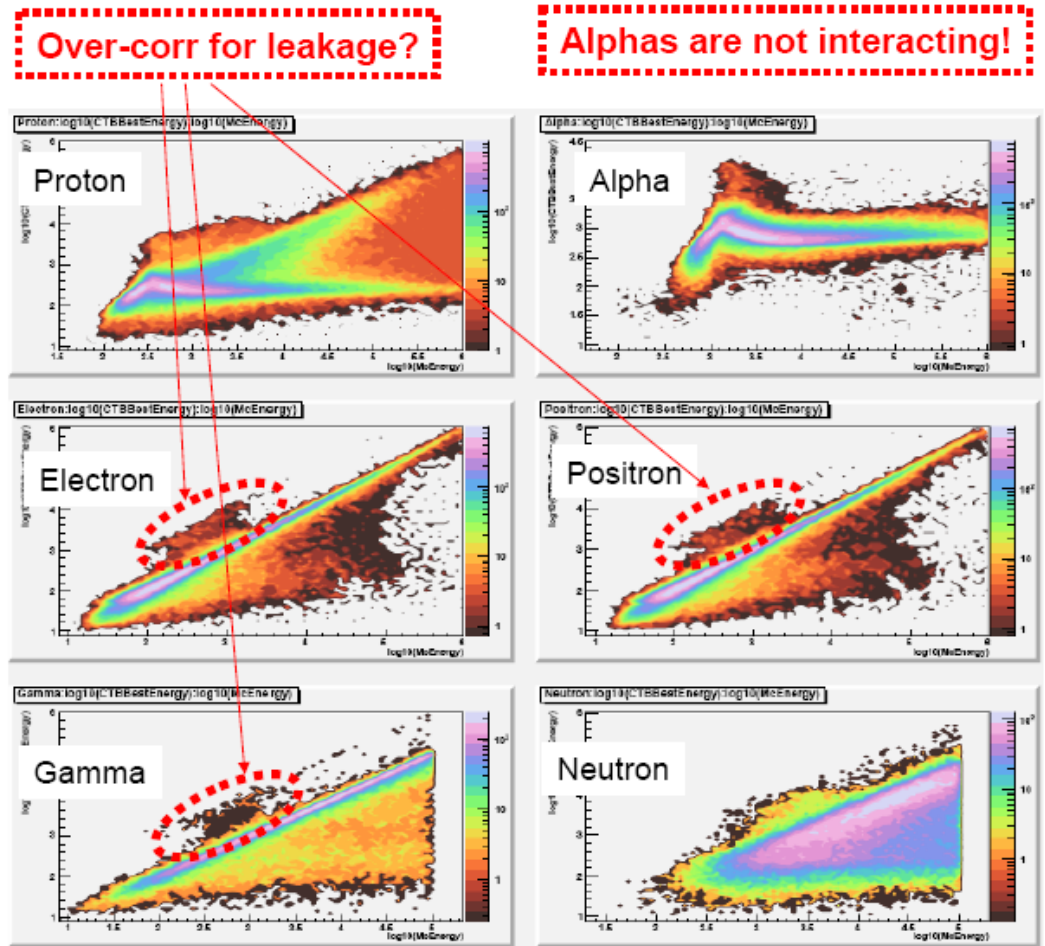


Readiness of Alpha Hadronic Interactions

F.Longo, J.Bregeon, L.Latronico

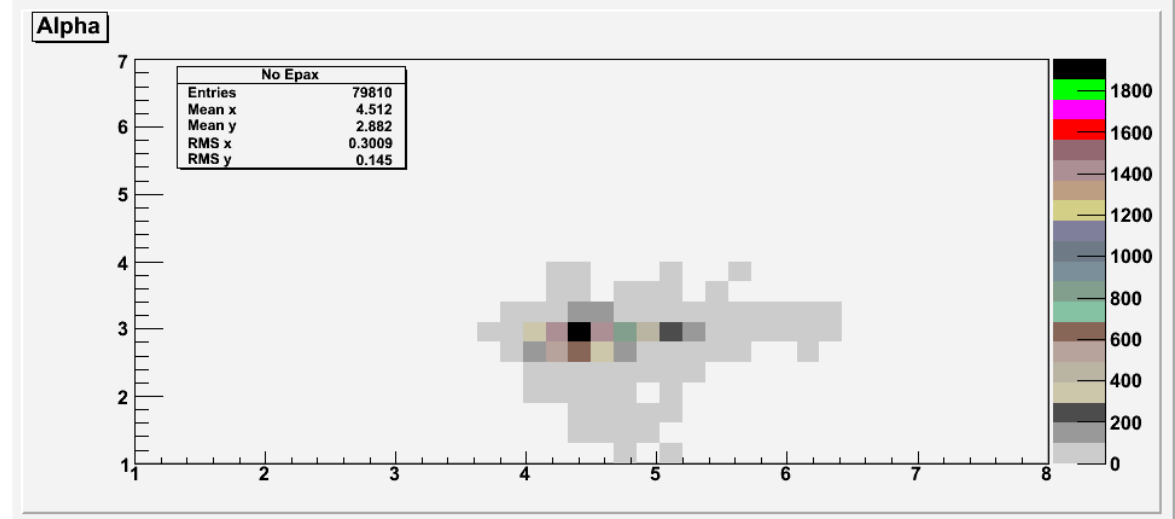
