

Updated GEM Tracking

Mike Nycz

Run replayed with updated GEM tracking

4663,4664,4667,**4680**,4776,**4780,4781,4783**

Run 4783: Trigger 3

10 μ A

TS3 (PS = 3): Scin C + Scin D + Sh Sum

Scin C (31 mV), Scin D (35 mV), Sh Sum(15)

TS4 (PS = 0): Sh Sum

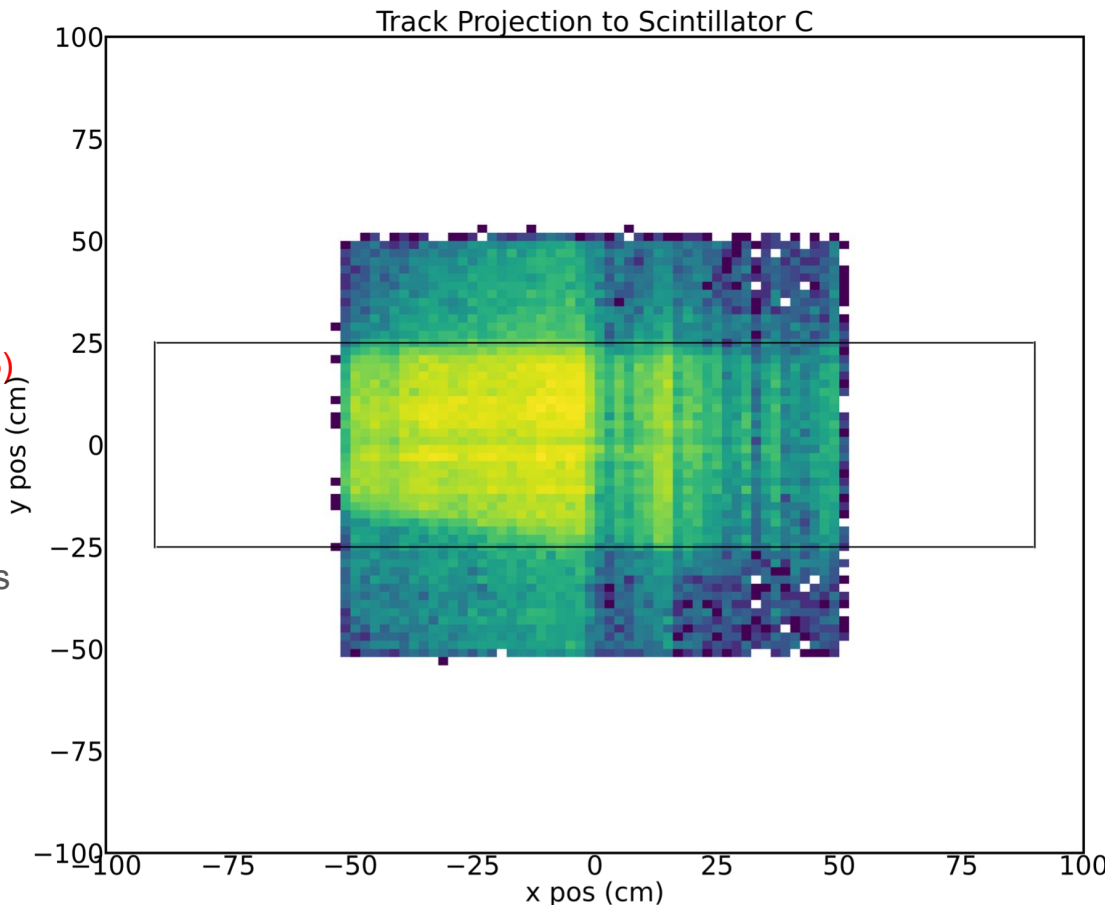
180 mV

Track projection from 1st GEM: 1.879 meters

To do

Point back to target position

(ignore events from beamline)



