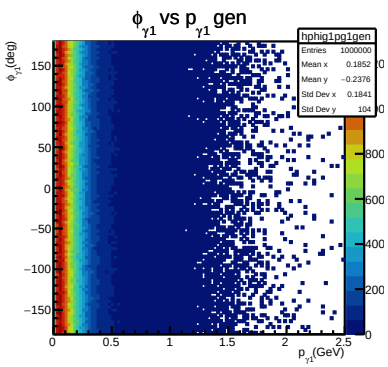


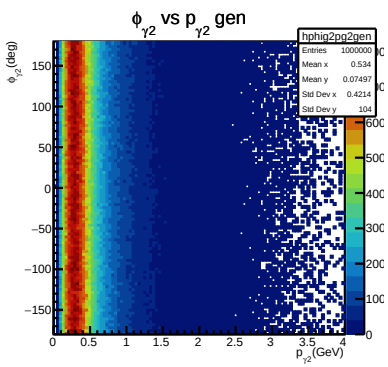




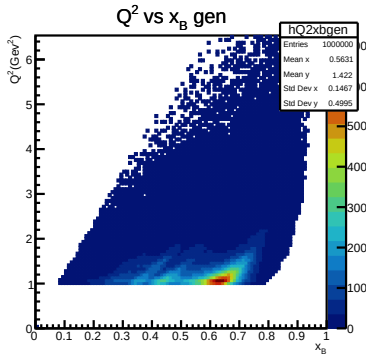


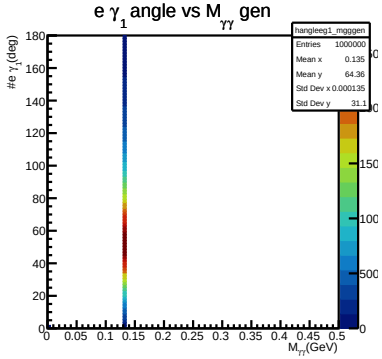


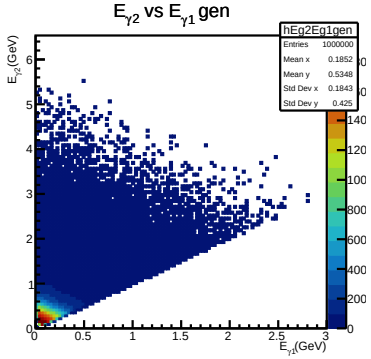


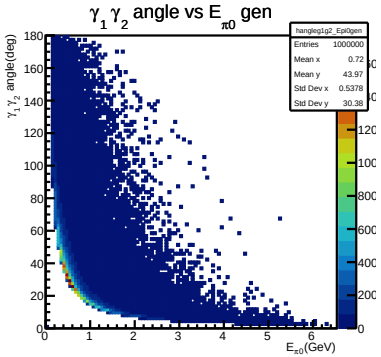


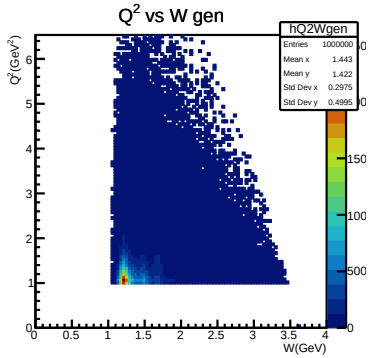
Generated particles ($ep \rightarrow ep\pi_0$)

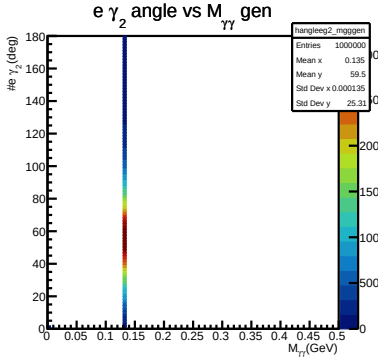


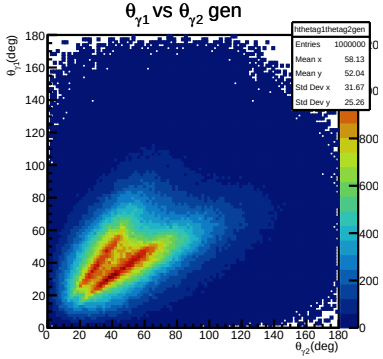


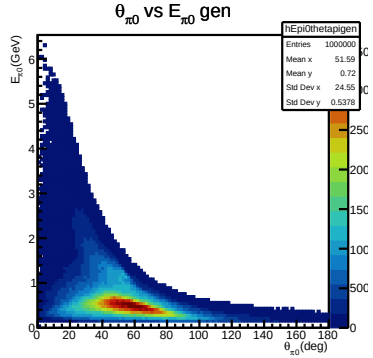


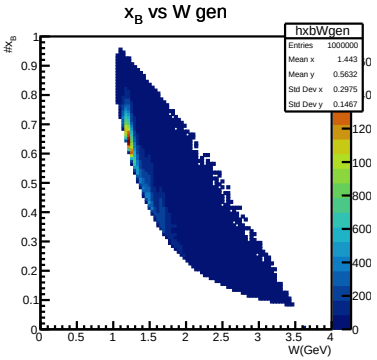


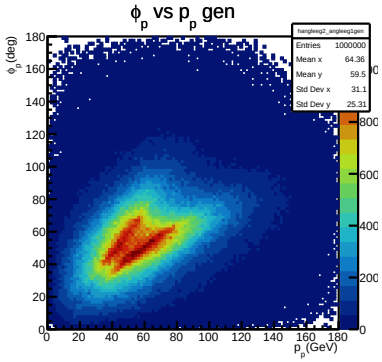


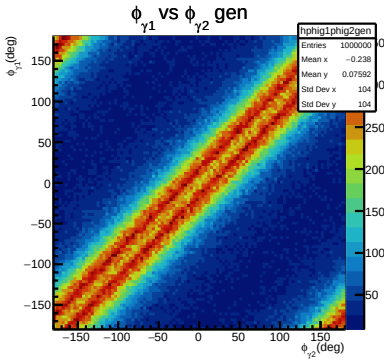


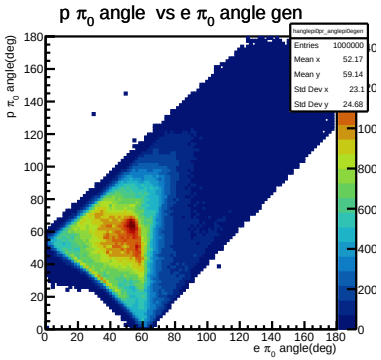




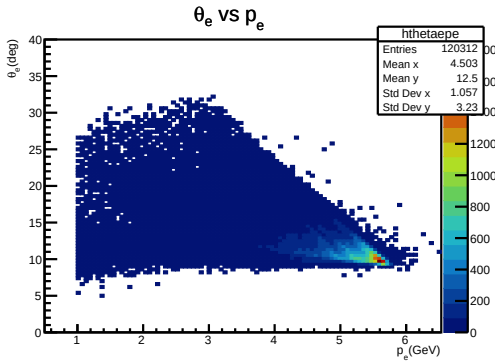


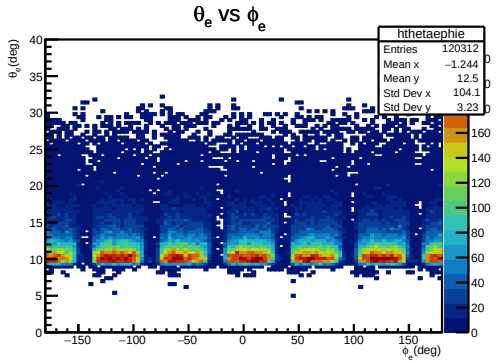


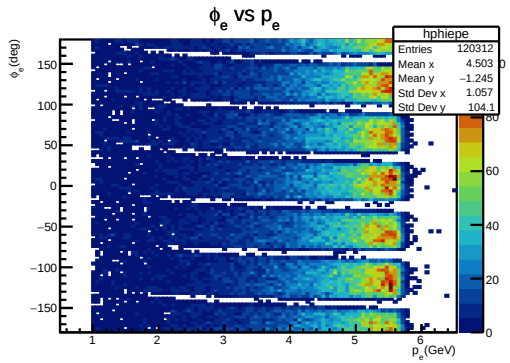


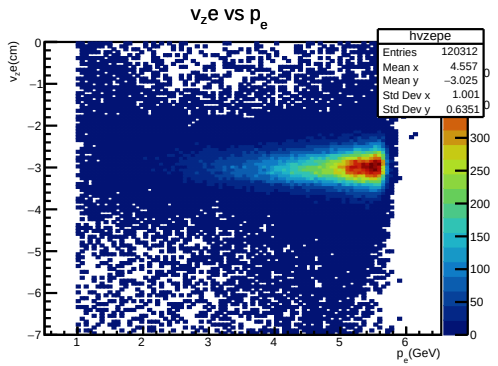


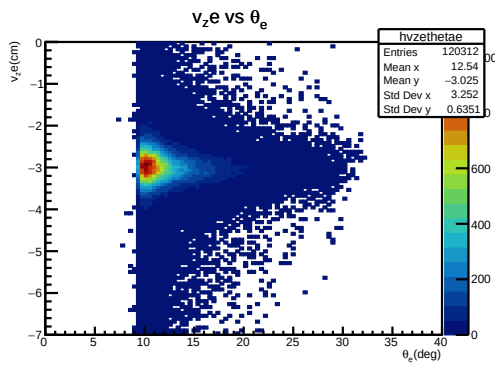
All events (without any cuts) - electrons

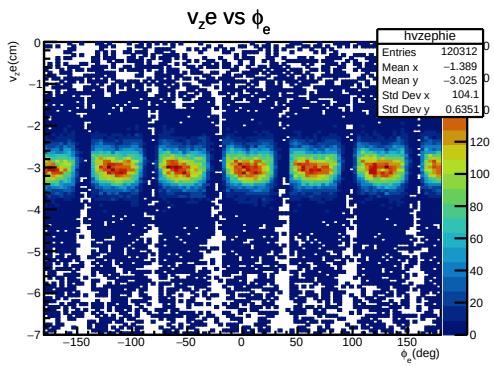


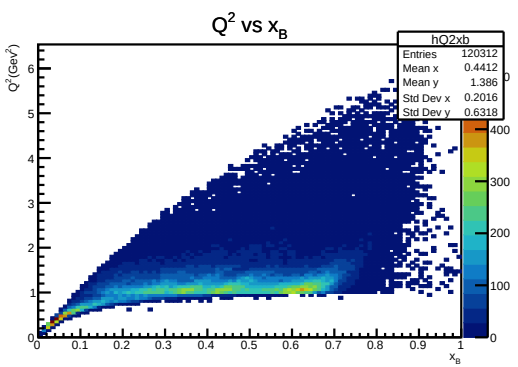


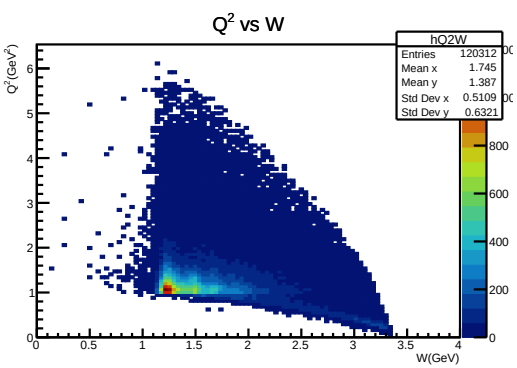


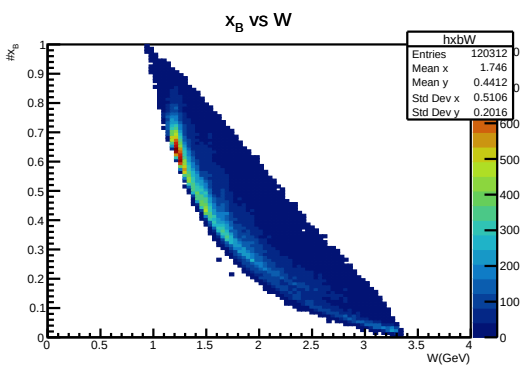




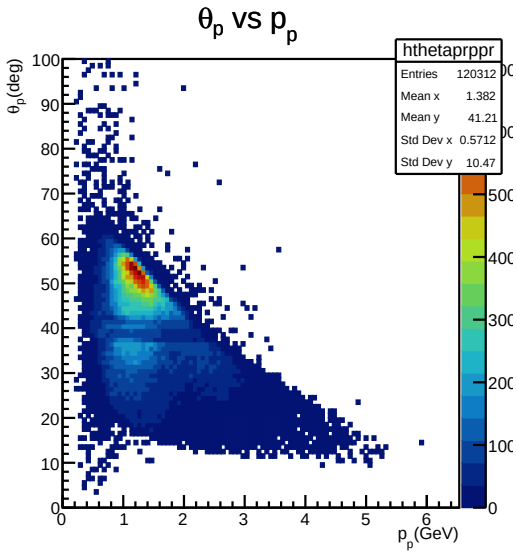


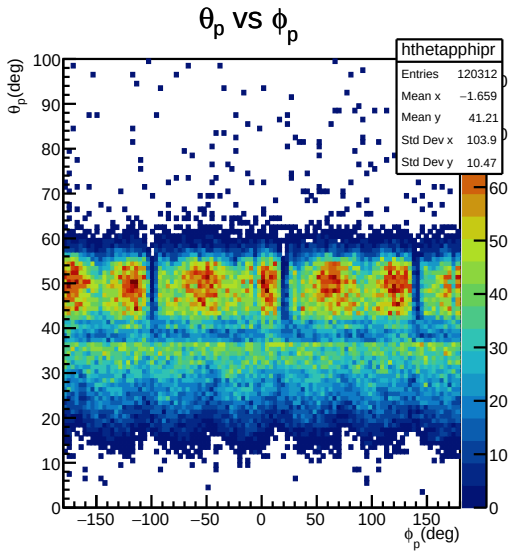


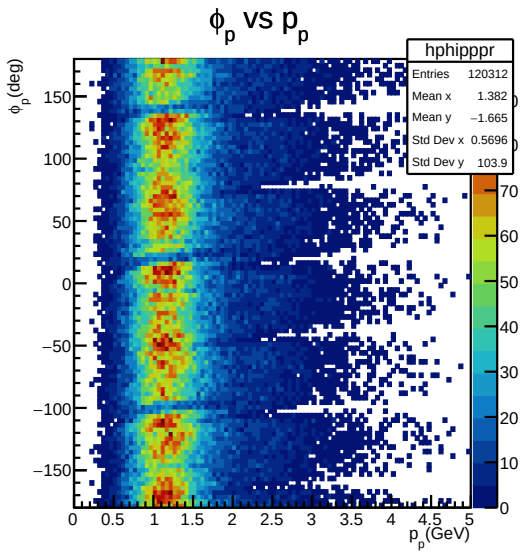


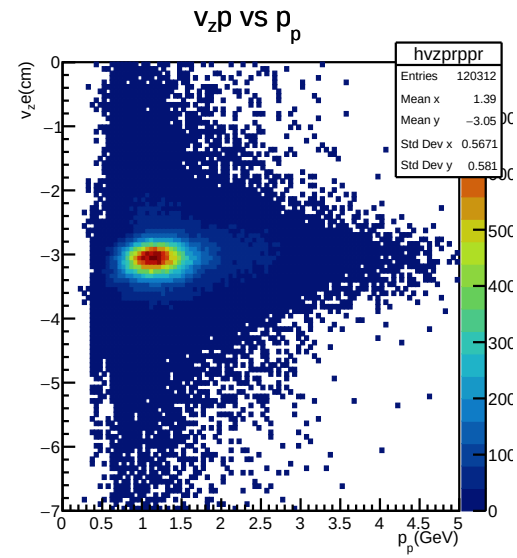


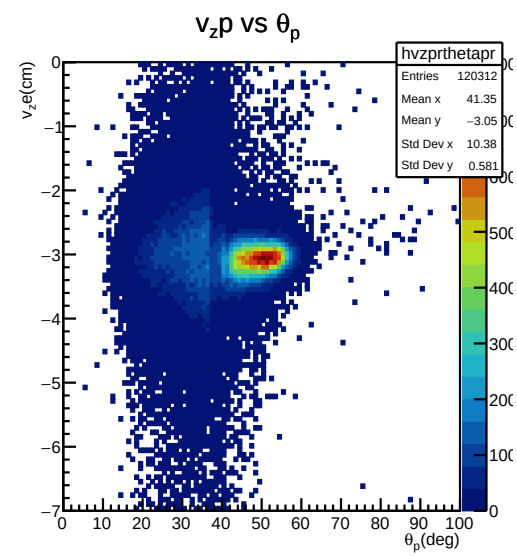
All events (without any cuts) - protons

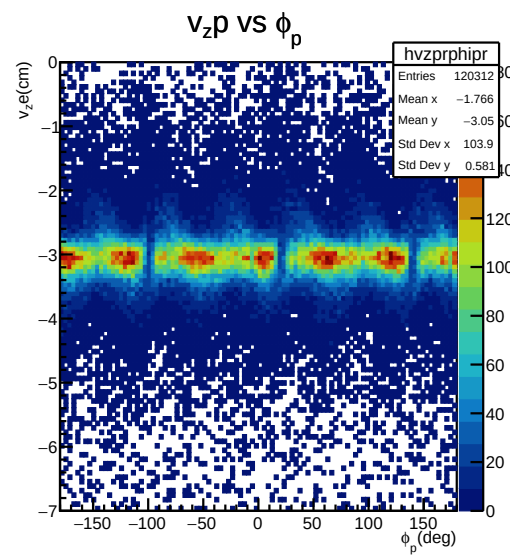




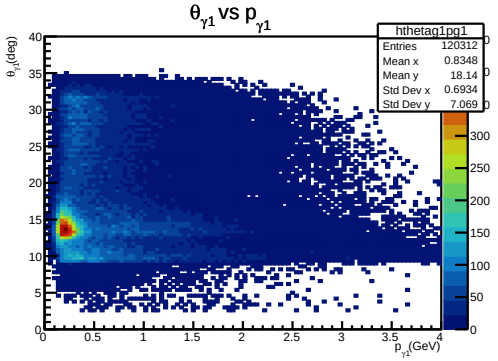


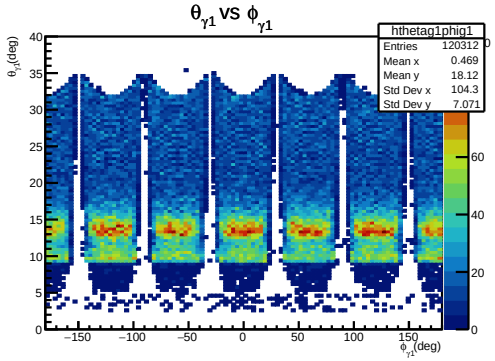


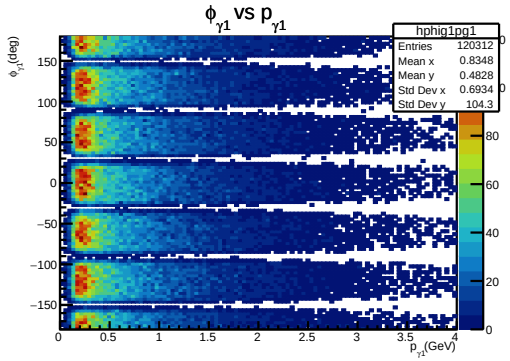


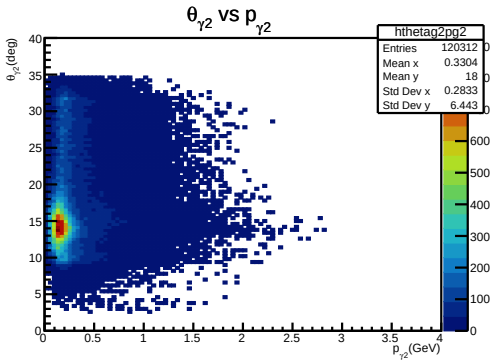


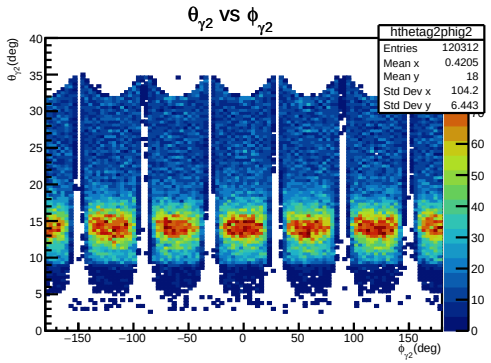
All events (without any cuts) - gammas

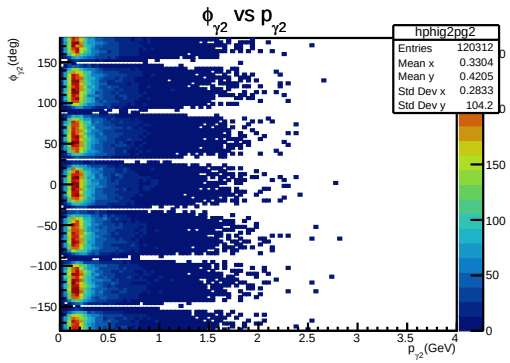


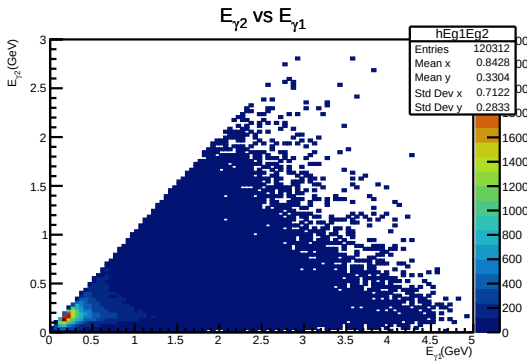


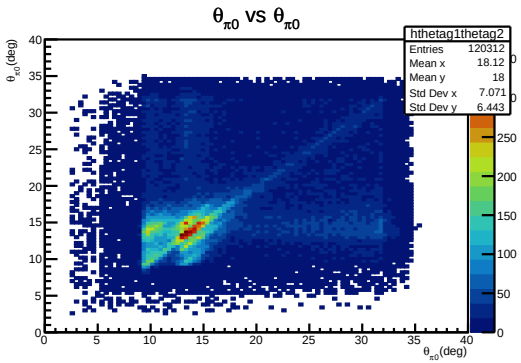


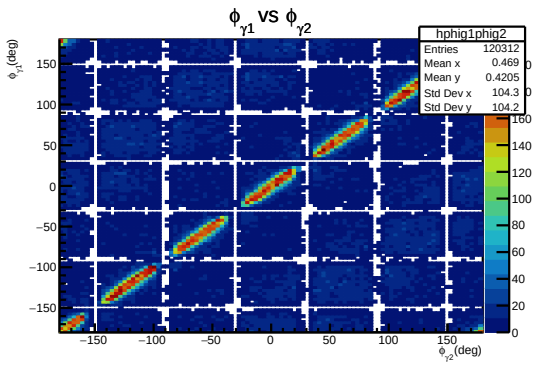




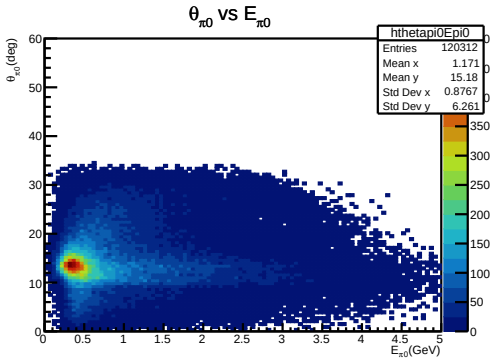


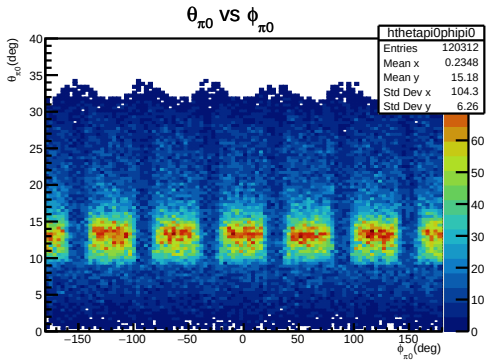


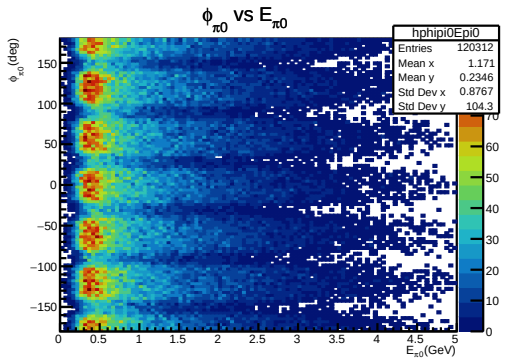


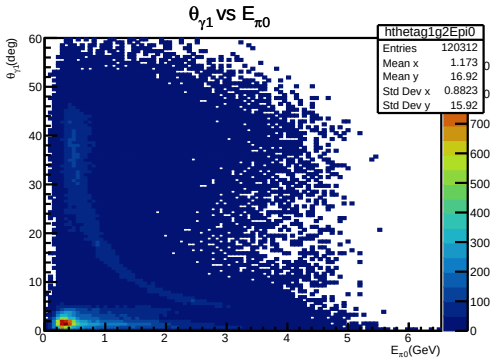


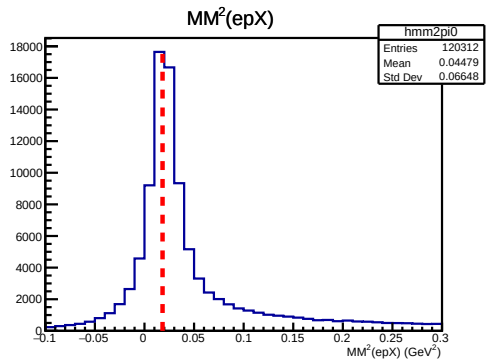
All events (without any cuts)

