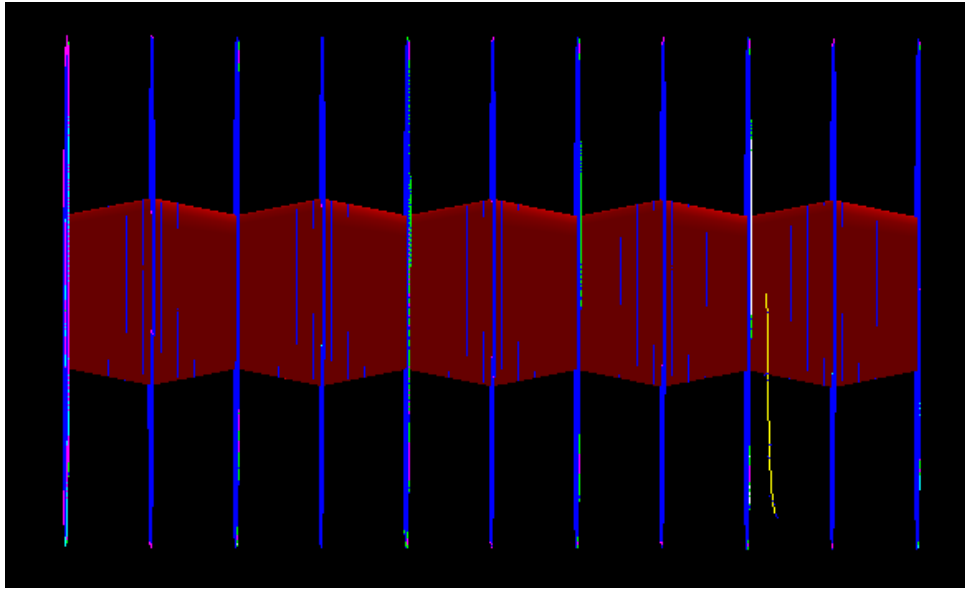
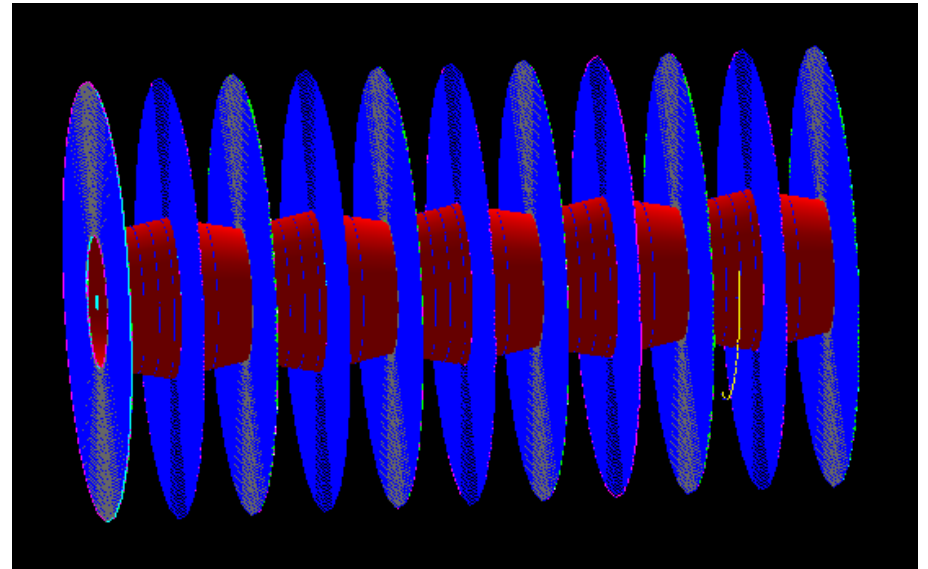
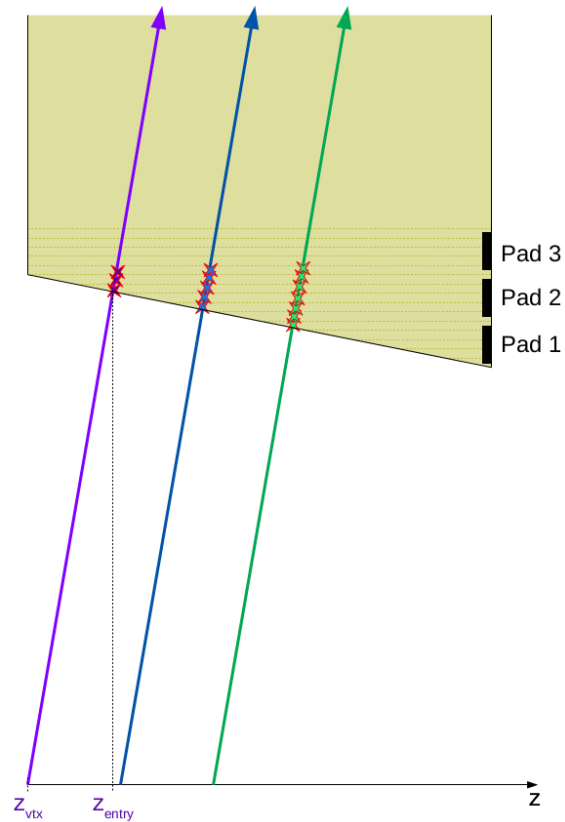