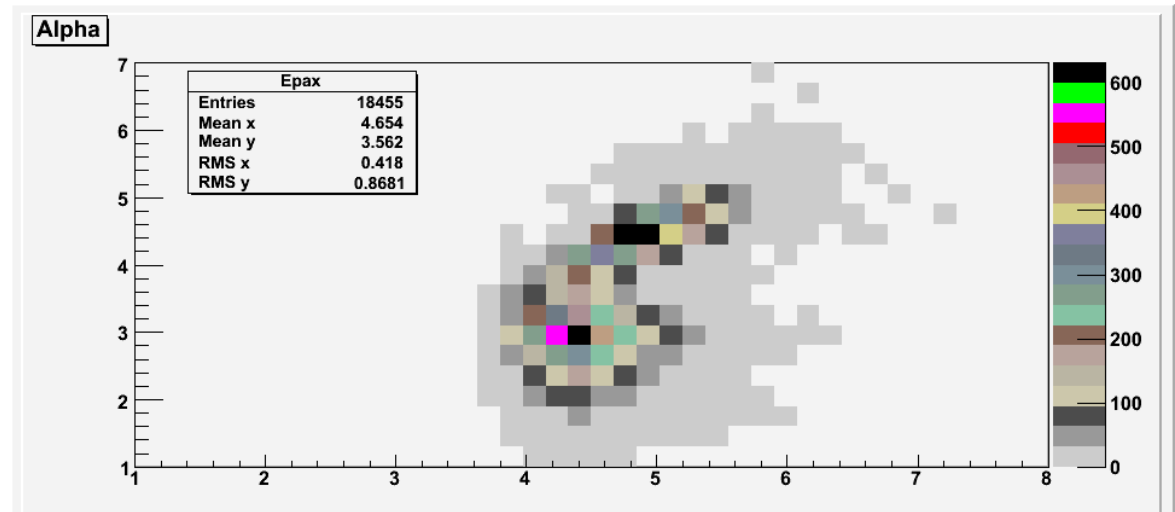
Alpha Interactions

- Bug found by T.Kamae on July 24
- Preliminary solution: Adopt Epax model for Alpha



