

SNB Flash Selection Cuts

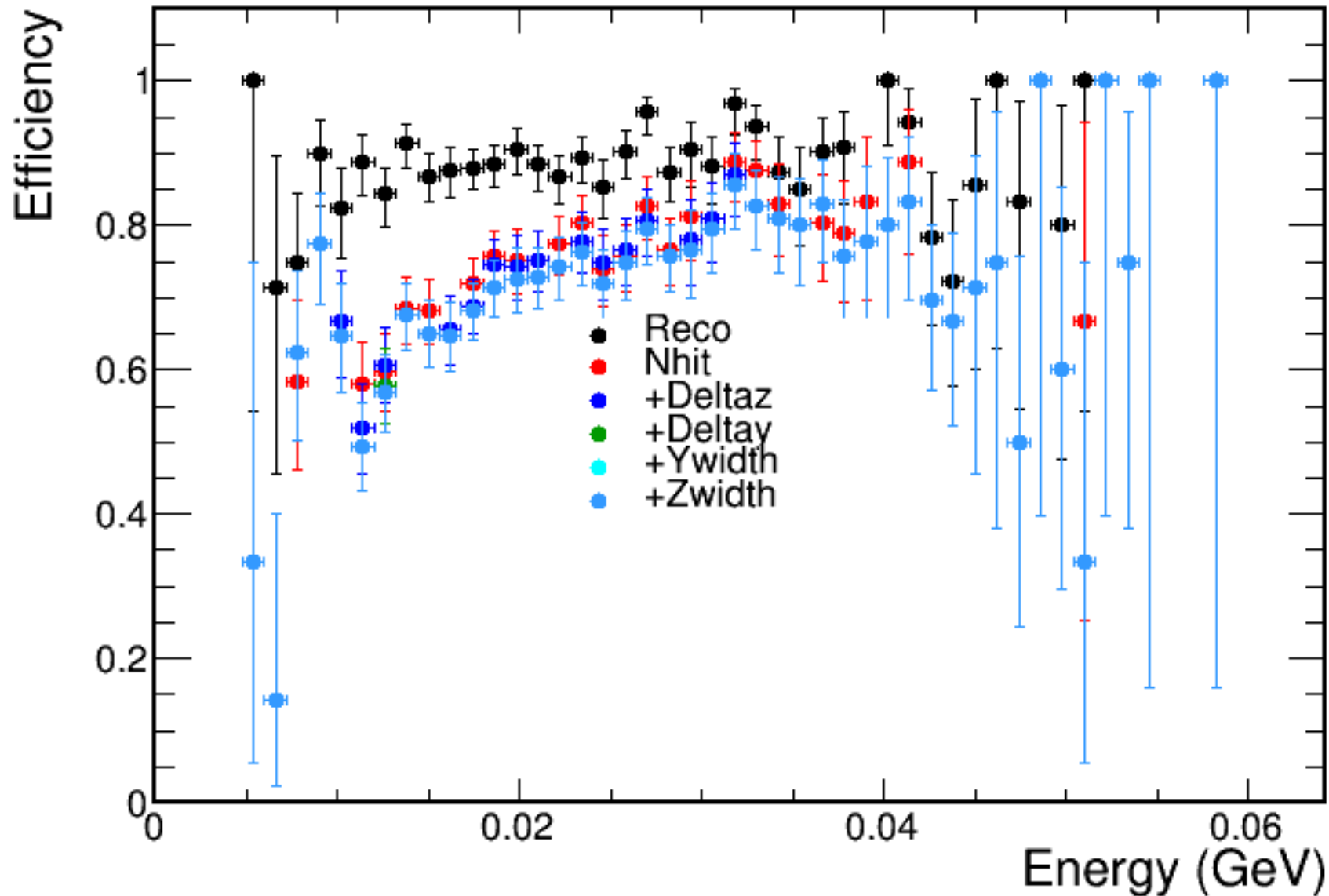
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December 17, 2019

