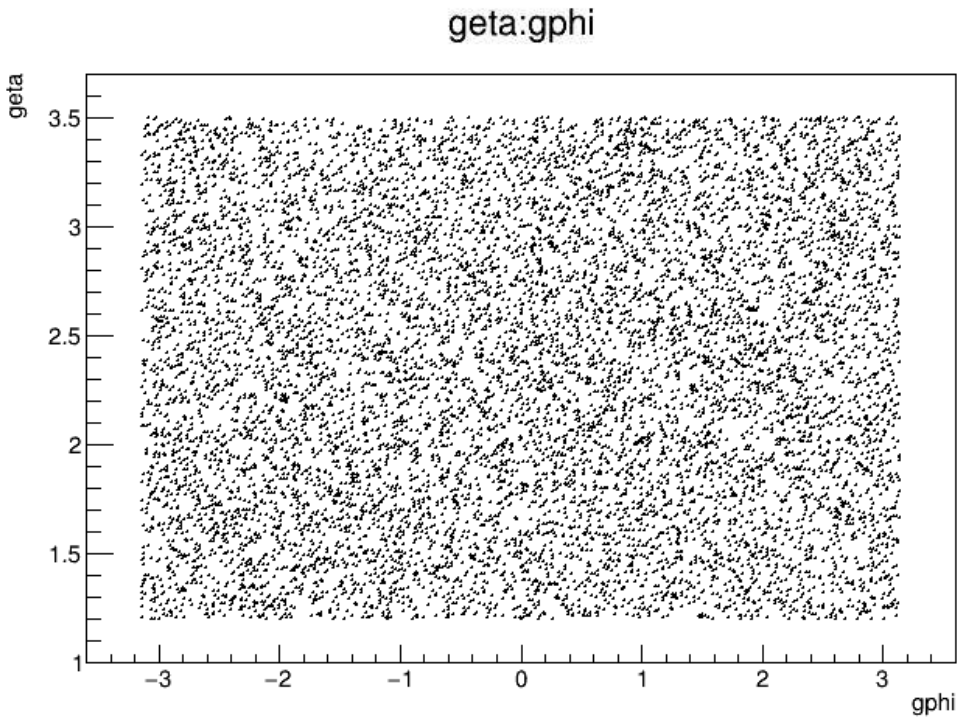
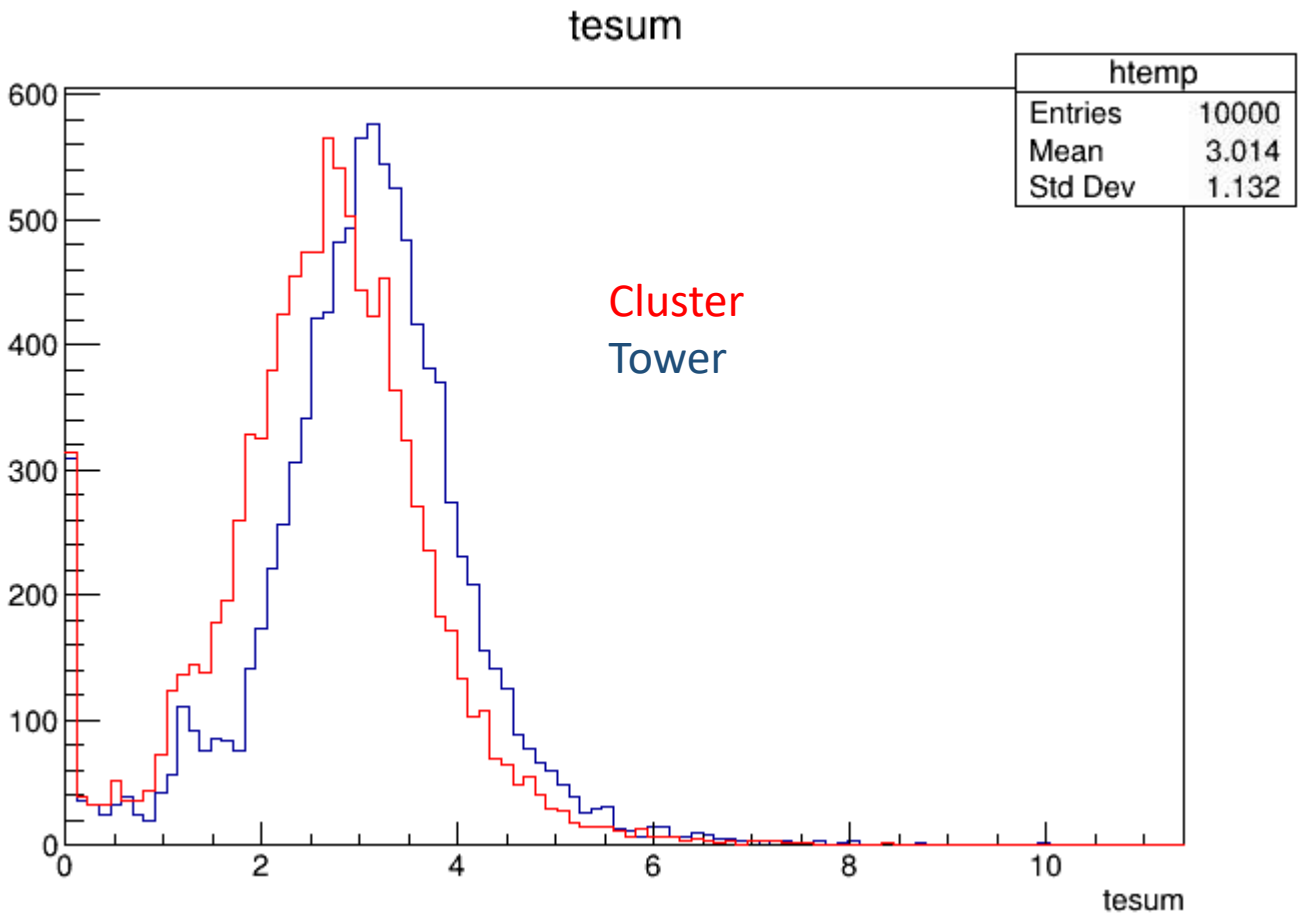
FHCal Energy Conservation

