

Impurity Capture Analysis Update

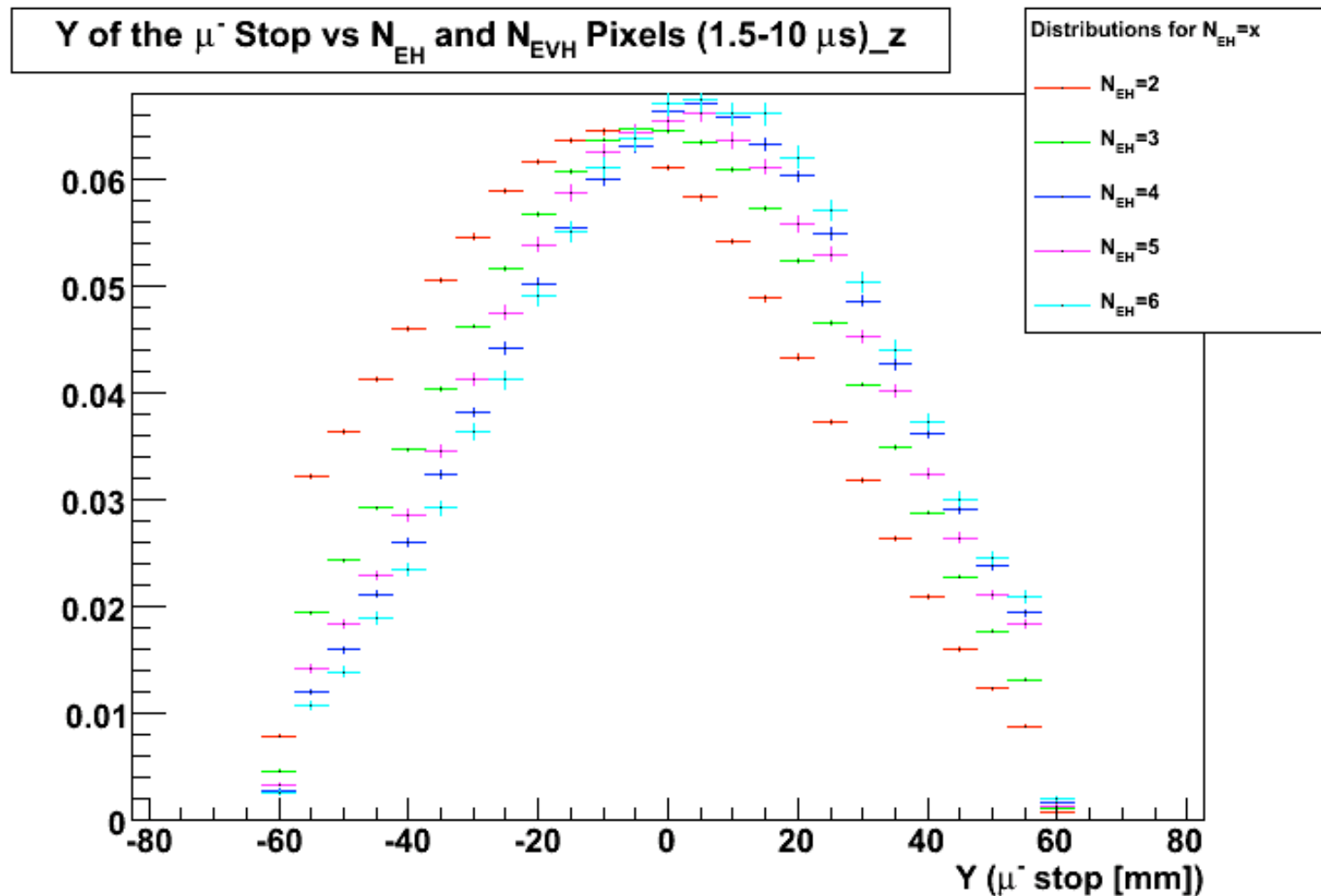
MuCap Meeting - 10/1/2008

Sara Knaack

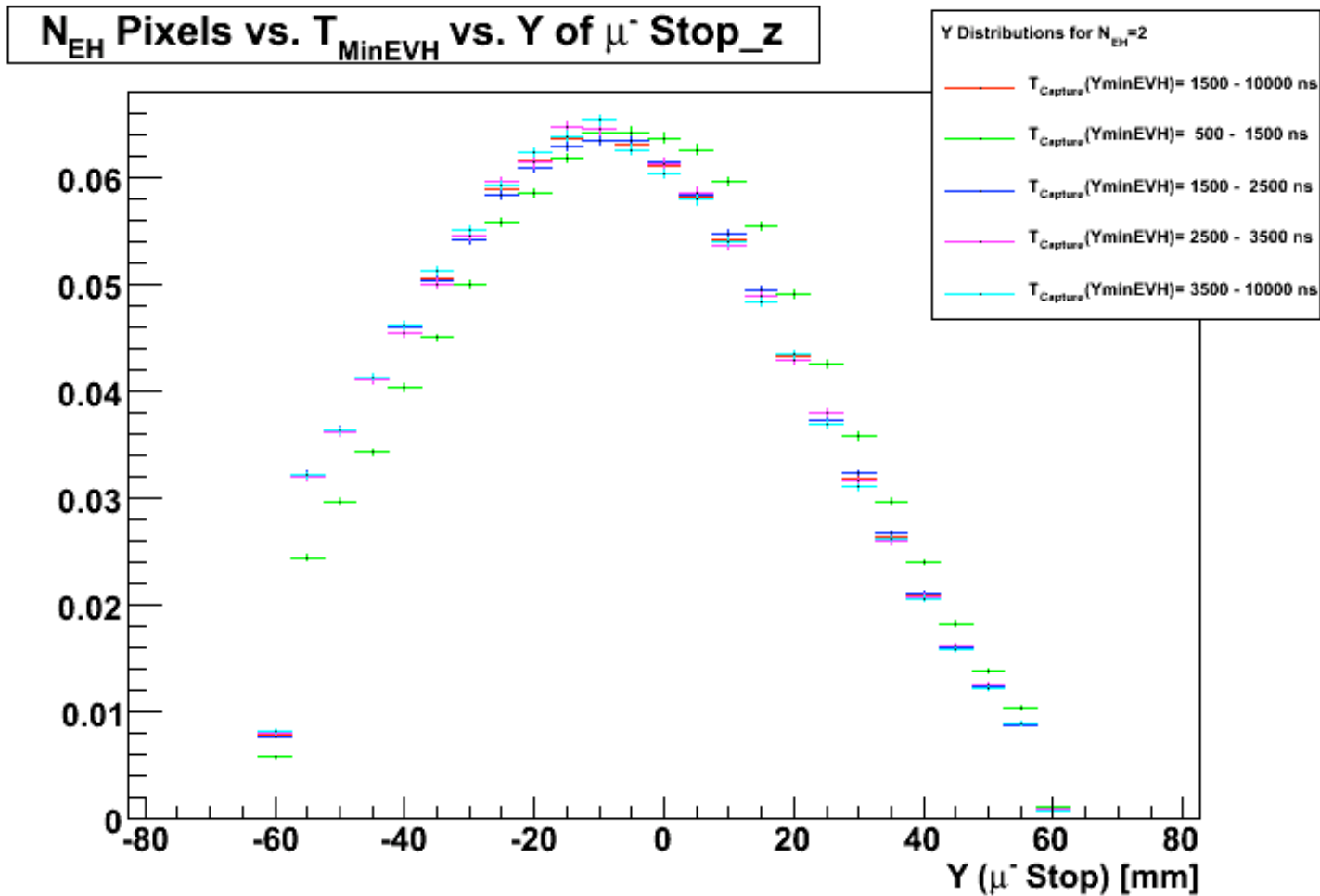
Part 1: The Y distribution variation with N_{EH}

I am going to update you on what I have looked at concerning this muon stop Y distribution variation with the size of the capture island in N of EH pixels.