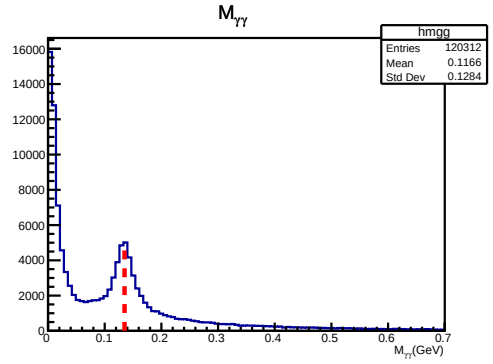


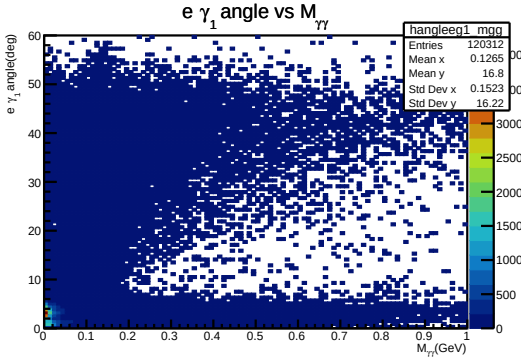


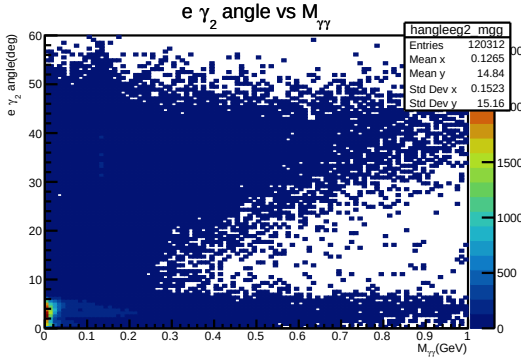


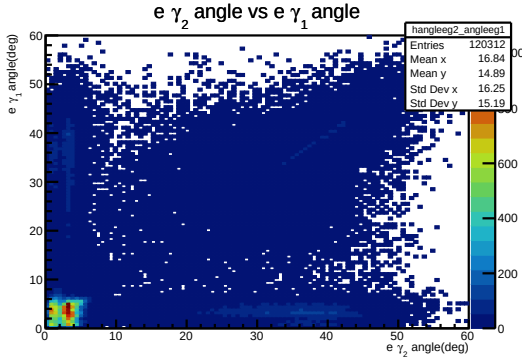




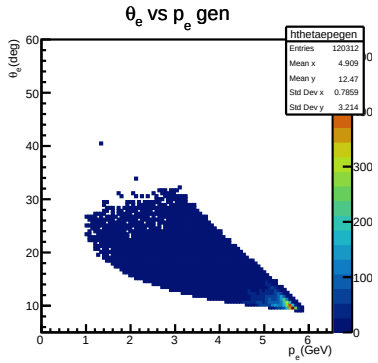


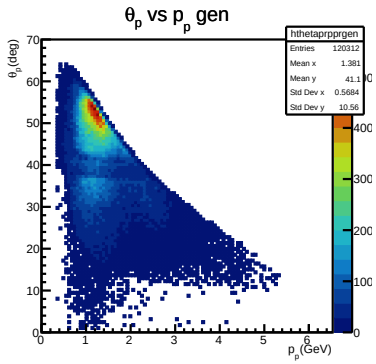


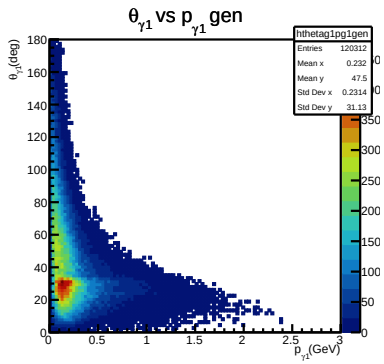


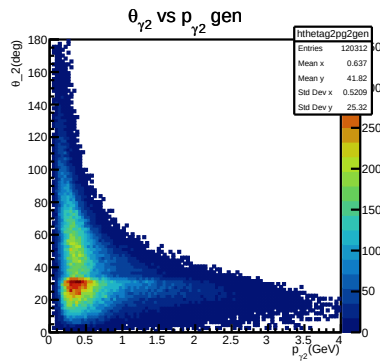


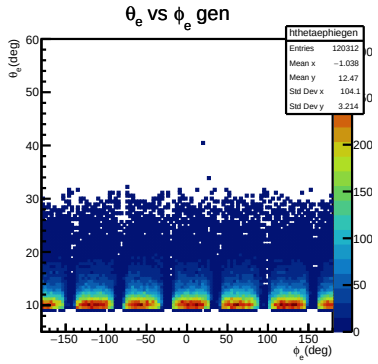
All events (without any cuts) - generated particles

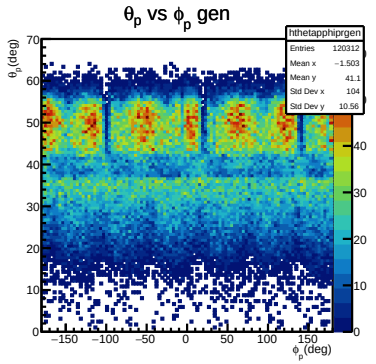


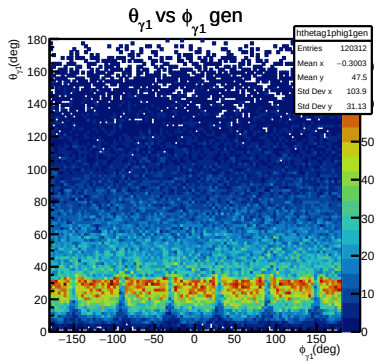


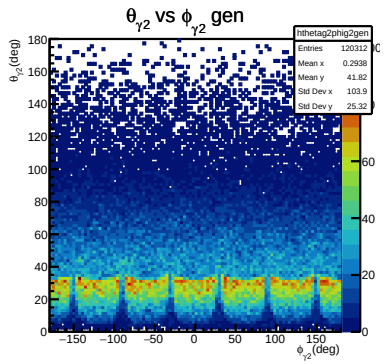


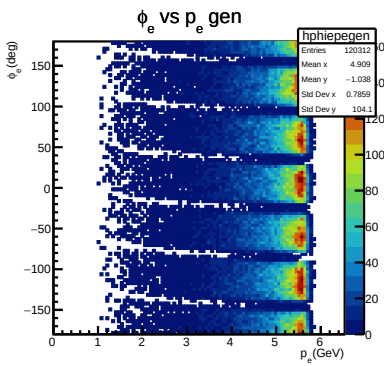


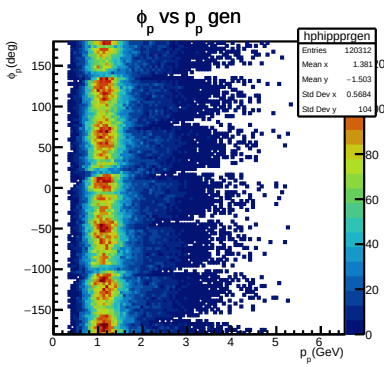


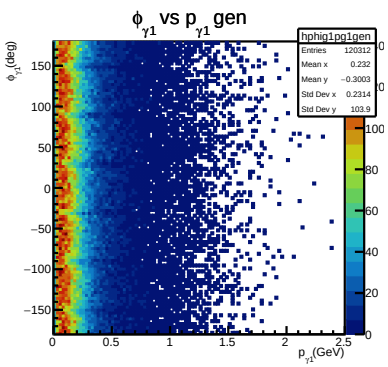


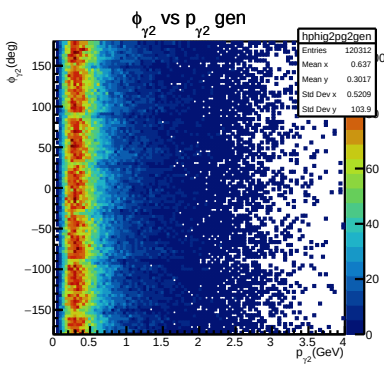




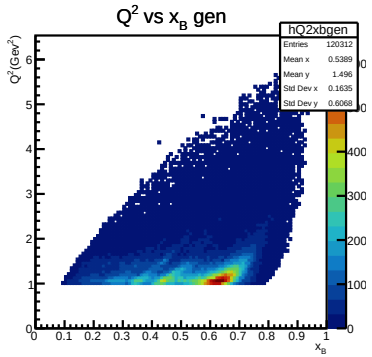


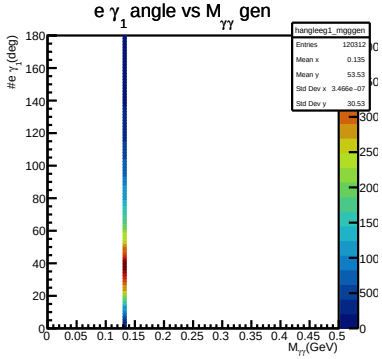


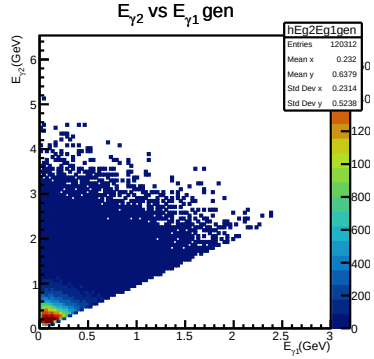


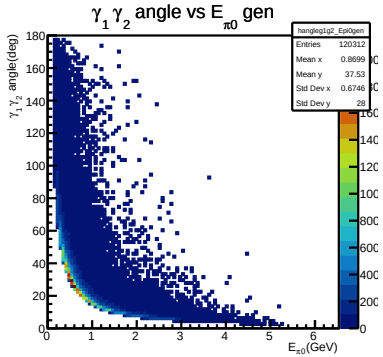


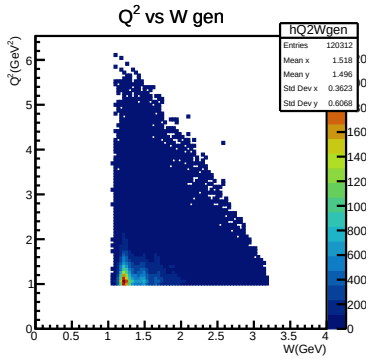
All events (without any cuts) - generated particles

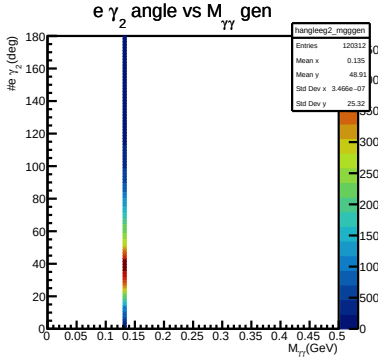


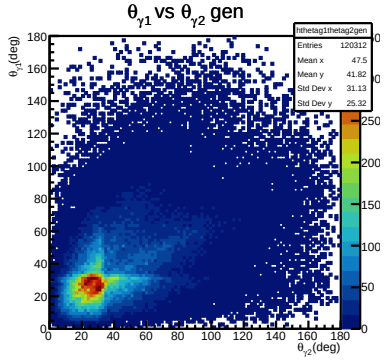


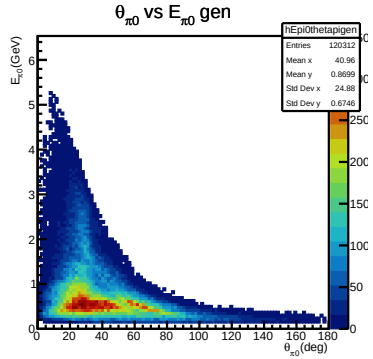


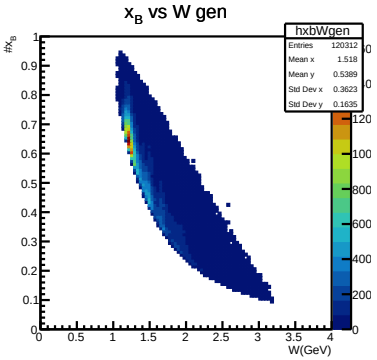


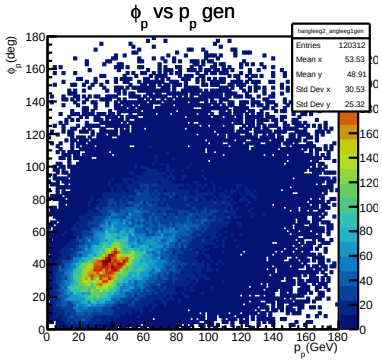


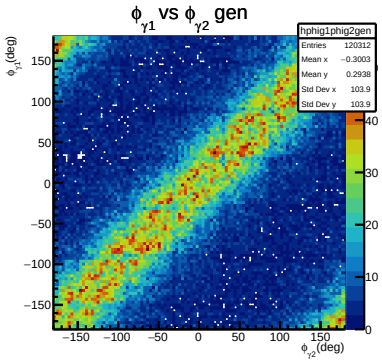


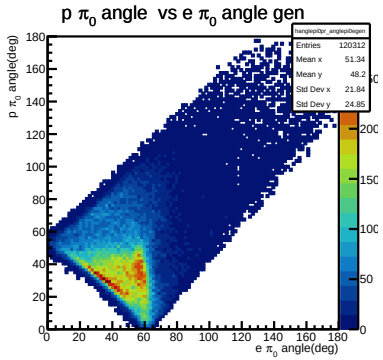




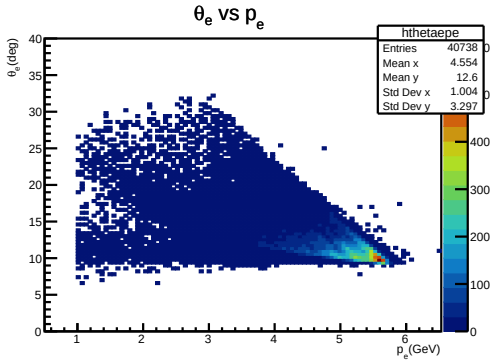


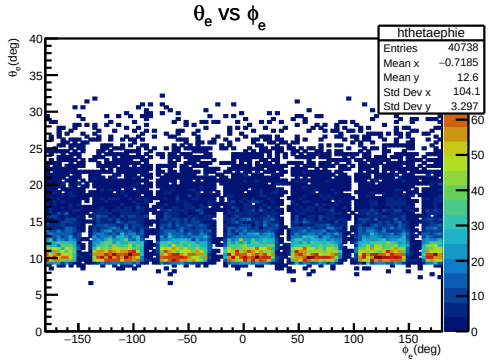


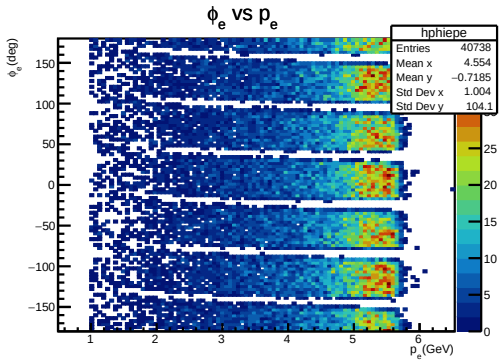


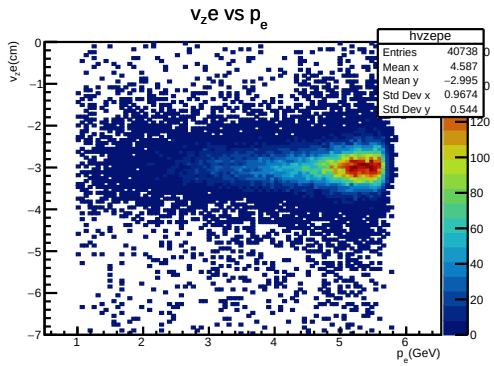


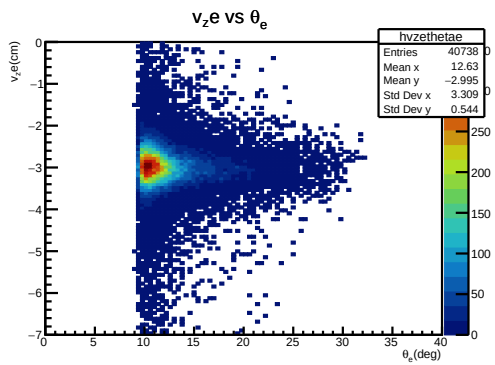
p_{π_0}-dependment cut for γ_1 γ_2 angle : electrons

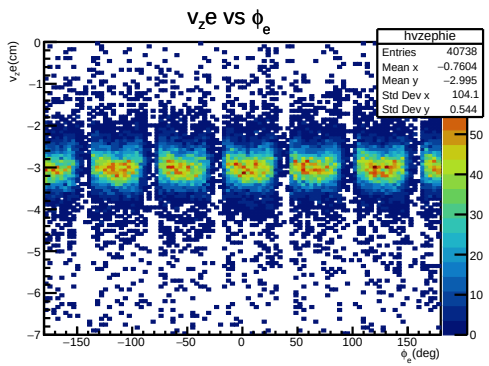


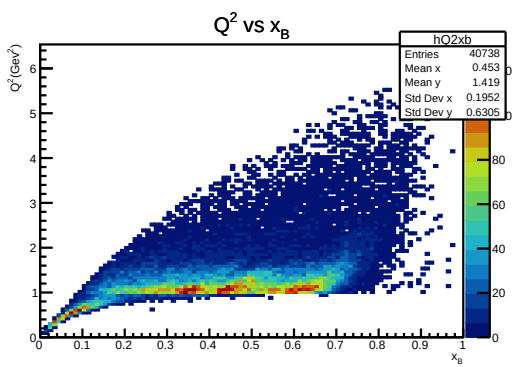


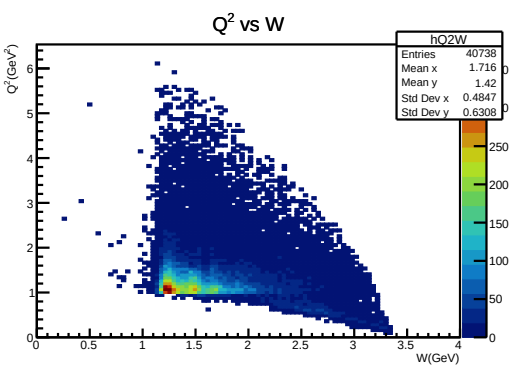


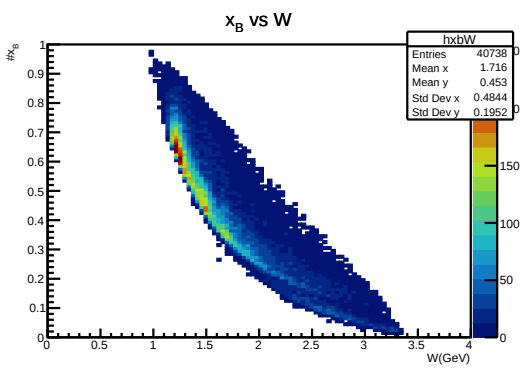




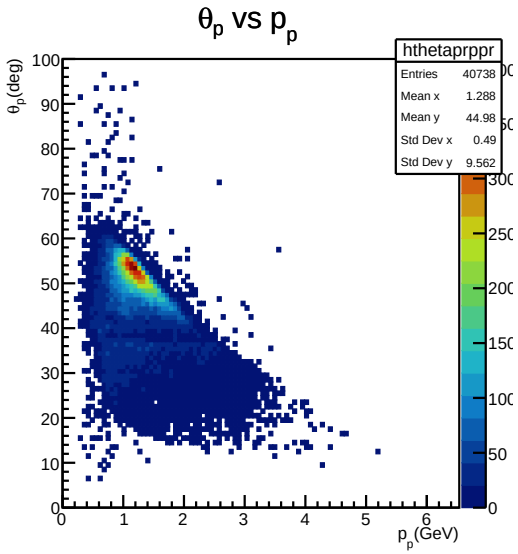


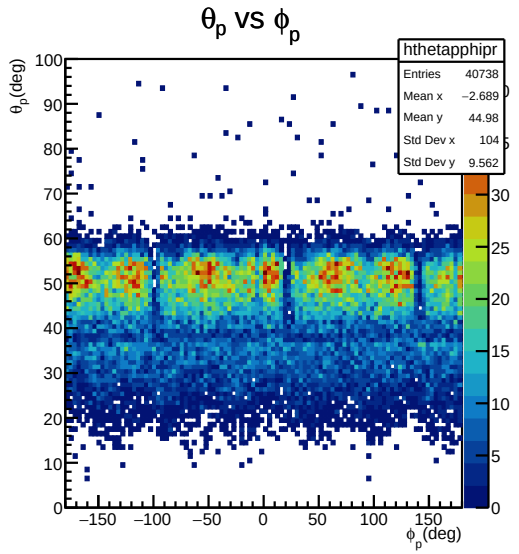


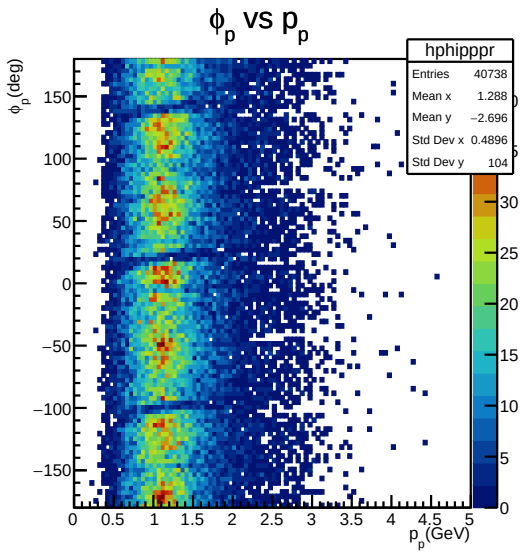


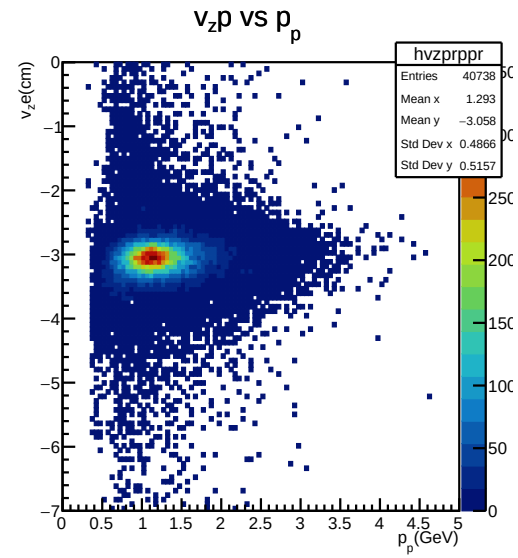


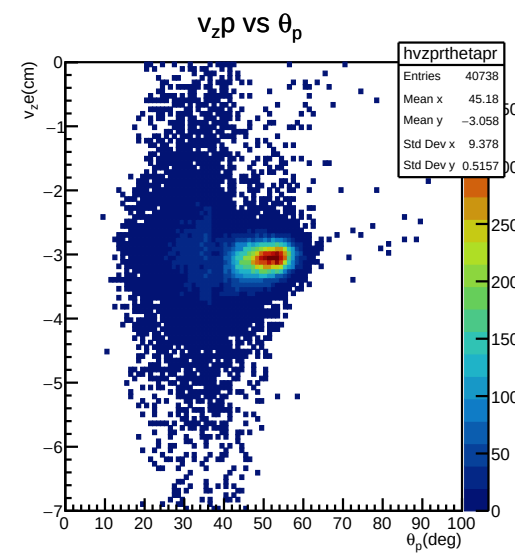
p_{π_0}-dependment cut for γ_1 γ_2 angle : protons

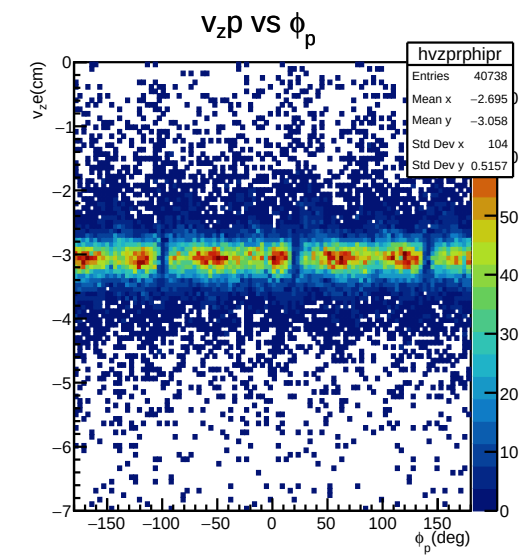




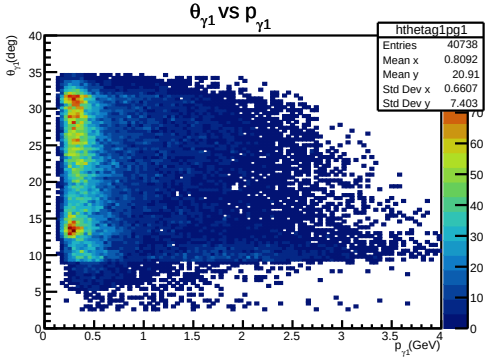


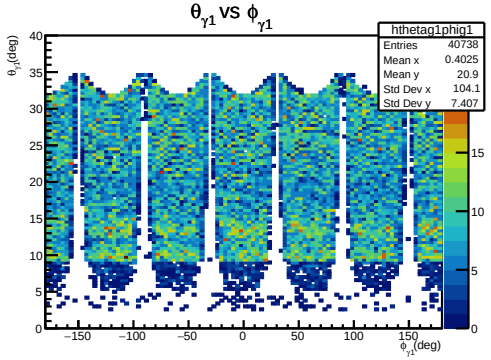


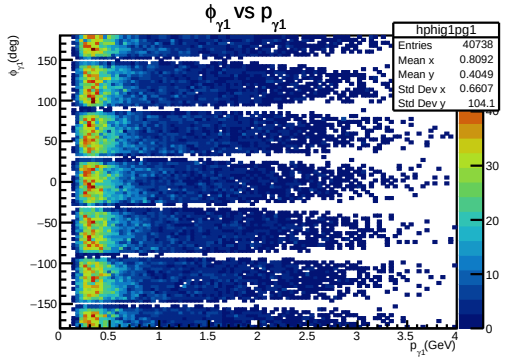


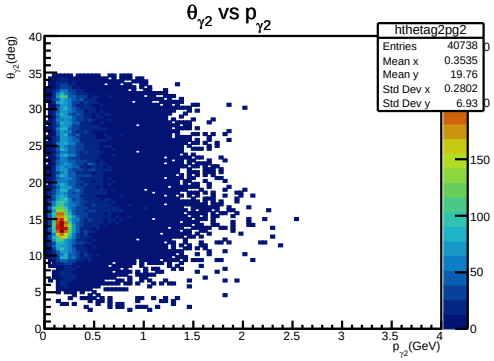


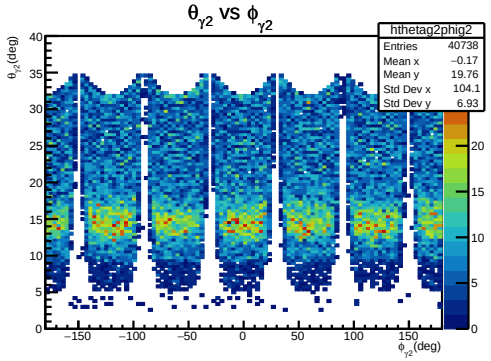
p_{π_0}-dependment cut for γ_1 γ_2 angle : gammas