Reminder About Conical Concept

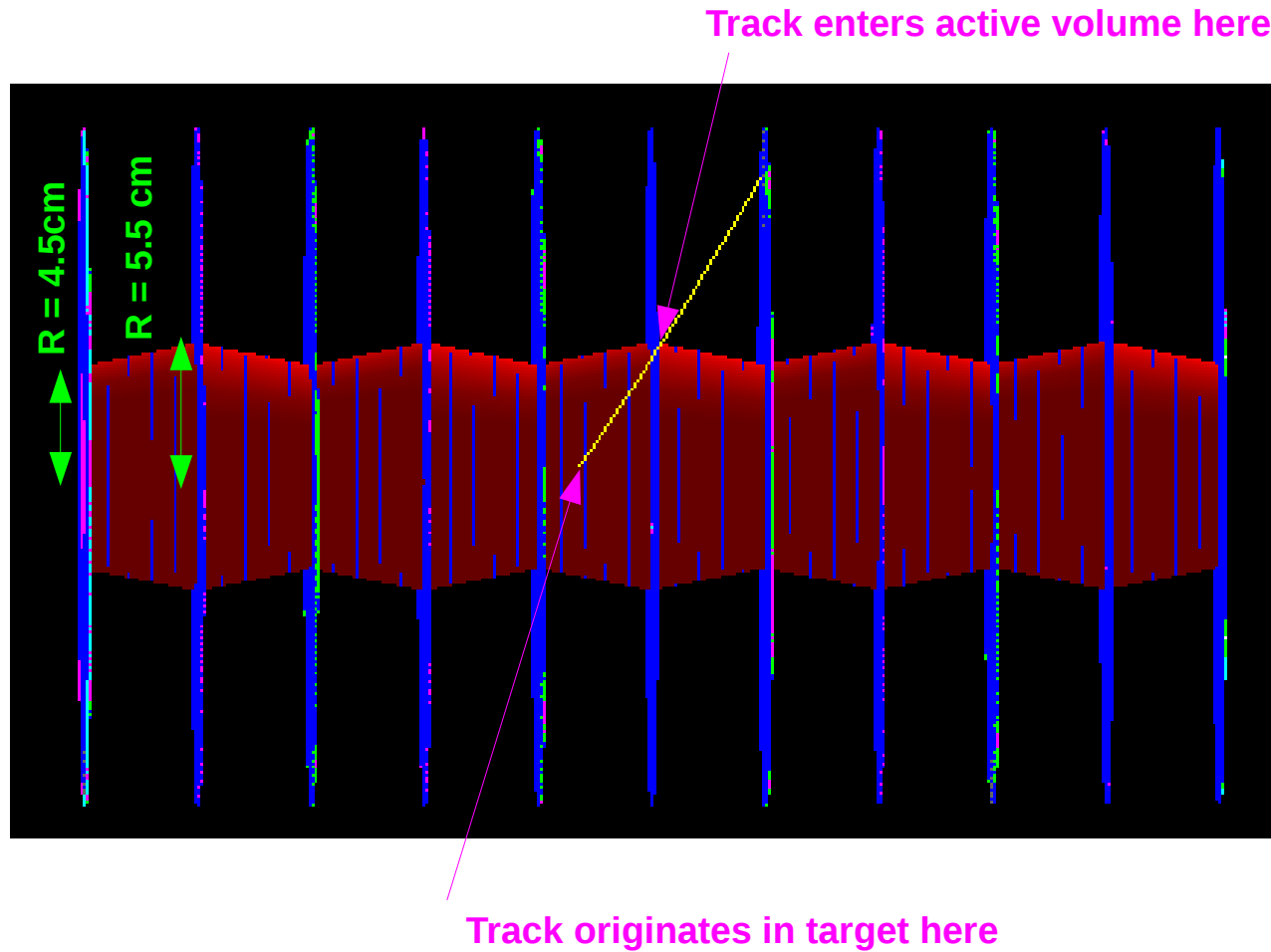


Aim is to improve knowledge of z-position of track vertex



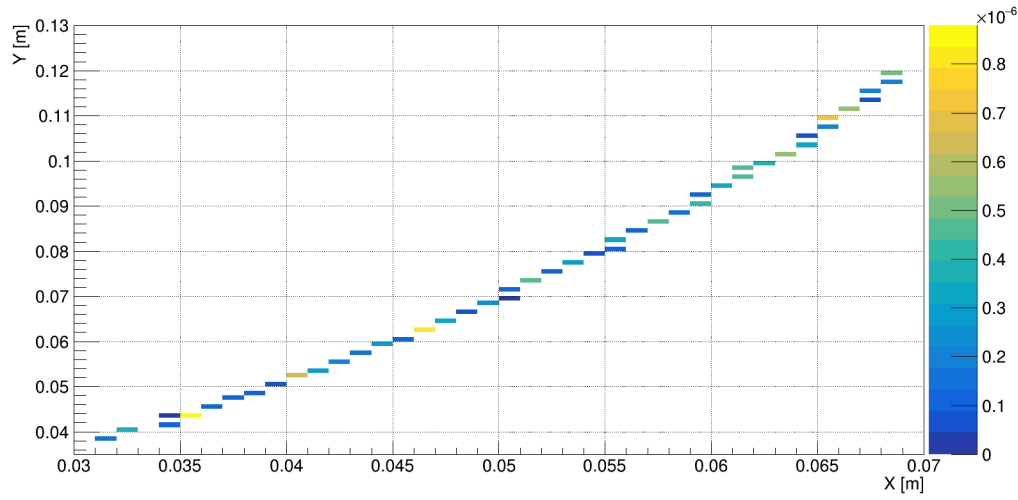
Initial Look at Individual Tracks

Track: momentum = 400MeV/c; Theta = 60degrees; Phi = 45 degrees; Z = -3.2cm



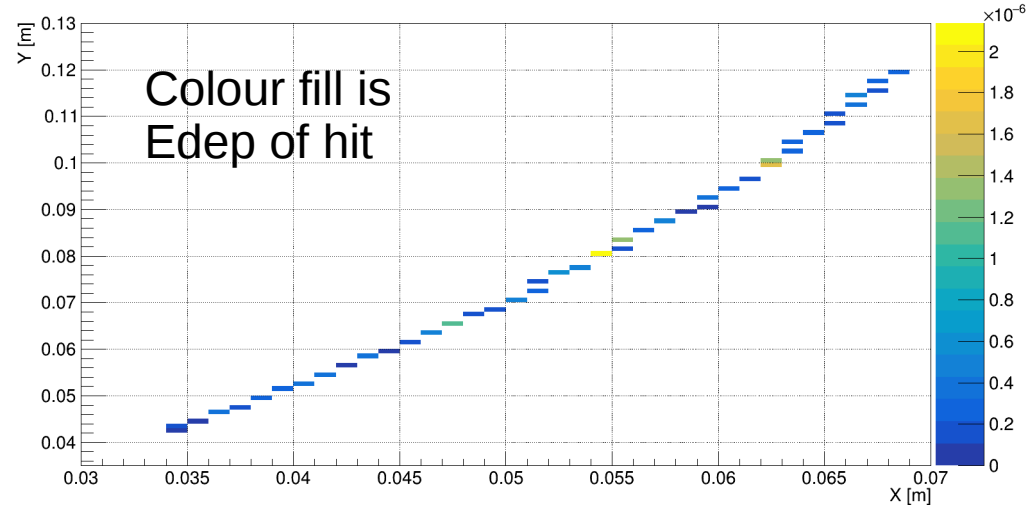
Non-Conical

hXYHits

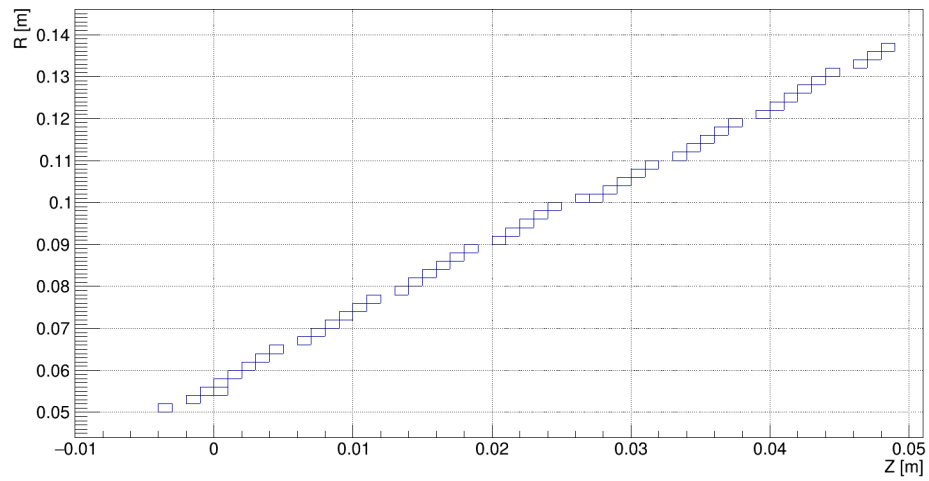