Run 4783: Trigger 3

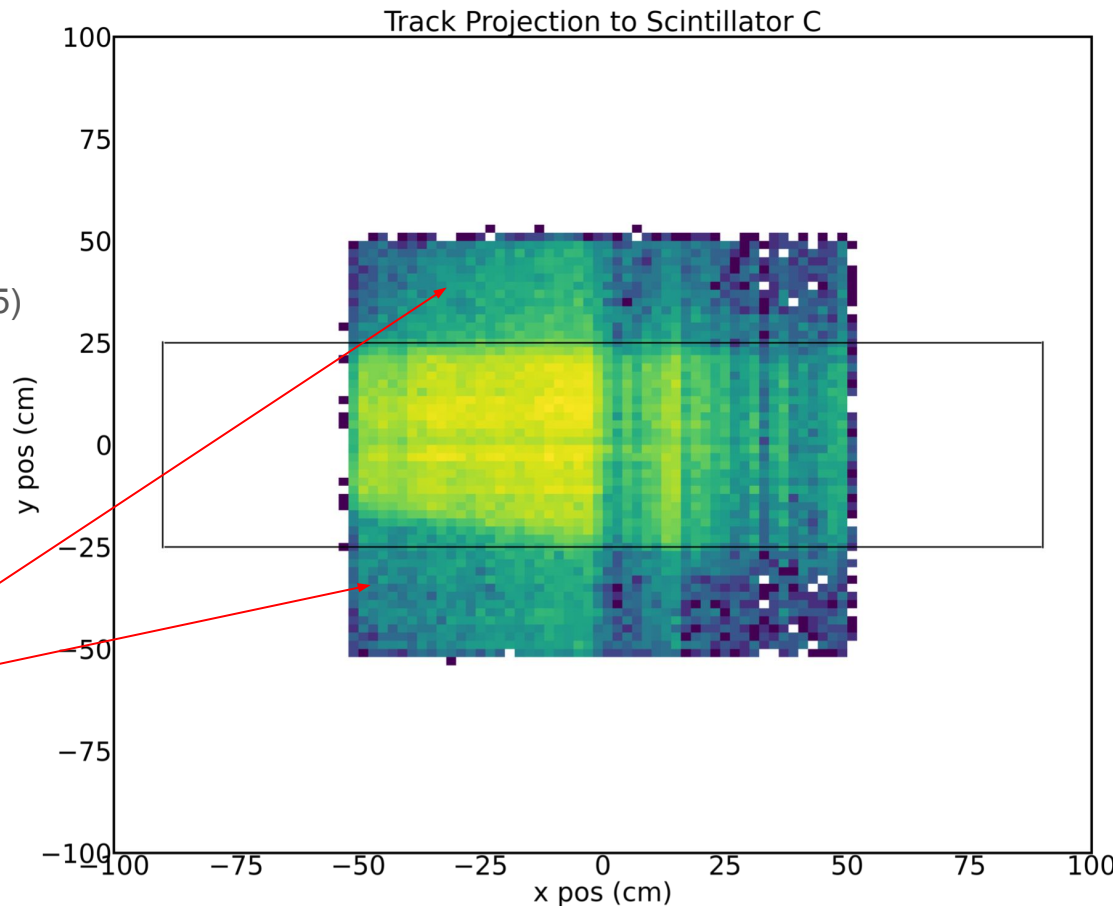
TS3 (PS = 3): Scin C + Scin D + Sh Sum

Scin C (31 mV), Scin D (35 mV), Sh Sum(15)

TS4 (PS = 0): Sh Sum

180 mV

~20% of of Trigger 3 events have the track with smallest chi-sq outside of the Scin C geometry