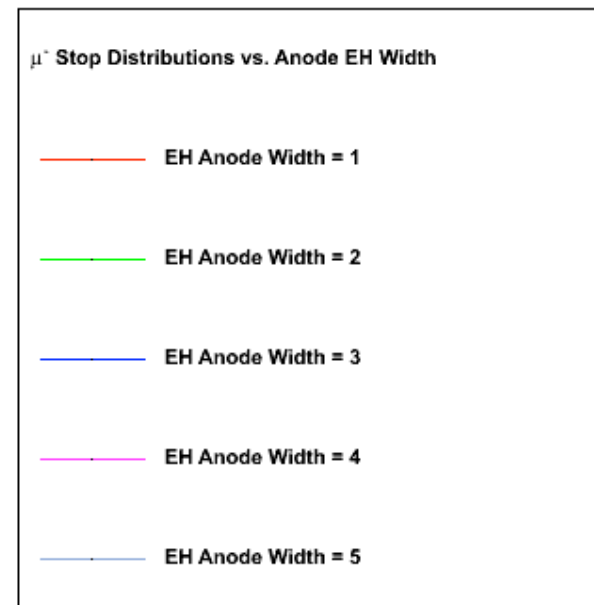
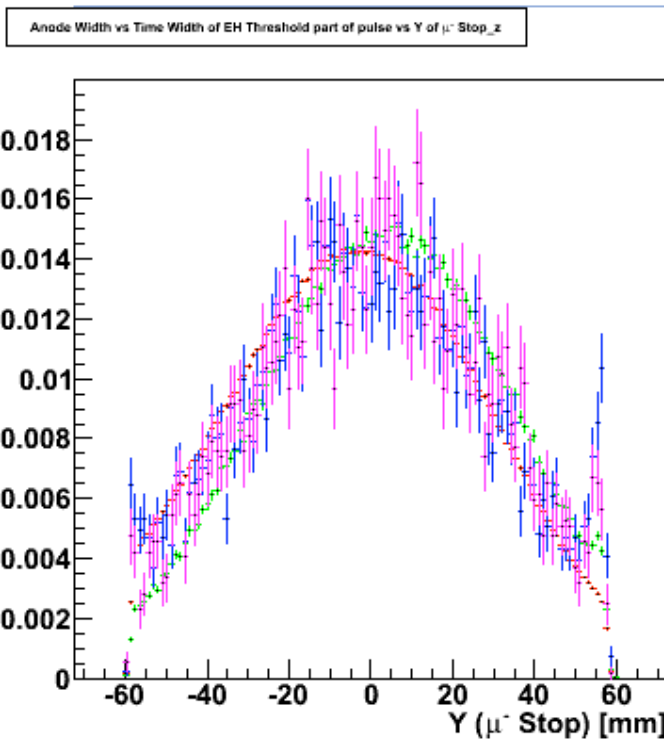
The Y distribution varies more strongly with N_{EH} ...