Conical

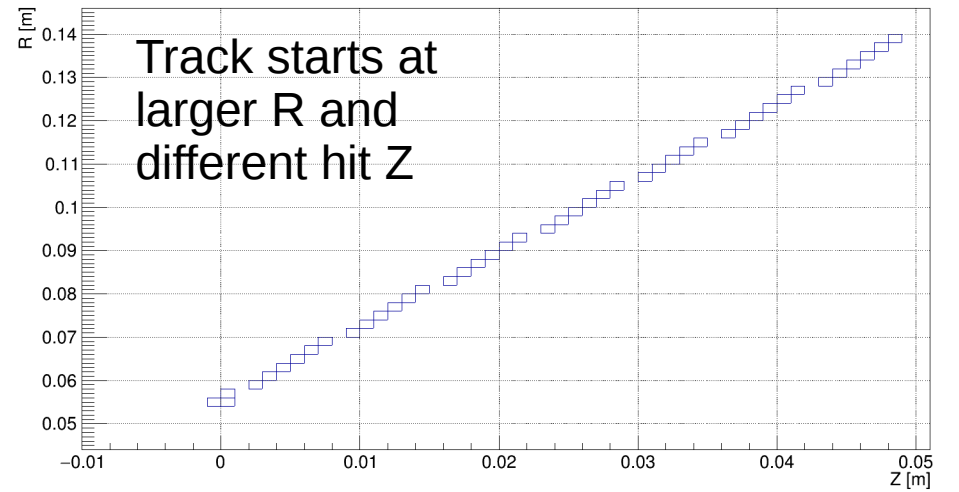
hXYHits



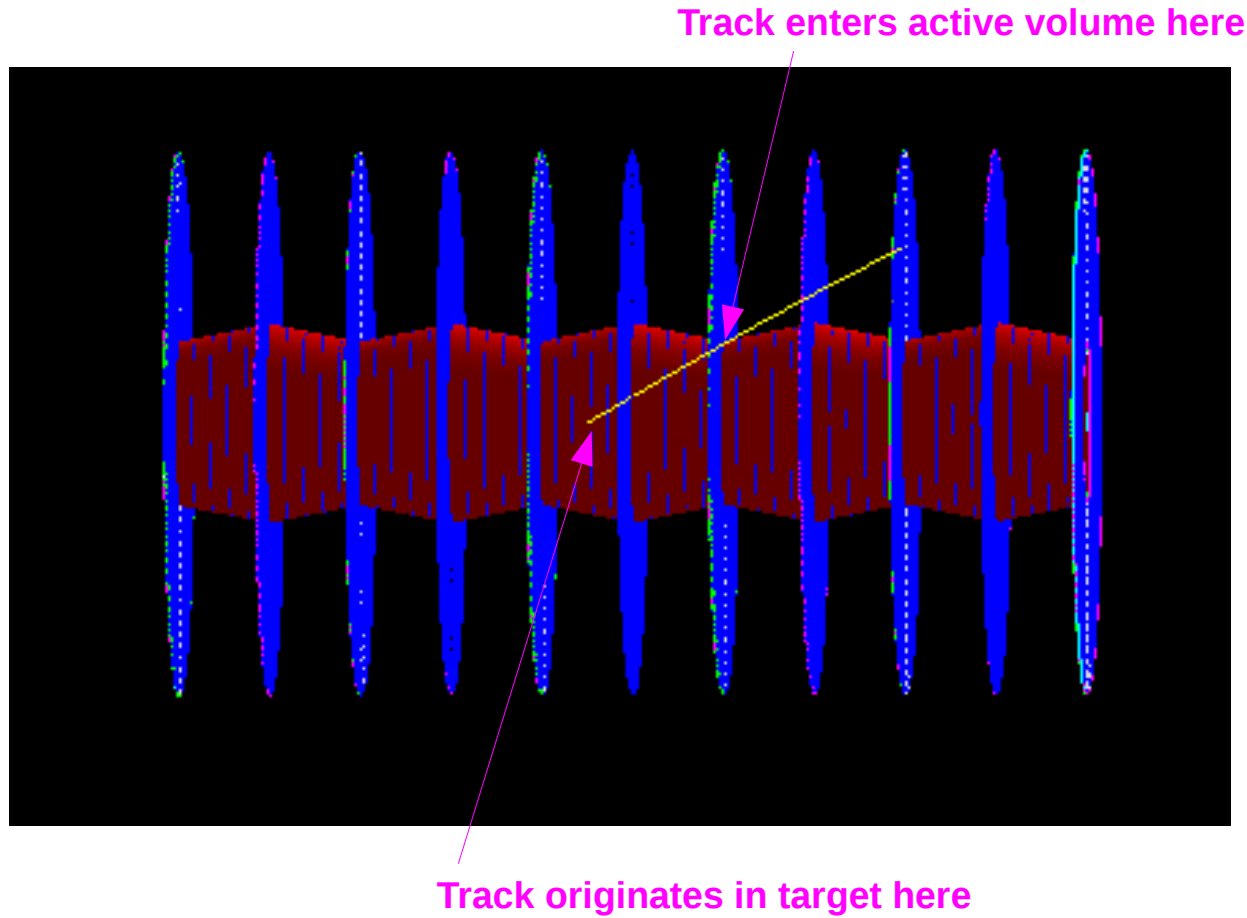
hRvZHits



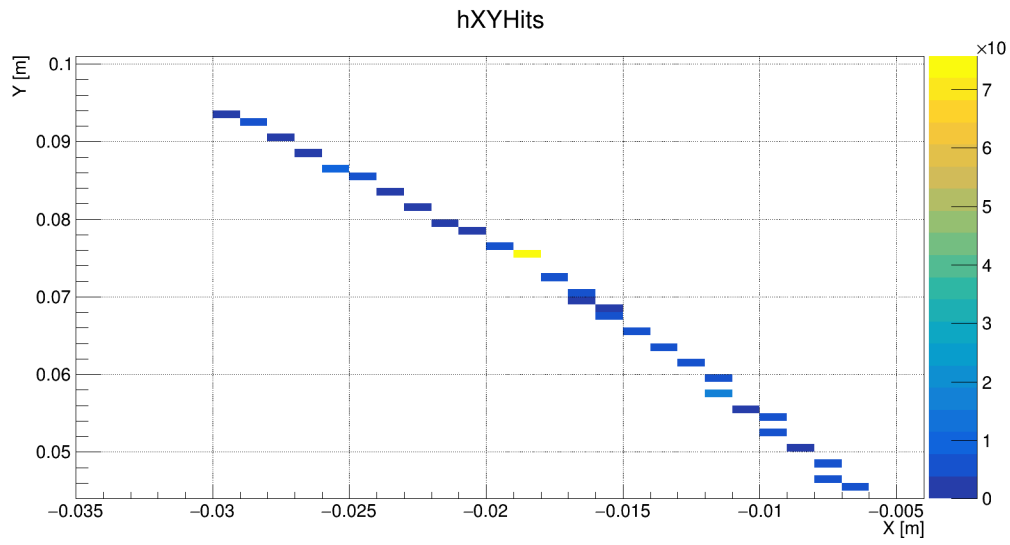
hRvZHits



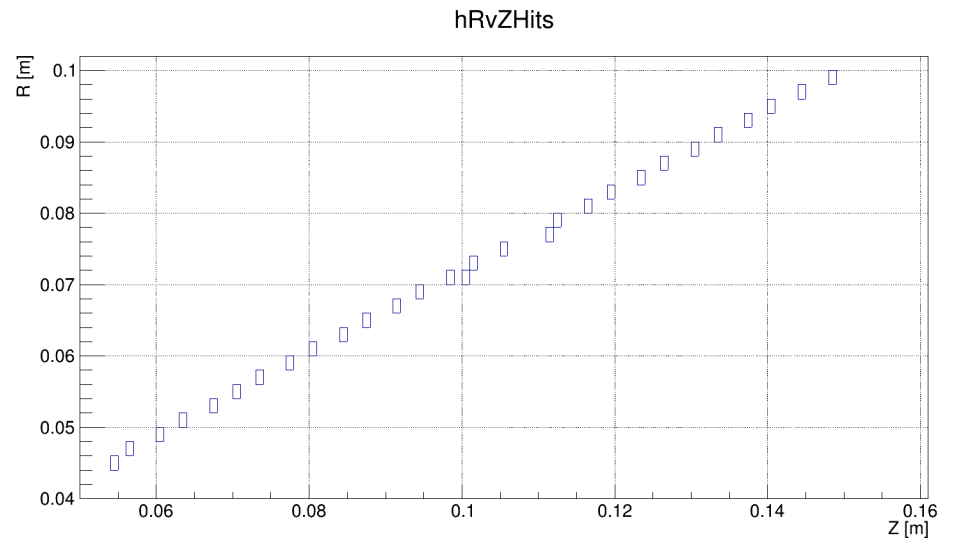
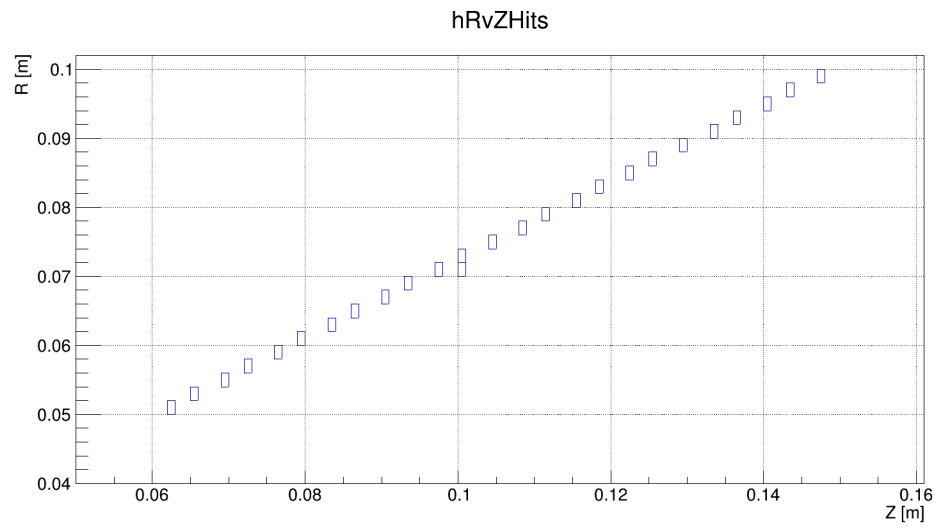
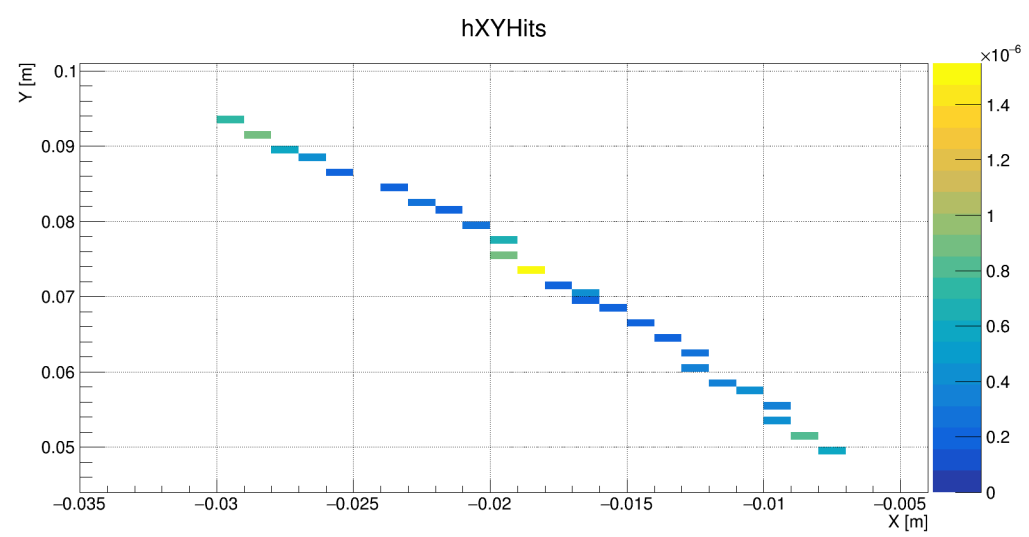
Track: momentum = 400MeV/c; Theta = 30degrees; Phi = 90 degrees; Z = -2.5cm