Simulation Setup

- 4 GeV/c single Pions
- 1.2<eta<3.5
- 2Pi in phi
- FHCal only (no FEMC in front)
- Default reconstruction chain
  - Sampling Fraction = 0.018
- Energy sum for hits, towers and cluster
- Took a while to get back into this but I am having fun with it



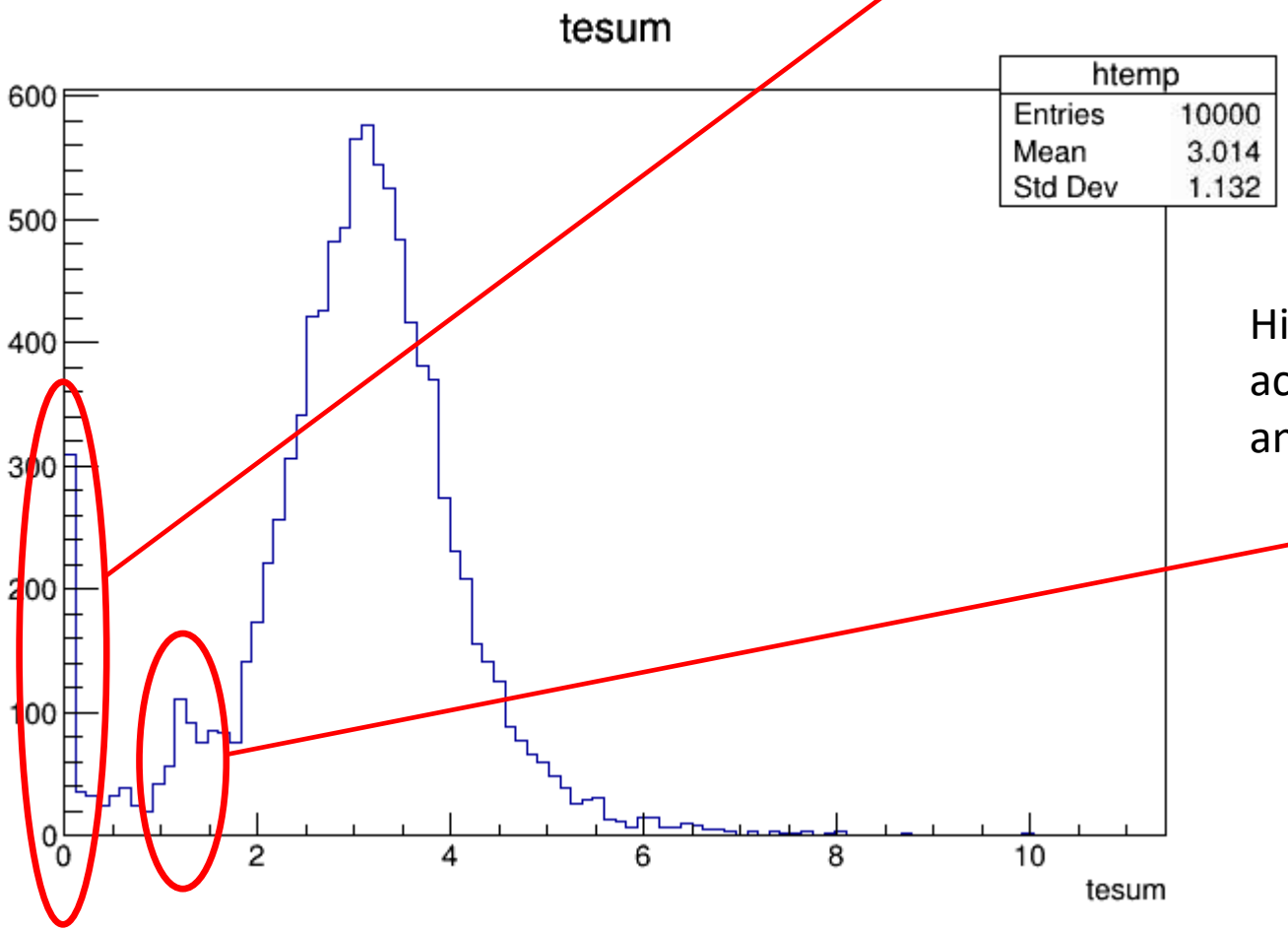
