Algorithm(efficiency registration track)

Event loop

     1. Skip events without tof400 hits
     if (TOF400Hit->GetEntries() <= 0)
     point_id → RefIndex→ mcID → Track_ID

STS -Tracks loop

     if (!tof400_hits.count(mc_track_ID))
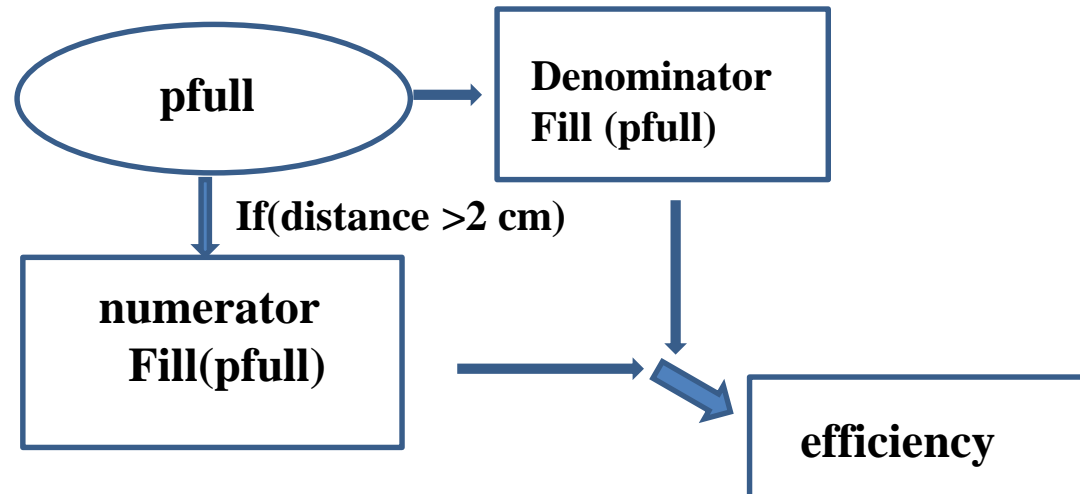   **condition that there minimum 5 reco hits in GEM : if(rcble<5)**

Extrapolation to the Z(tof-400) – coordinate of the true hit
Check if extrapolation (X, Y, Z) goes through the geometry volume
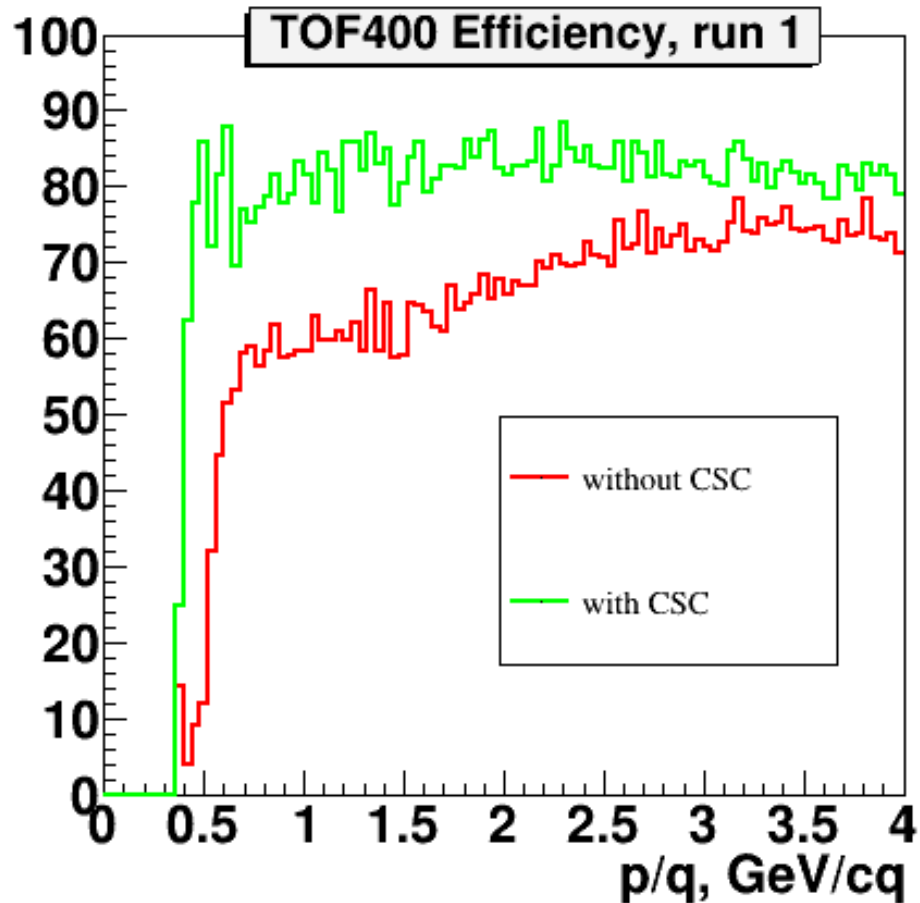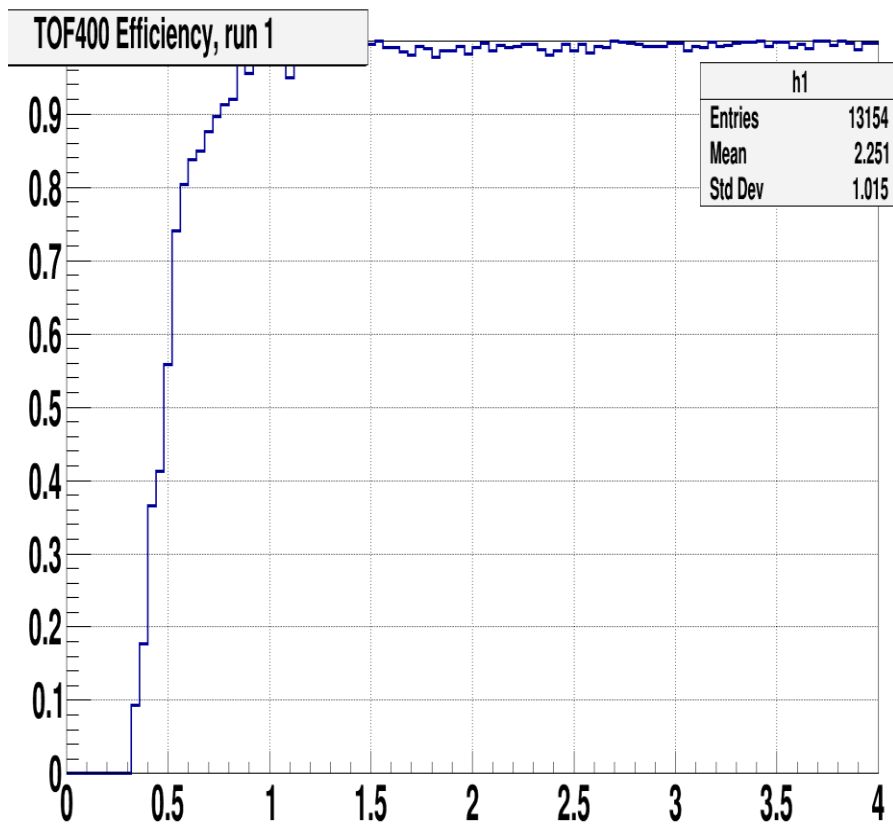geo filter tof filter ⟶ StripActive