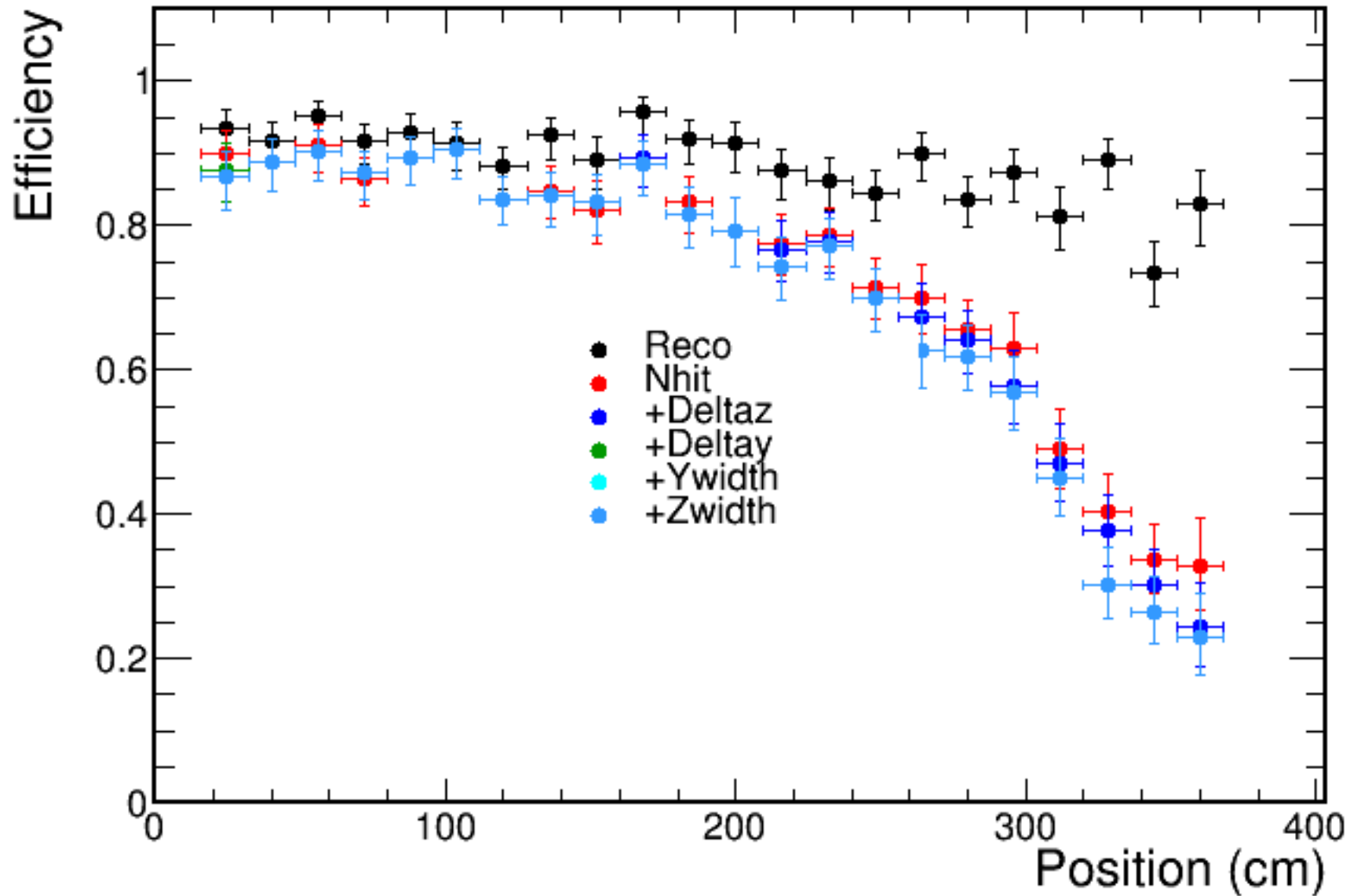
Low Energy Physics Working Group meeting