Tower and Cluster Energy sums



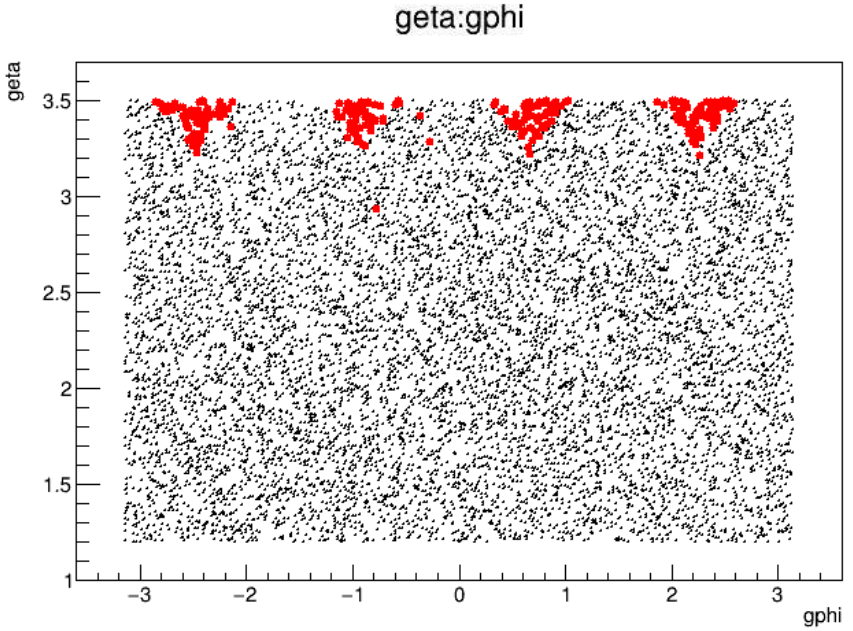
Energy seems to be conserved
In our default reconstruction
Clusters loose energy because of a tower energy cut
Applying sampling fraction corrections does not recover the 4GeV incident energy
But it's not 6 GeV either