Non-Conical

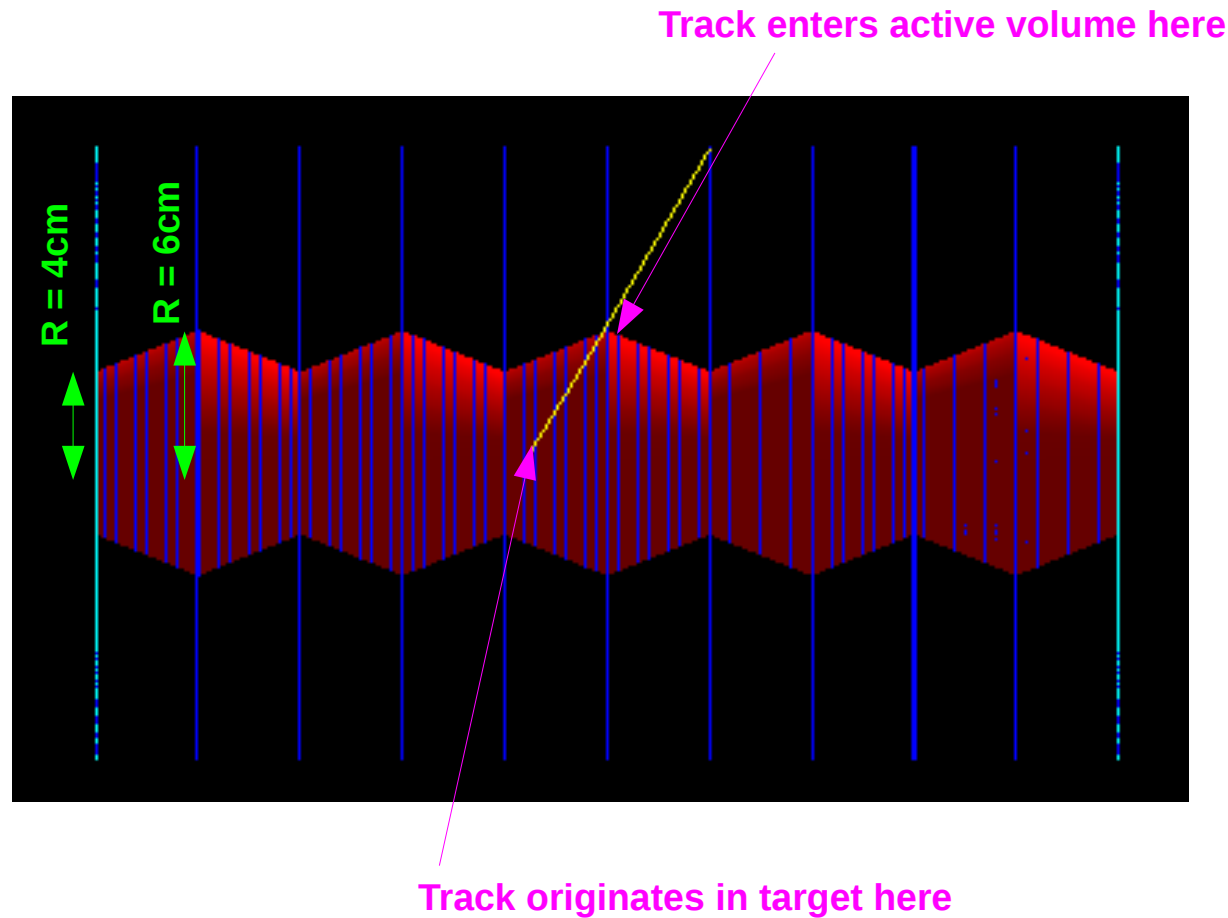


Conical

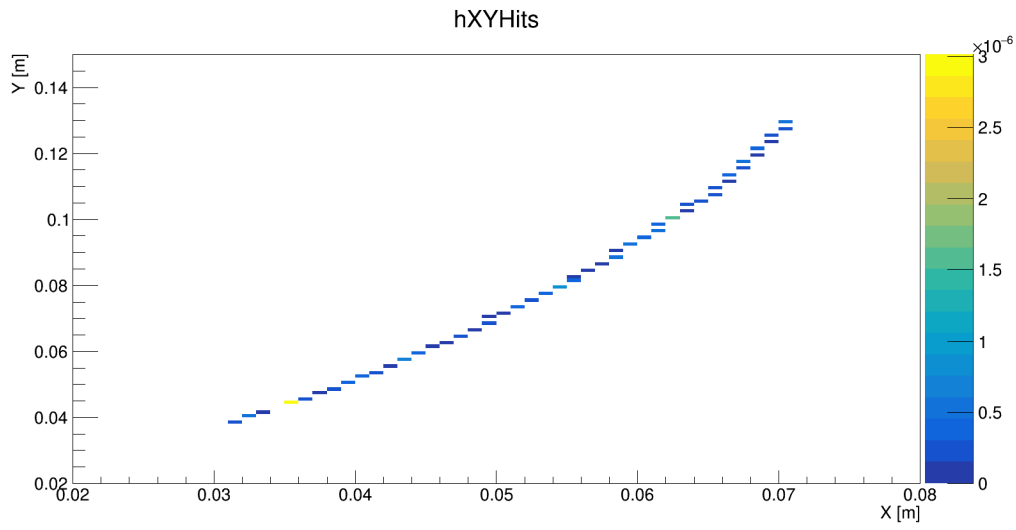


Checked change in radii of conical shape inner wall to 4 - 6cm

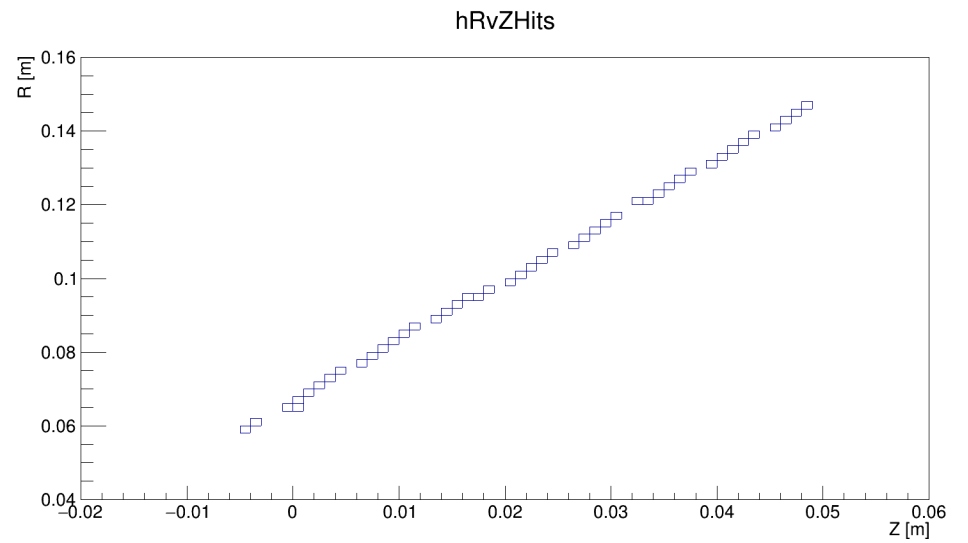
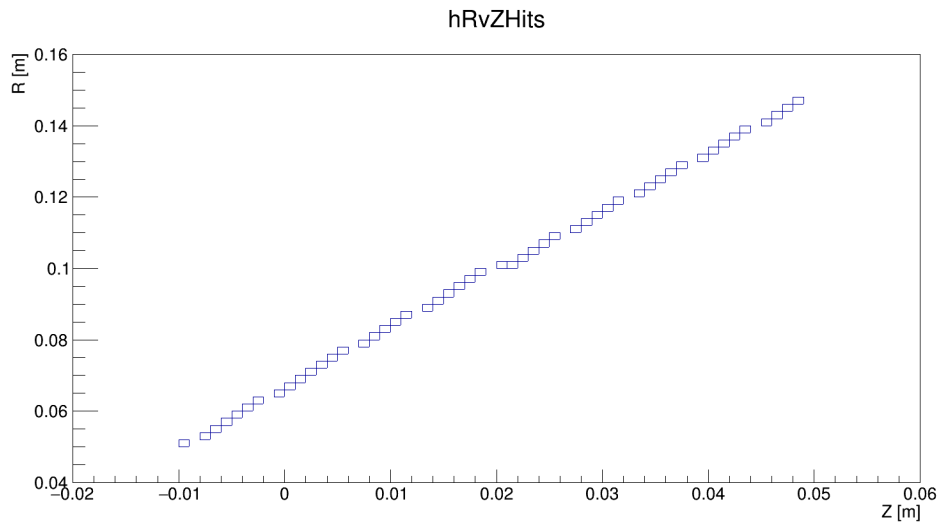
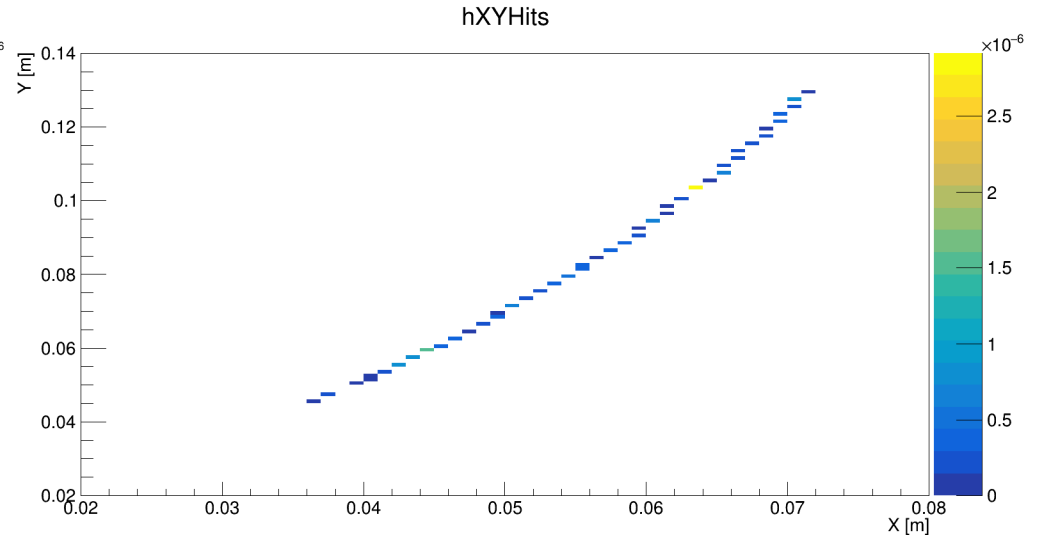
Track: momentum = 400MeV/c; Theta = 30degrees; Phi = 90 degrees; Z = -3.8cm