Tests – I

- MC with and without Epax
- Plot of CTBBestEnergy vs McLogEnergy



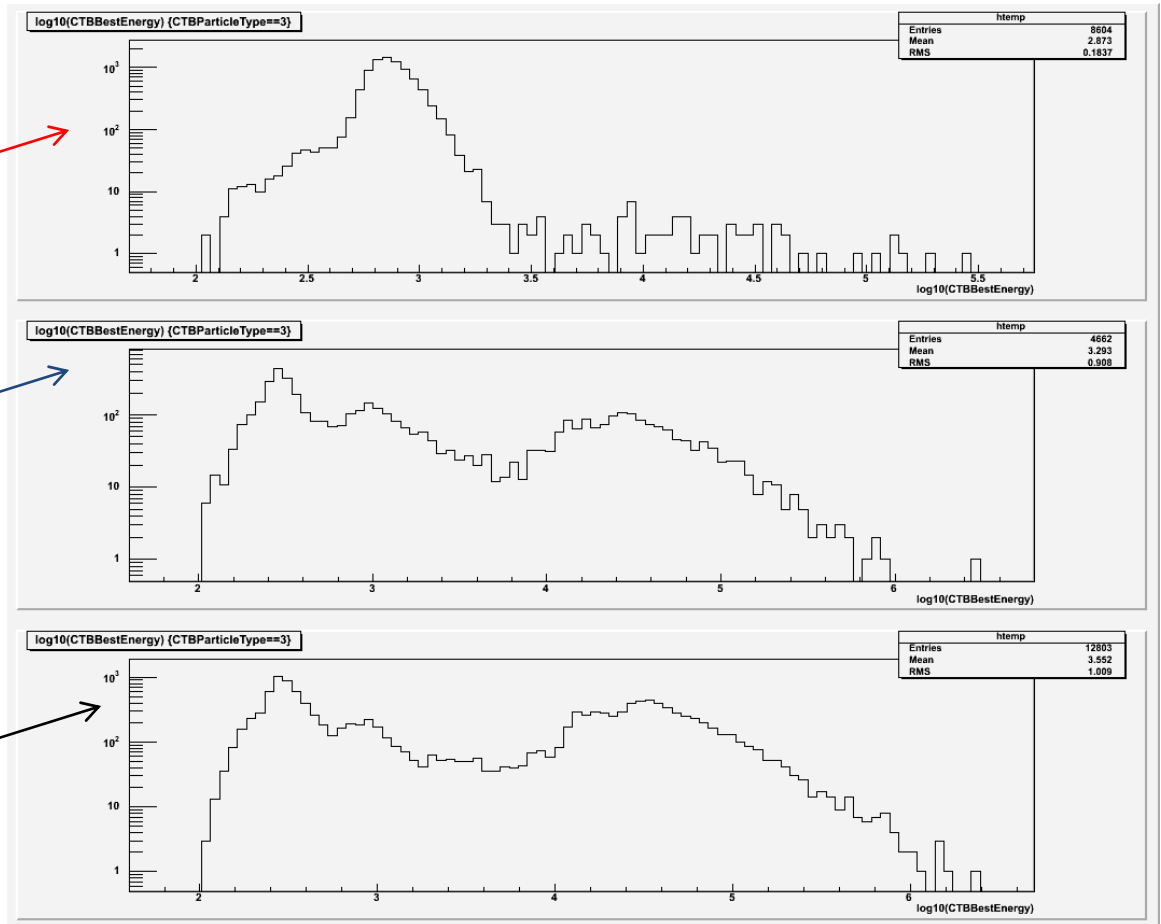
Tests – II

- Different MC and data
- Plot of CTBBestEnergy with cut on CTBParticleType==3

No Epax

Epax

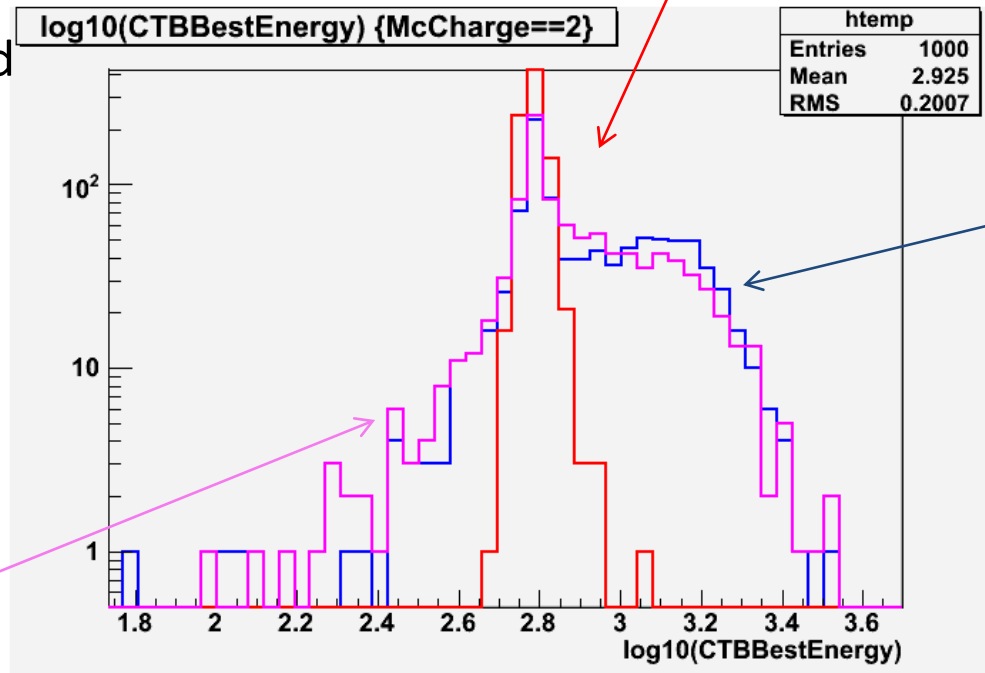
Data



Tests – III

- Gleam simple test suggested by Benoit
 - 3.4 GeV vertical alpha
- 3 physics lists
 - GLAST
 - Space (recommended by G4)
 - Epax for alphas