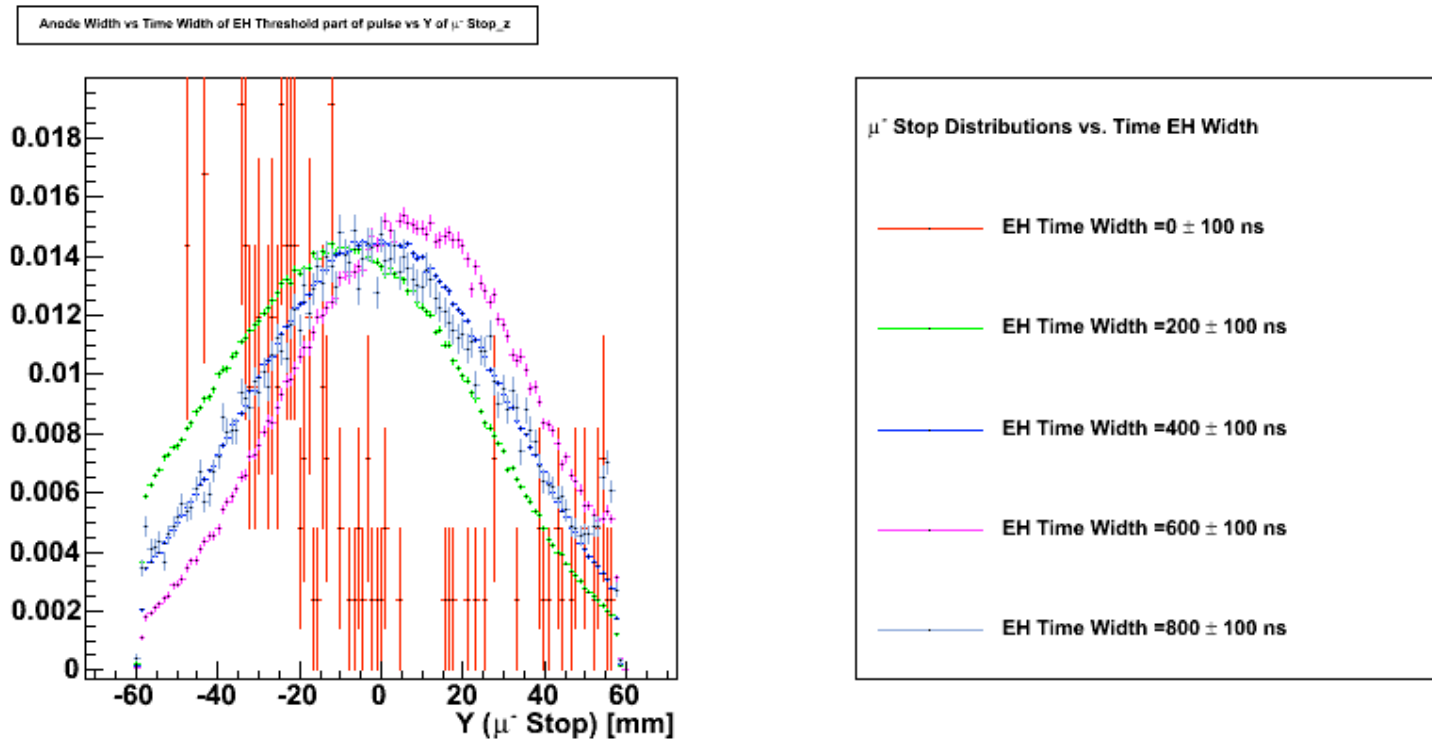
... than with the time of capture. ($T_{\text{capt}}(Y_{\text{minEVH}})$)