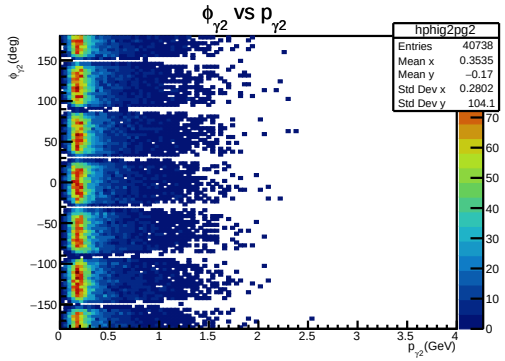


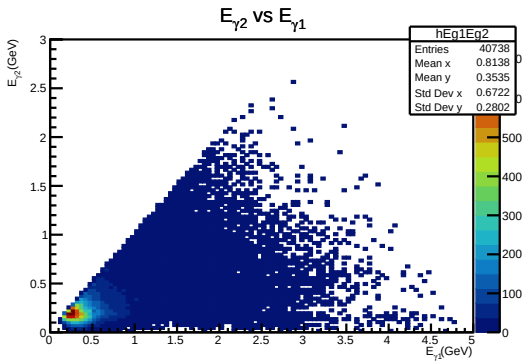


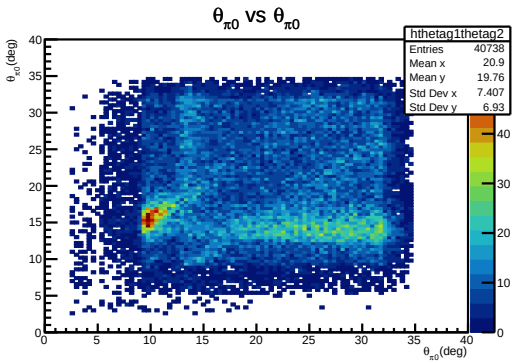


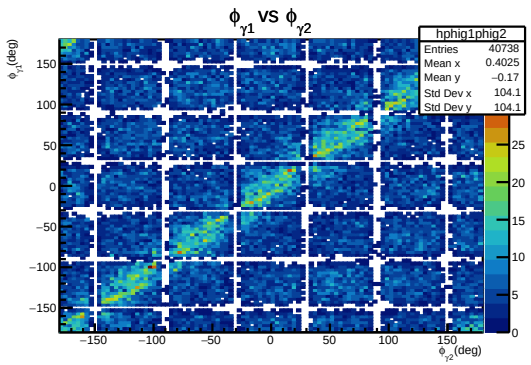




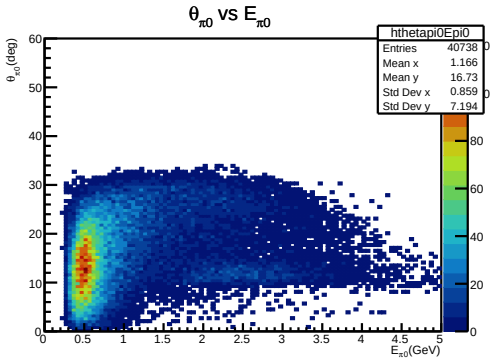


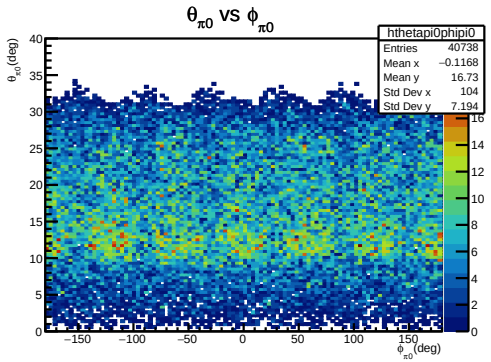


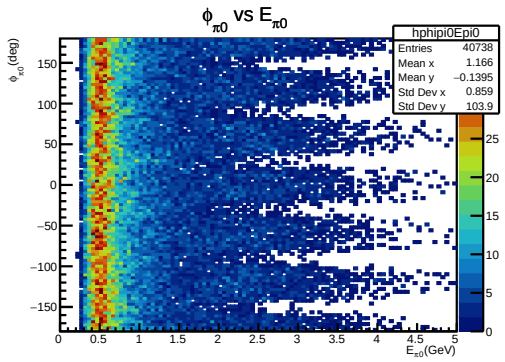


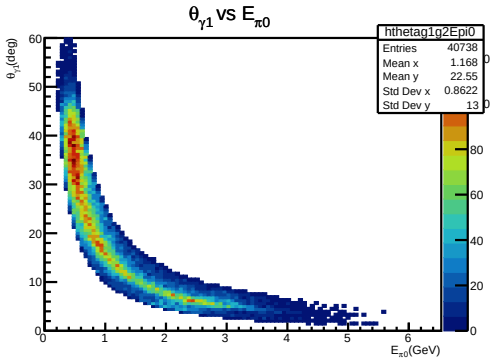


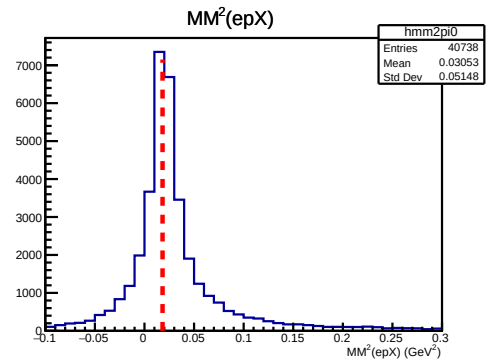
p_{π_0}-dependment cut for γ_1 γ_2 angle

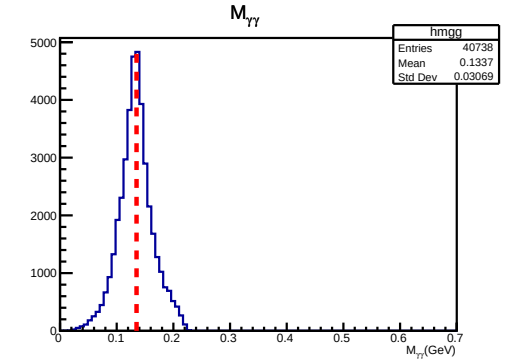


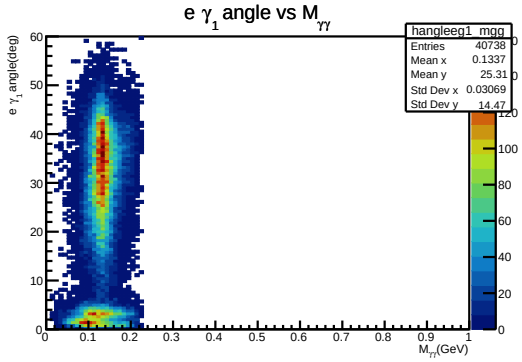


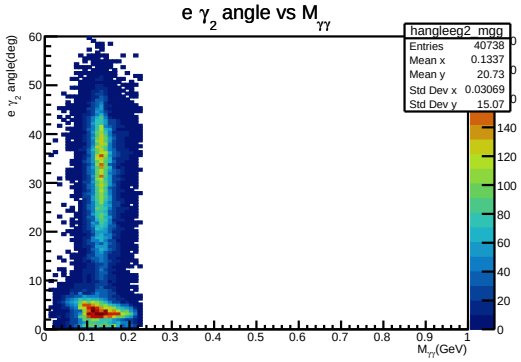


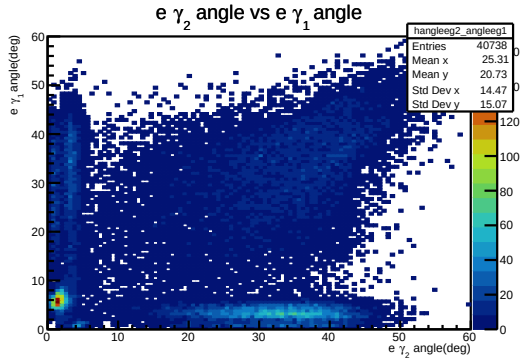




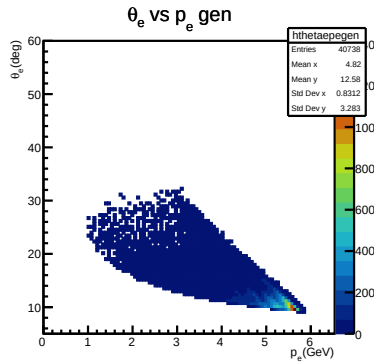


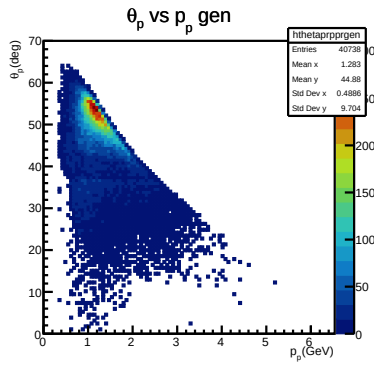


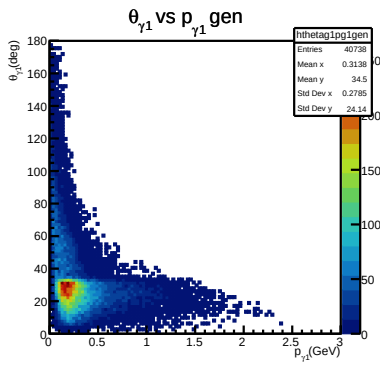


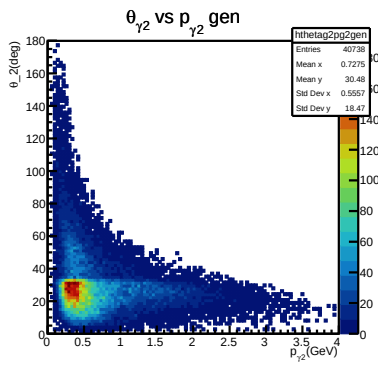


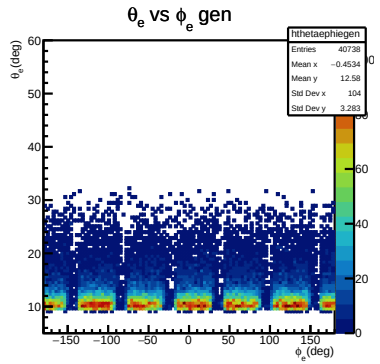
p_{π_0}-dependment cut for γ_1 γ_2 angle : generated events

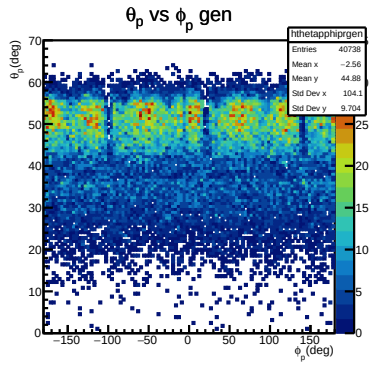


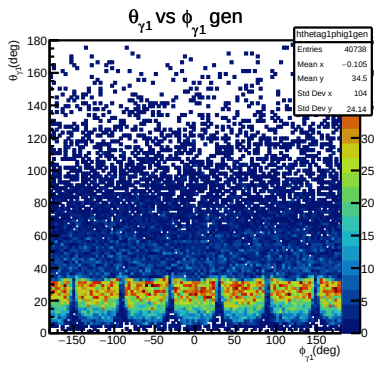


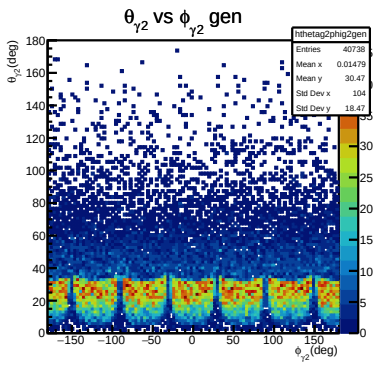


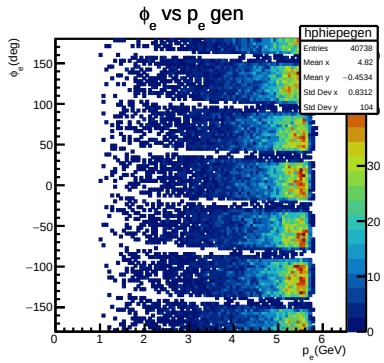


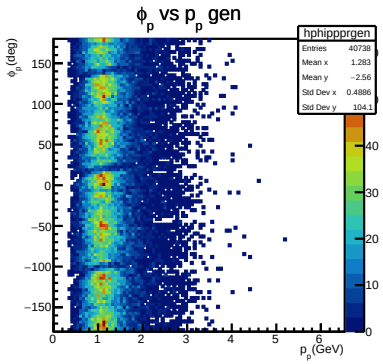


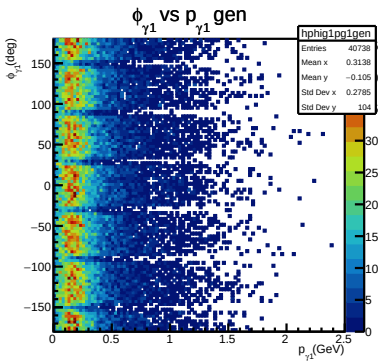


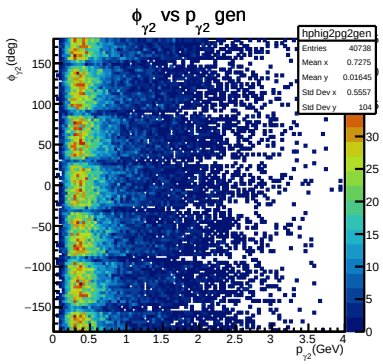




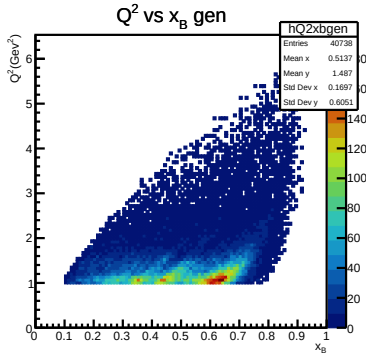


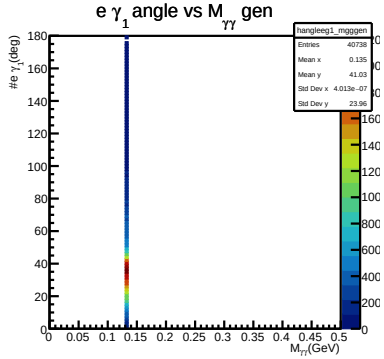


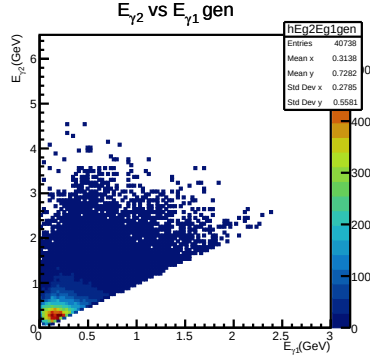


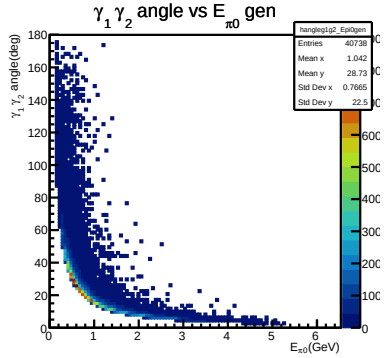


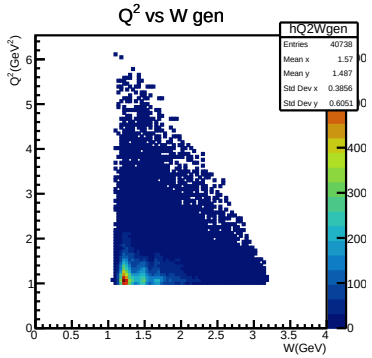
p_{π_0}-dependment cut for γ_1 γ_2 angle : generated events

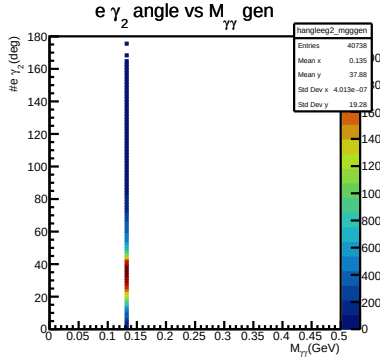


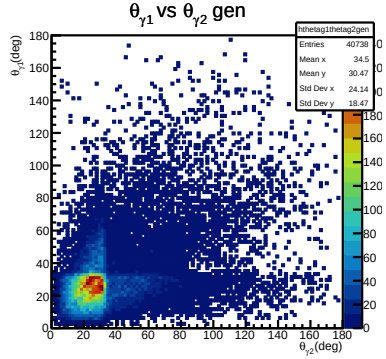


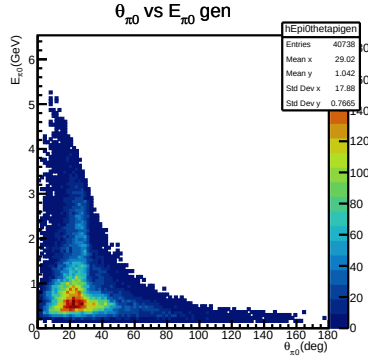


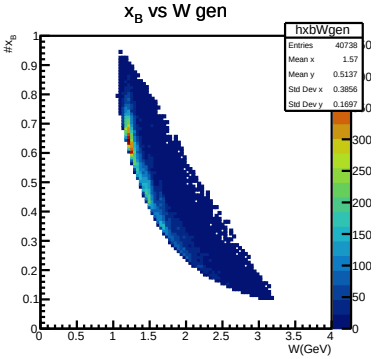


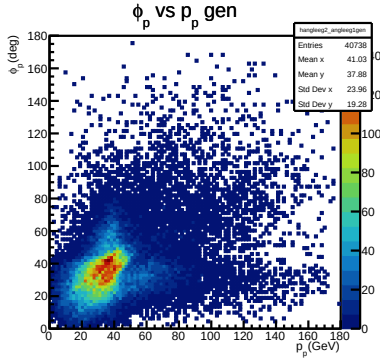


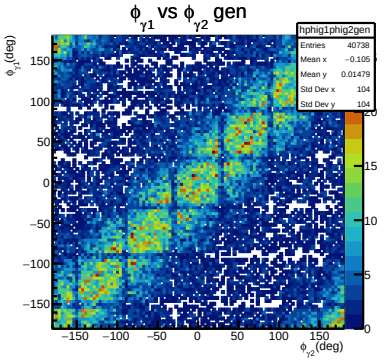


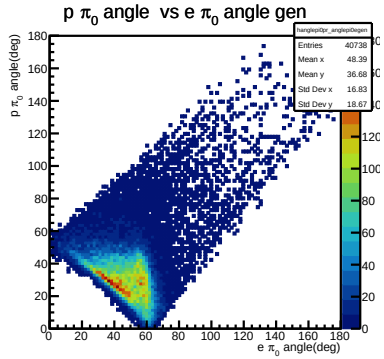








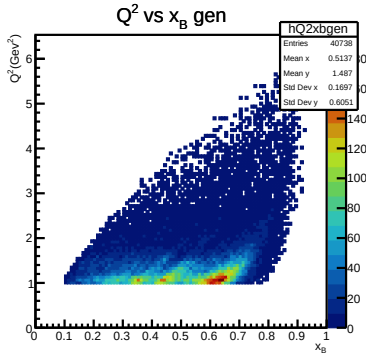


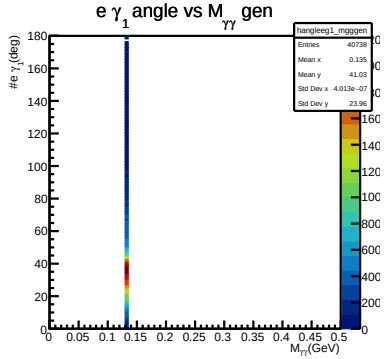


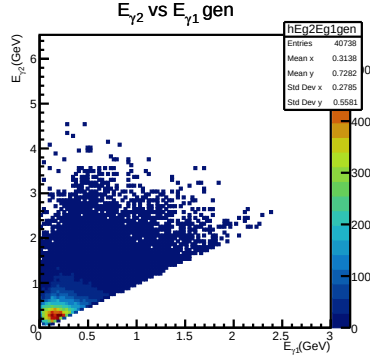
p_{π_0}-dependment cut for γ_1 γ_2 angle

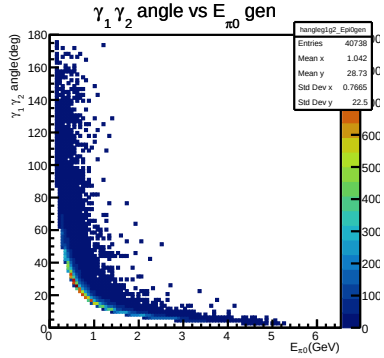
Do we need to do momentum dependment cut?
Maybe it is enough to do cut for angle γ_1 $\gamma_2 < 8^\circ$?

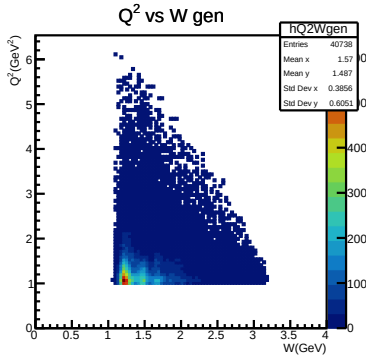
p_{π_0}-dependment cut for γ_1 γ_2 angle : generated events

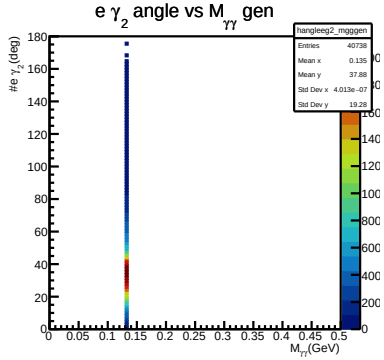


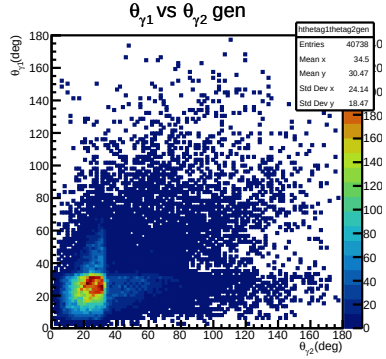


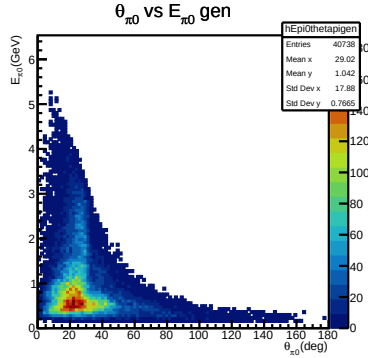


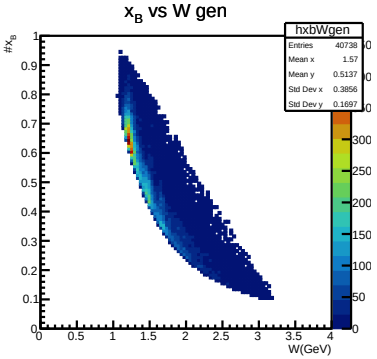


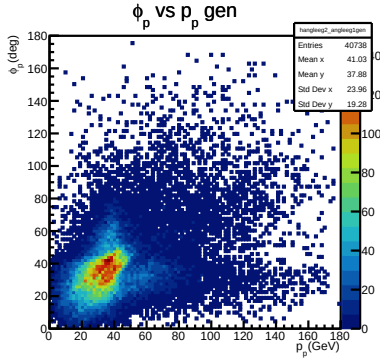


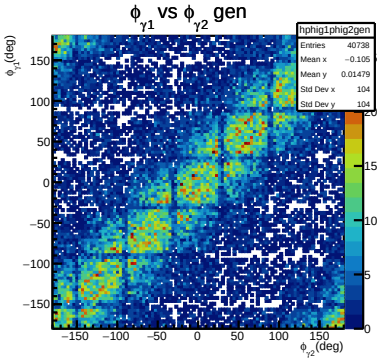


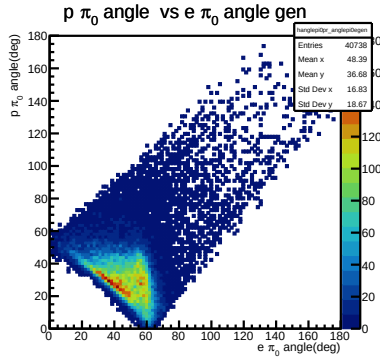




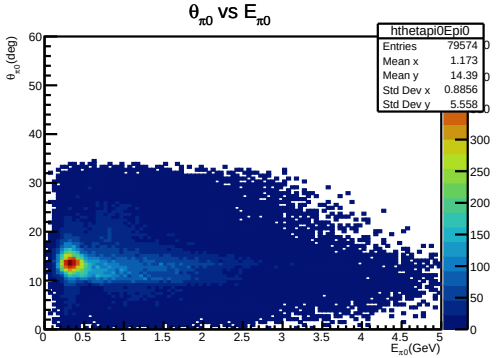


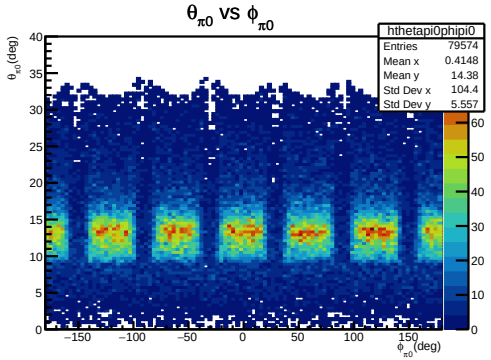


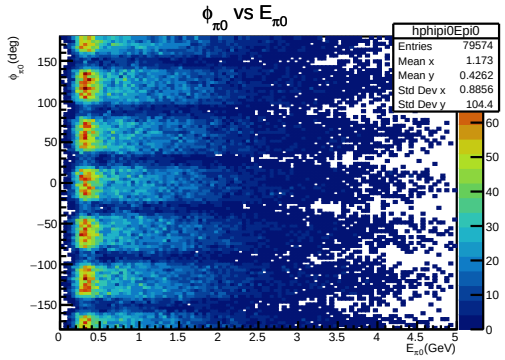


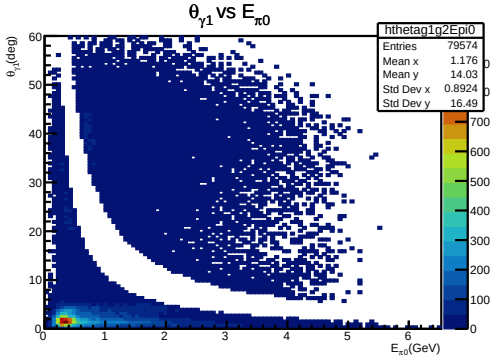


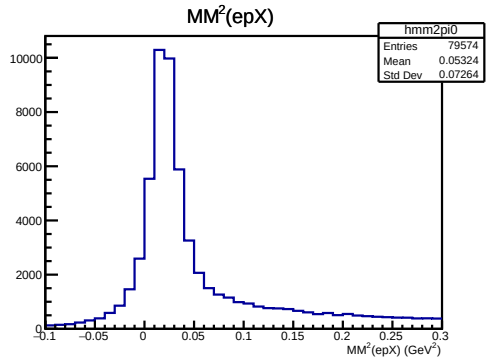
Events, cutted out with p_{π_0}-dependment cut