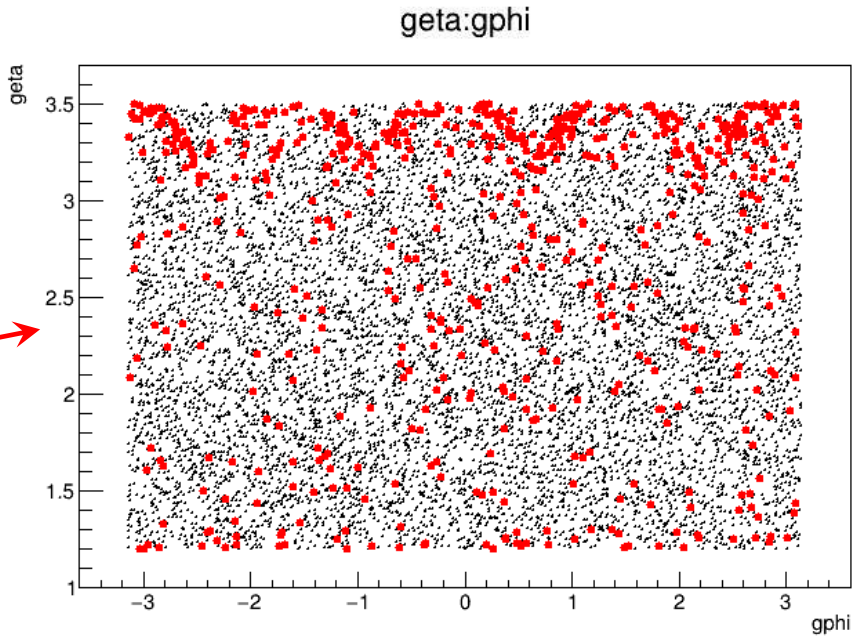
Energy Sum Towers

tesum = 0 square calorimeter towers filling round hole

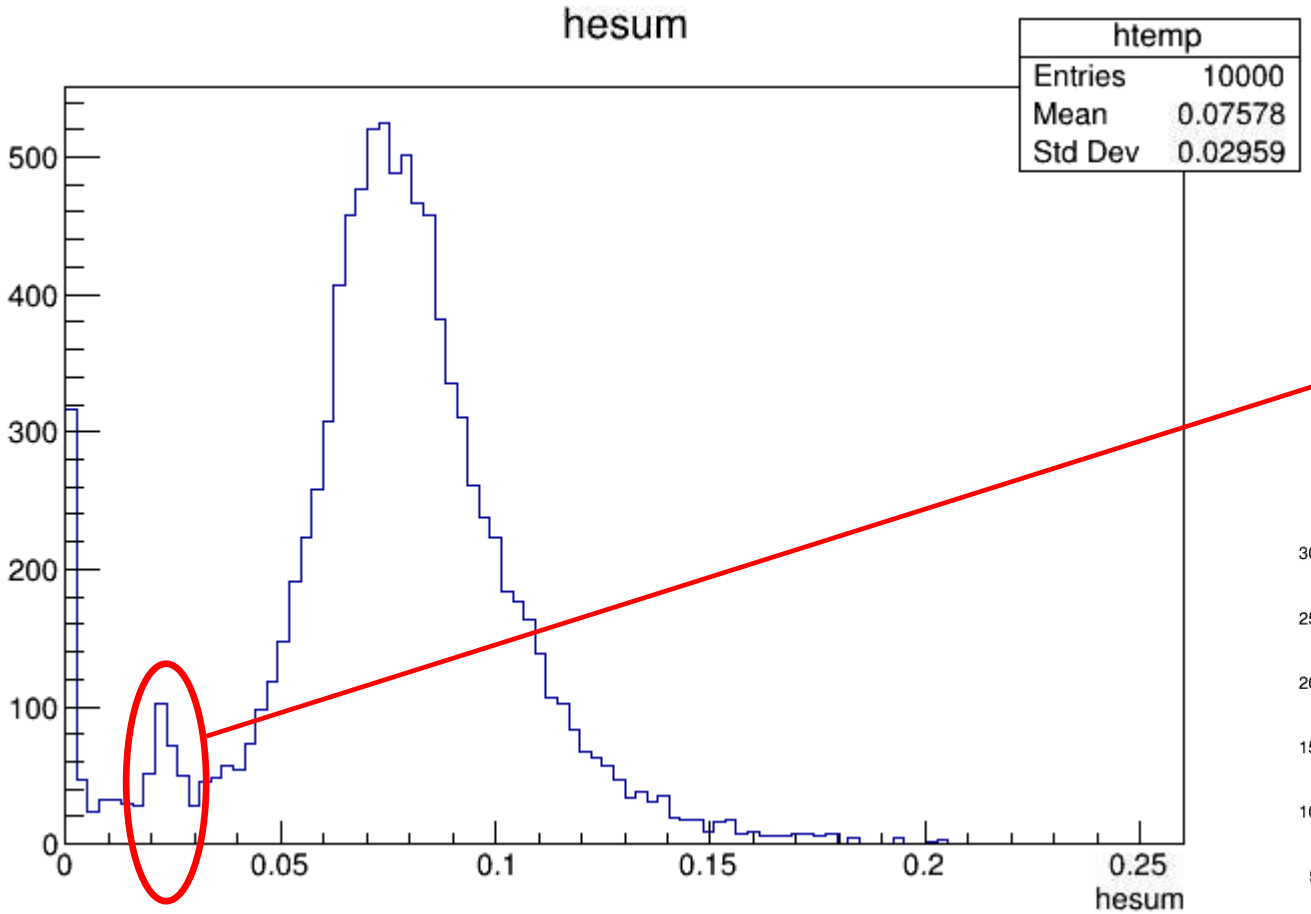


High eta acceptance and mips?