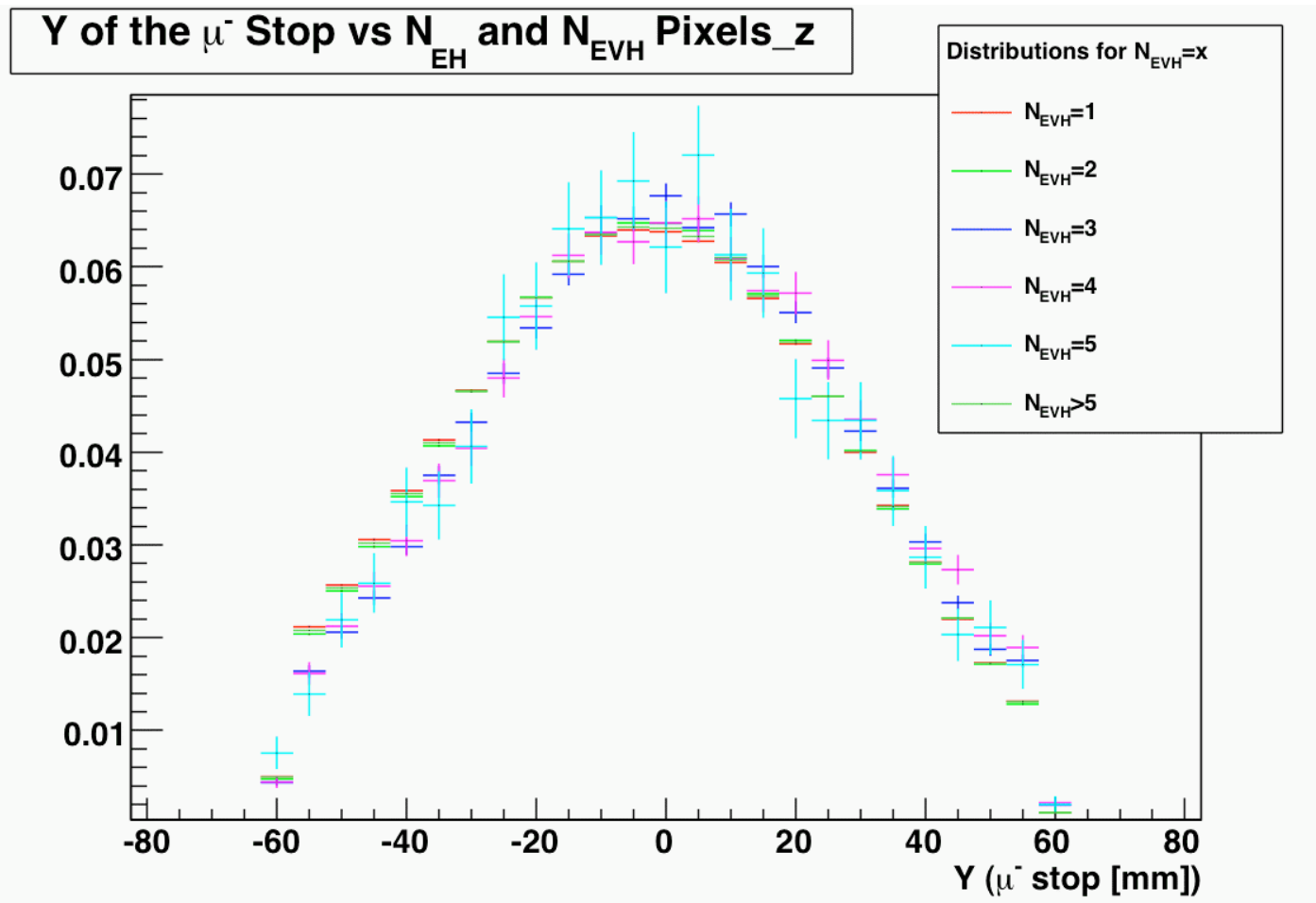
The Y distribution variation with the Anode width of the capture recoil is weaker than..



... the variation with the size of the capture recoil pulse in the drift plane, Y .

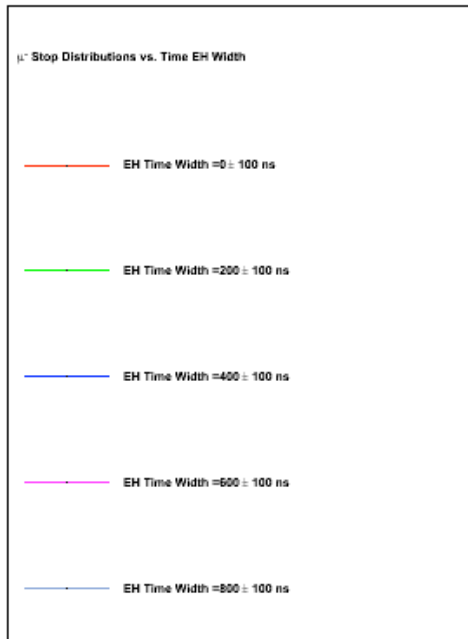
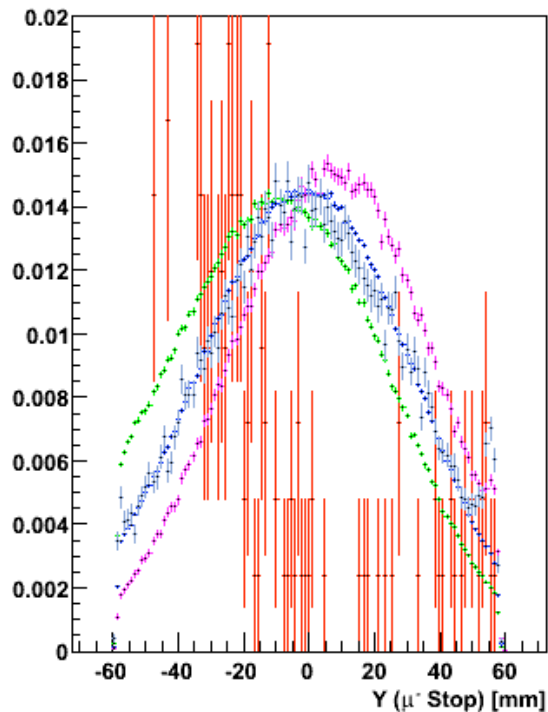