Efficiency:

If(stanZ!=4 && staZ!=5)

pfull ⟶ **Denominator Fill (pfull)**

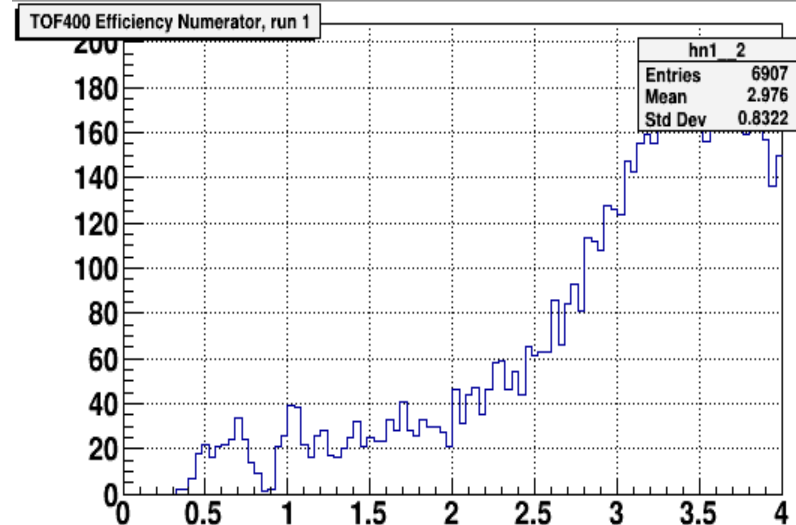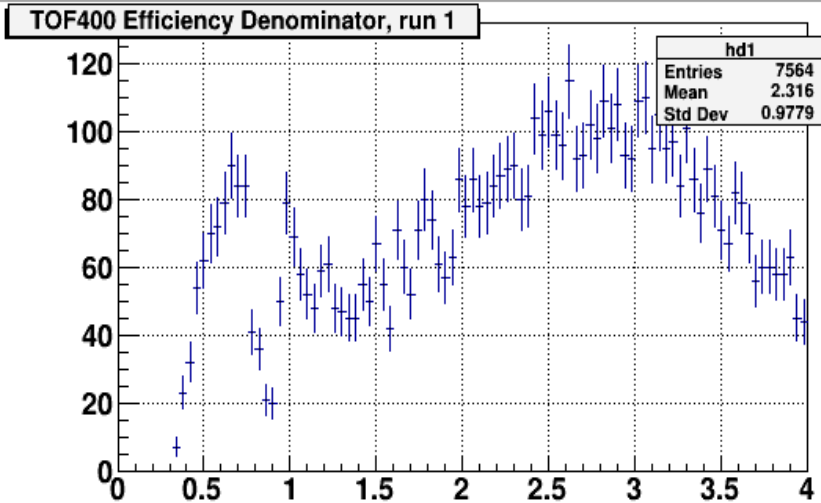**If(distance >2 cm)**

numerator Fill(pfull)

efficiency

1) The efficiency is considered only for the TOF400 planes 1,2,3,6,7,8 (these are the planes x> 0 and y> 0, a small part of the planes 3 and 6 has y <0). The choice of specific planes is associated with the ability to confirm the passage of the track through them using CSC;
2) magnetic field with Mscale = 1251.9 / 900 .;
3) Reconstructed tracks, CSC hits and TOF400 hits are used;
4) tracks with the number of hits > = 5;
5) Efficiency is considered for each TOF400 plane separately;
6) The denominator records tracks that, when extrapolated to Z of a given TOF400 plane, fell into it by XY;
7) Tracks are recorded in the numerator, near the extrapolation point of which within a radius of 2 cm there is a TOF400 hit;
8) To plot the dependence of efficiency on the total pulse, I use a histogram with 100 bins 0 <pfull <4 GeV / cq.

Track registration efficiency of TOF-400 with GEM

BM@N

~~if (!tof400_hits.count(mc_track_ID))~~
condition that there
minimum 5 reco hits in GEM :
if(rcble<5)

Events = 50000