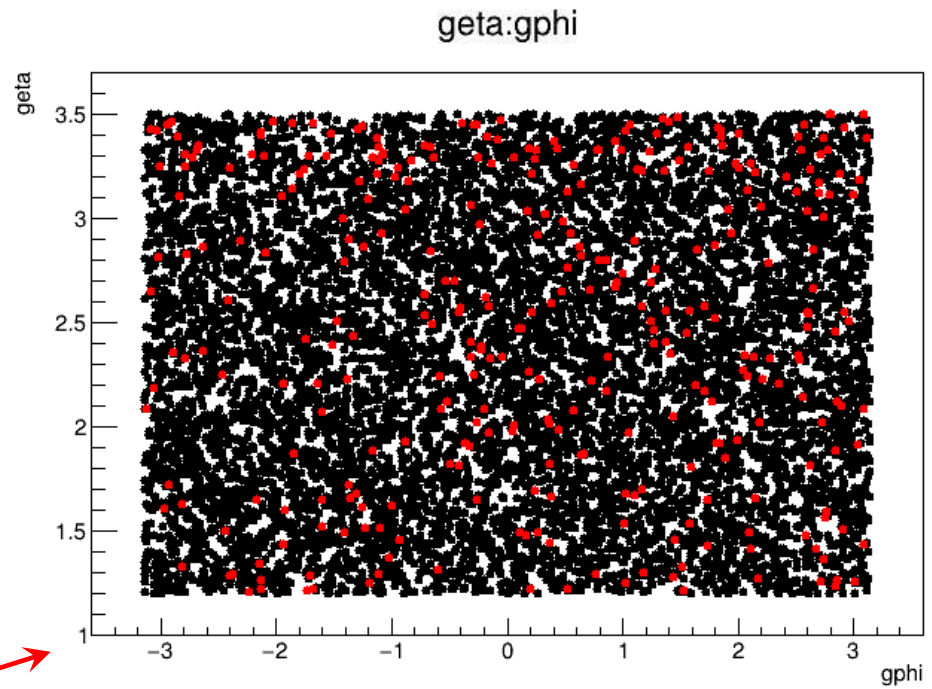




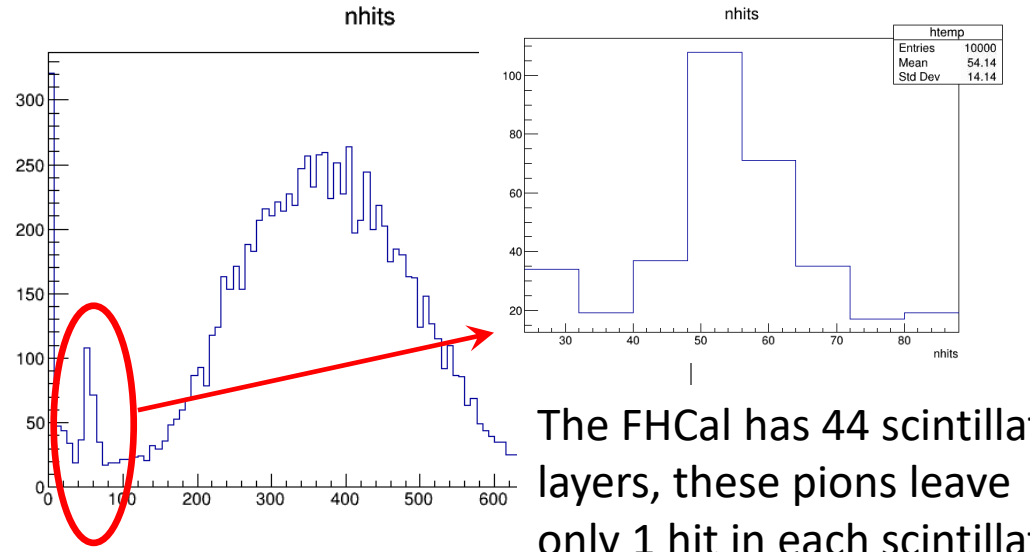
Energy Sums G4Hits



Energy deposition in scintillators
Sampling Fraction needs to be applied
0.075/0.018 = 4.2