There is not as significant a variation with the N of EVH threshold pixels as with EH.

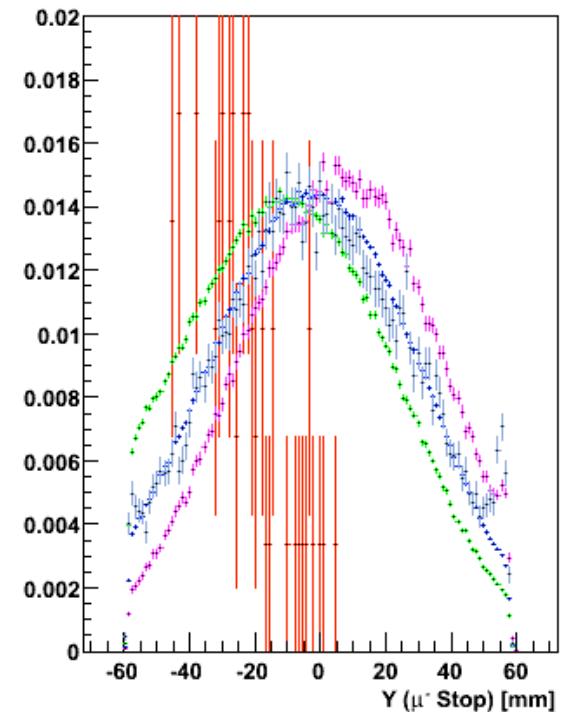


The events in the 1.5 - 10.0 μs capture time fit window show this same variation.

μ^- Stop Y Distribution



μ^- Stop Y Distribution For $T_{\text{Capt.}} = 1.5 - 10.0 \mu\text{s}$



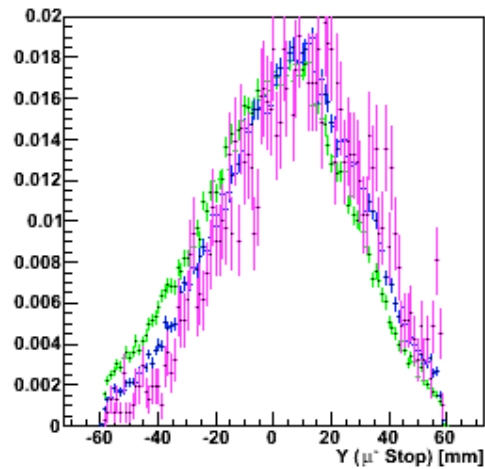
This picture changes with anode sector.

I broke up the TPC anodes in groups of 15 anodes, group 1 being at the front of the TPC toward the beam counters, and 5 being the far end of the TPC.

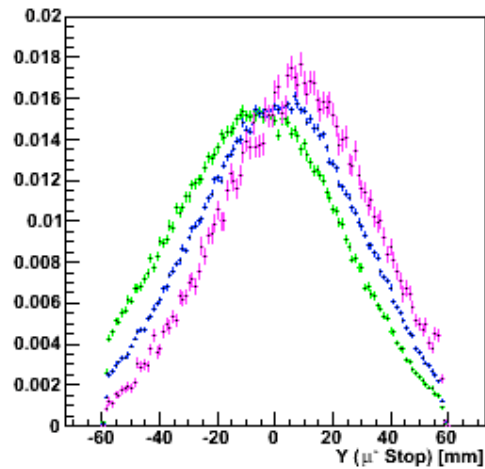
Events are grouped by the “AnodeMaxEH()”, the furthest anode from the entrance which has an EH threshold.