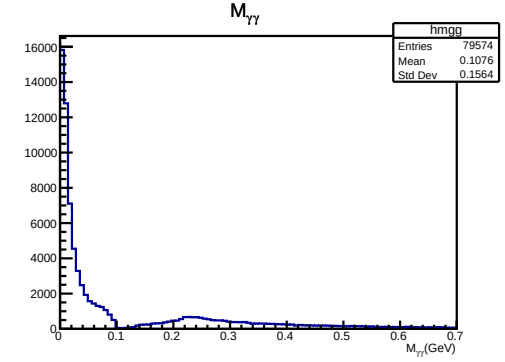


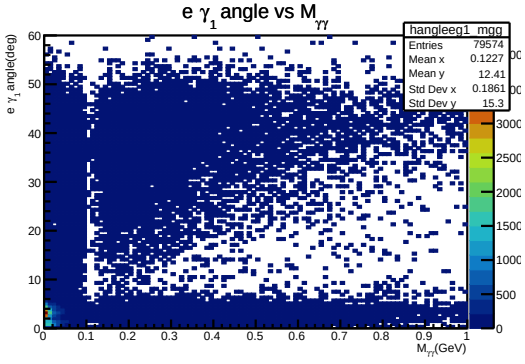


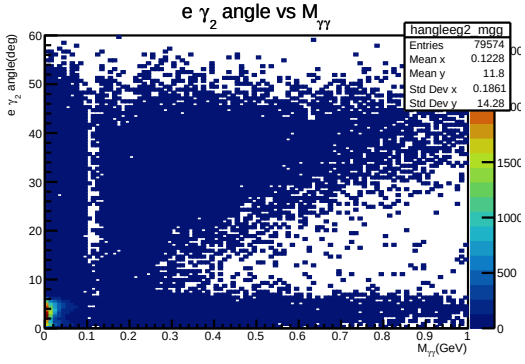


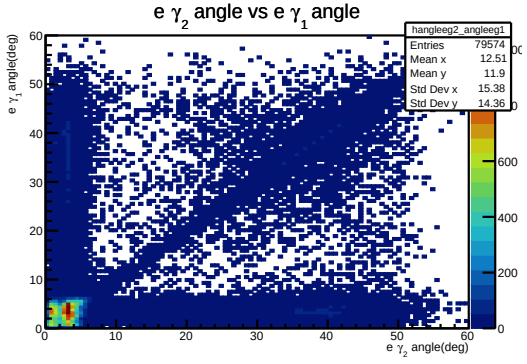




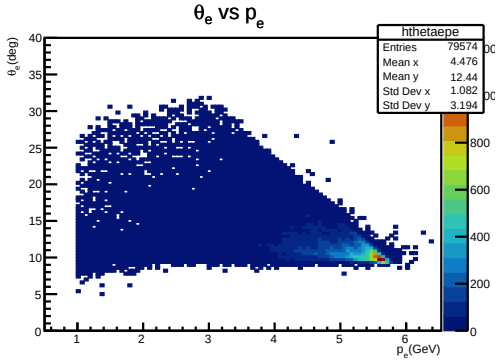


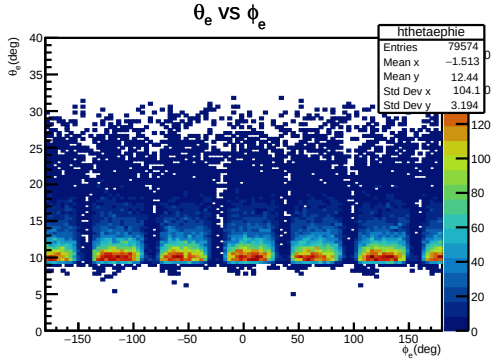


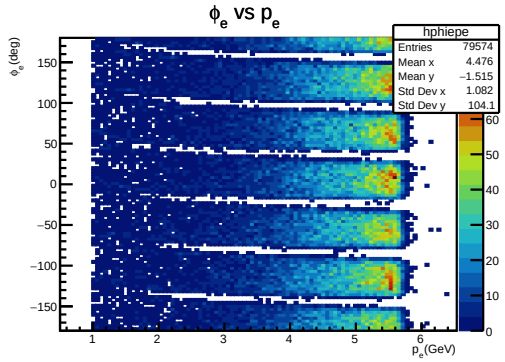


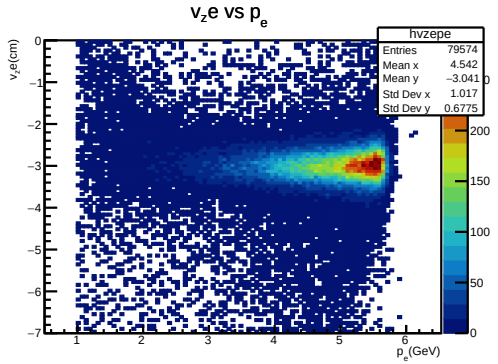


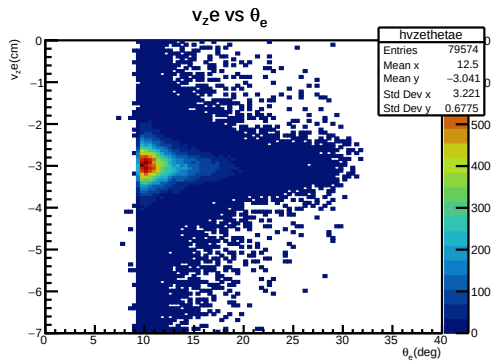
Events, cutted out with p_{π_0}-dependment cut: electrons

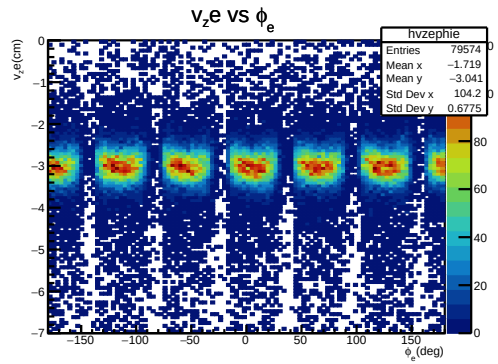


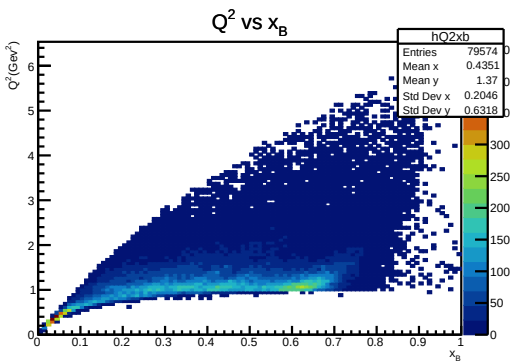


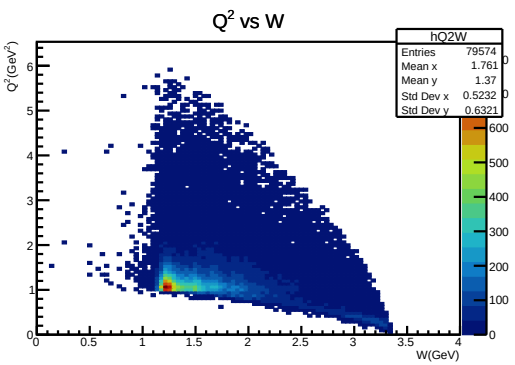


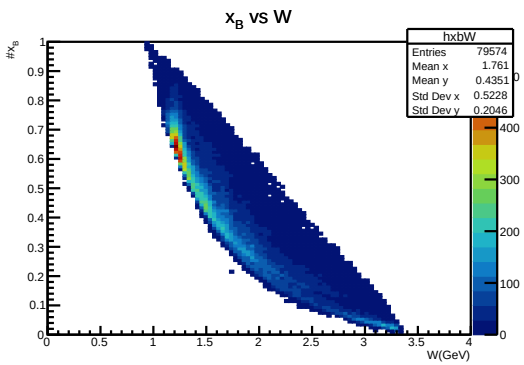




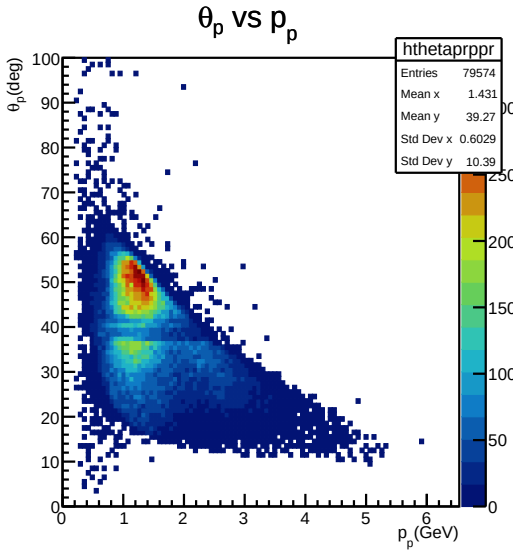


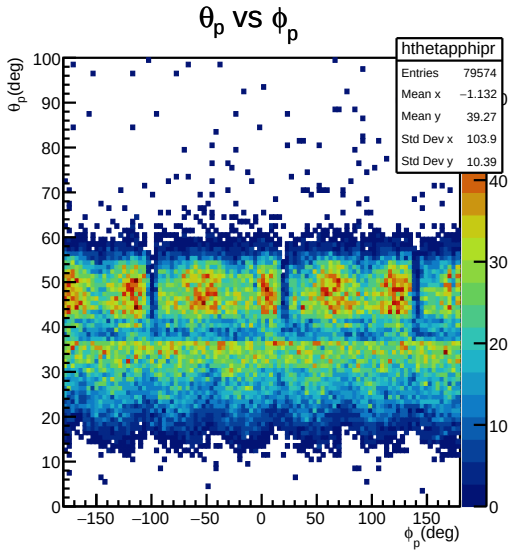


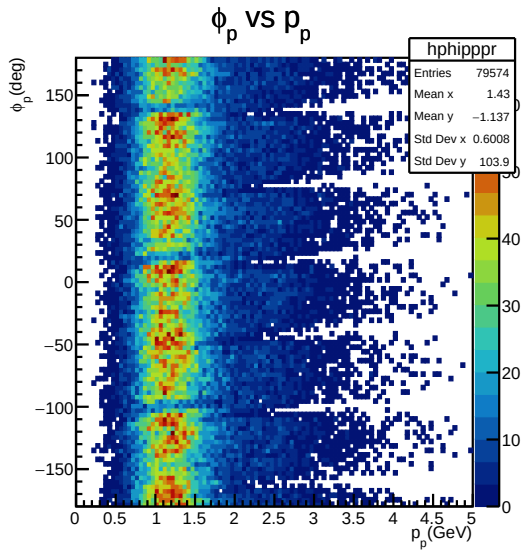


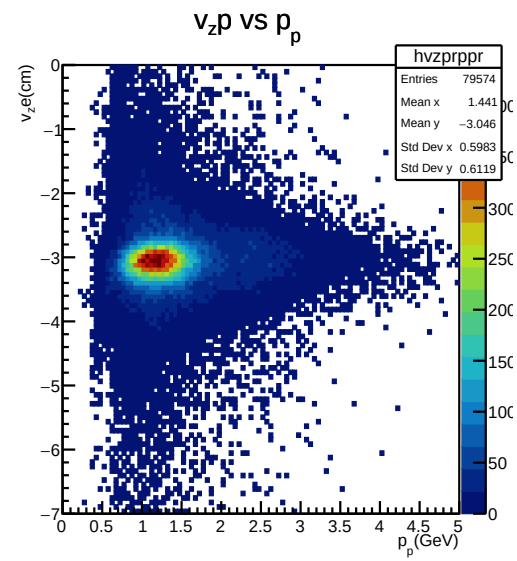


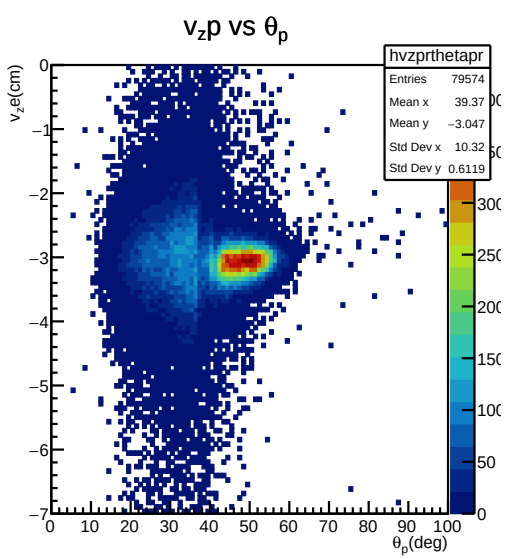
Events, cutted out with p_{π_0}-dependment cut: protons

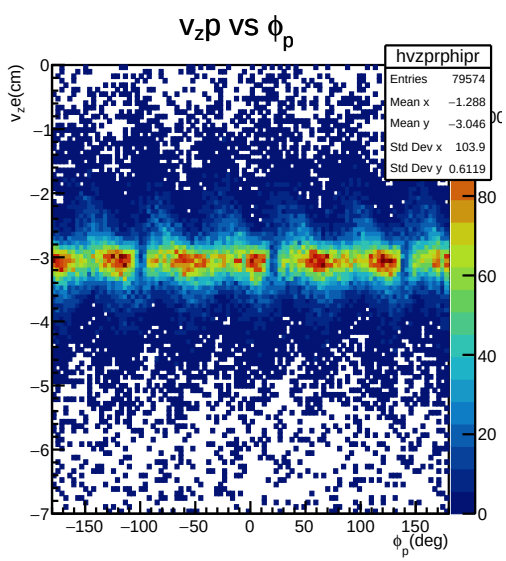




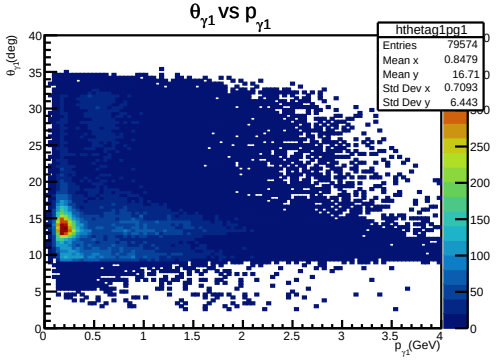


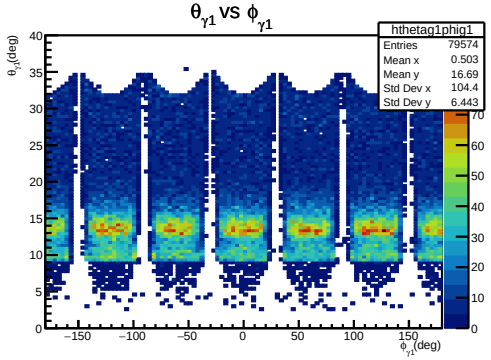


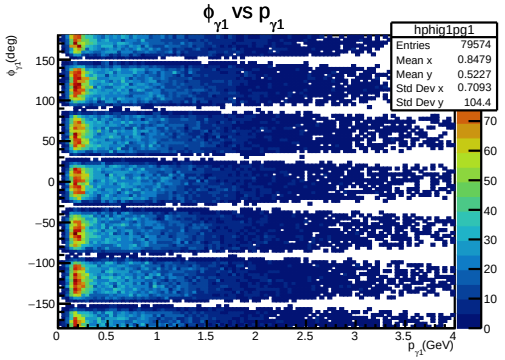


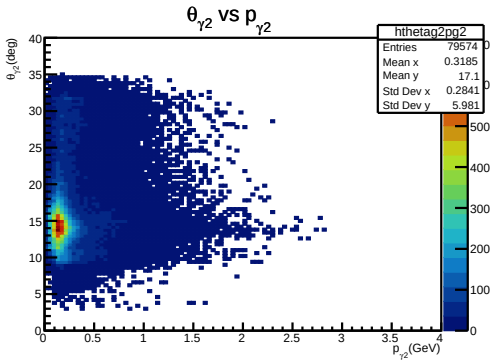


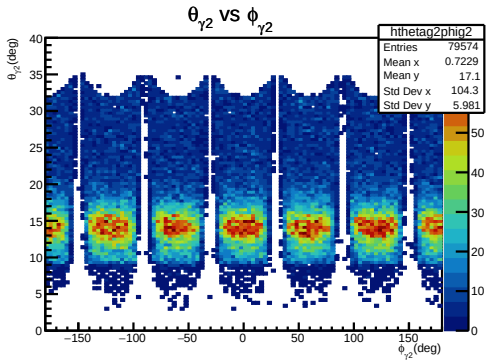
Events, cutted out with p_{π_0}-dependment cut: gammas

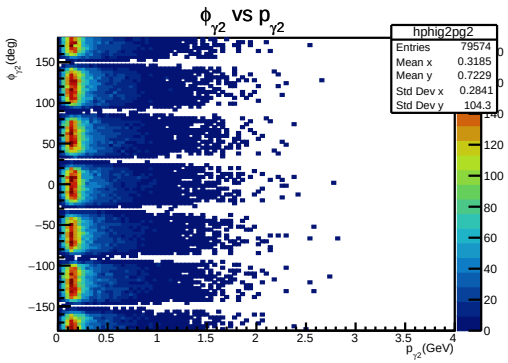


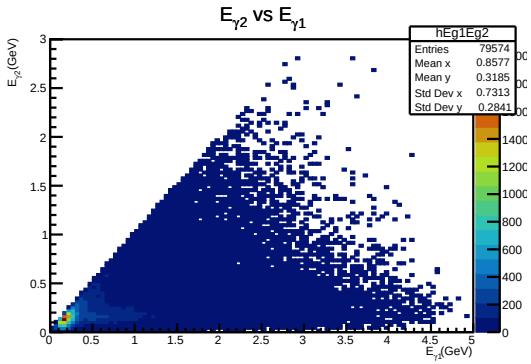


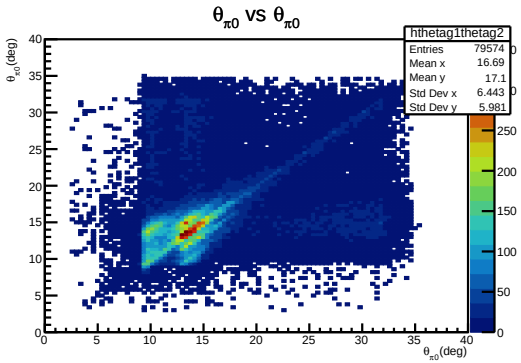


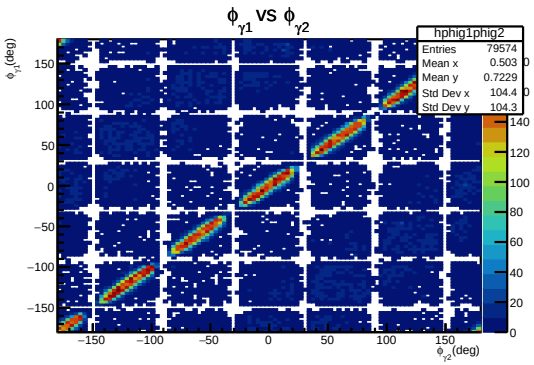








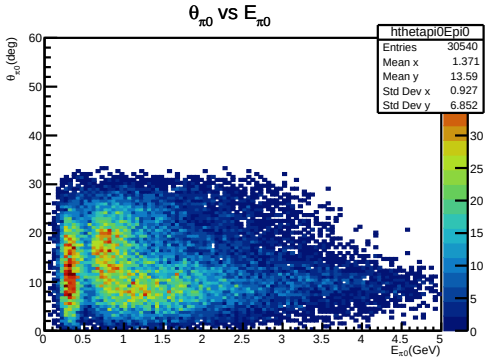


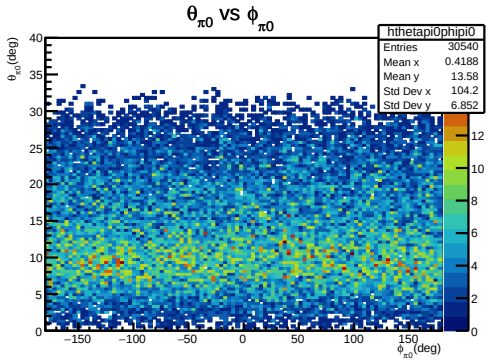


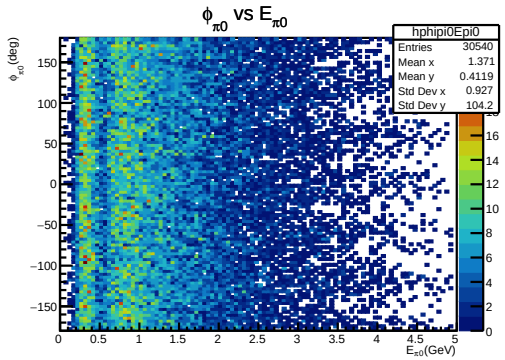
Events, cutted out with p_{π_0}-dependment cut: protons

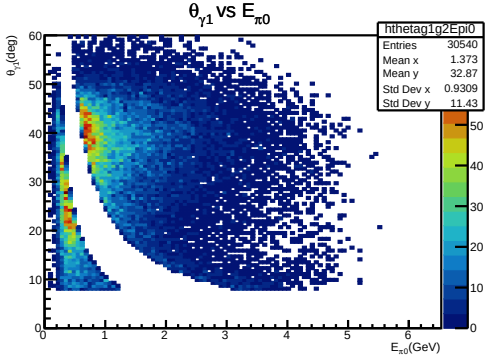
Next 3 slides I show background events without events with angle γ_1 $\gamma_2 < 8^\circ$

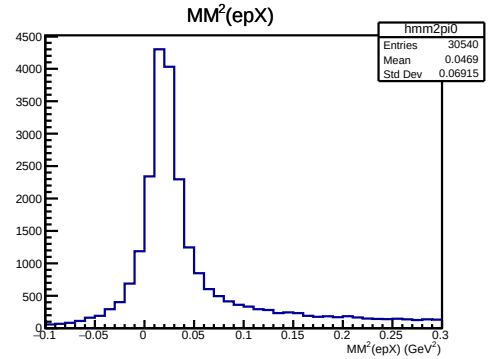
Events, cutted out with p_{π_0}-dependment cut without bottom ribbon