Space

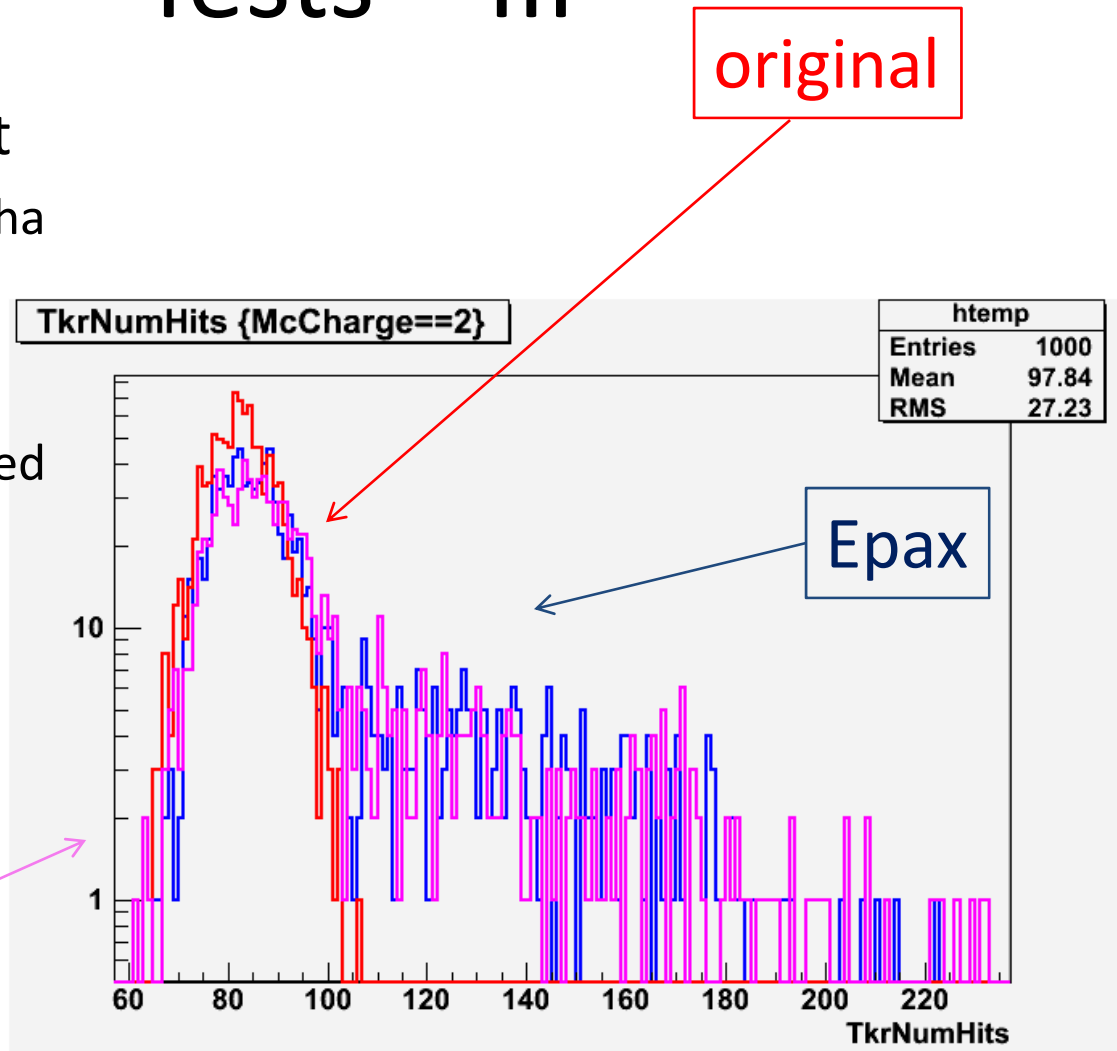


original

Epax

Tests – III

- Gleam simple test suggested by Benoit
 - 3.4 GeV vertical alpha
- 3 physics lists
 - GLAST
 - Space (recommended by G4)
 - Epax for alphas