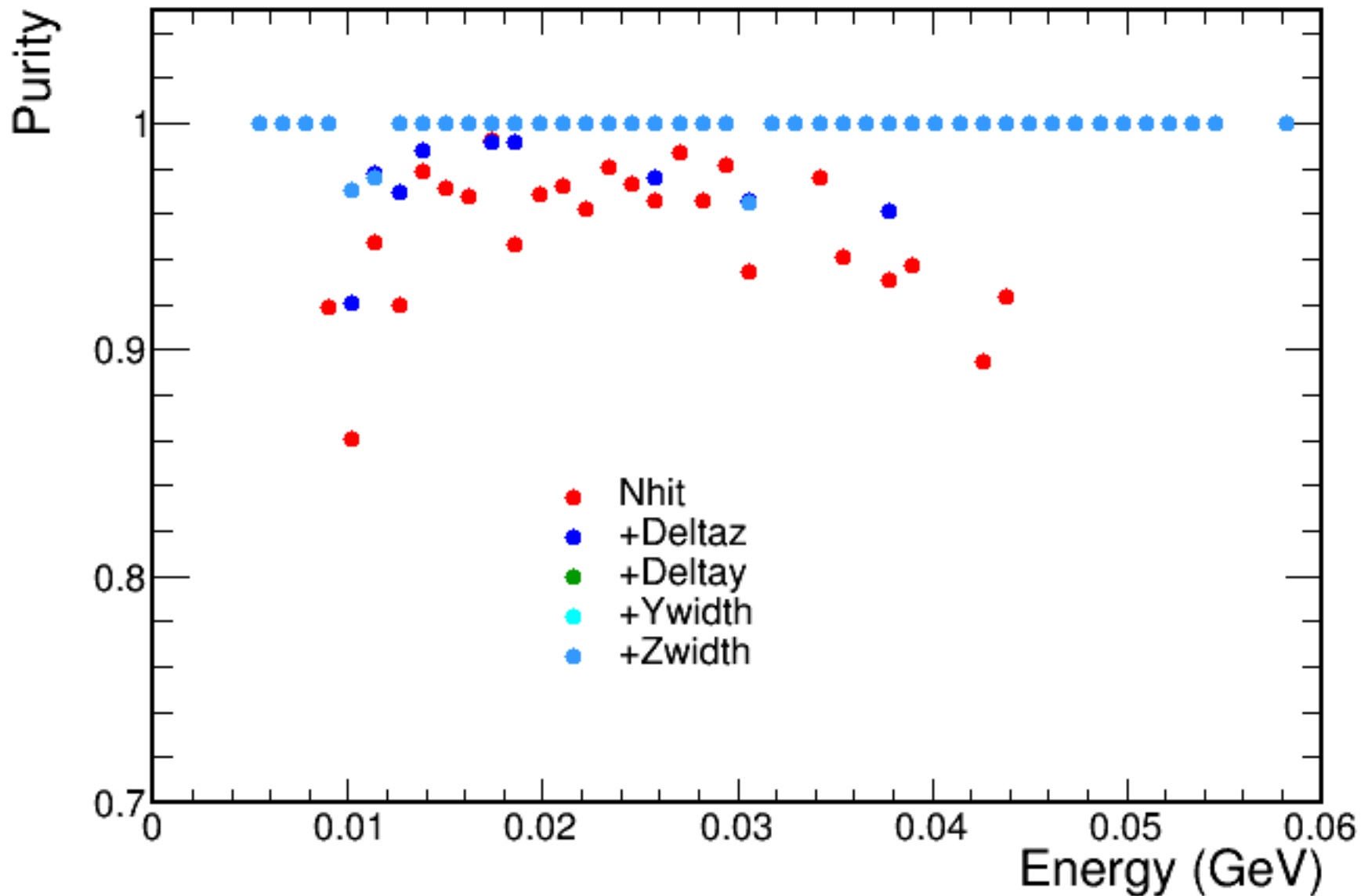


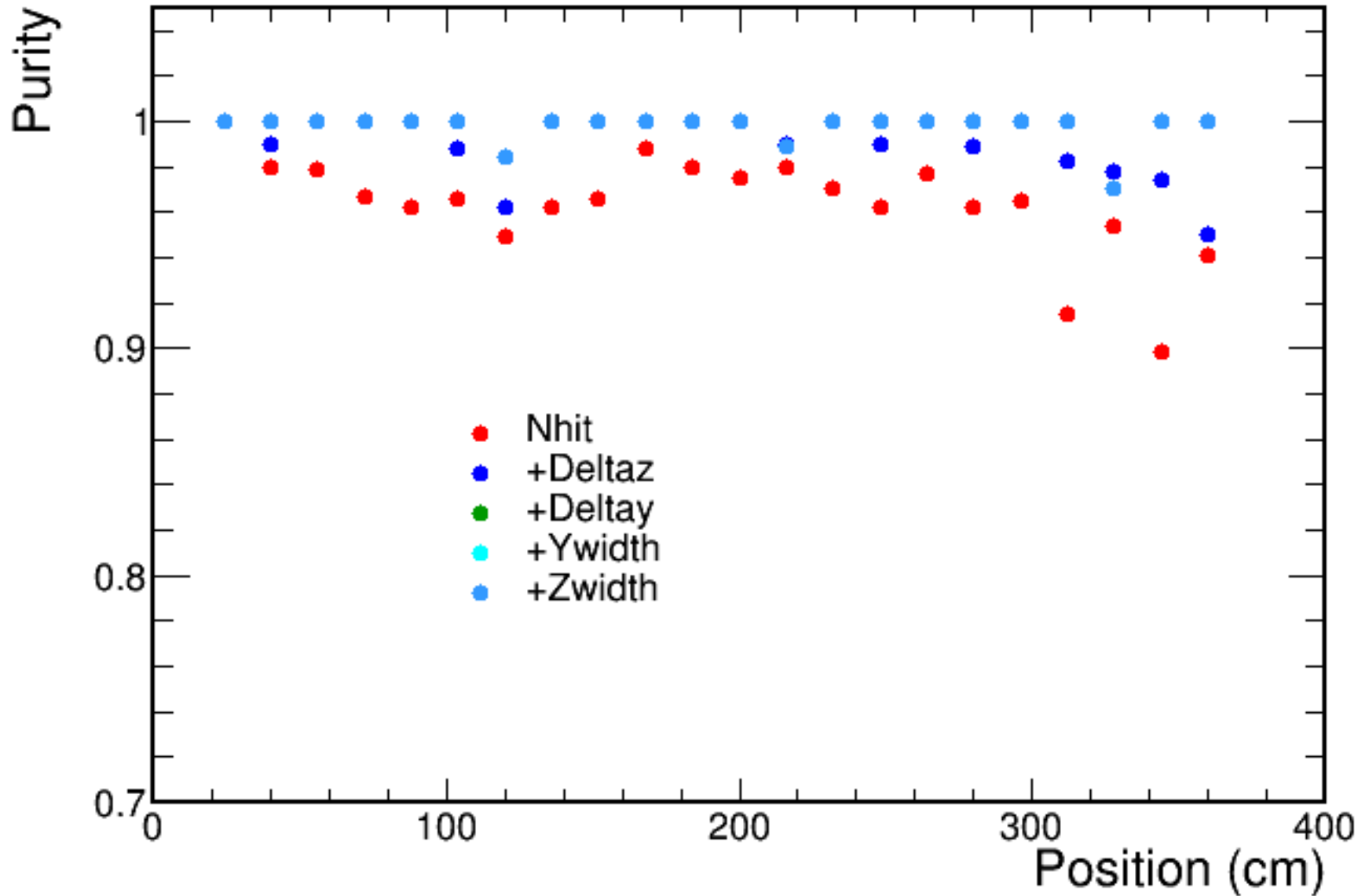
Goal

- In this talk, we have determined a set of cuts to select supernova flash for my calorimetry study. We will see shortly how efficiency and purity looks after each cuts.
- History: In the TDR calorimetry resolution plot, we select flash of purity > 0.5 on events based on Total PE cut (some value for different configuration).
- Here is the list of cuts which will remove on selecting wrong flash.
 - no. of hits < 10