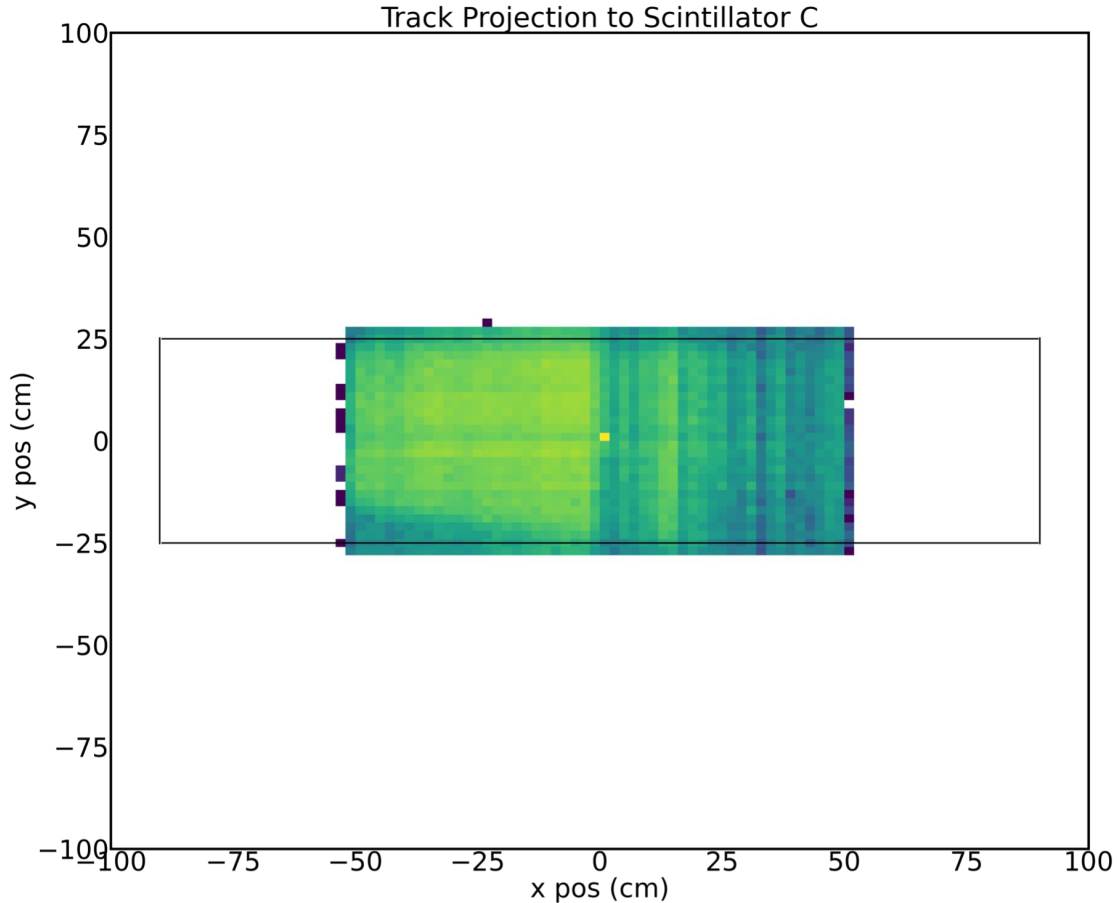


Run 4783: Trigger 3

For each event, can store 10 possible tracks (ordered)