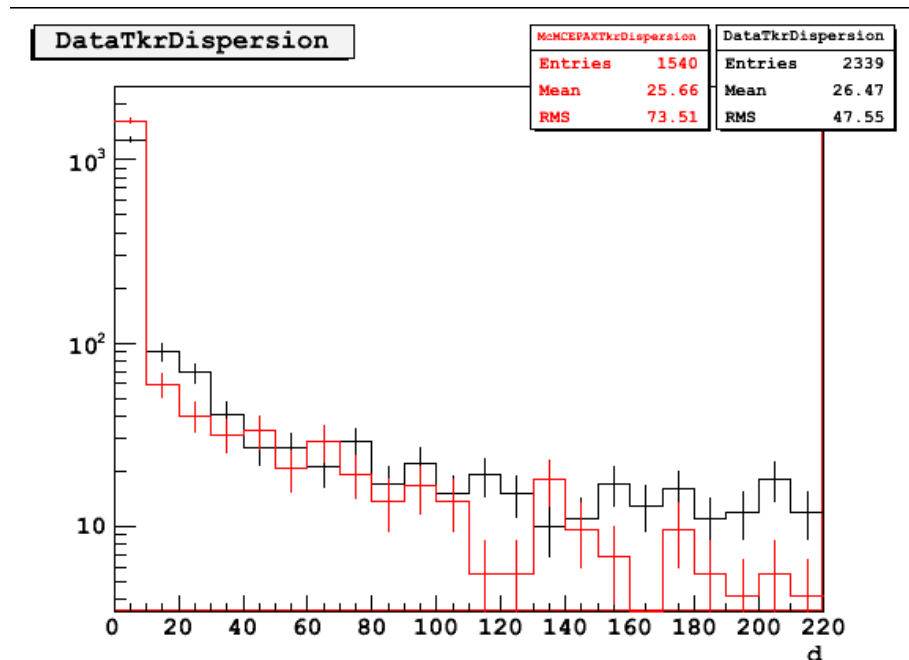


Tests – IV

- Checks with new MC and data
- Common cuts to identify Alpha
- 3 data runs and 30k streams of bg-Day with interacting Helium.
The cut applied to select helium is the following:

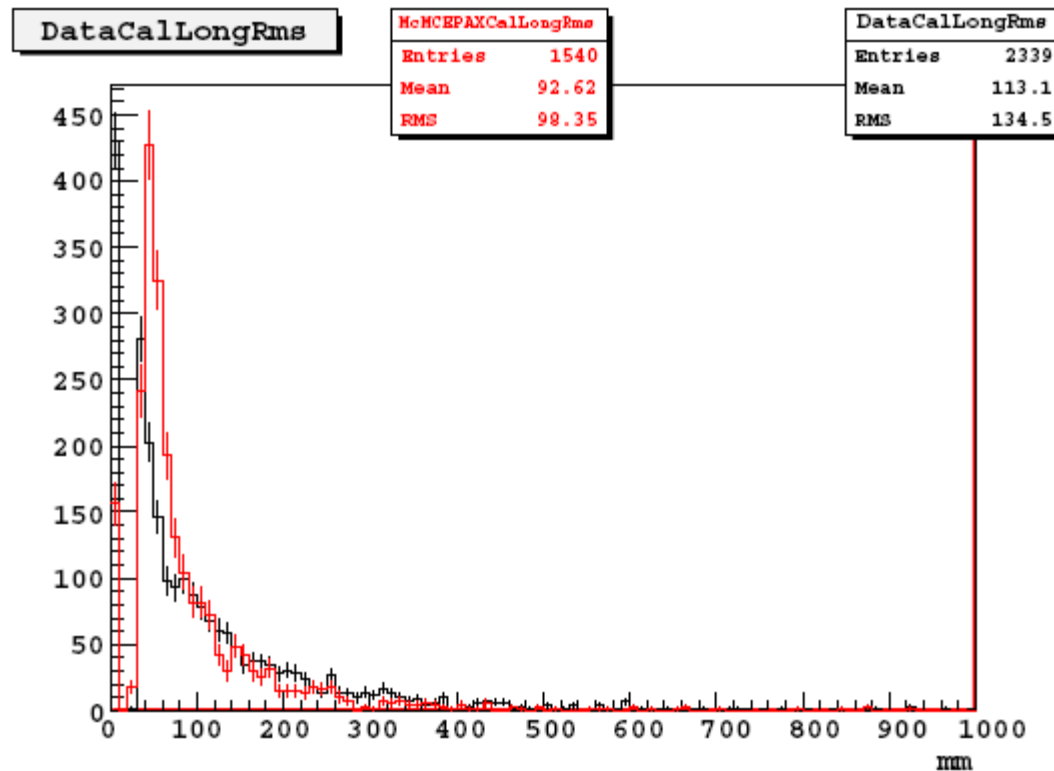
```
aCut = 'AcdActDistTileEnergy>4 && Tkr1ToTFirst>4 && Tkr1ToTAve>4 &&\
      CalELayer7>5 && TkrHitsInLyr17>0 &&\
      CalELayer0>45 && CalELayer0<90 && CalELayer1>45 && CalELayer1<90
```