Non-Conical



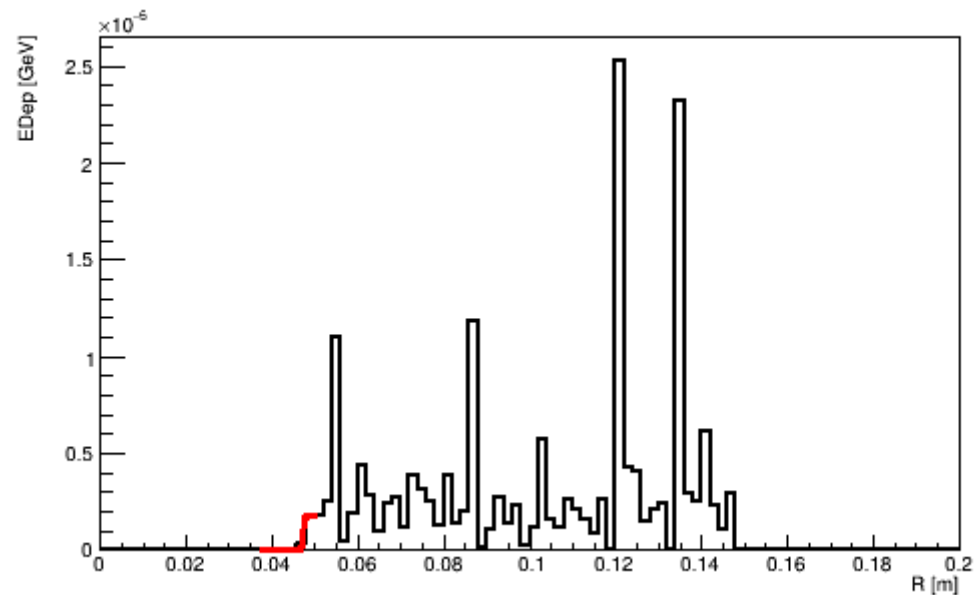
Conical



Determining RS from Edep V R

- Z position of track vertex scanned in 1cm steps
- At each Z position:
- Tracks sent through geometry in G4
- For each hit along track histogram of Edep V r filled
- Edep V r fitted with formula below (S=amplitude; RS=step location; D=diffusivity), step function to find location of first edep in volume

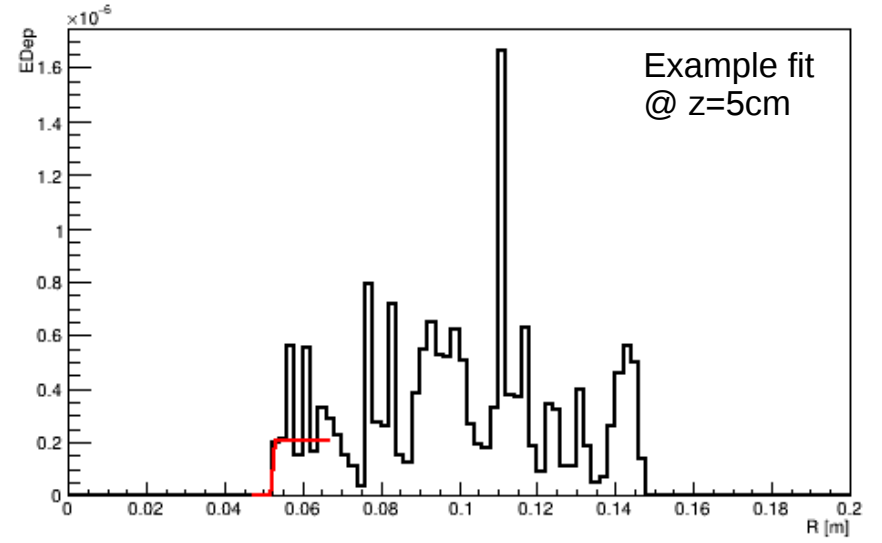
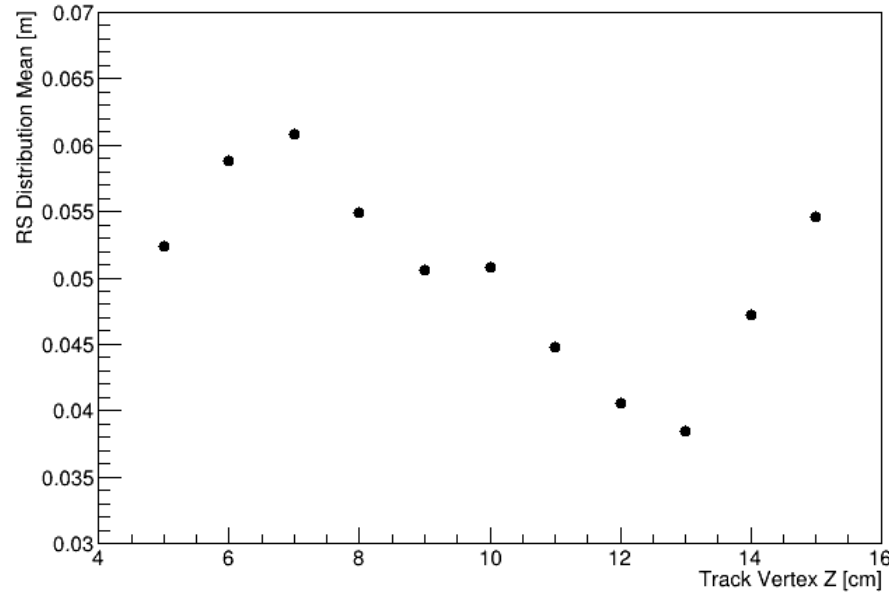
$$f(r) = \frac{S}{1 + \exp\left(\frac{RS - r}{D}\right)}$$



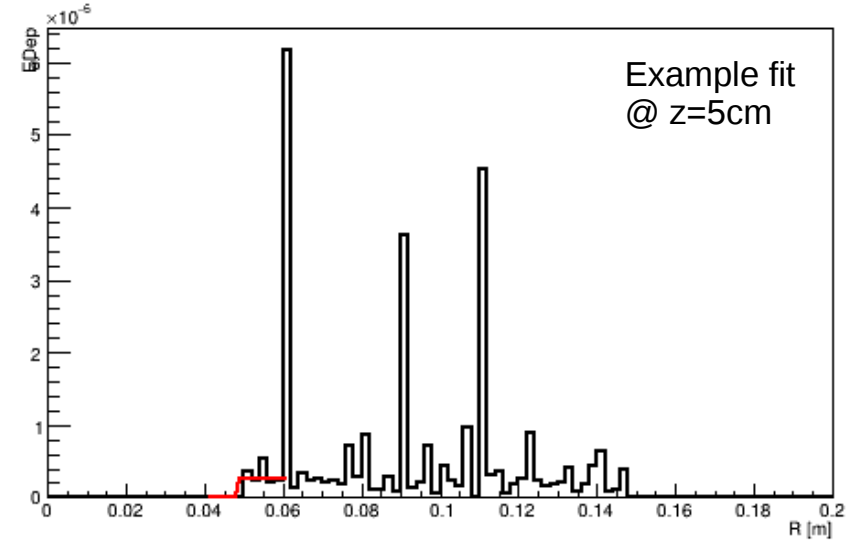
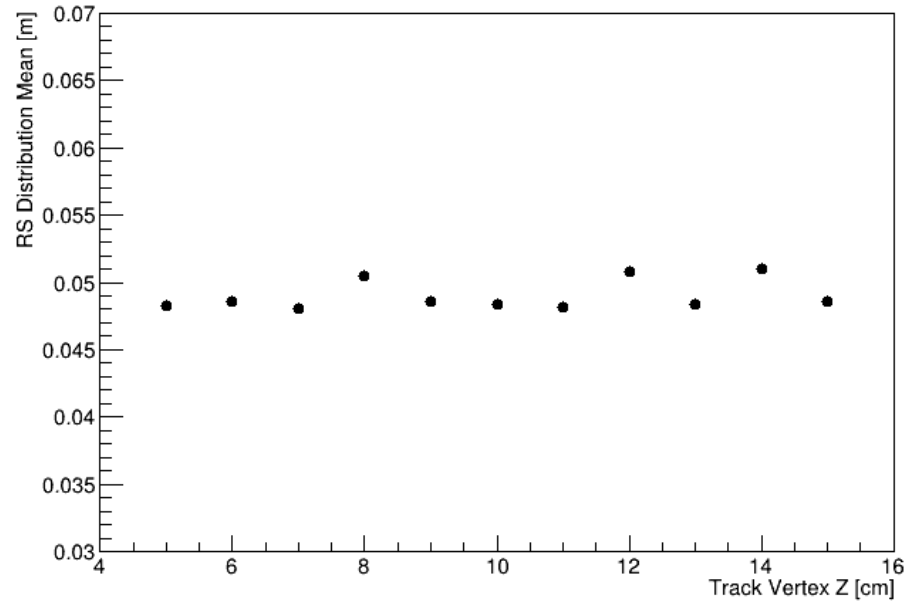
Perform this RS fit study, for geometry of cone with inner radii varying from r=4cm to r=6cm