~10% events have a track in Scin C

~10% events do not have a multi-track which passes through the scintillator



Run 4783: Trigger 4

10 μ A

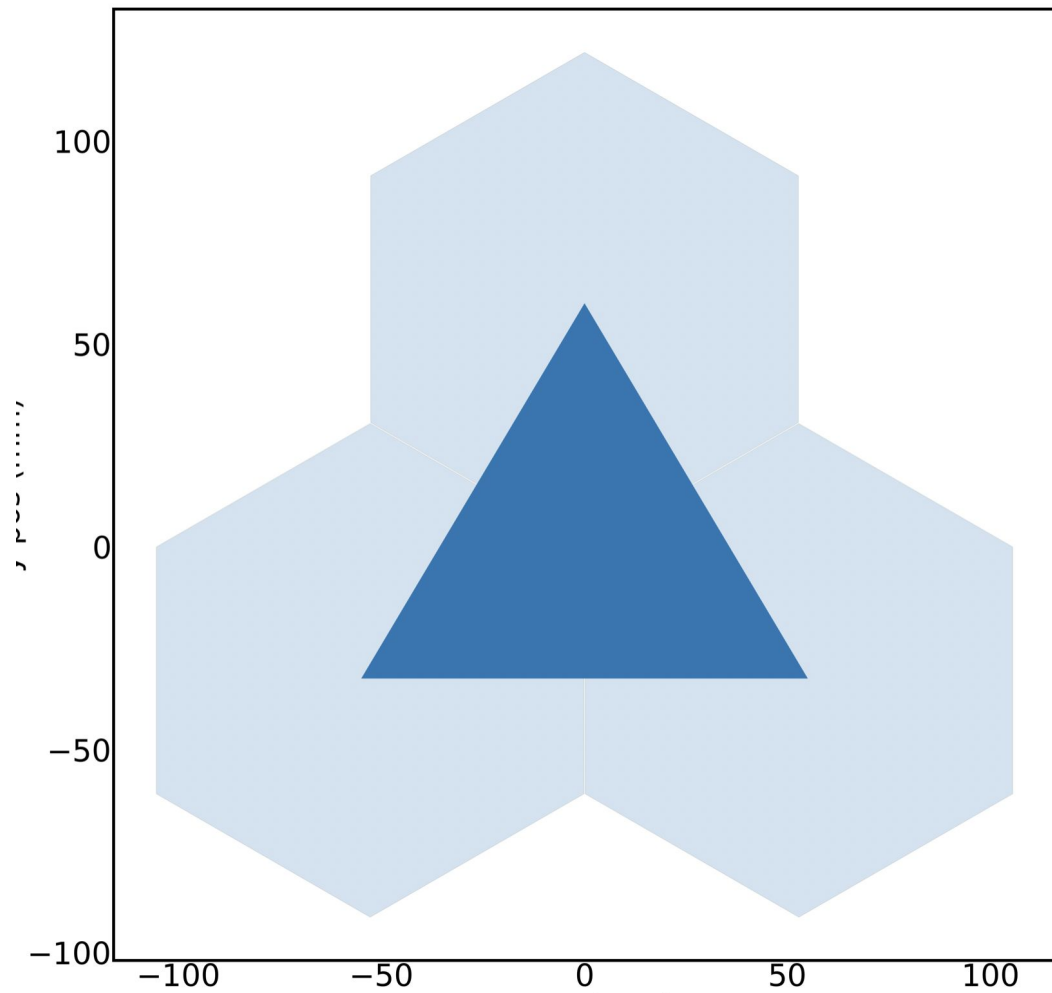
TS3 (PS = 3): Scin C + Scin D + Sh Sum

Scin C (31 mV), Scin D (35 mV), Sh Sum(15)

TS4 (PS = 0): Sh Sum

180 mV

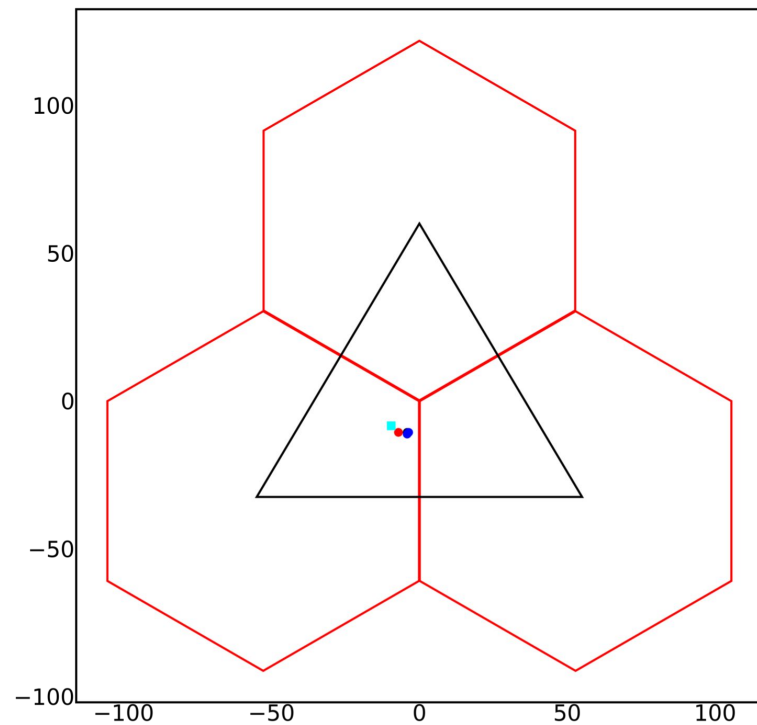
Track projection from 1st GEM to shower: 2.17
meters