 - $-100 < \Delta Y < 100$ (Y center - True Y),
 - $-100 < \Delta Z < 100$ (Z center - True Z),
 - Y width < 60 and Z width < 60
- Efficiency is number of signal correctly selected in the fiducial volume divided by total number of events in fiducial volume.
- Purity is defined as (selected cut && signal) / selected cut in each events.









Cut Flow

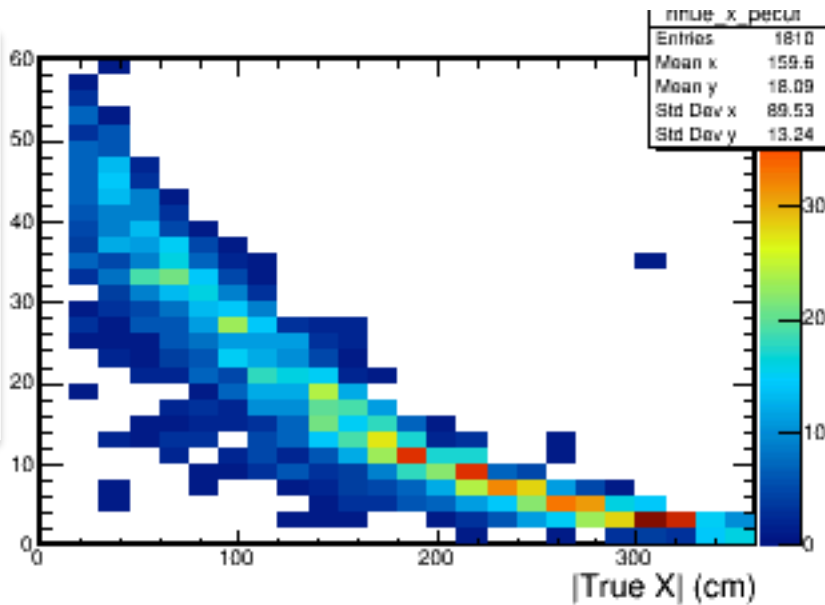
Cut	Efficiency (%)	Purity (%)
Nhit	74	96.5
+delta z	73	99.4
+delta y	72	99.7
+y width	72	99.7
+z width	72	99.7

