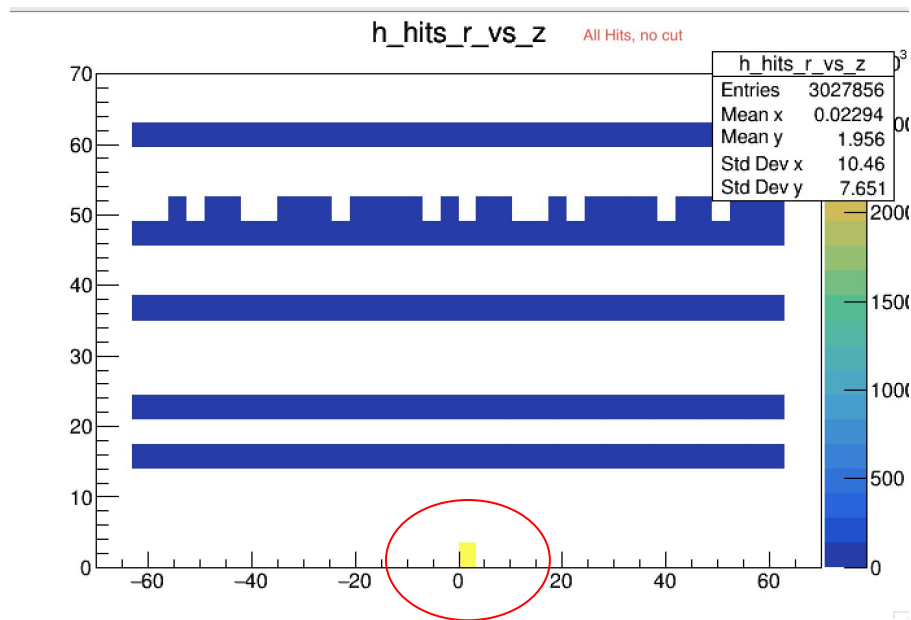


C3 Beam Background Studies

Elias Mettner - Jan 19, 2023

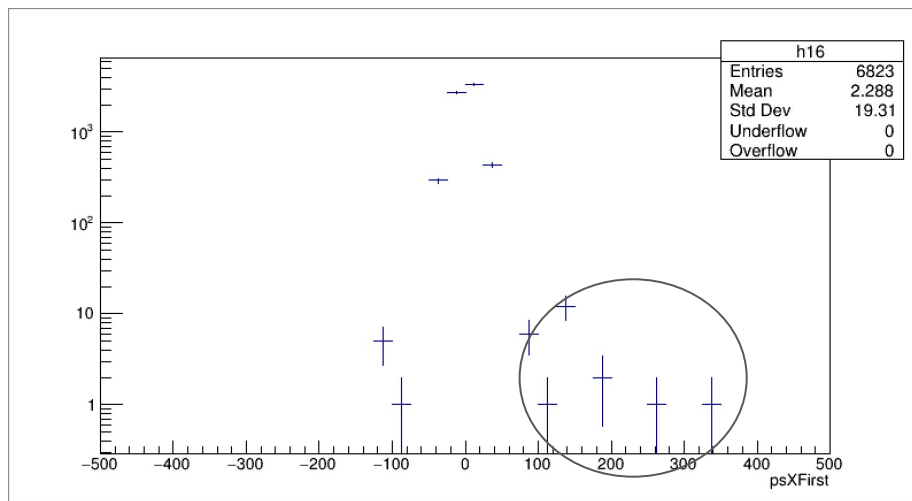
Large Amount of Hits at (0,0,0)

- 2D histogram of the position of the hits in tracker shows a large amount of hits positioned directly at (0,0,0)



Analyzing pT of Origin Hits

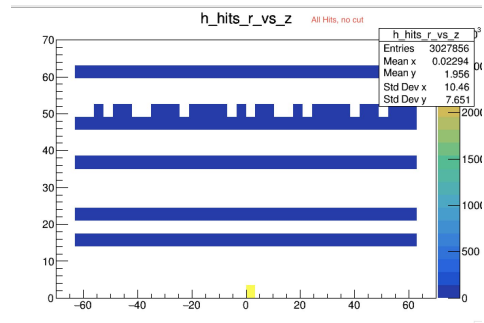
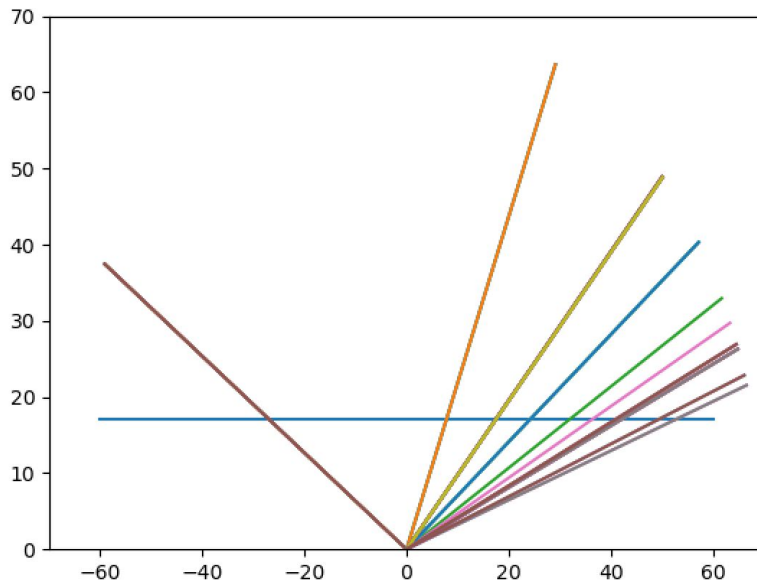
- pT of most of these hits is very small
 - We are assuming that these are simply hits that did not leave a sensible hit in any layer of the detector, but were still produced
 - Hits were placed at (0,0,0) for convenience
- However, some hits clearly have the pT to make it to the first layer (>200 MeV/c)



High Momenta Case

- There must be another reason why high-pT hits don't reach tracker
 - Perhaps their angle just isn't outward enough
- Plotted a line from (0,0,0) of each high-pT hit at their respective angle hoping to see the lines not reach the first layer
 - Unfortunately, not the case

r_vs_z position - angle of origin hits > 200 MeV



Next Steps

- We suspect something else is still going on
 - Explainable or just a bug?
 - Lindsey and I meeting on Monday to go over all ideas and possibilities
- Perhaps drawing the angled lines may not be useful
 - (?) If our assumption that these hits are placed at $(0,0,0)$ for convenience is true, then drawing the lines starting at $(0,0,0)$ may be incorrect - but we don't know the correct place to draw them from
- We're ready to move on to different analyses and will do so soon