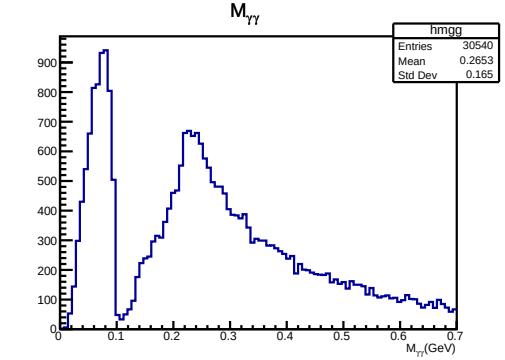


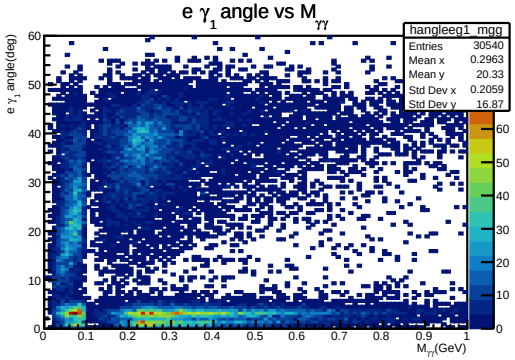


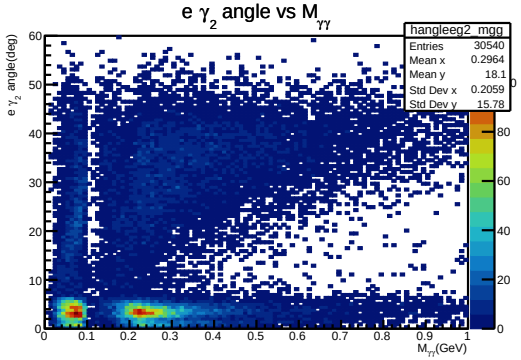


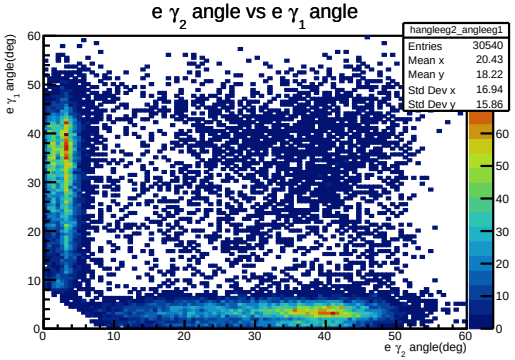




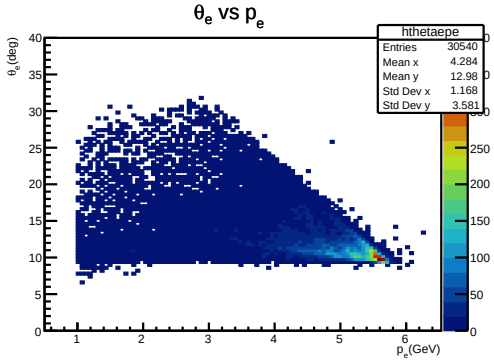


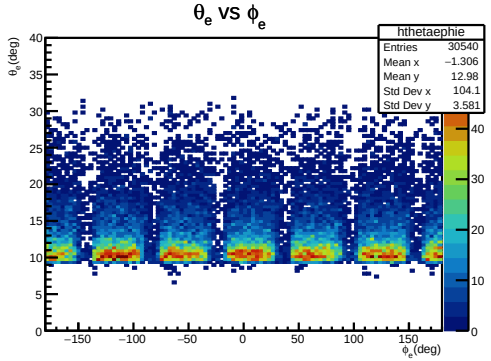


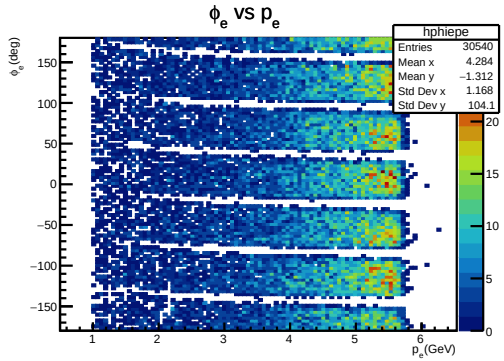


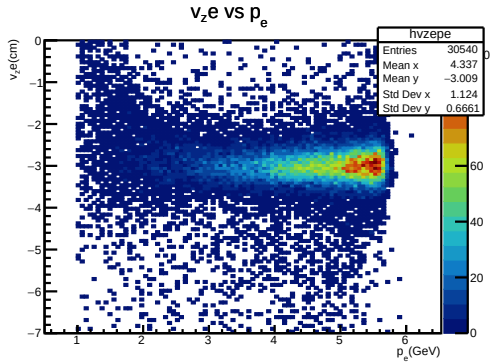


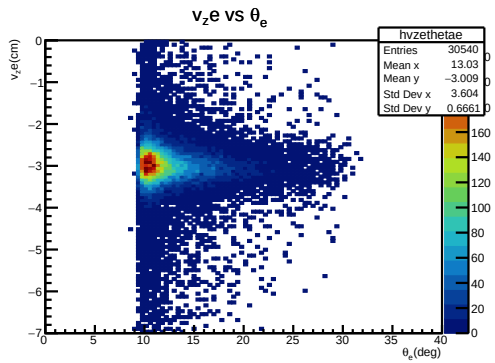
Events, cutted out with p_{π_0}-dependment cut without bottom ribbon: electrons

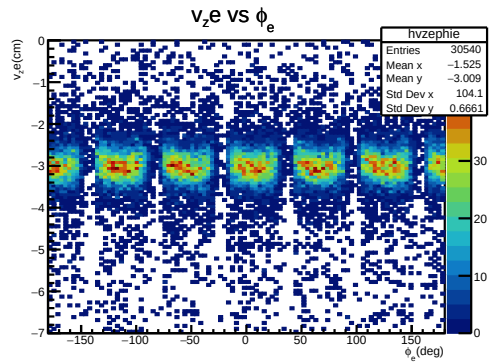


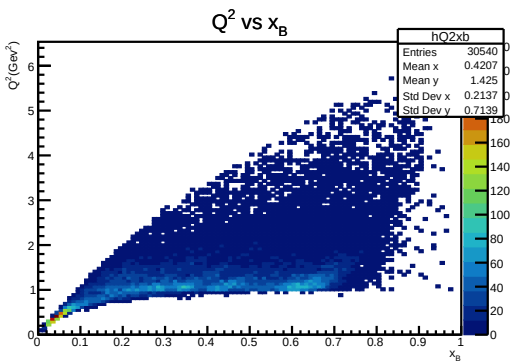


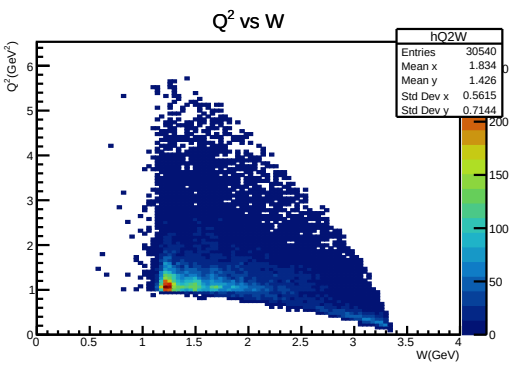


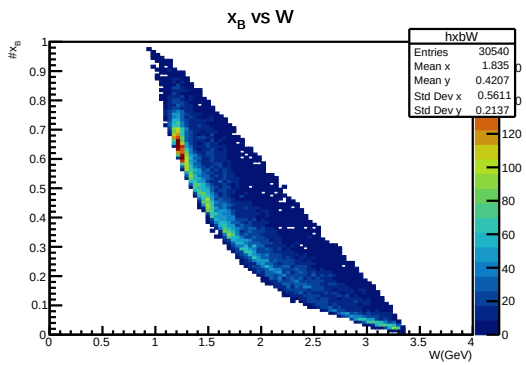




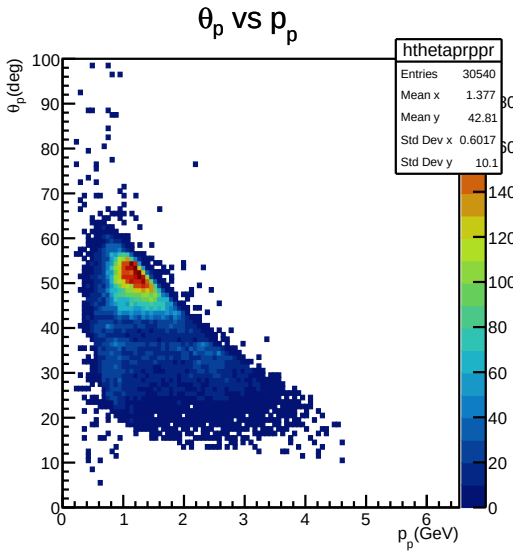


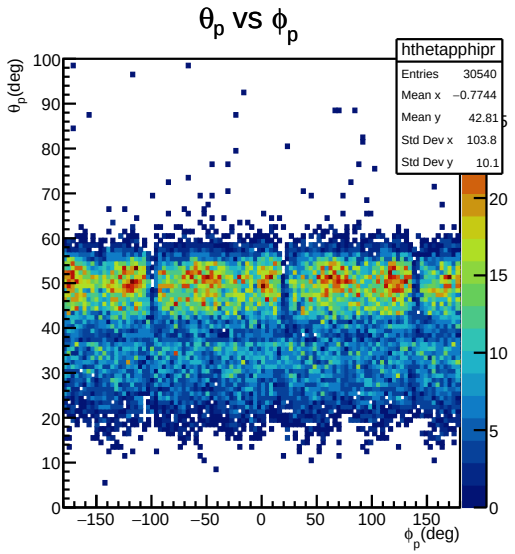


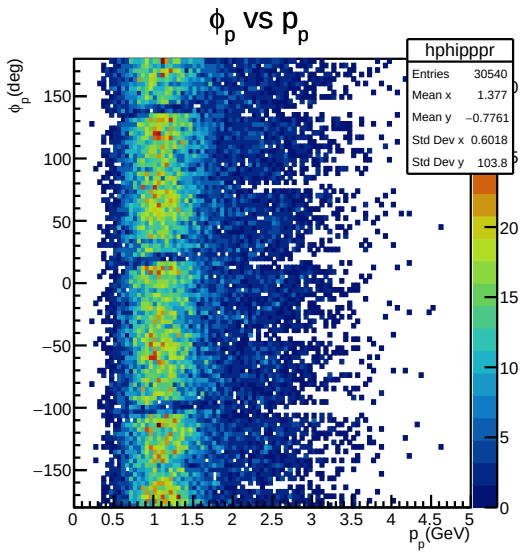


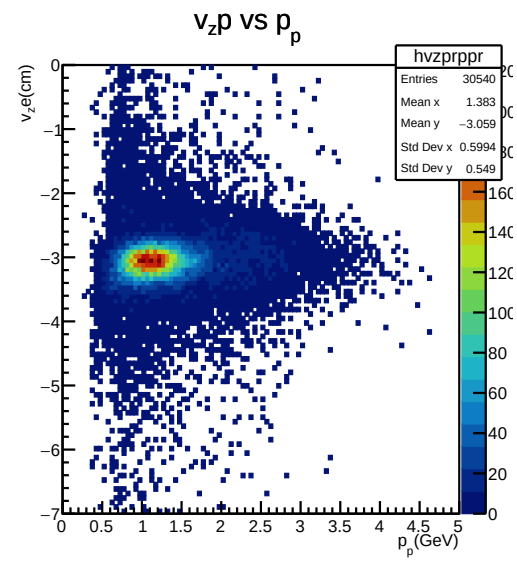


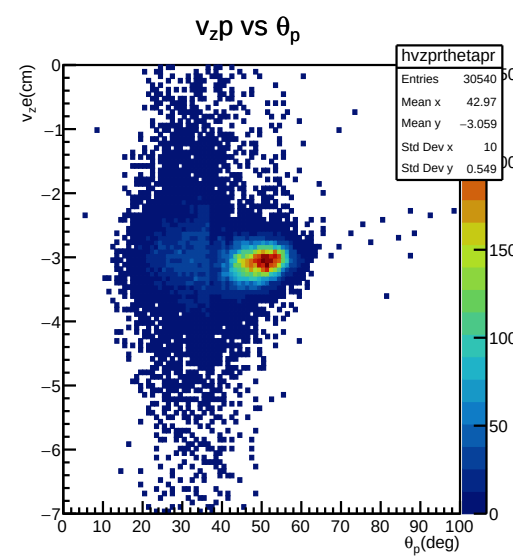
Events, cutted out with p_{π_0}-dependment cut without bottom ribbon: protons

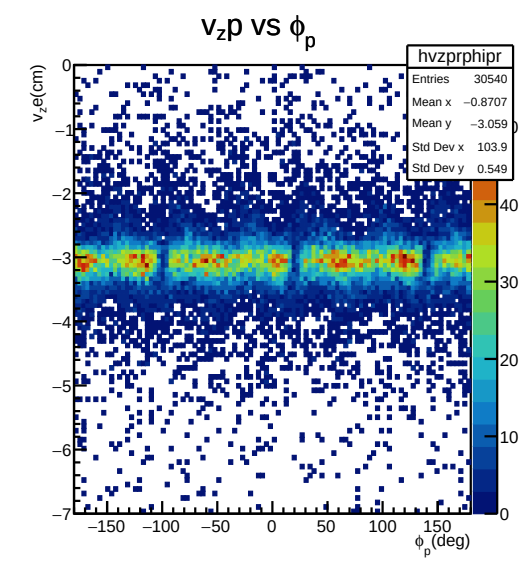




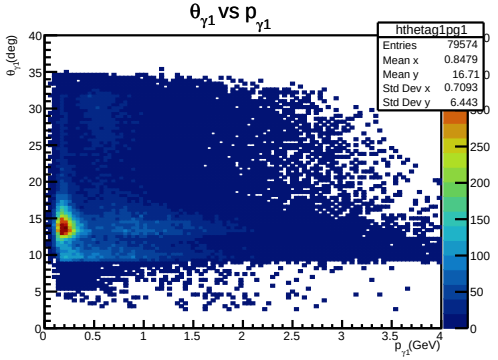


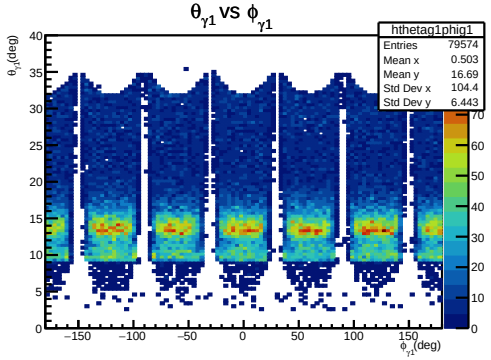


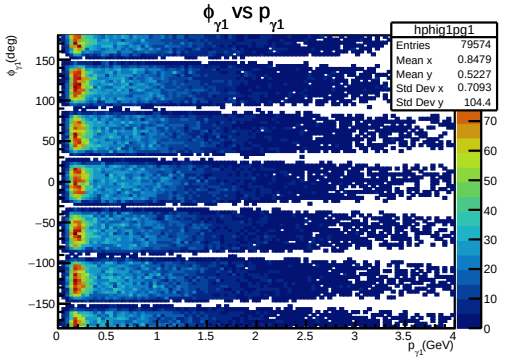


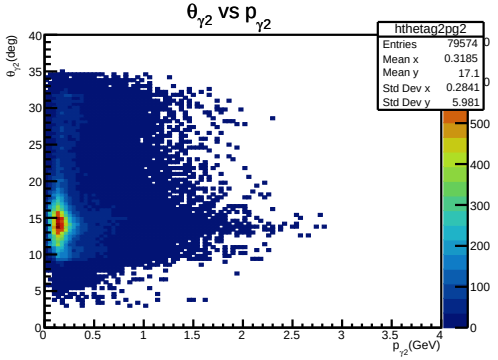


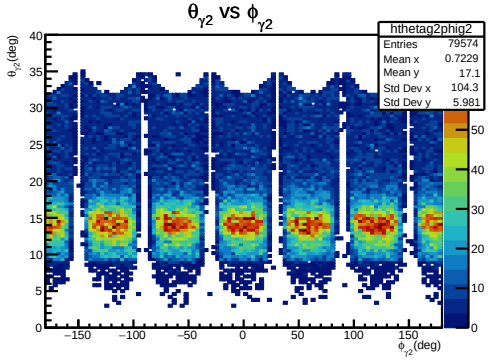
Events, cutted out with p_{π_0}-dependment cut without bottom ribbon: gammas

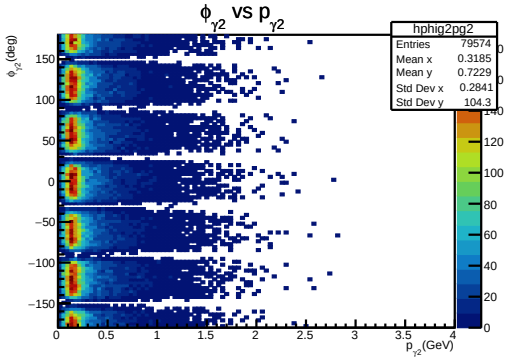


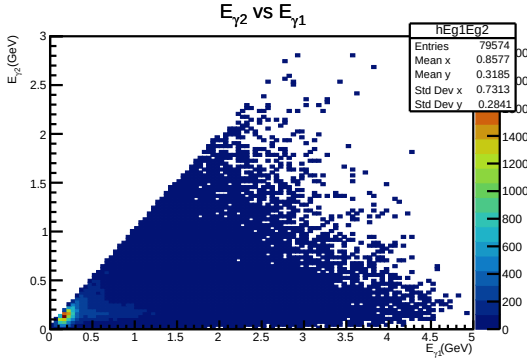


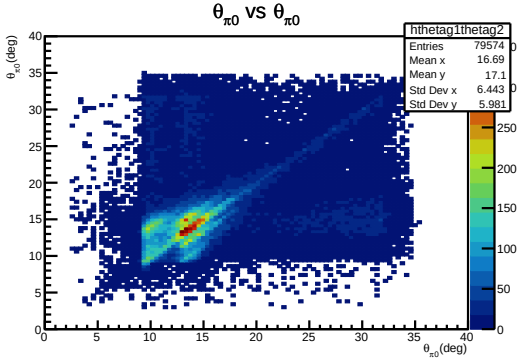


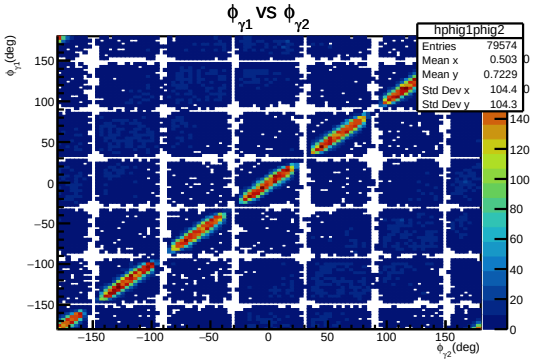










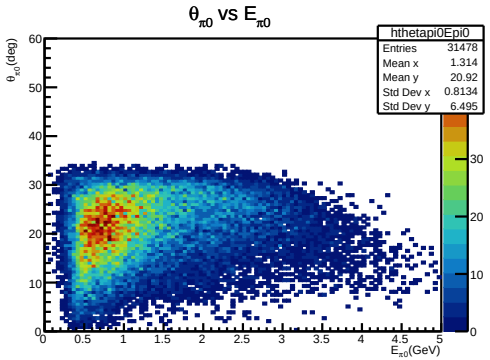


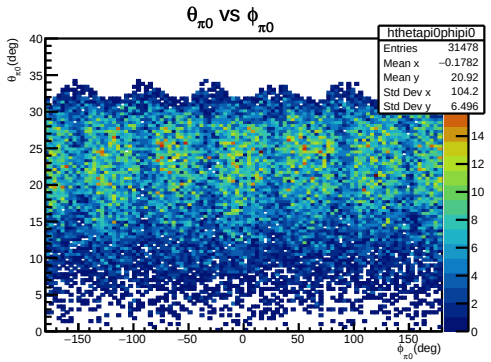
Events with cut for γp angle

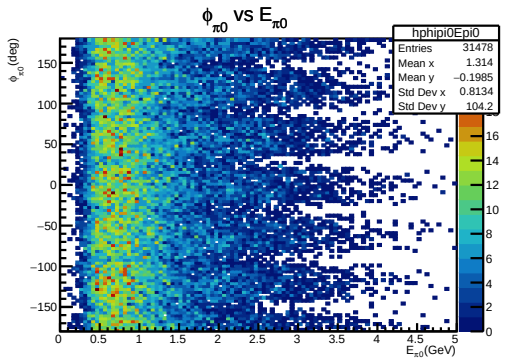
Next I apply for all events these selections:

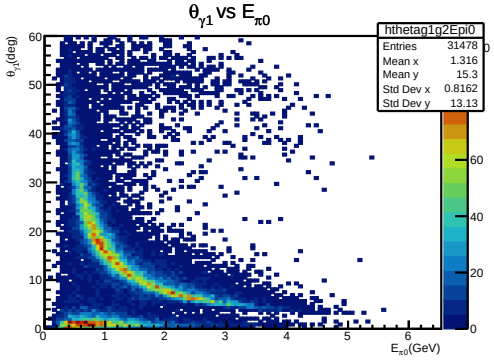
- γ_1 e angle $< 7^\circ$
- γ_2 e angle $< 7^\circ$
- $\theta_{\gamma_1} > 5^\circ$
- $\theta_{\gamma_2} > 5^\circ$