One track; 400MeV/c; Theta=60deg; Phi=45deg; Scan z position of vertex

Conical
(varying
4cm -
6cm)

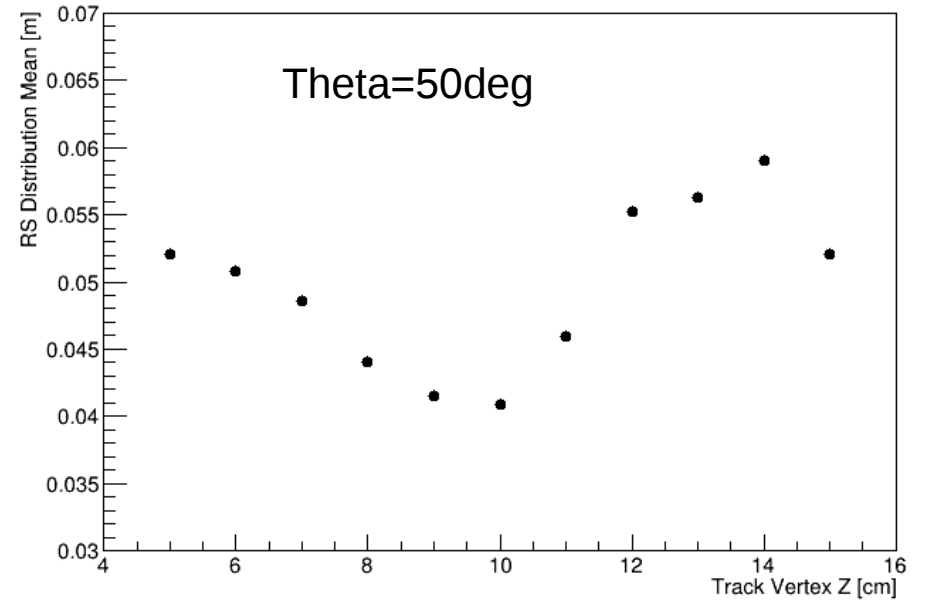
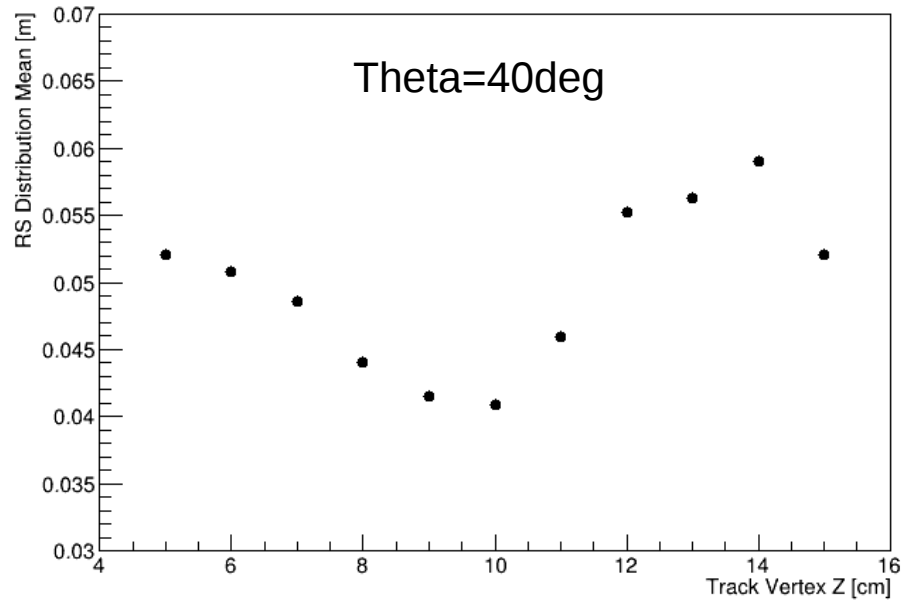


Non
conical

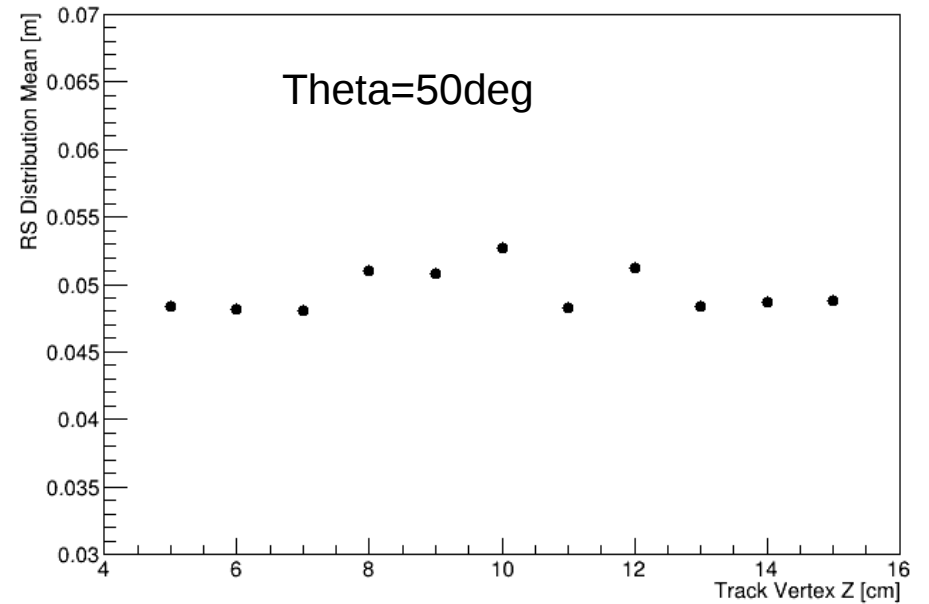
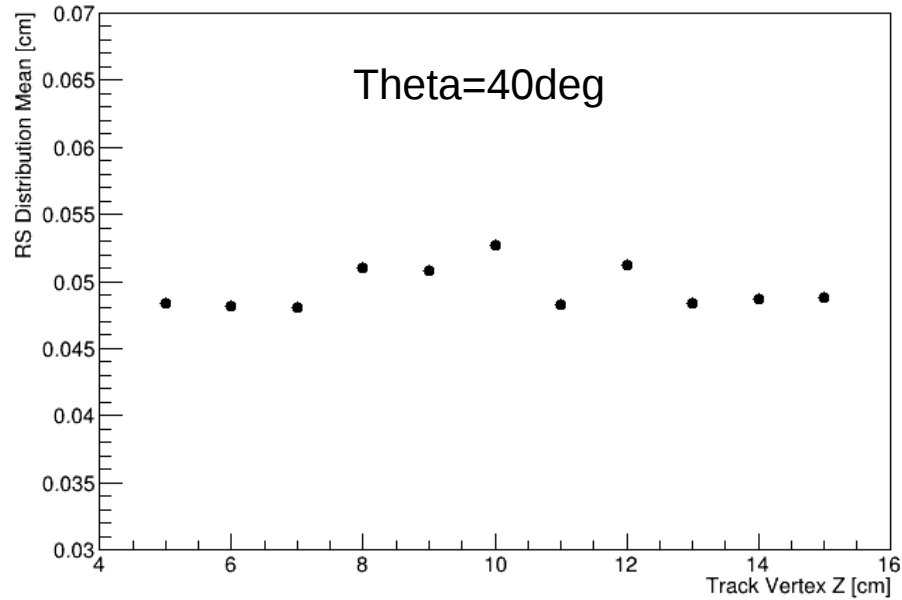