Suggestion from Xinzhan:

Utilize Shower cluster position to better
determine best track

(Not a great example since all the tracks are in
the center)

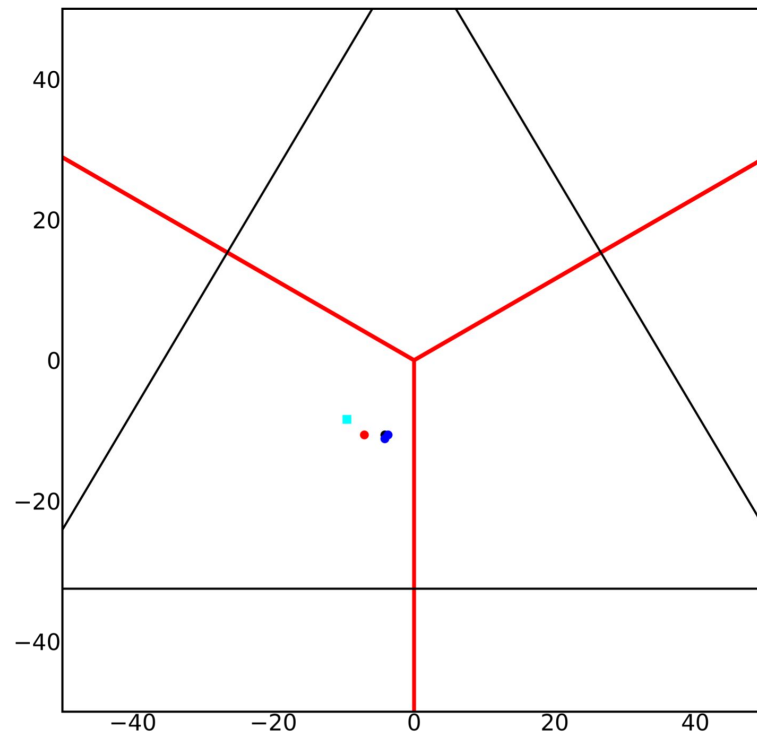


Suggestion from Xinzhan:
Utilize Shower cluster position to to determine
best track