- Checking some variables
 - TkrDispersion



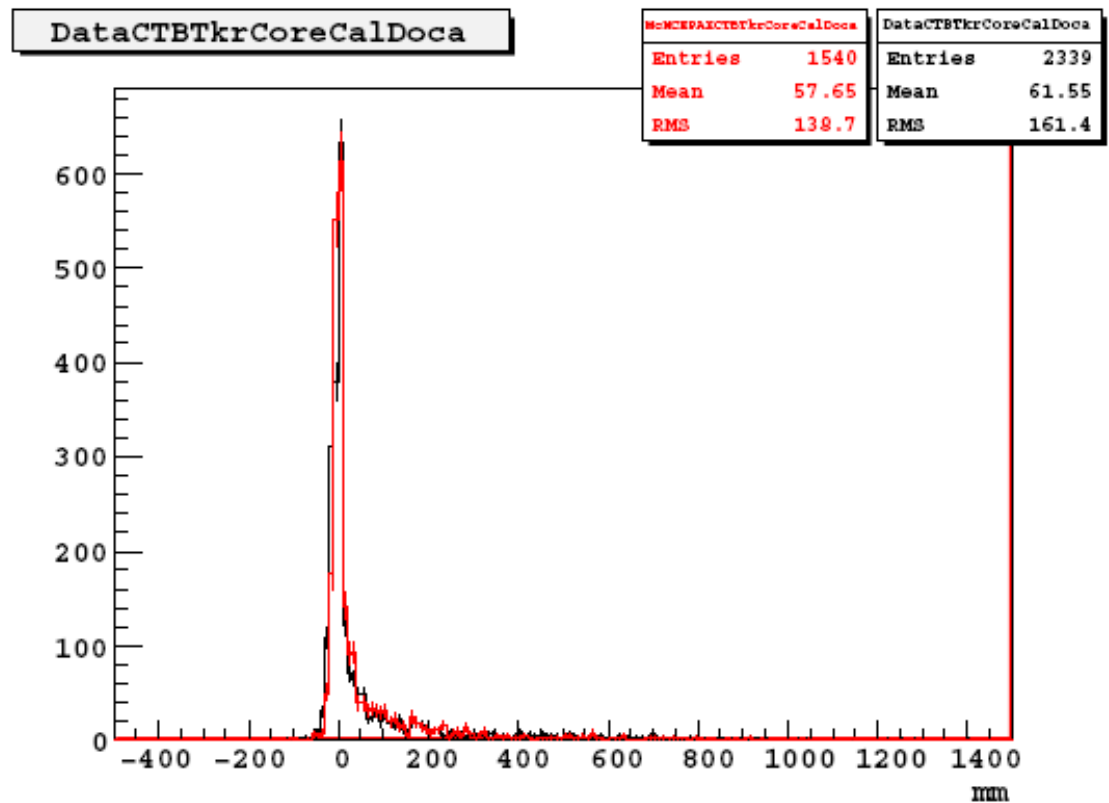
Tests – IV

- Checks with new MC and data
- Common cuts to identify Alpha
- Checking some variables
 - CalLongRms