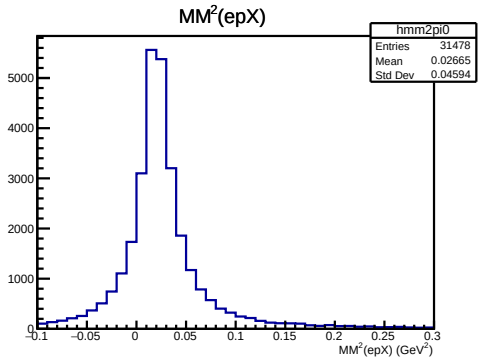
Events with cut for γp angle

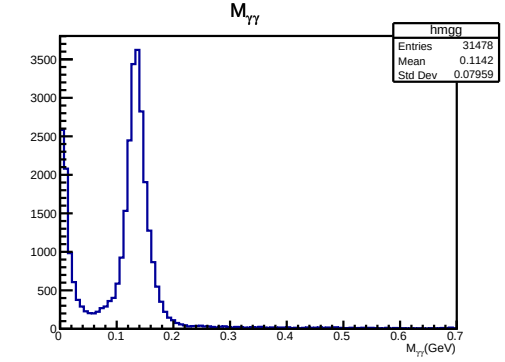


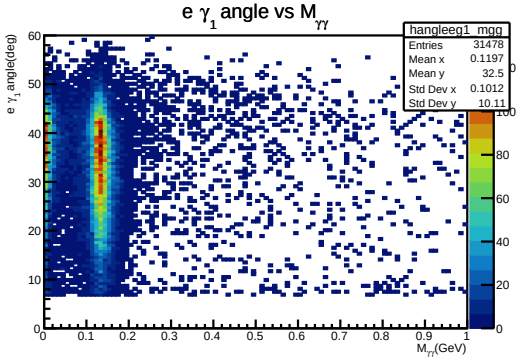


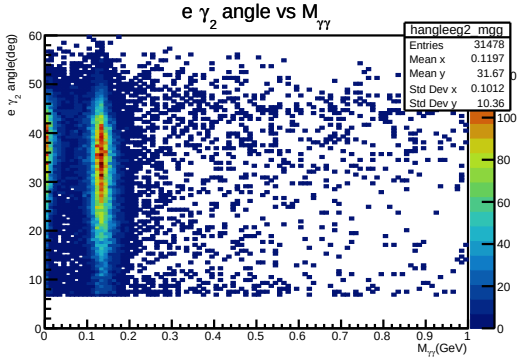


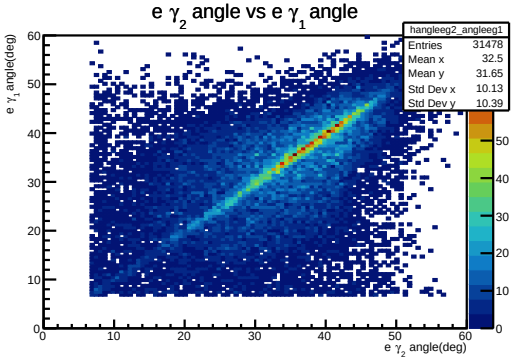




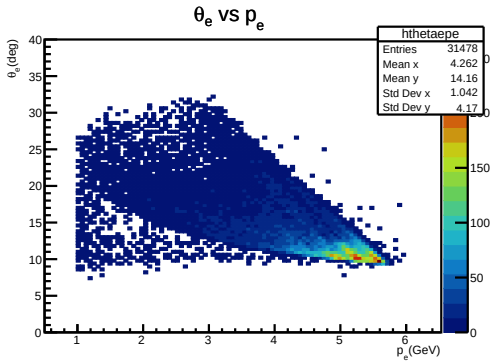


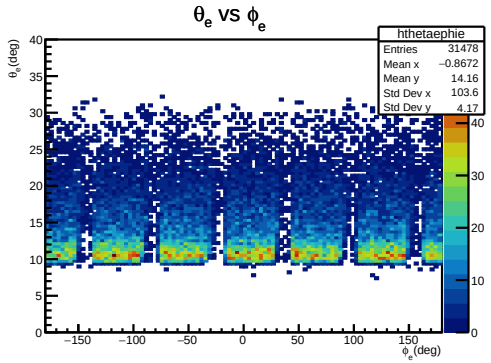


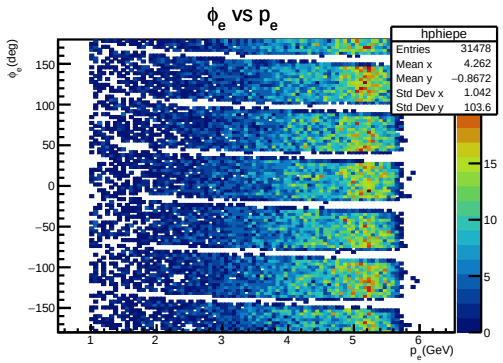


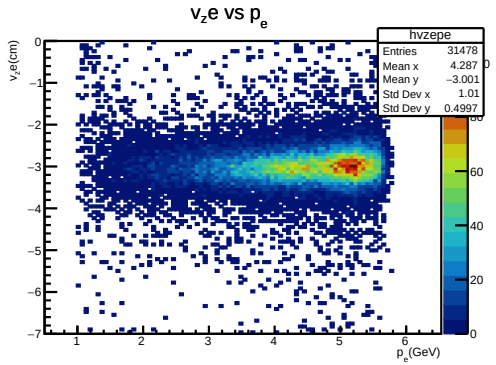


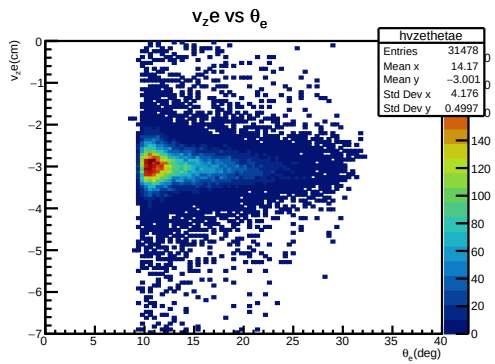
Events with cut for γp angle: electrons

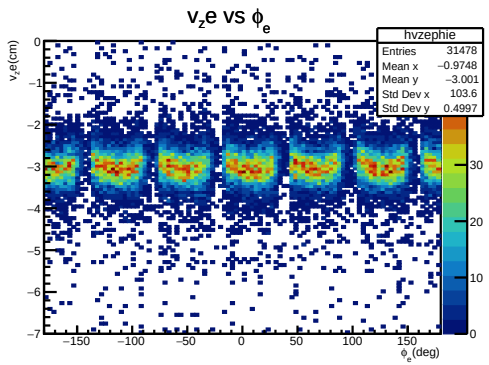


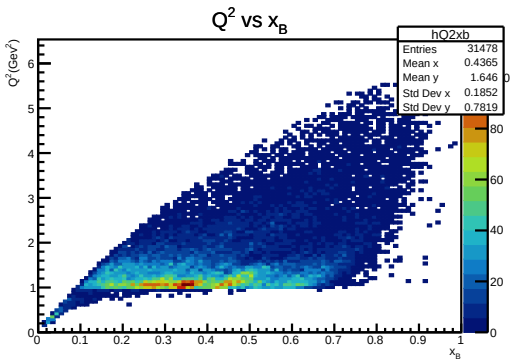


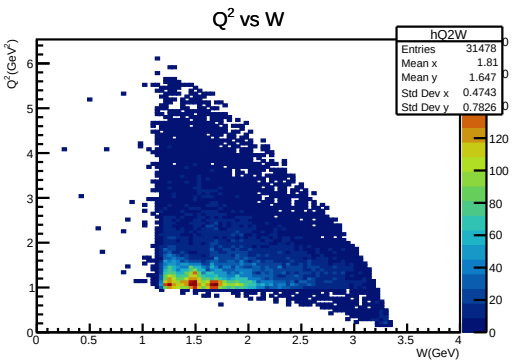


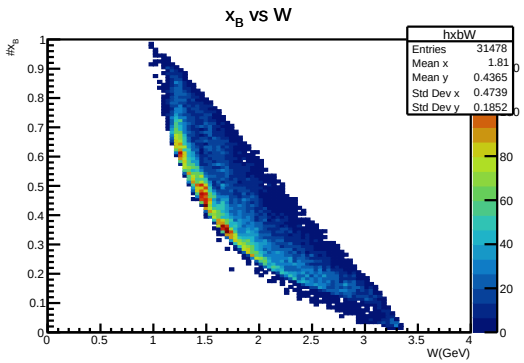




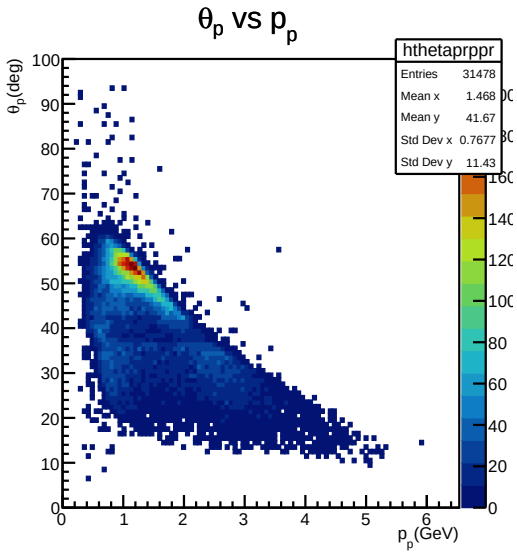


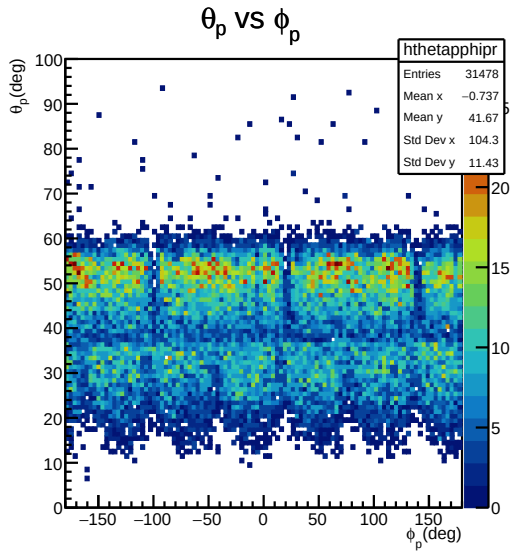


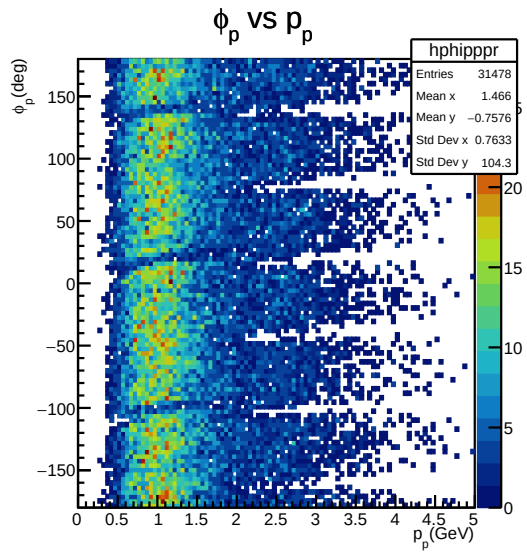


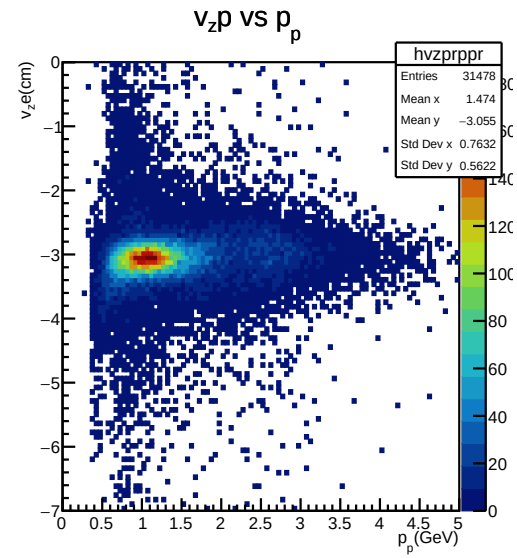


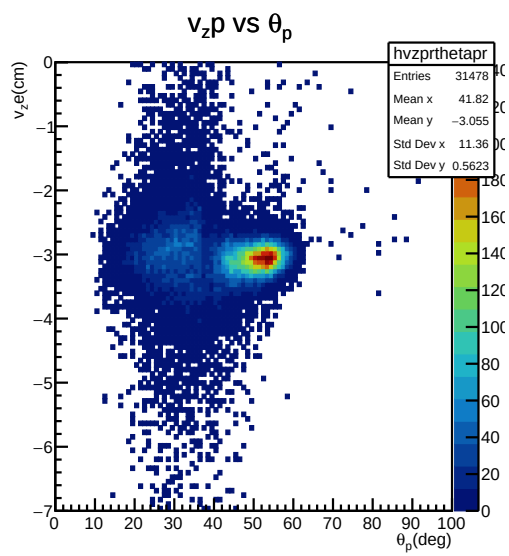
Events with cut for γp angle: protons

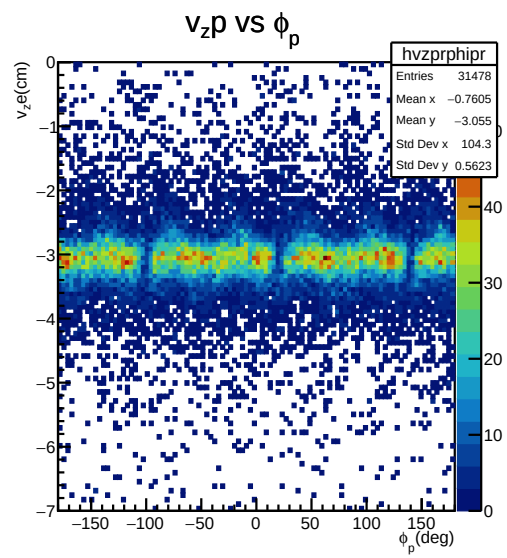




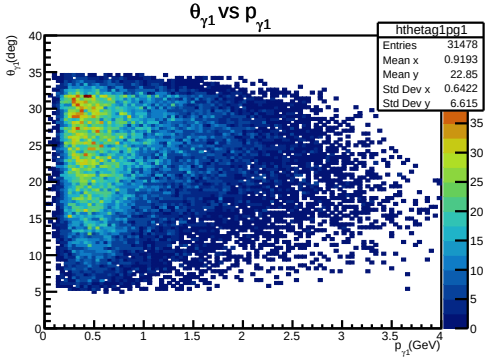


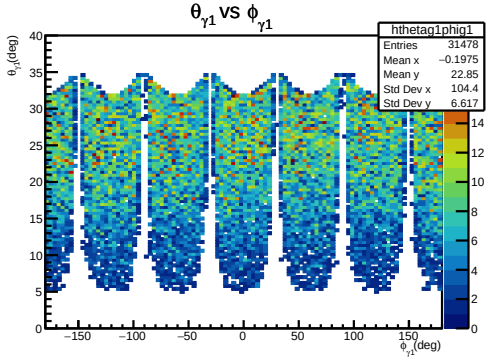


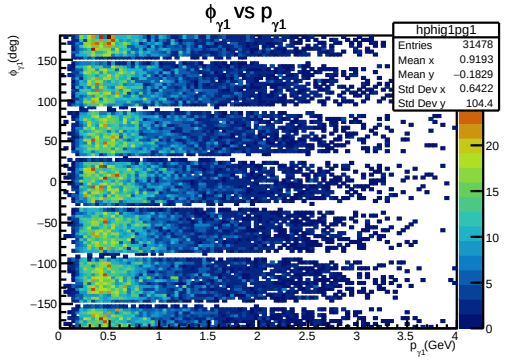


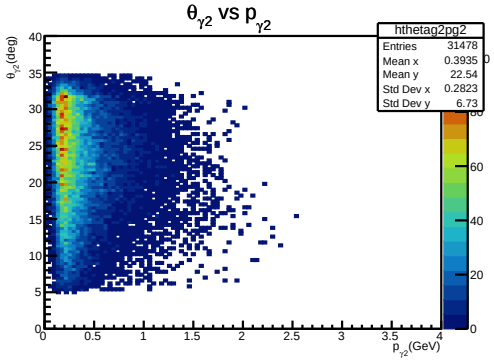


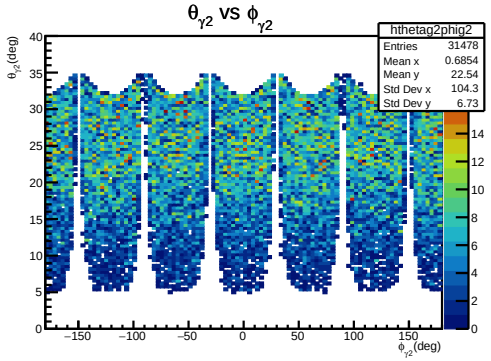
Events with cut for γp angle: gammas

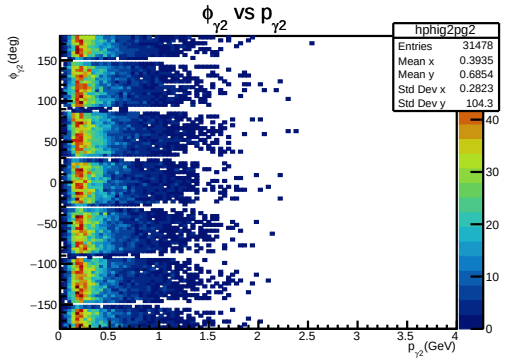


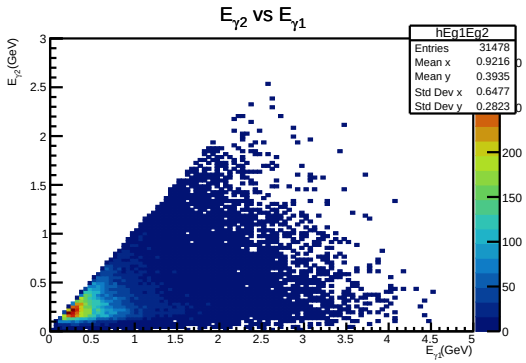


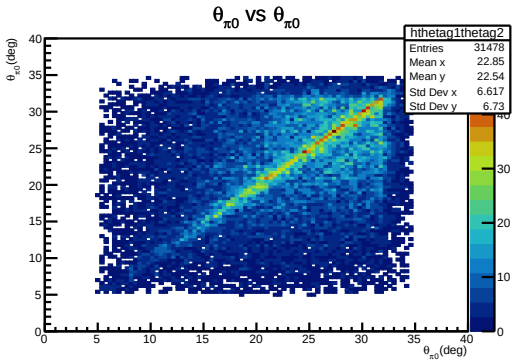


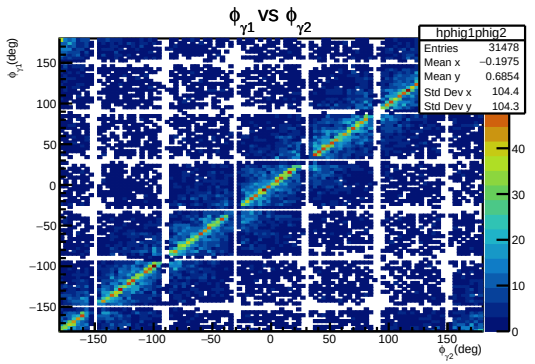




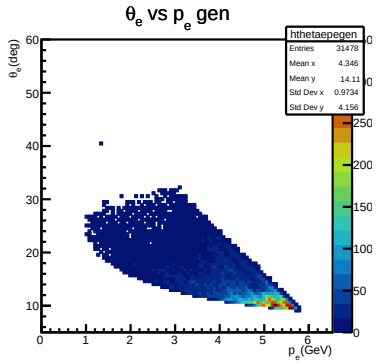


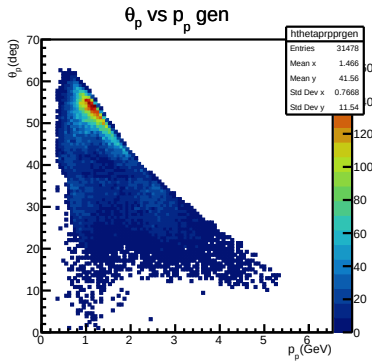


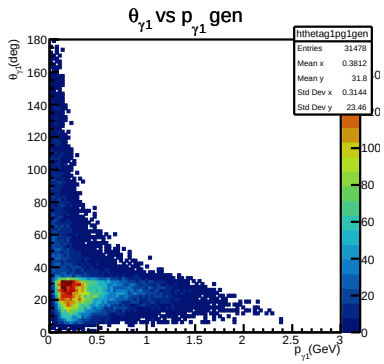


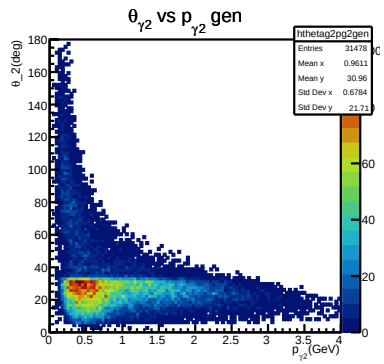


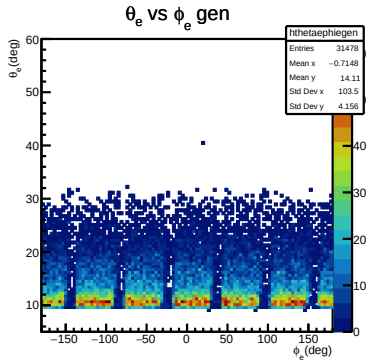
Events with cut for γp angle: generated events

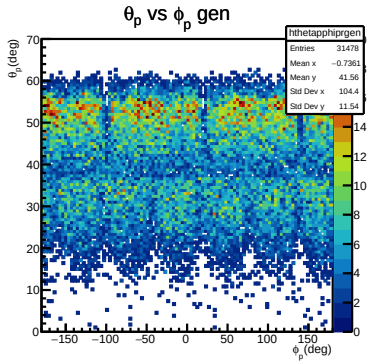


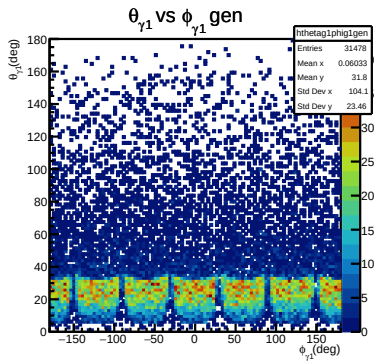


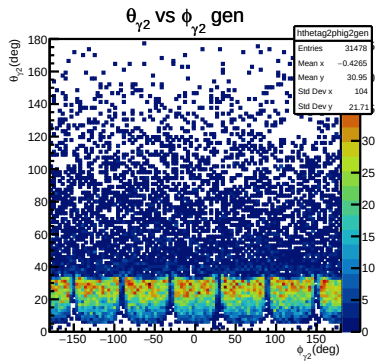


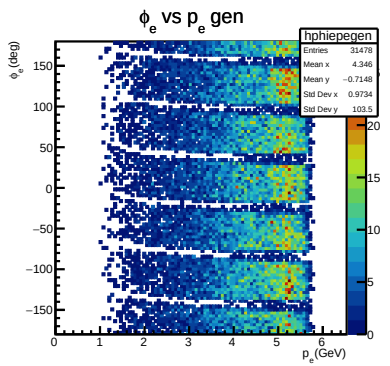


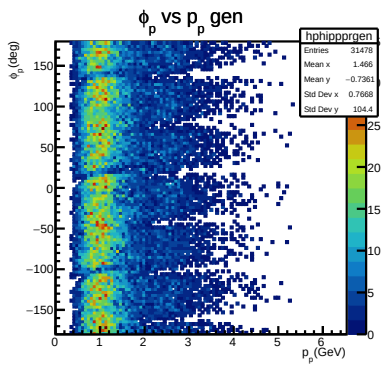


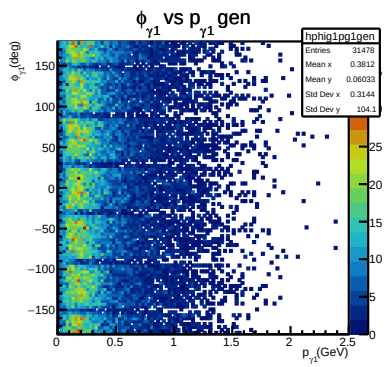


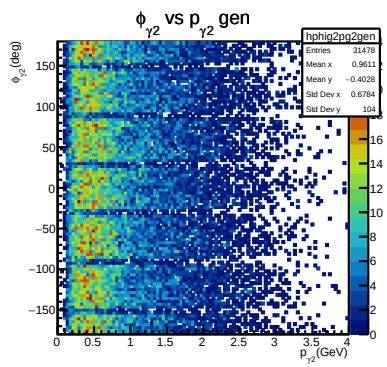




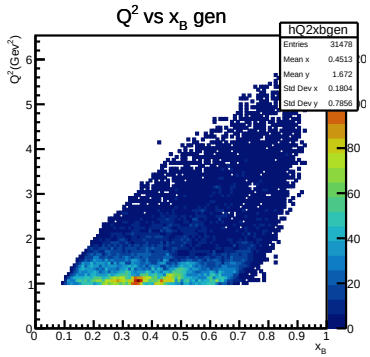


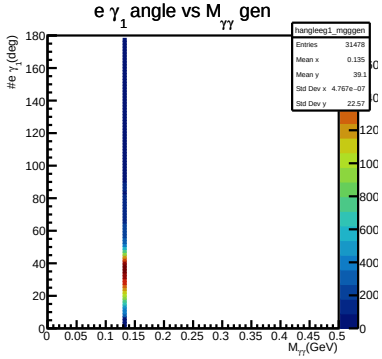


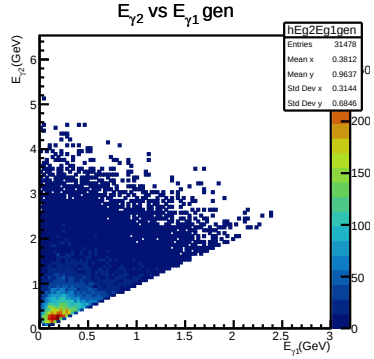


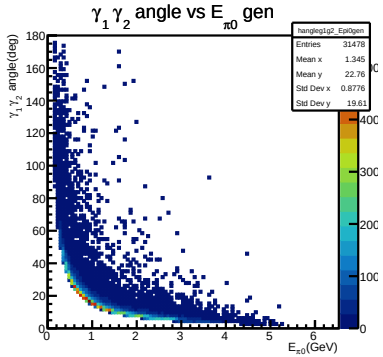


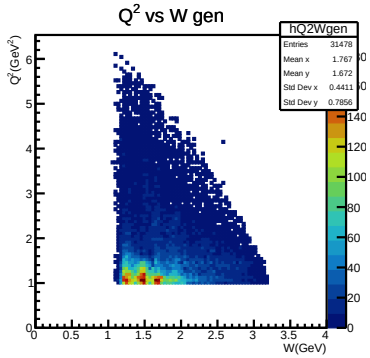
Events with cut for γp angle: generated events

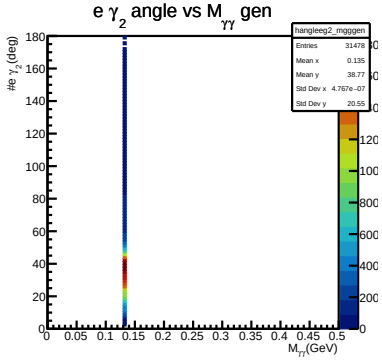


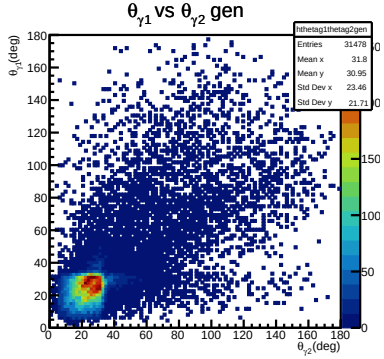


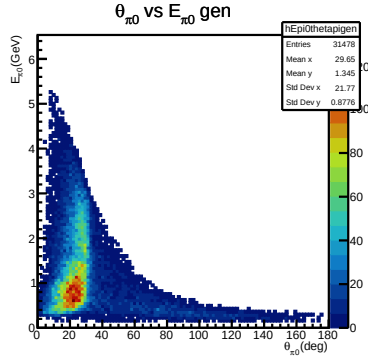


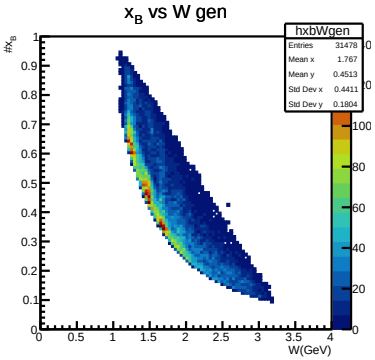


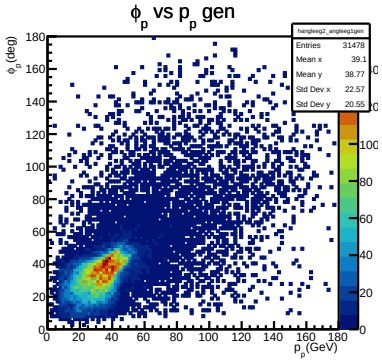


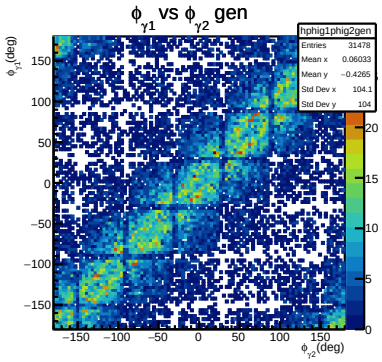


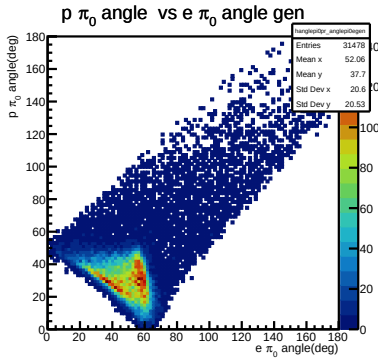








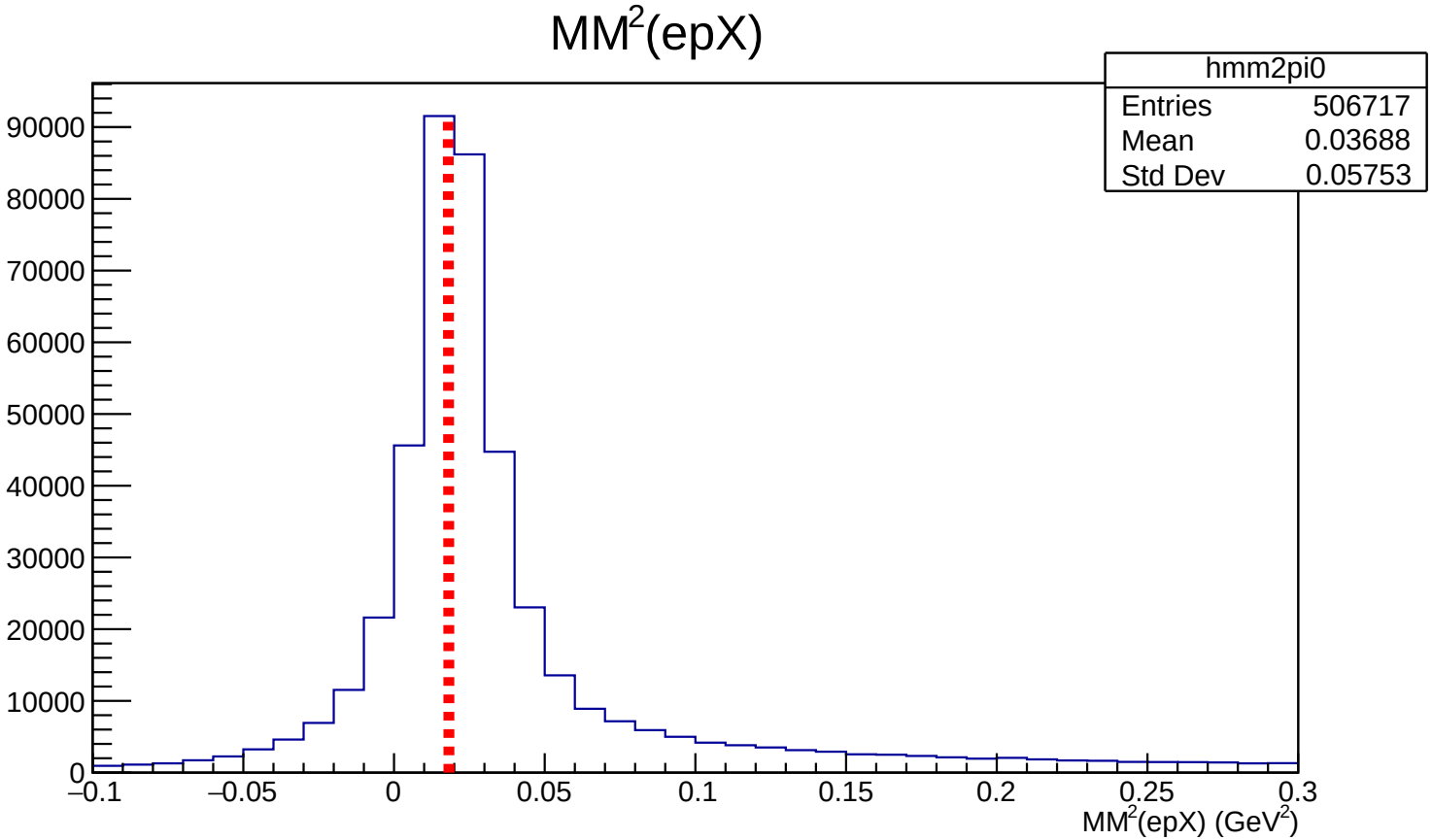




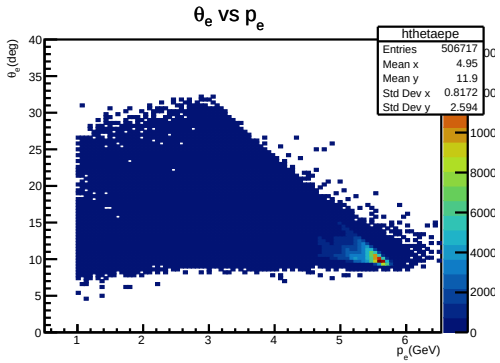
Reaction *epX*

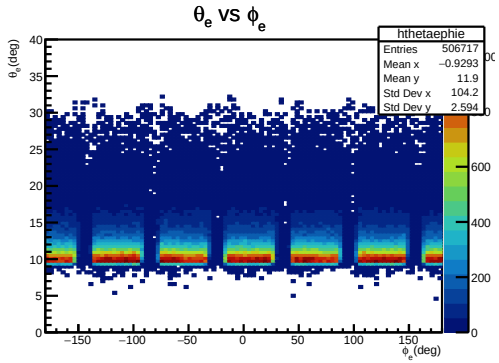
Next slides I required one electron and one proton in reaction without any selection for gammas:

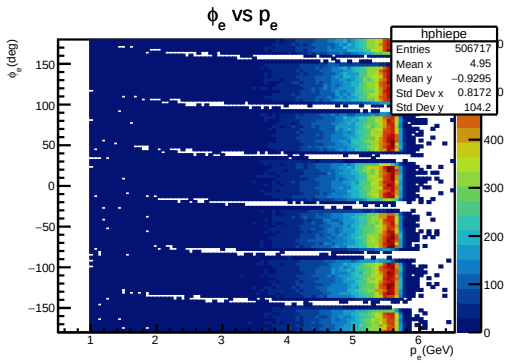
Reaction *epX*

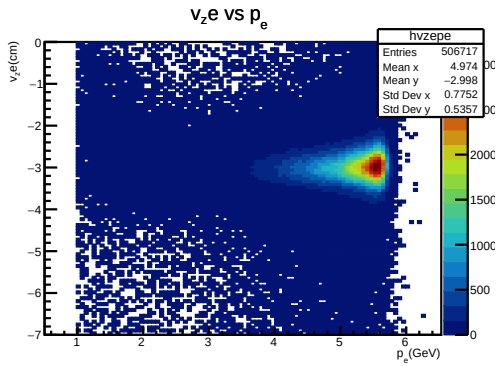


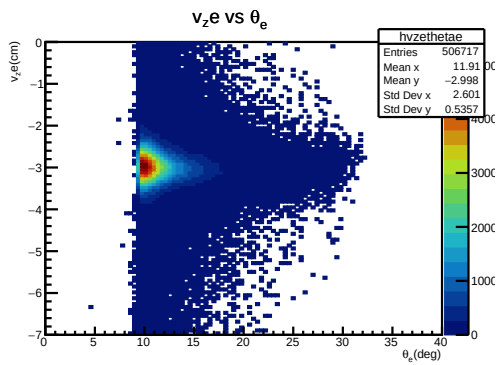
Reaction *epX*: electrons

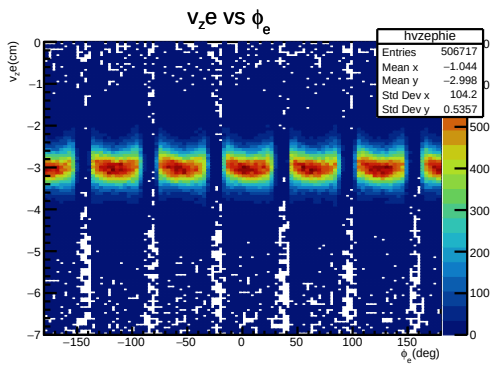


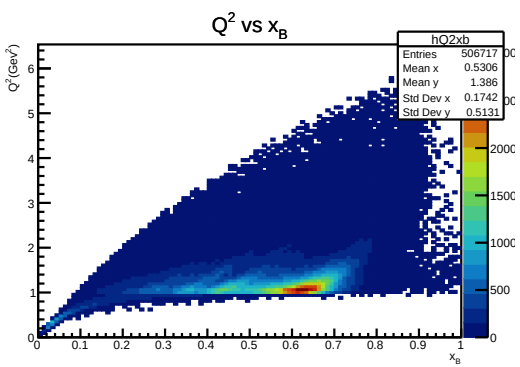


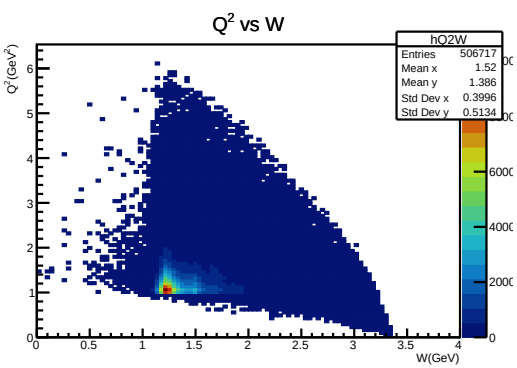


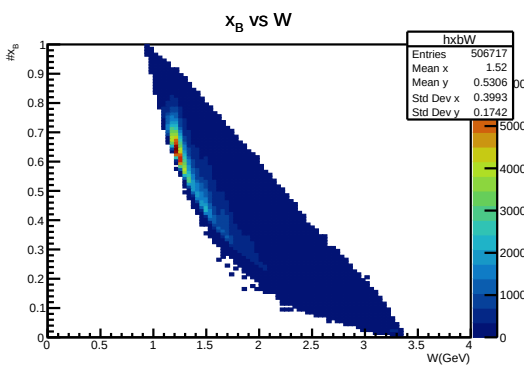




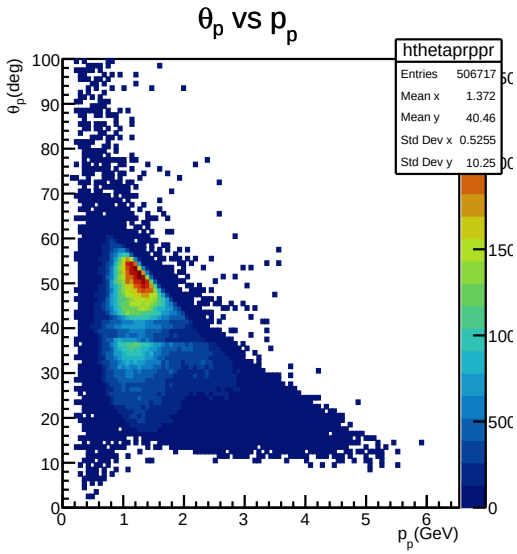


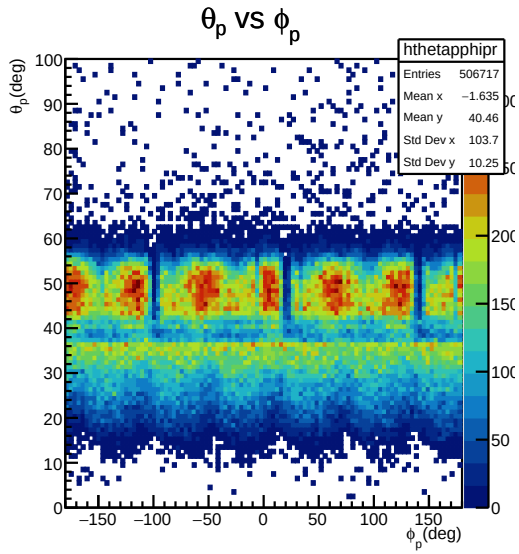


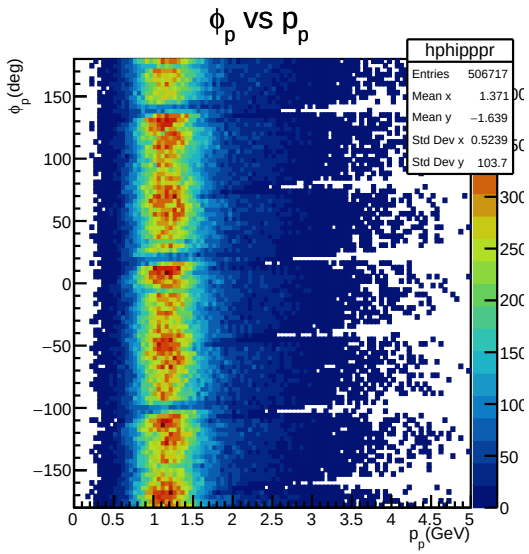


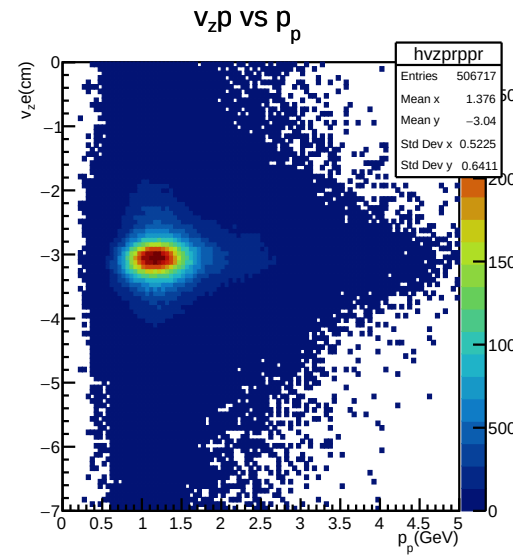


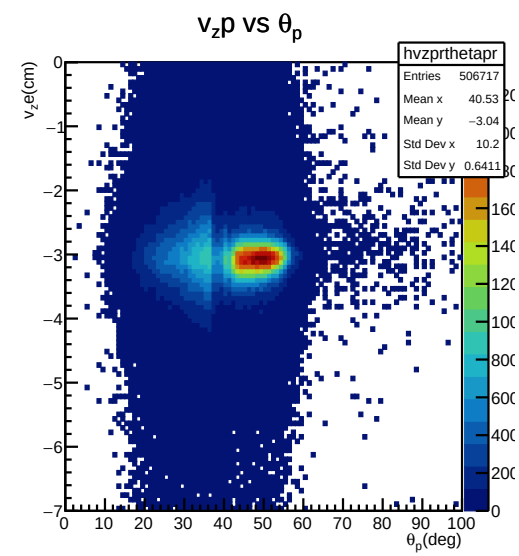
Reaction *epX*: protons

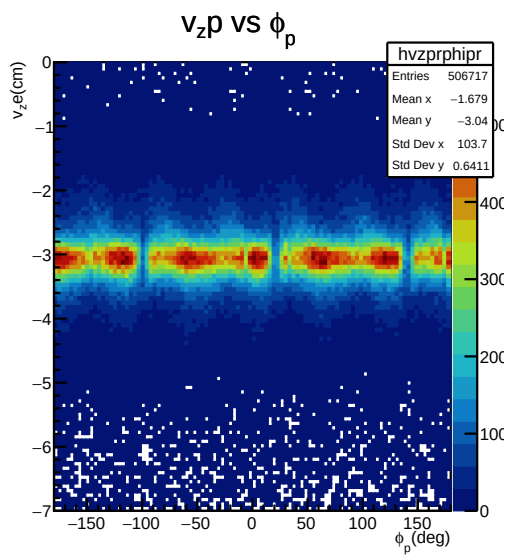




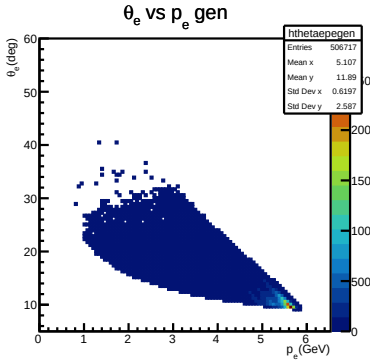


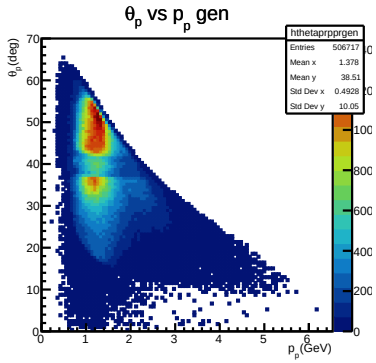


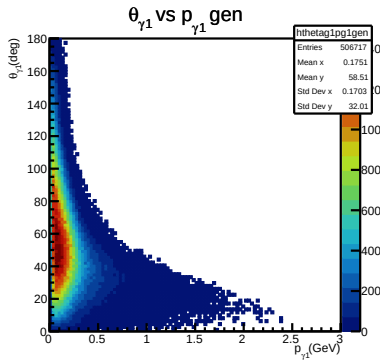


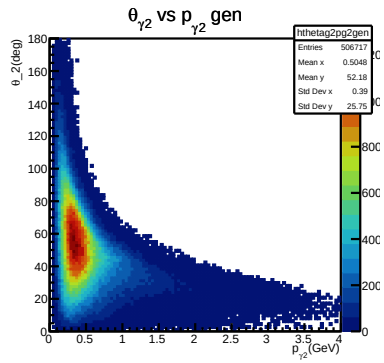


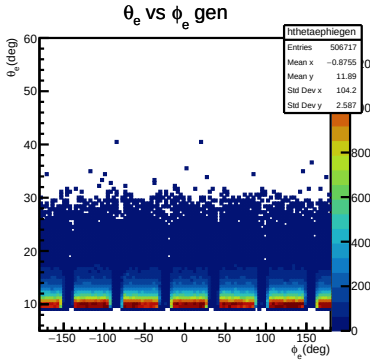
Reaction *epX*: generated events

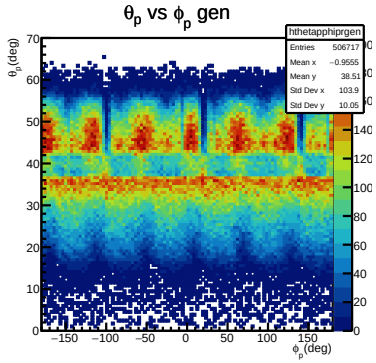


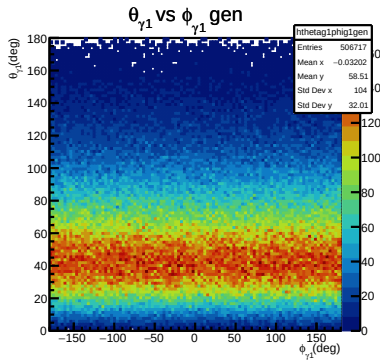


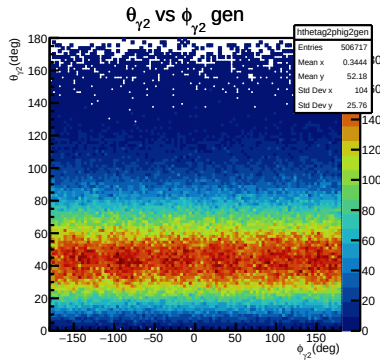


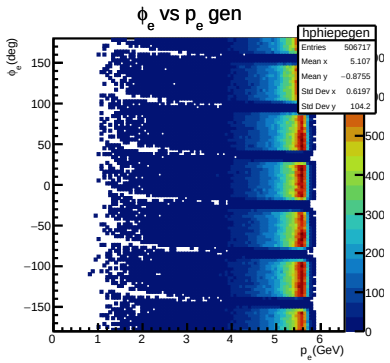


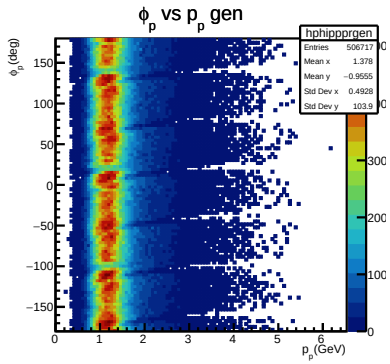


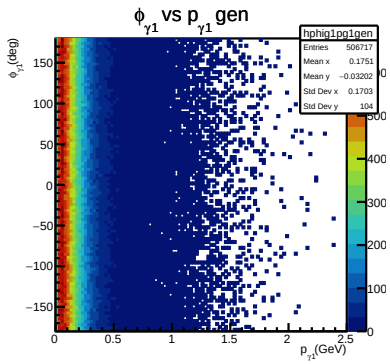


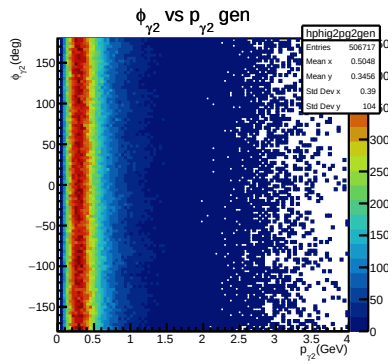




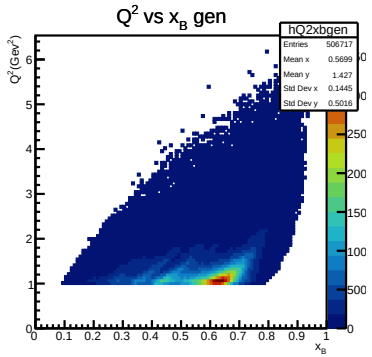


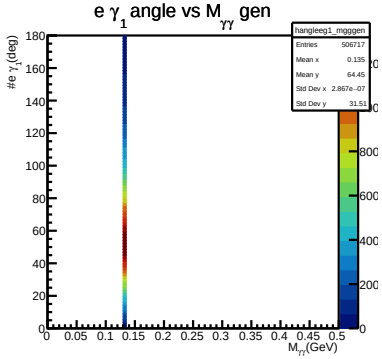


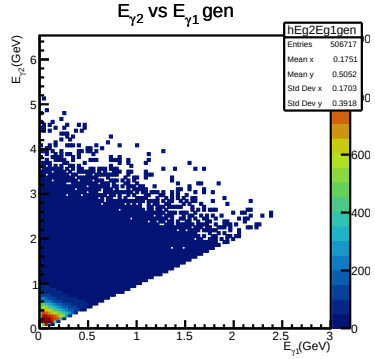


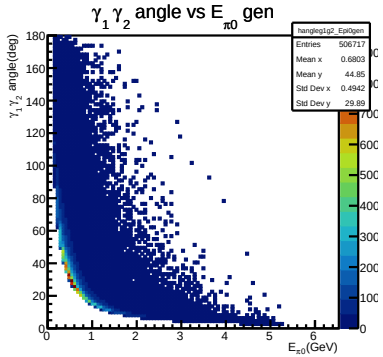


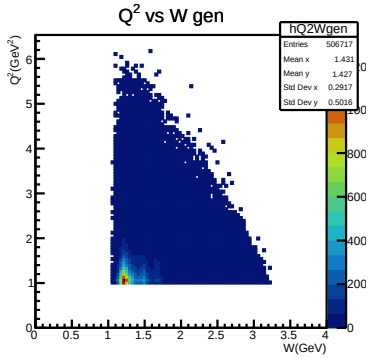
Reaction *epX*: generated events

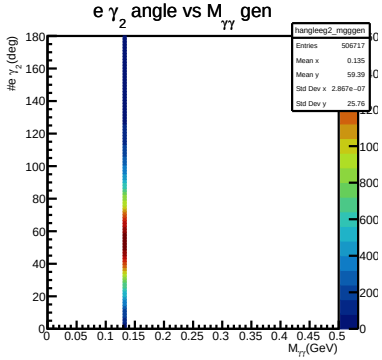


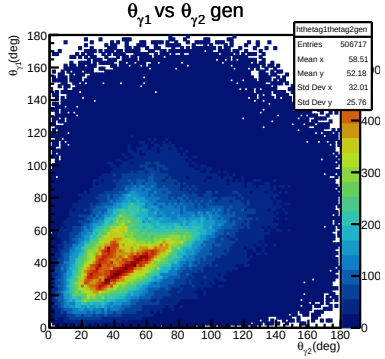


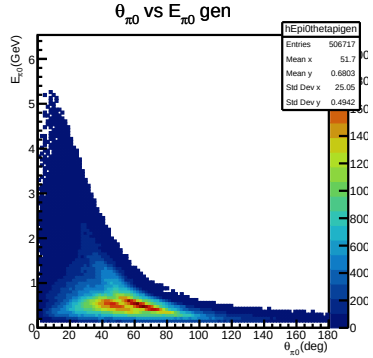


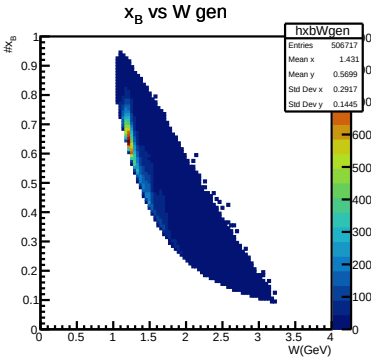


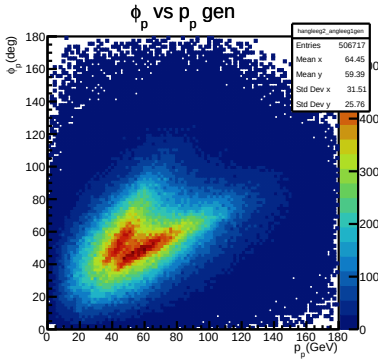


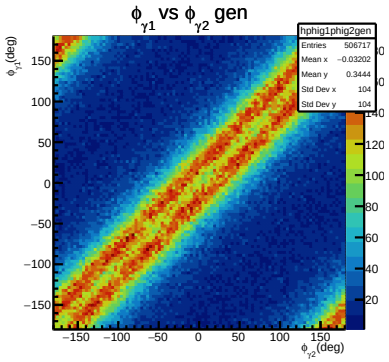


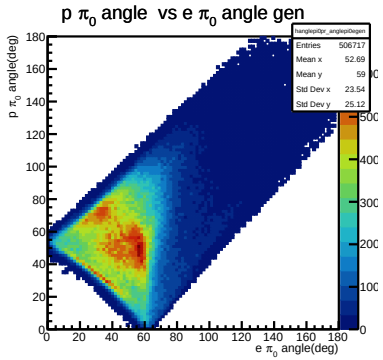








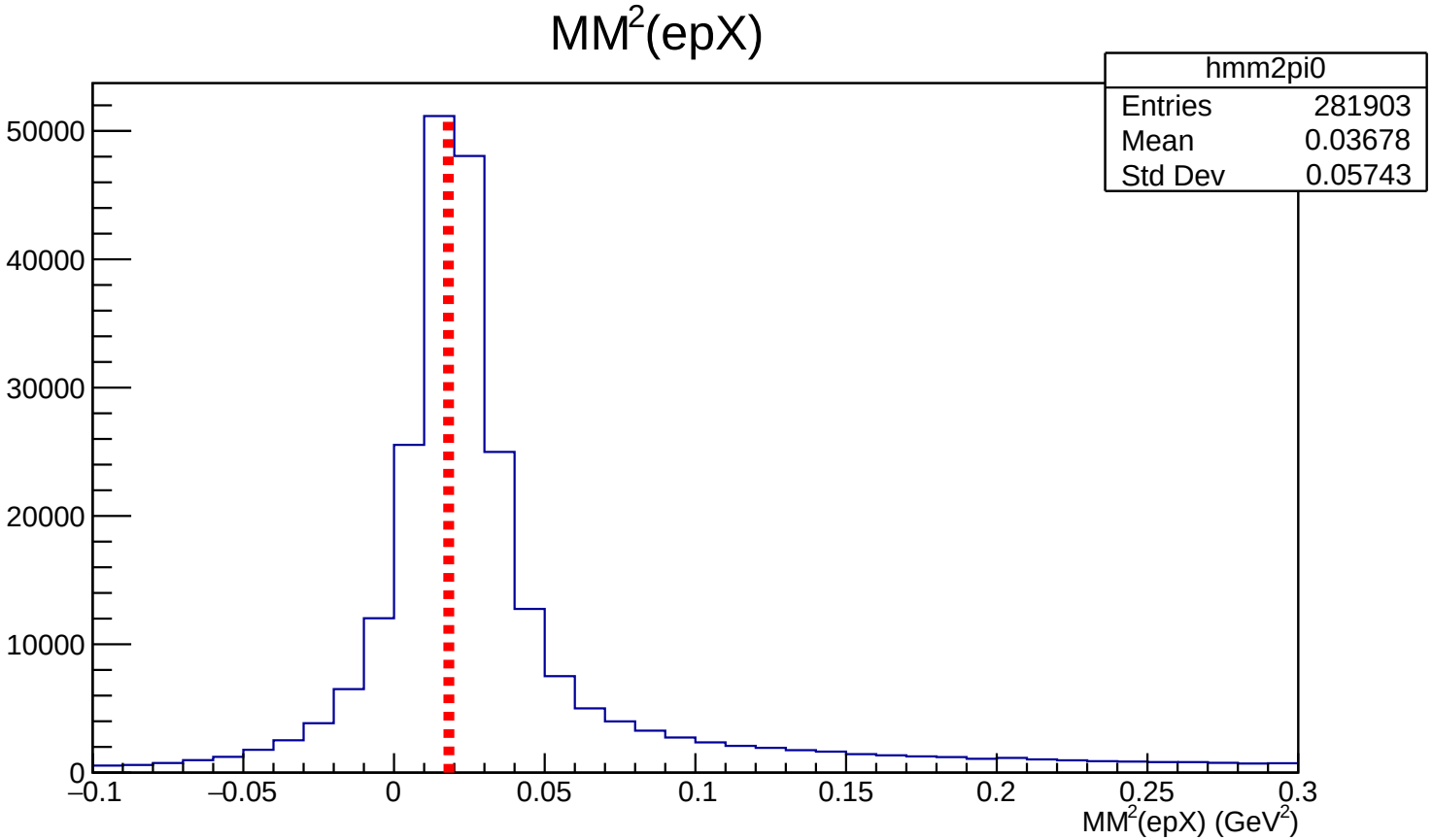




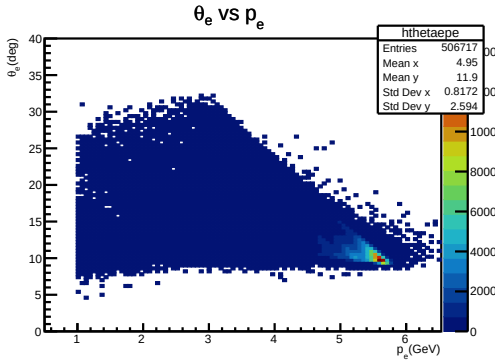
Reaction *epX*

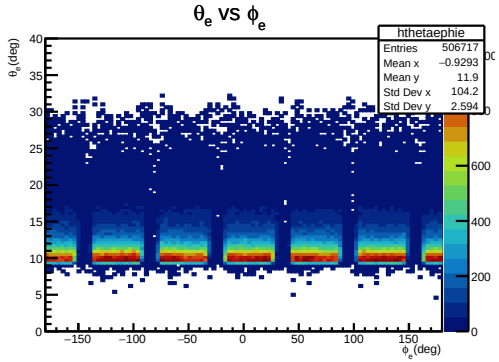
Finally I required one electron, one proton and one gamma in reaction (I choosed gamma with maximum energy for distributions)