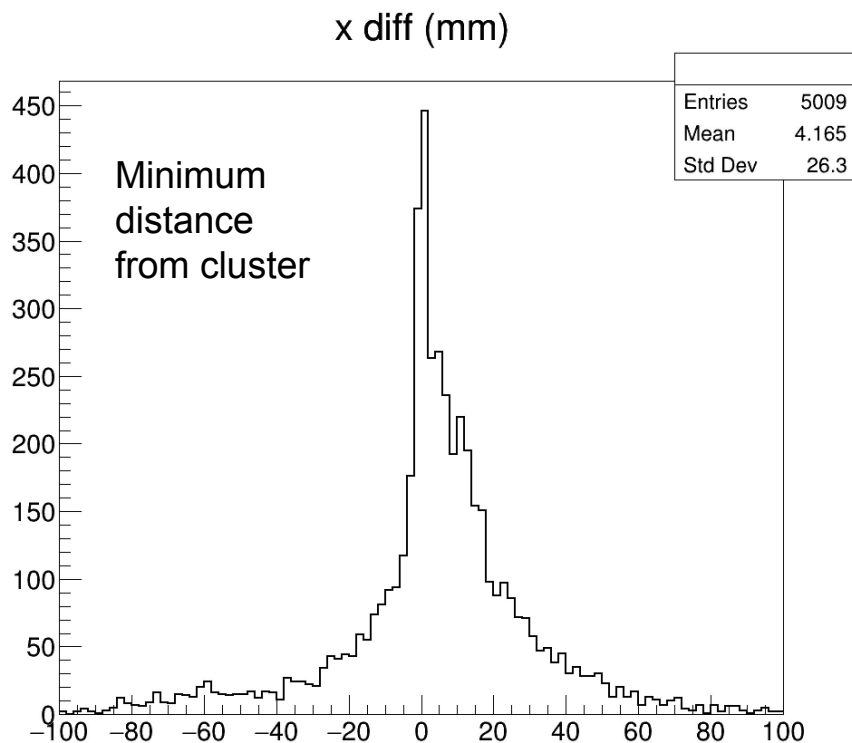
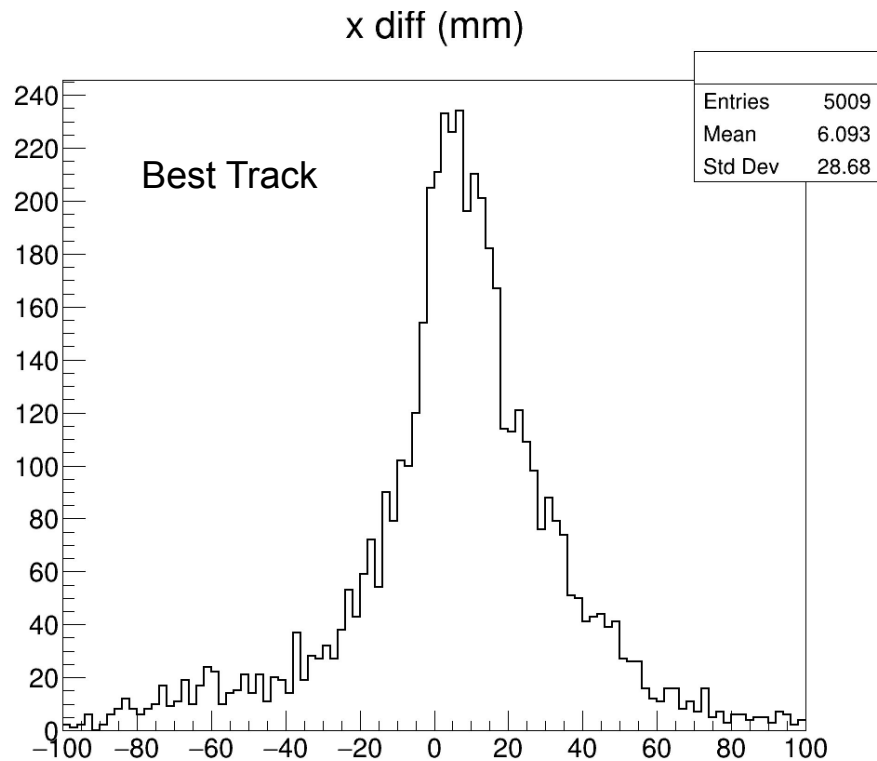
Cyan: Shower Cluster Position