One track; 400MeV/c; Phi=45deg; Scan z position of vertex

Conical
(varying
4cm -
6cm)

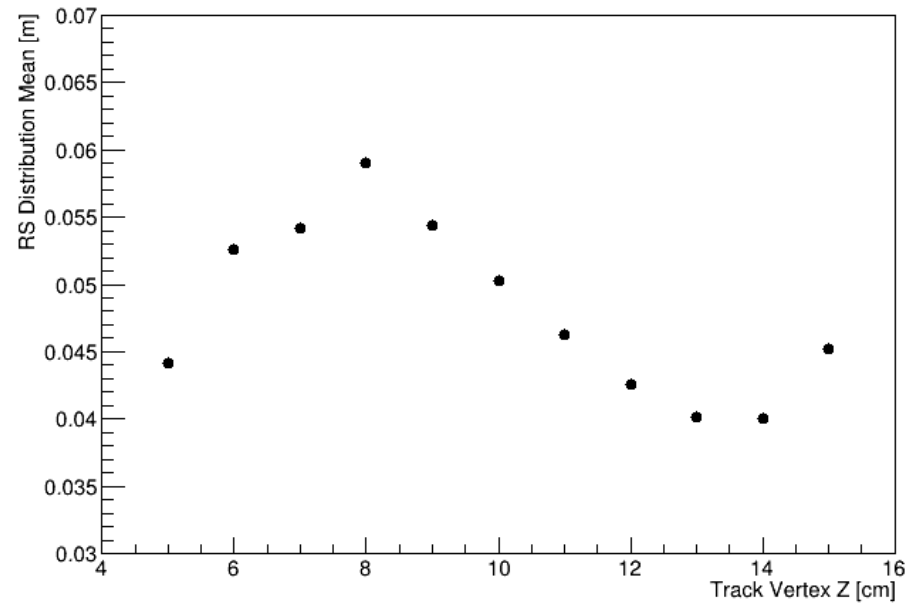


Non
conical

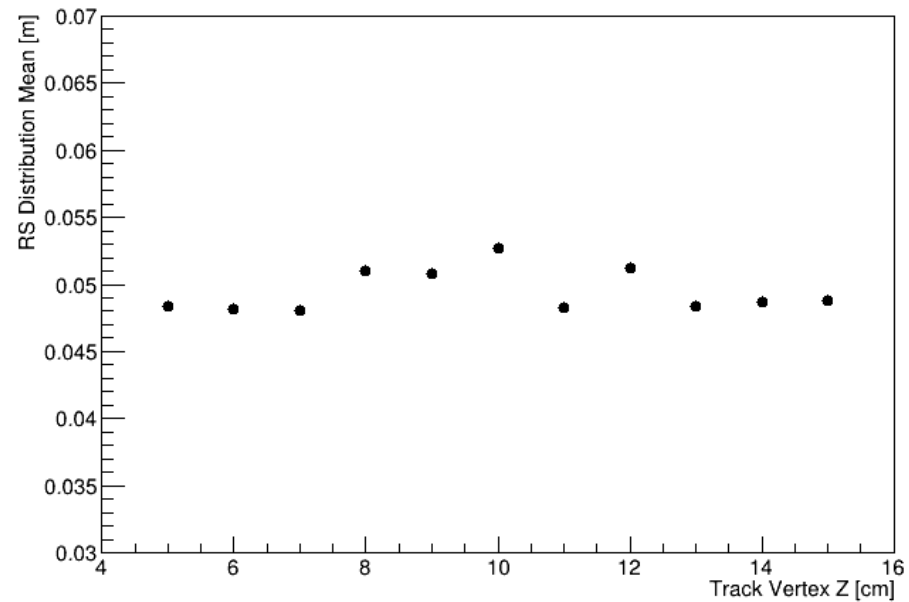


One track; 400MeV/c; Theta=70deg; Phi=45deg; Scan z position of vertex

Conical
(varying
4cm -
6cm)

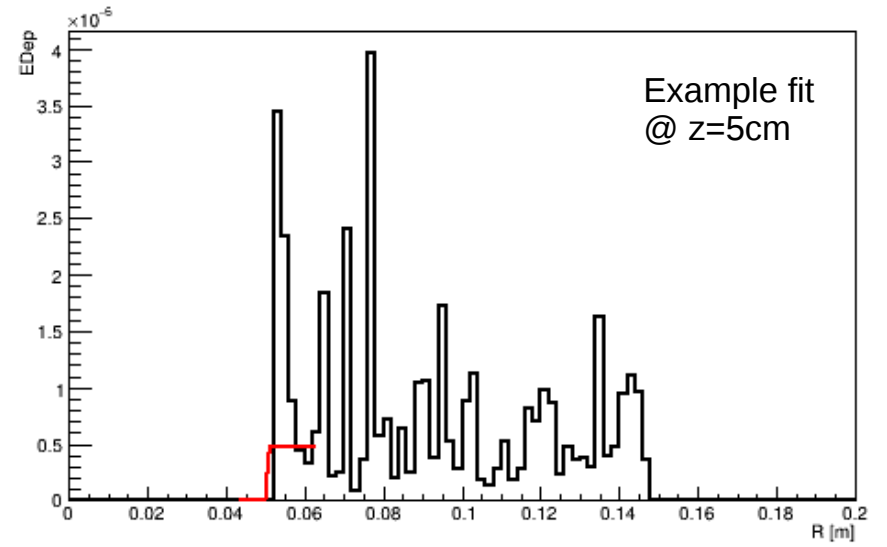
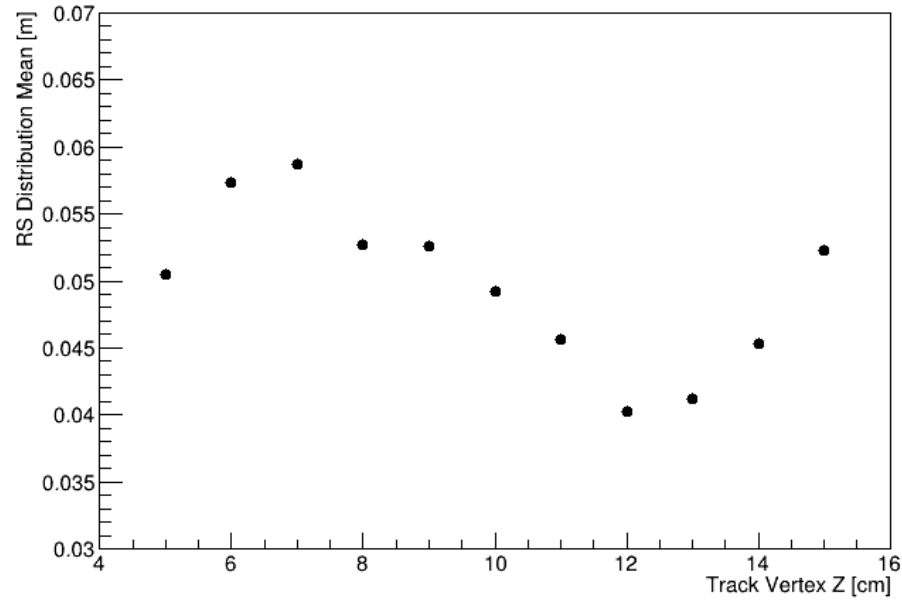