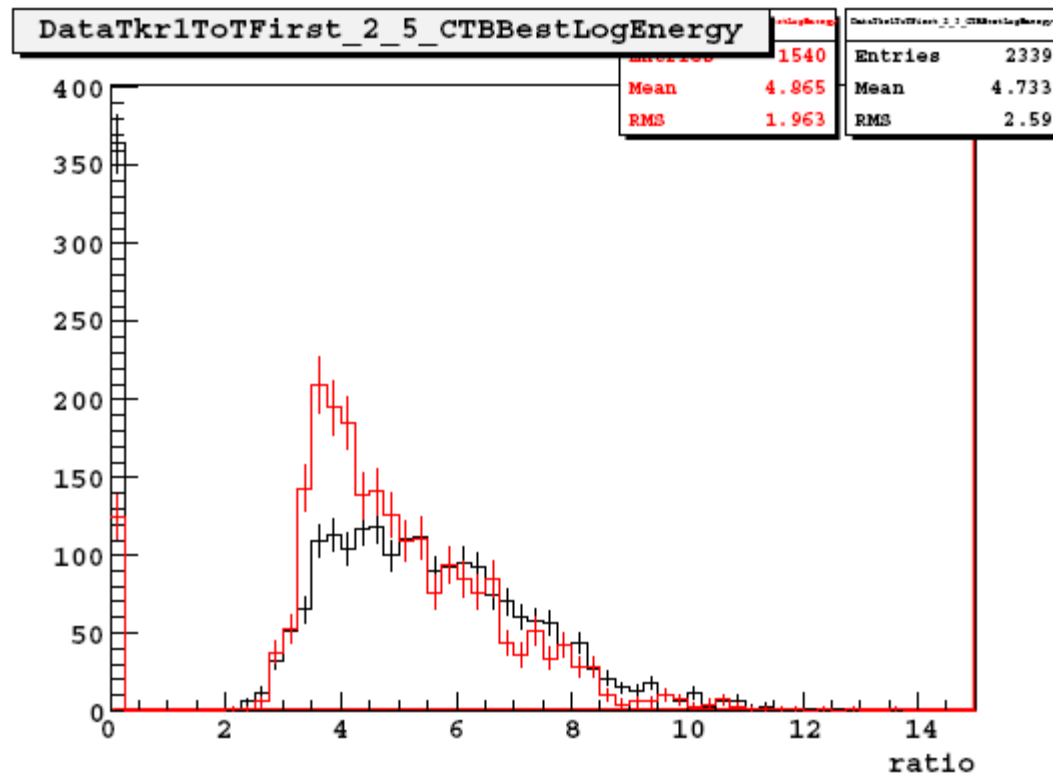
Tests – IV

- Checks with new MC and data
- Common cuts to identify Alpha
- Checking some variables
 - CTBTkrCoreCalDoca



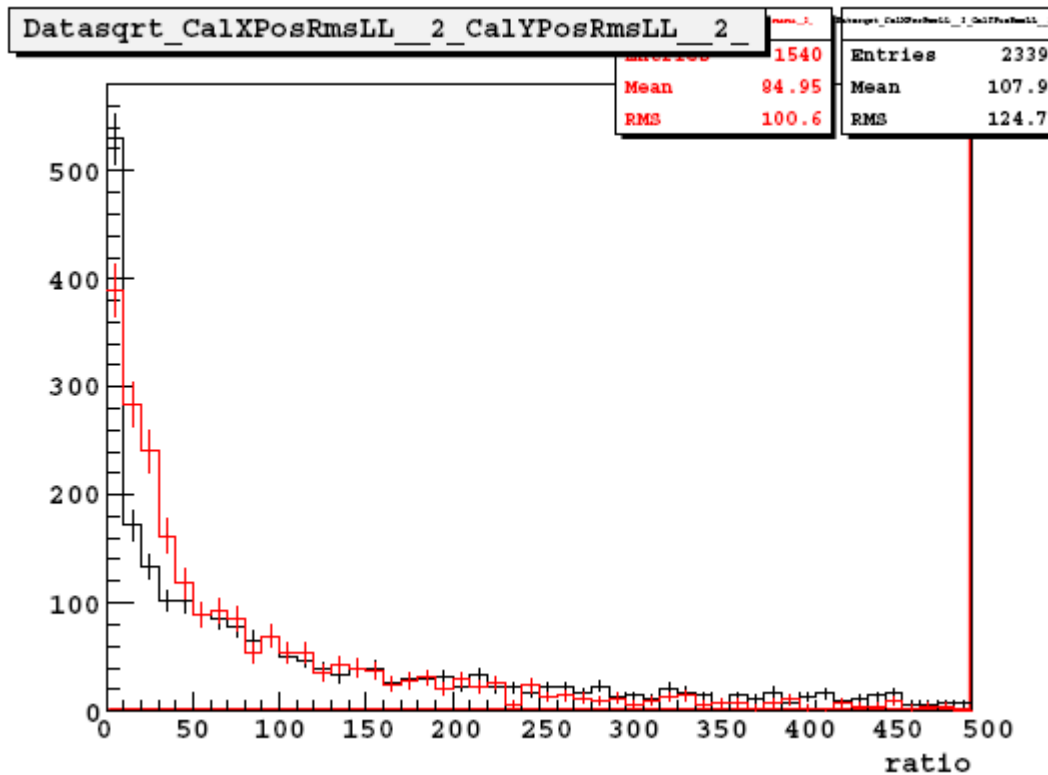
Tests – IV

- Checks with new MC and data
- Common cuts to identify Alpha
- Checking some variables
 - $\text{Tkr1ToTFirst} * 2.5 / \text{CTBBestLogEnergy}$



Tests – IV

- Checks with new MC and data
- Common cuts to identify Alpha
- Checking some variables
 - $\sqrt{\text{CalXPosRmsLL}^2 + \text{CalYPosRmsLL}^2}$



Glast Release updates

- Caveats from not perfect agreement with data at GSI from Benoit
- Space option not available above 10 GeV
- In use for HEE MC production
- Ready to be tag in G4Generator