Black point (hidden)- best track

Red Point: Track with minimum distance from
Shower Cluster Position

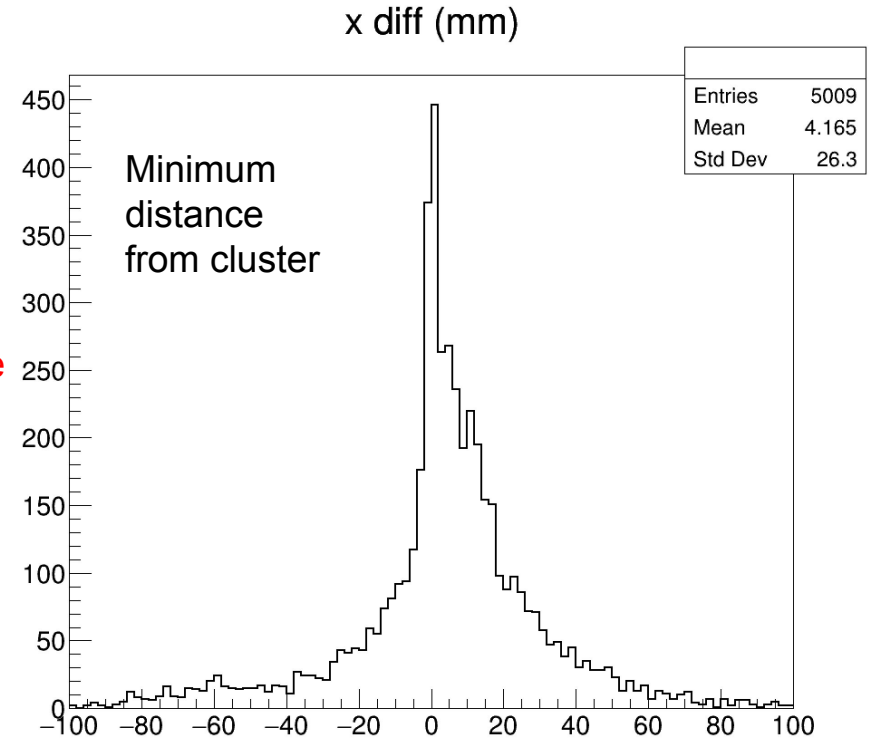
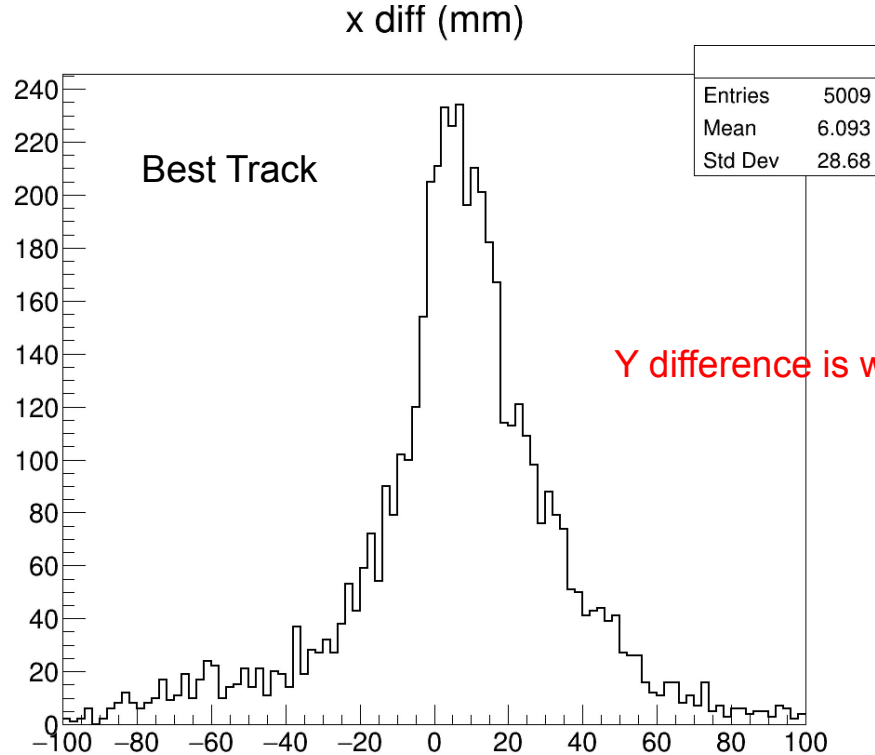