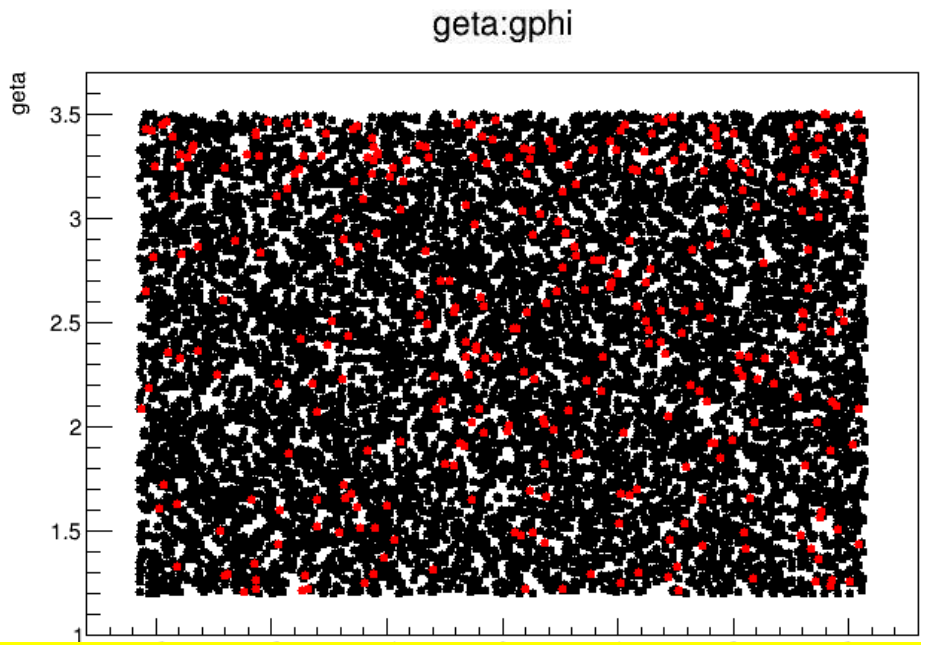


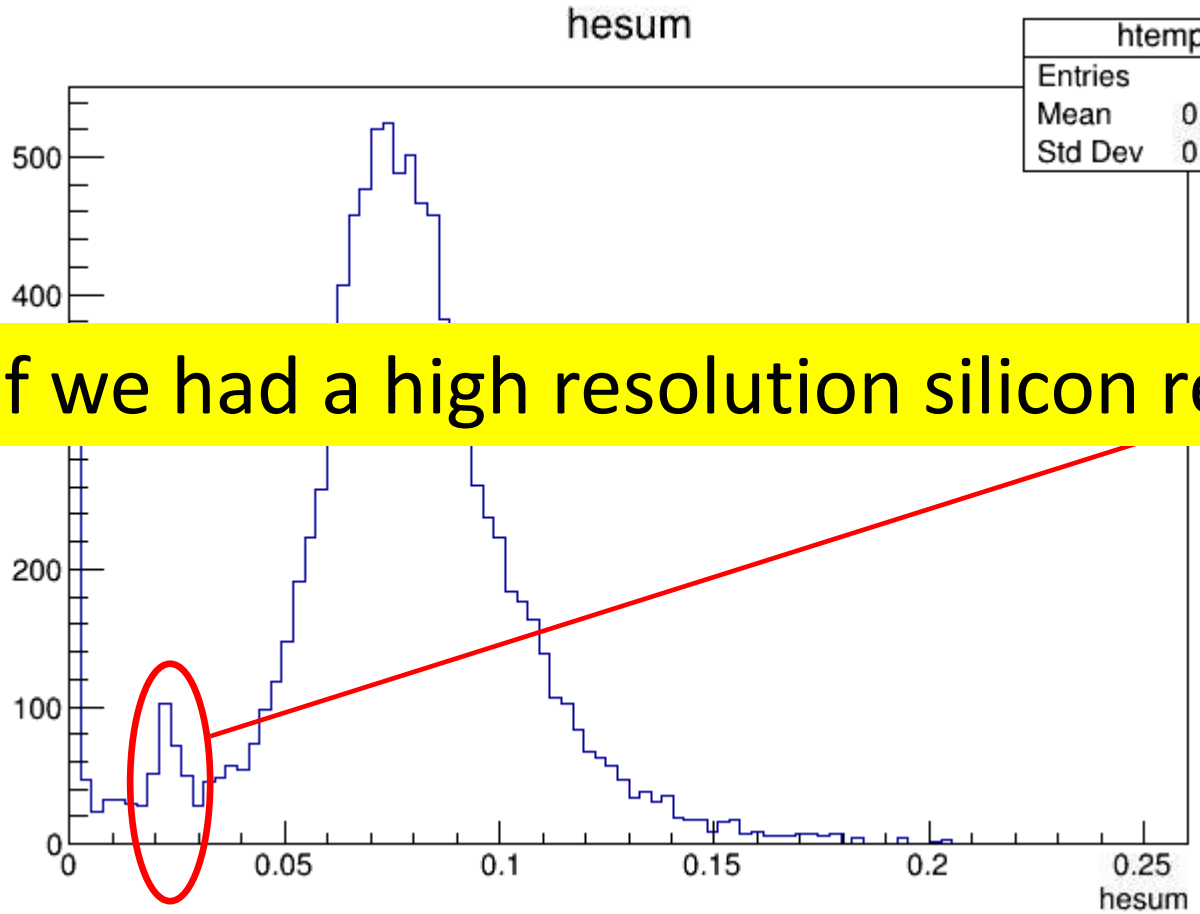
Scattered all over the place



The FHCal has 44 scintillator layers, these pions leave only 1 hit in each scintillator
→ These are our mips