Summary

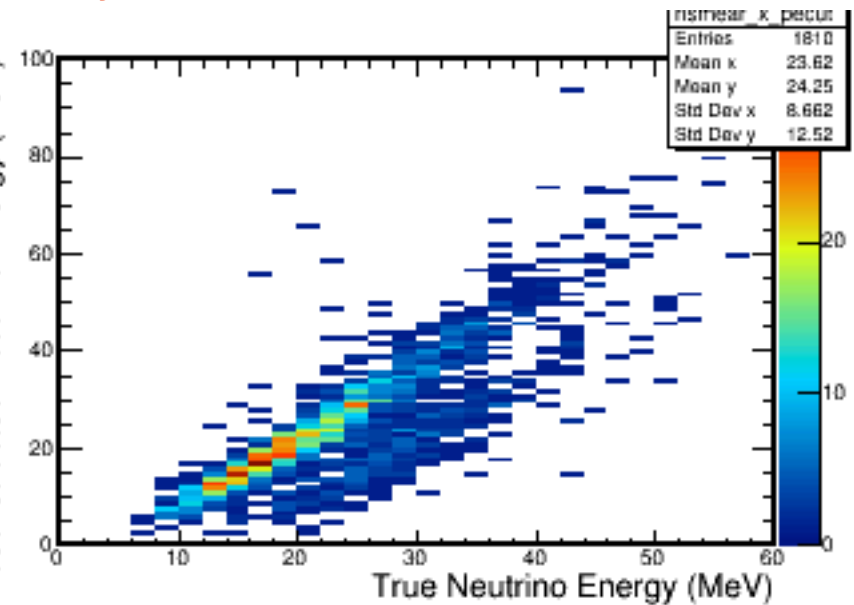
- These cuts improves resolution as in the TDR.
- We need to understand the inefficiency (10%) when flashes are closer to APA and also when we move further we are more inefficient.
- My next step is to investigate where the inefficient coming from?
- Any other suggestion or comments will be appreciated.

Thank You!

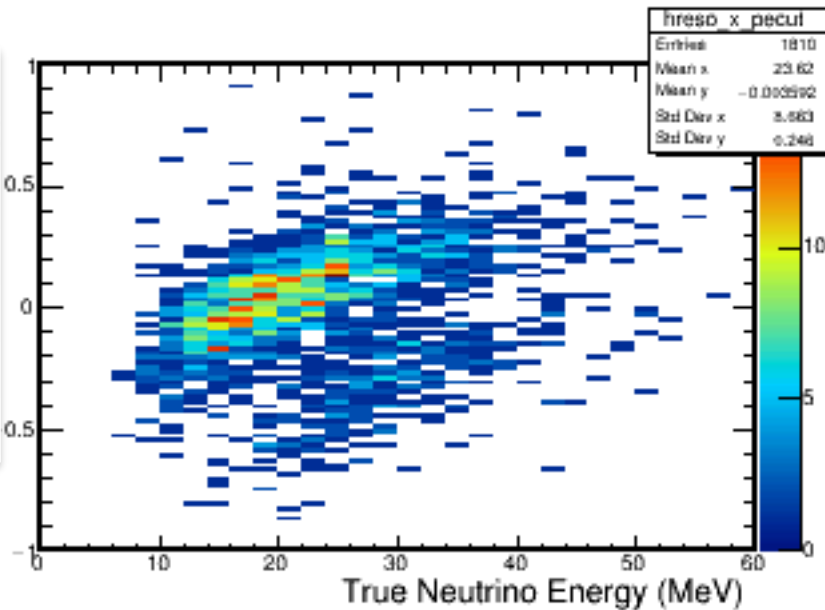
Total PE / True E



Reconstructed Neutrino Energy (MeV)



(Reco - True)/True



Correcting the total observed amount of photons for the average number of photons expected per MeV as a function of position along the drift direction.

Limit study to central set of APAs to avoid effects of walls ($300 < z \text{ (cm)} < 1000$, $-300 < y \text{ (cm)} < 300$, $x \text{ (cm)} > 20$).