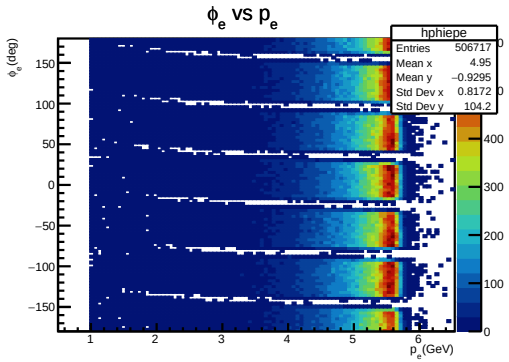
Reaction $ep\gamma X$

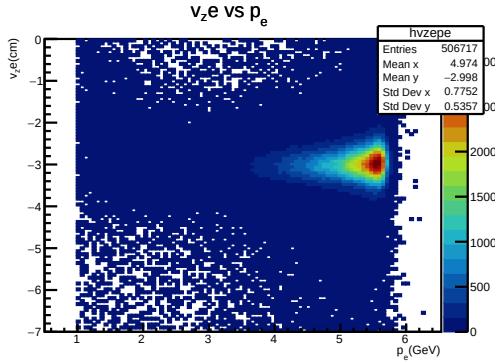


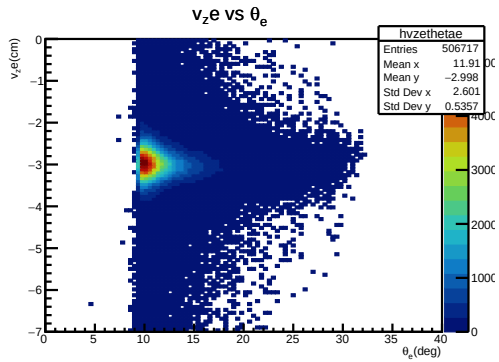
Reaction $ep\gamma X$: electrons

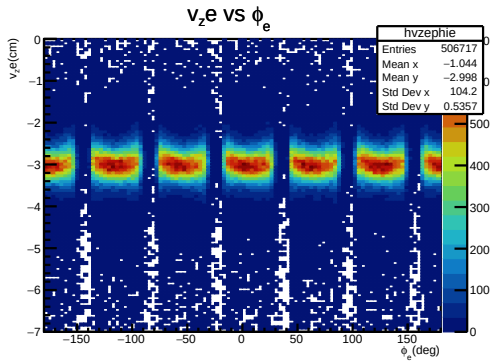


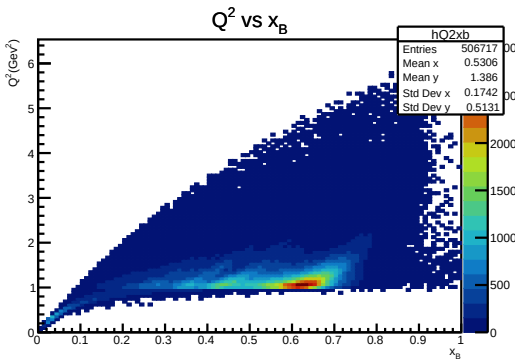


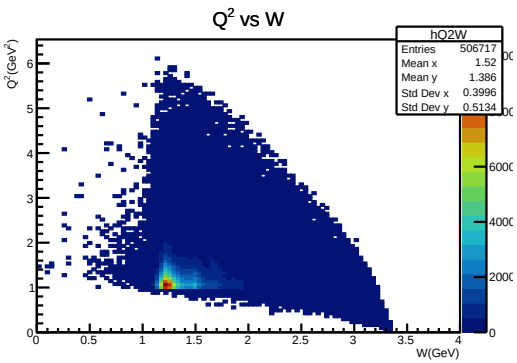


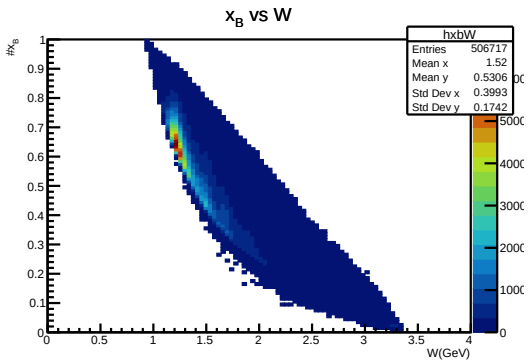




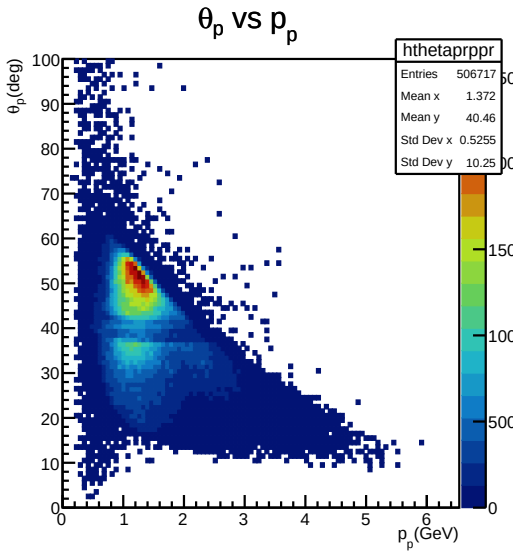


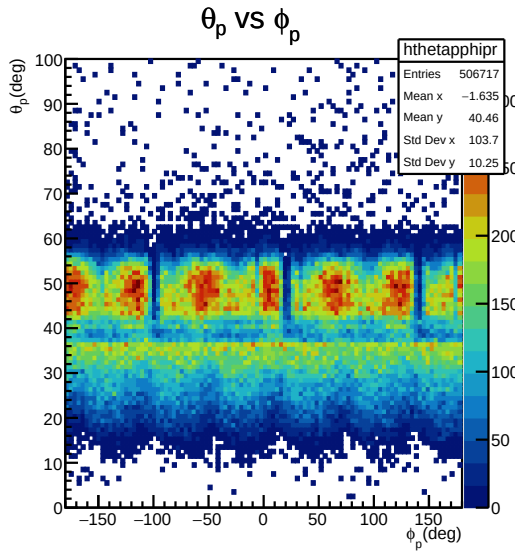


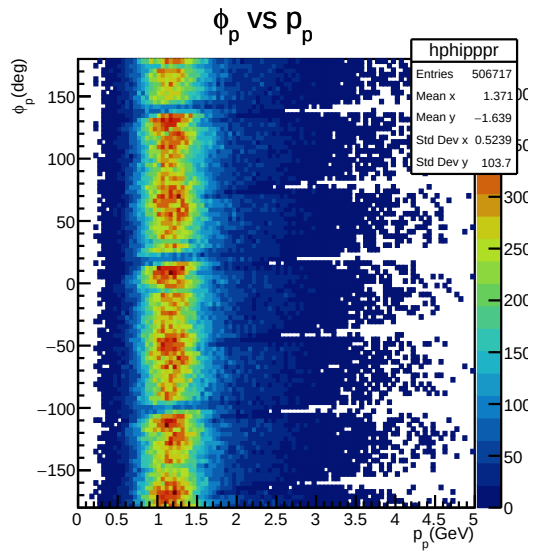


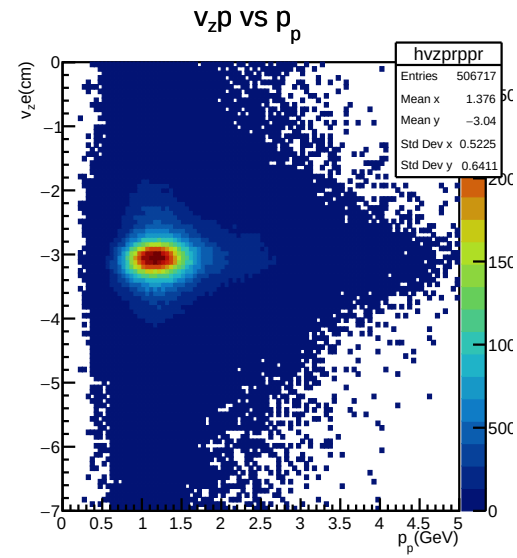


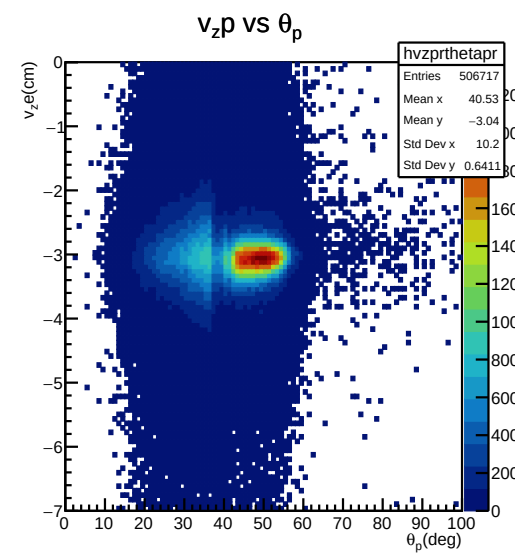
Reaction $ep\gamma X$: protons

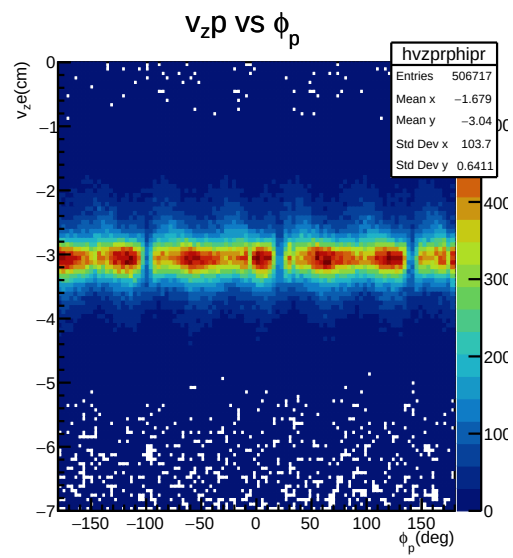




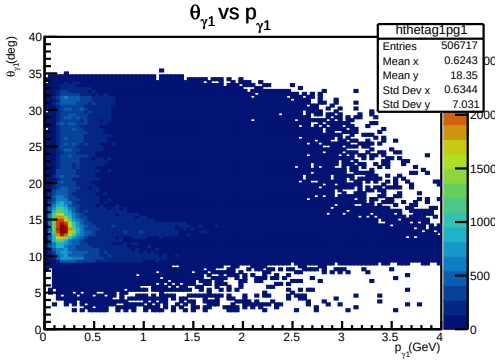


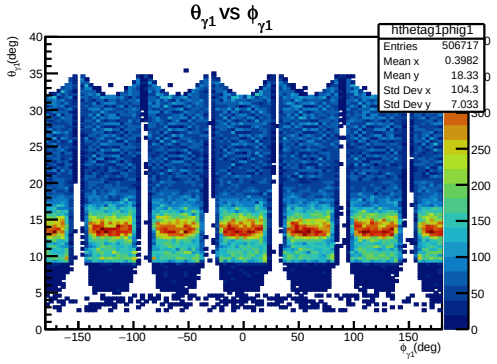


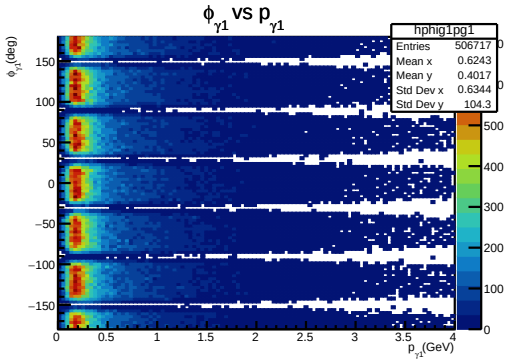




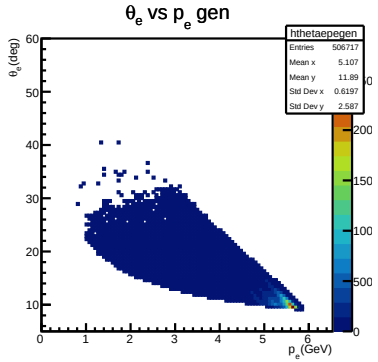
Reaction $ep\gamma X$: photons

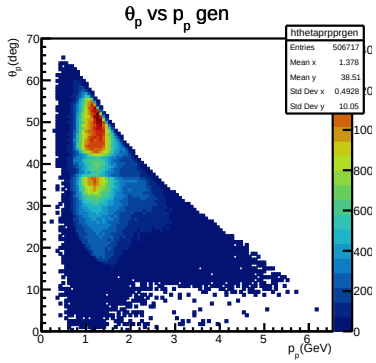


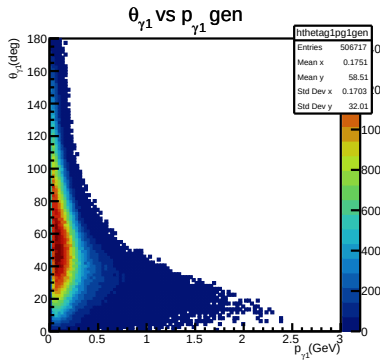


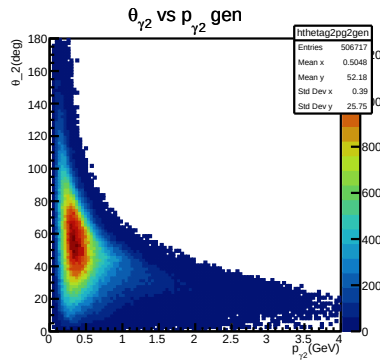


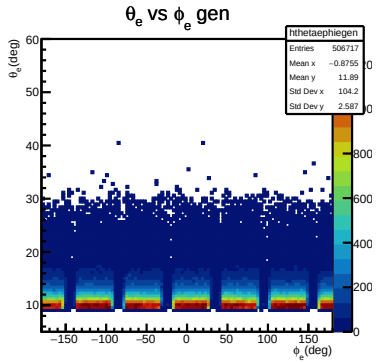
Reaction $ep\gamma X$: generated events

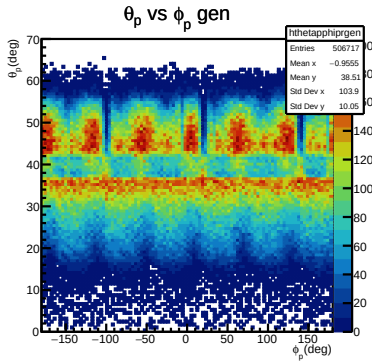


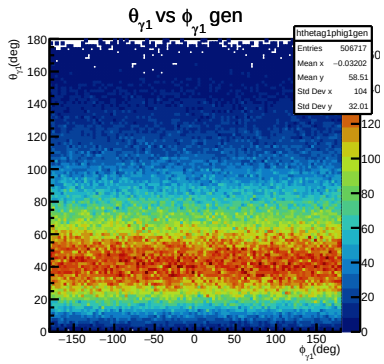


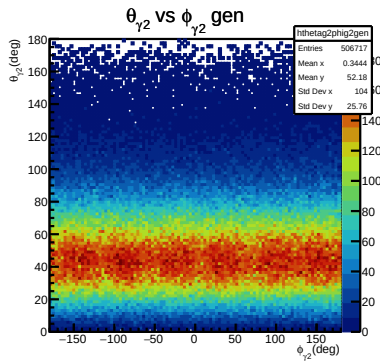


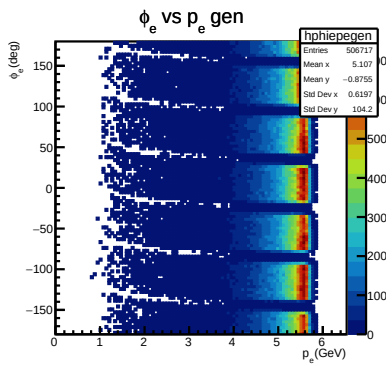


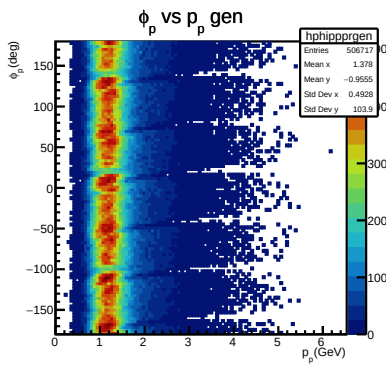


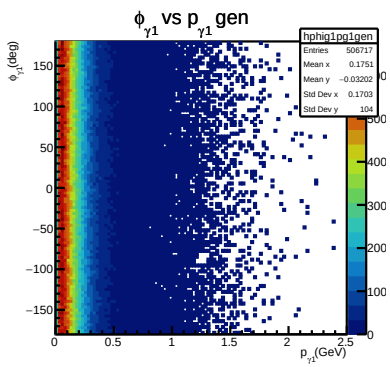


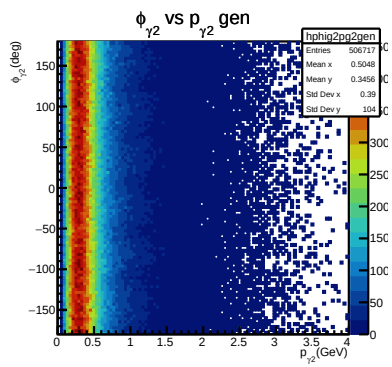




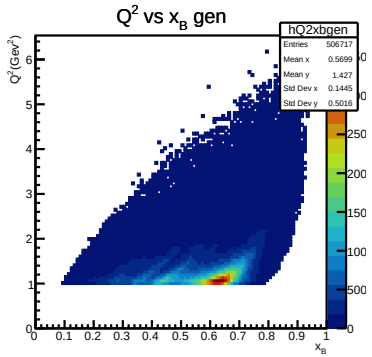


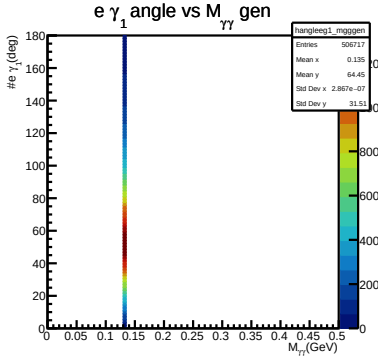


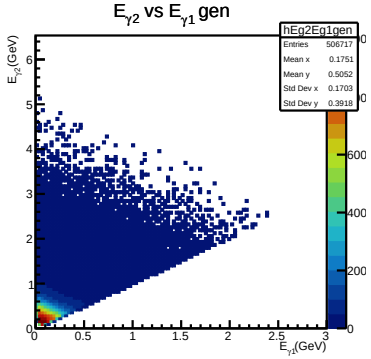


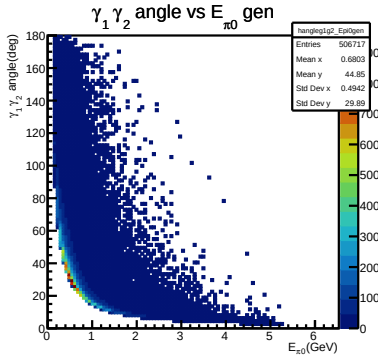


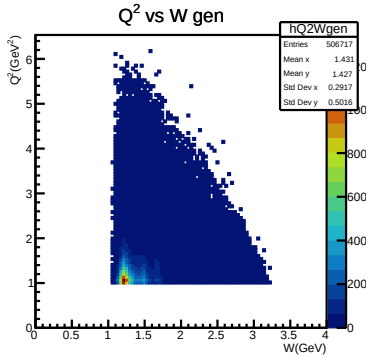
Reaction $ep\gamma X$: generated events

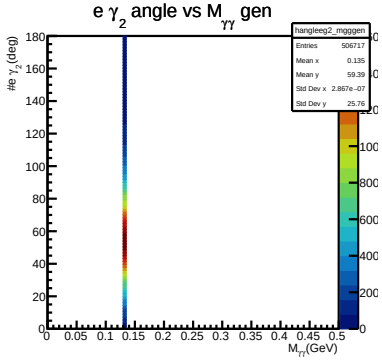


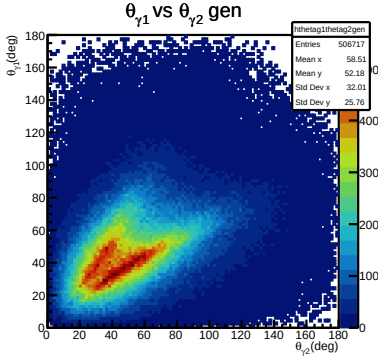


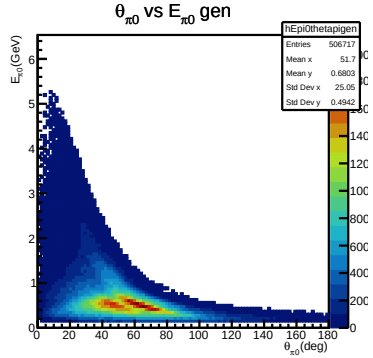


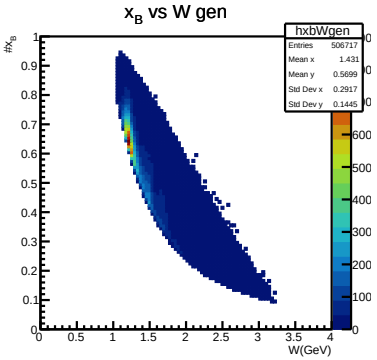


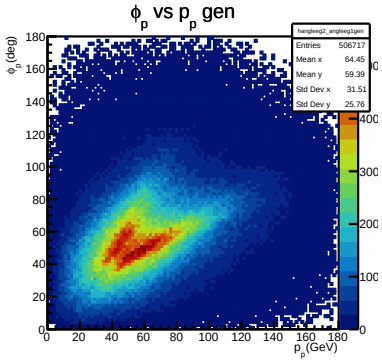


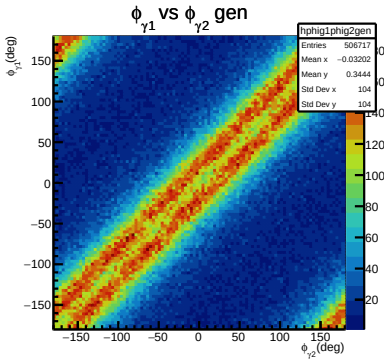


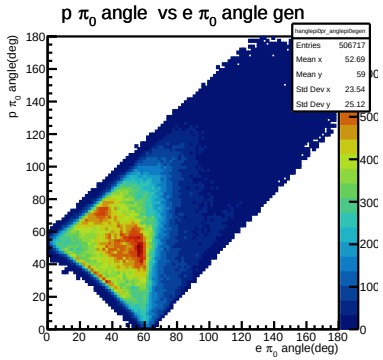










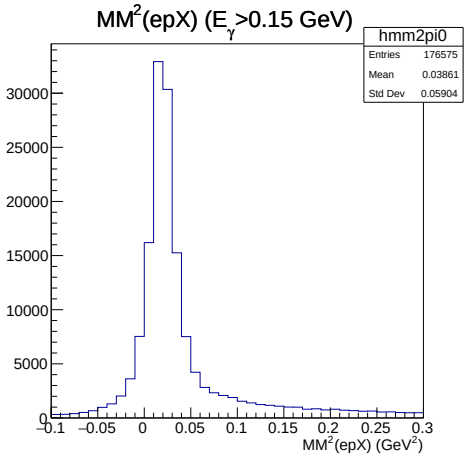


Reaction $ep\gamma X$

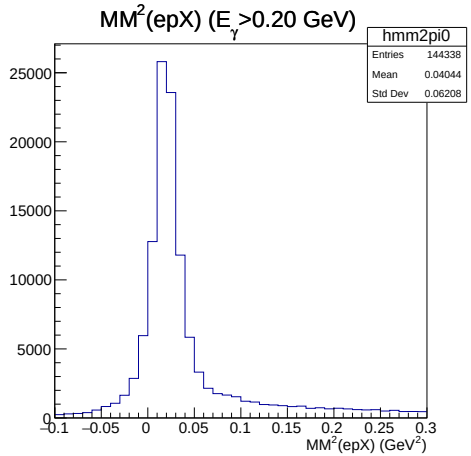
For detected gamma I apply next requirements:

- $20^\circ < \theta_\gamma < 30^\circ$
- $E_\gamma > 0.15, 0.20, 0.25$ GeV

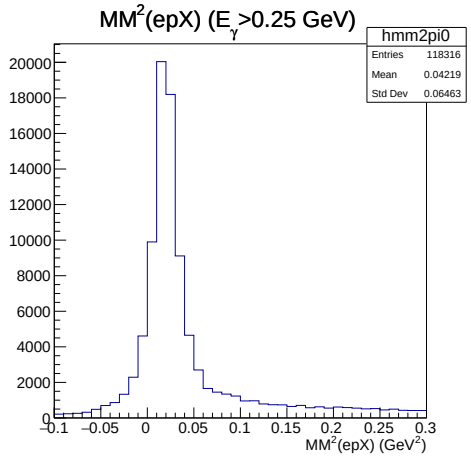
Reaction $ep\gamma X$



(a)



(b)



(c)