Energy Sums G4Hits





If we had a high resolution silicon readout, this would actually work

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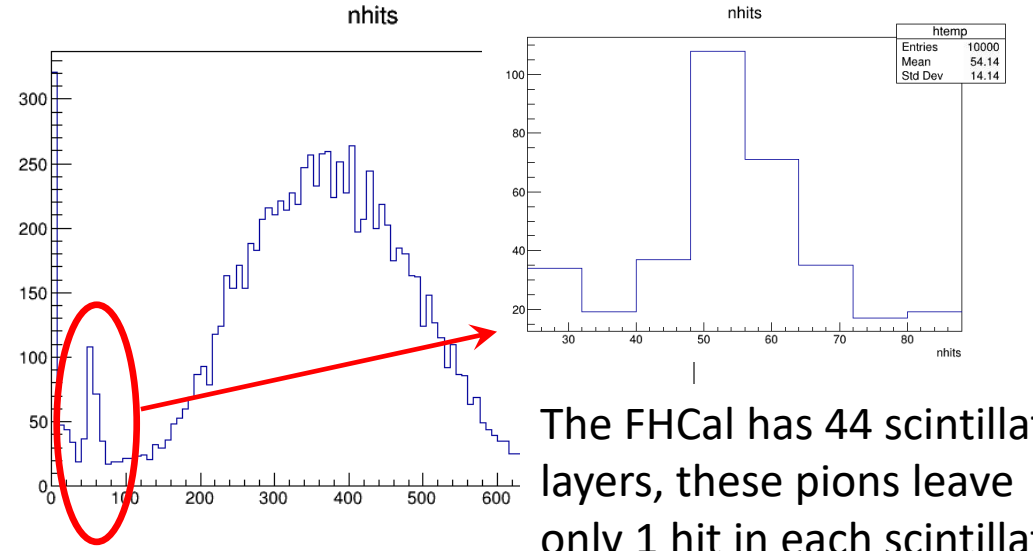

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