Non
conical

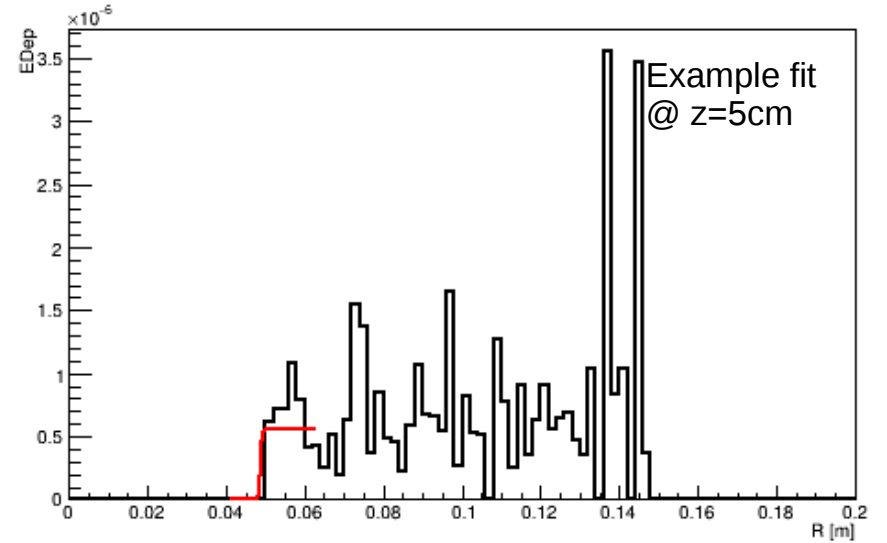
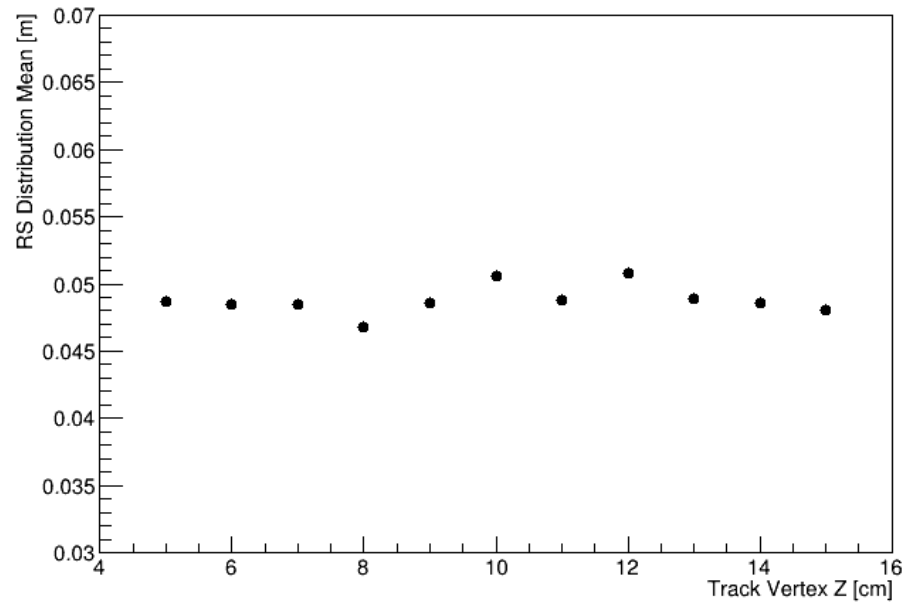


One track; 250MeV/c; Theta=60deg; Phi=45deg; Scan z position of vertex

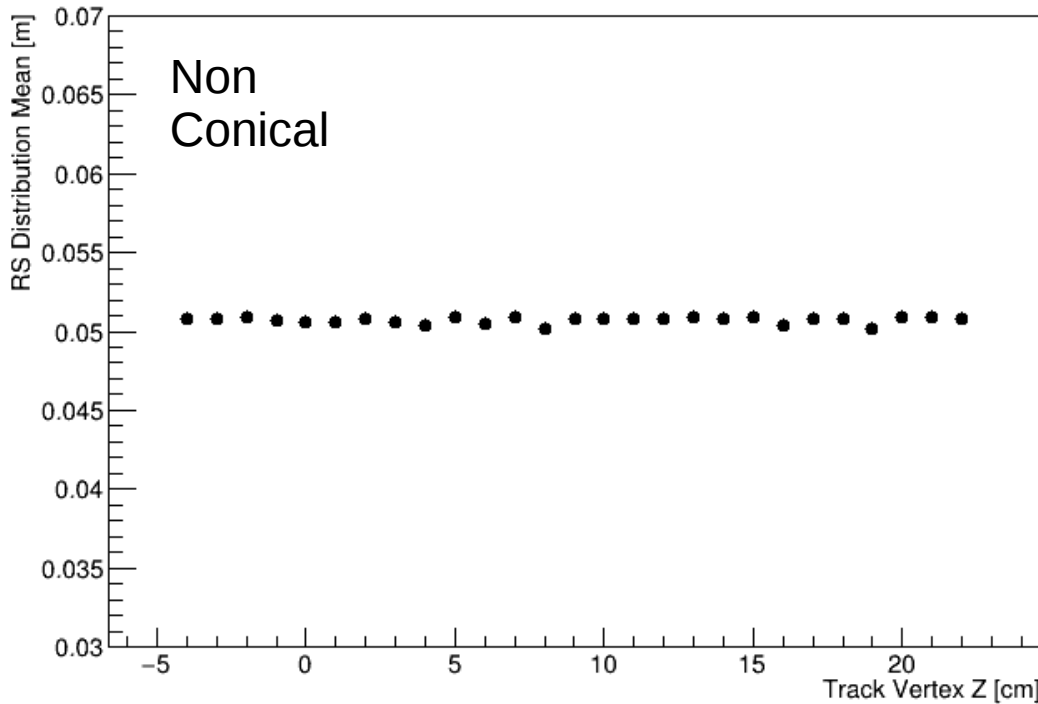
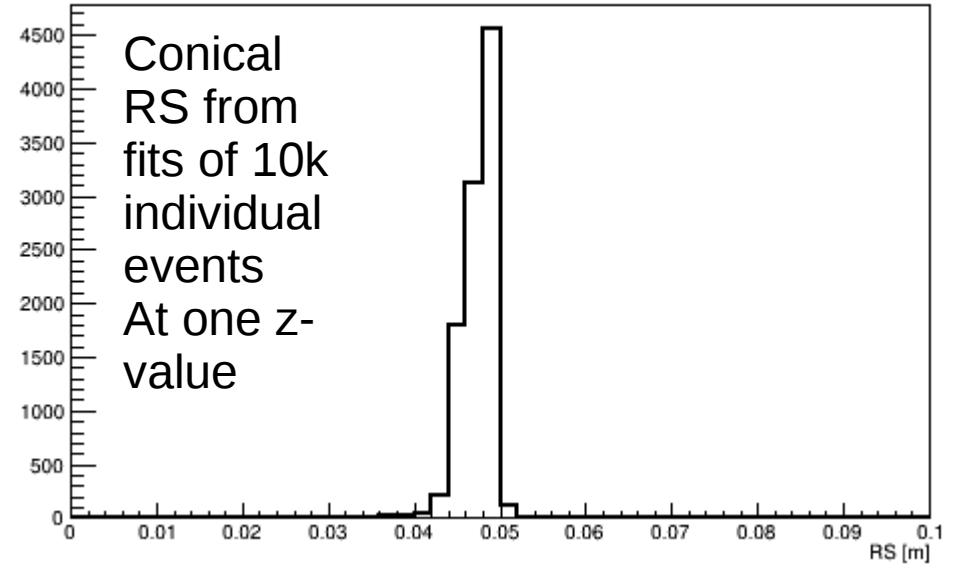
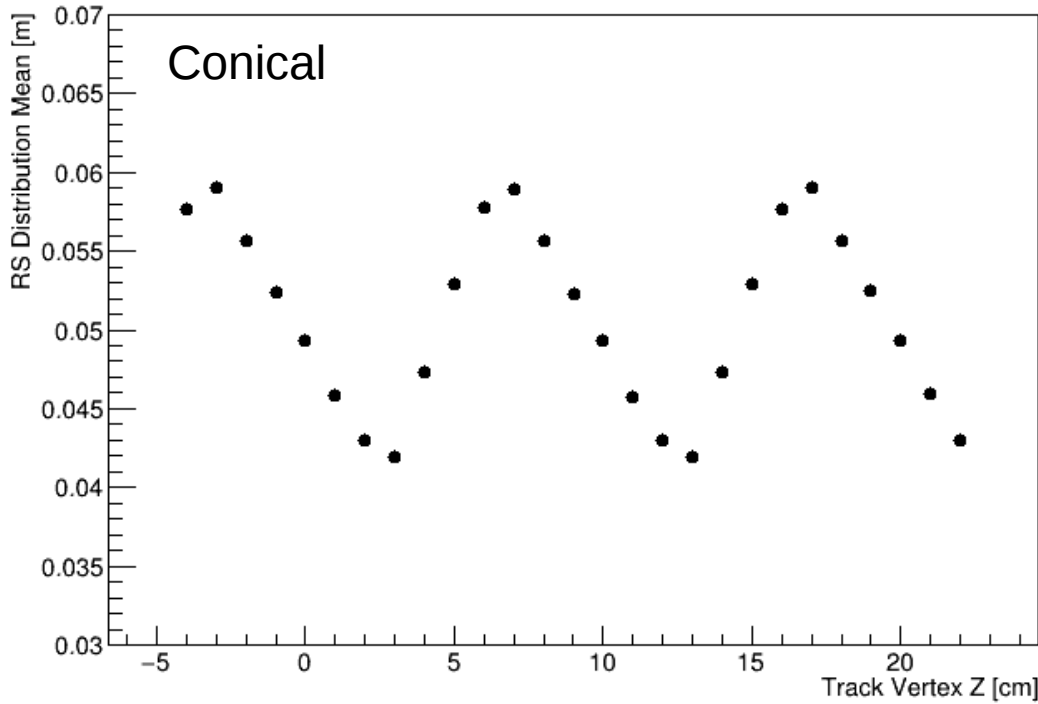
Conical
(varying
4cm -
6cm)



Non
conical



Repeat for 10k tracks and plot mean RS values:



- Track parameters:
 - $\theta=60^\circ$;
 - $\Phi=45^\circ$;
 - $P_{tot}=400\text{MeV}/c$
- Next step – include timing info