The distributions in each sector.

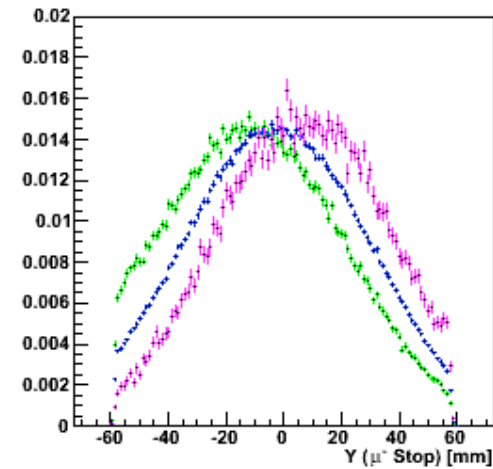
μ^- Stop Y Distribution (Anode Sector 1)



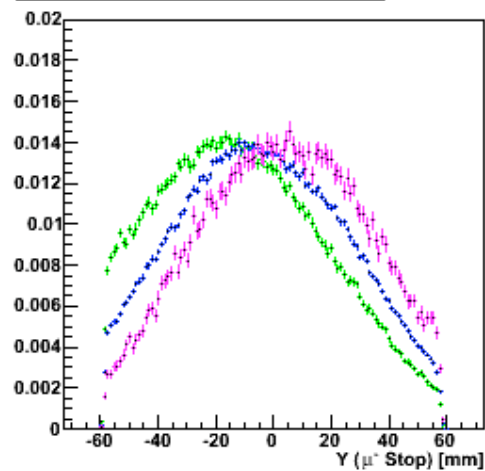
μ^- Stop Y Distribution (Anode Sector 2)



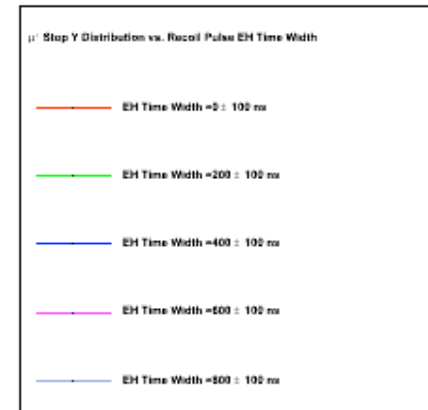
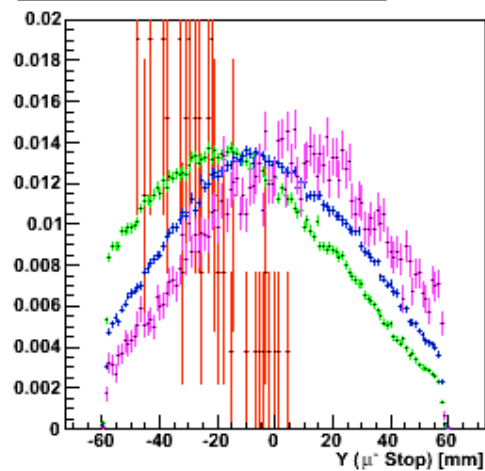
μ^- Stop Y Distribution (Anode Sector 3)



μ^- Stop Y Distribution (Anode Sector 4)



μ^- Stop Y Distribution (Anode Sector 5)



Conclusions

The variation of the Y distribution is strongest vs. the EH threshold size of the pulse in the drift plane. (Which I showed was stronger than the N_{EVH} variation)

This variation appears at a basic level in each anode sector of the TPC as studied here.

However there is also variation between the anode sectors themselves.

I have made a collection of TPC display images to look for indications of the source of this effect.