Difference in x position at Shower

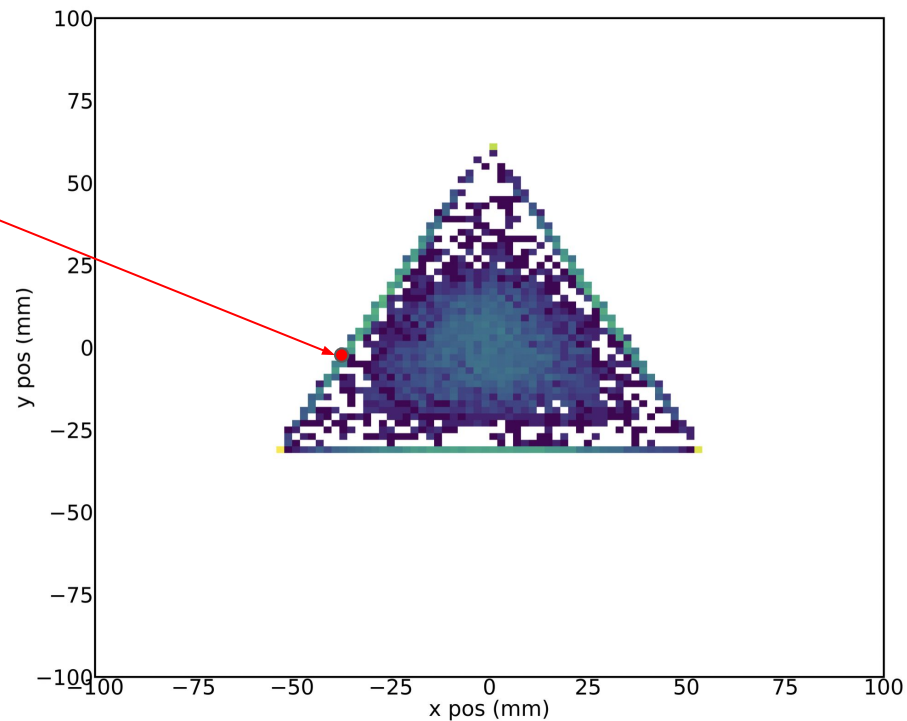


$X_diff = Shower_cluster_x - GEM_Projection_x$

Difference in x position at Shower



Shower cluster position outside of the center, lie along the outside of the triangle



Shower cluster position outside of the center, lie along the outside of the triangle

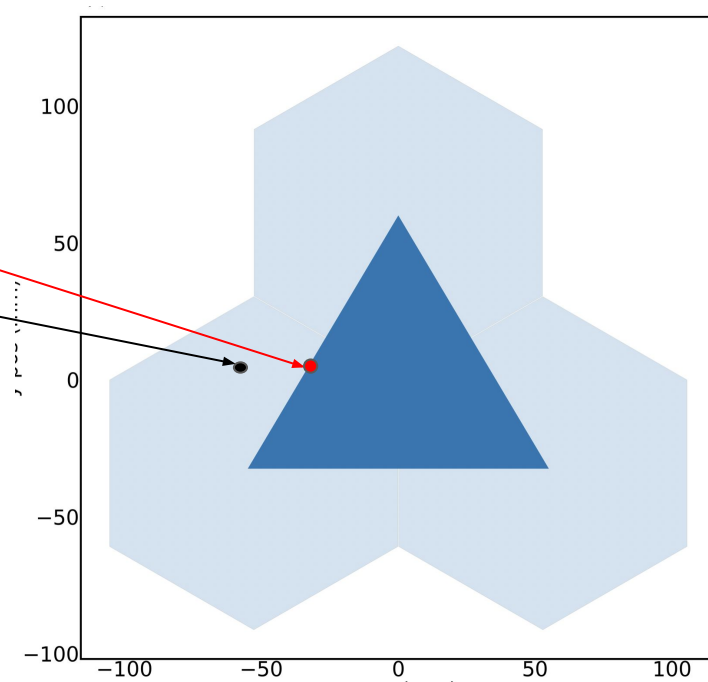
GEM position: no restriction

Add additional cut on the center of GEM cluster?
(and reverse)

Add in trigger detector geometry restrictions?

Add in target info

Then sort by chi-sq



Add in detector / trigger constraints into track algorithm

Target projection