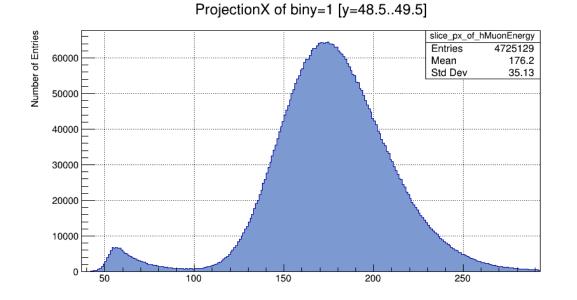


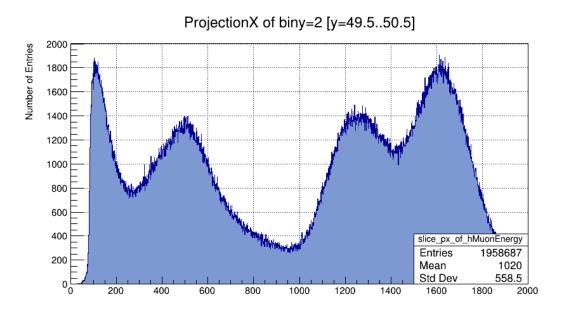
Update muX meeting 26/01

Michael Heines

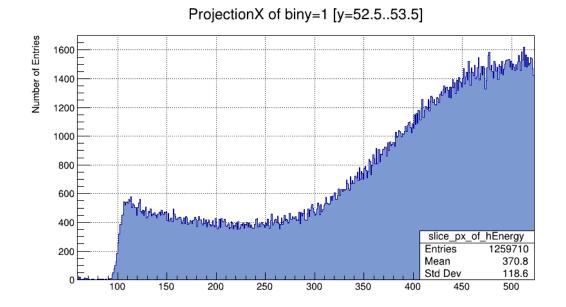
• Muon entrance: 110



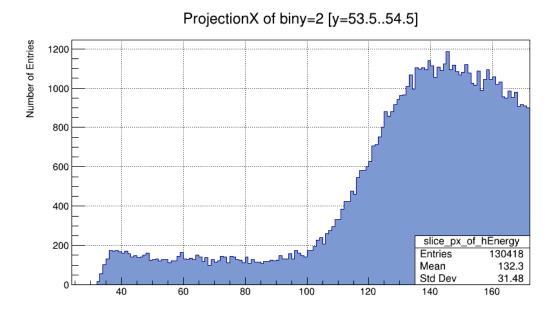
• Muon veto: ?



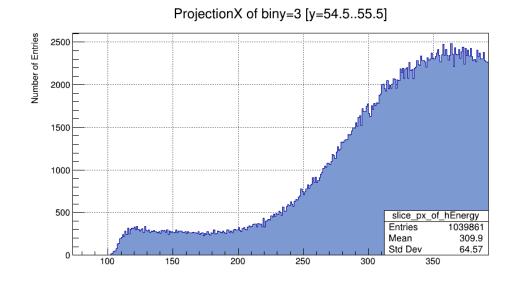
• VetoBack: 320



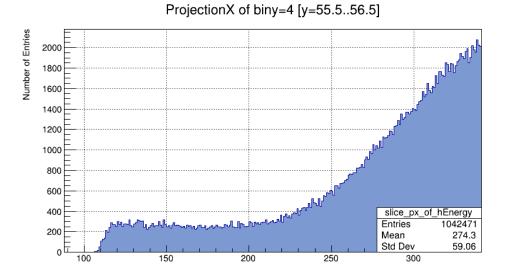
• VetoBottom: 110



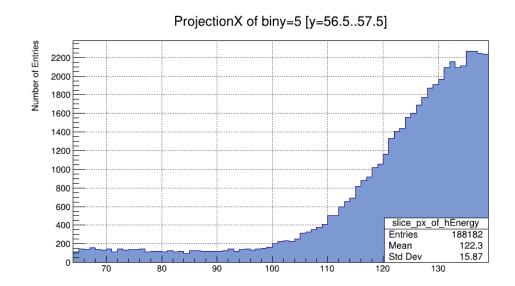
• VetoLeft: 210



• VetoRight: 230

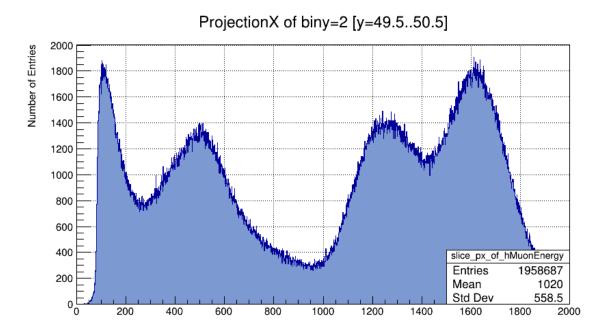


• VetoTop: 100



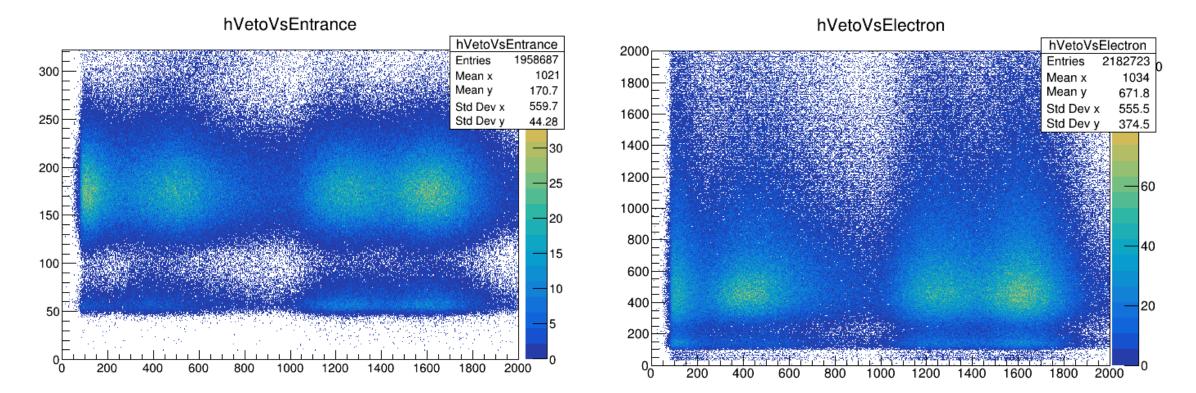
Understanding the muon veto

- Is the first peak noise?
- What contributions are in the spectrum?
- Correlation between muon veto and muon entrance/electron veto



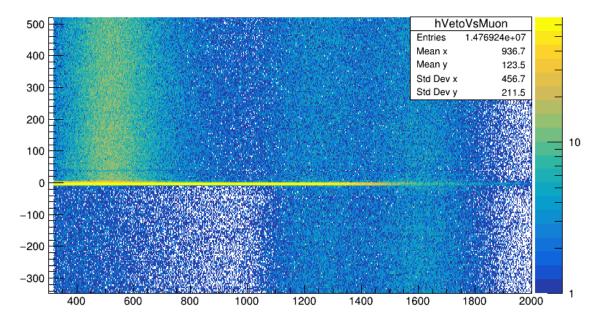
Muon veto energy correlation

Same muon event \rightarrow No clear correlation

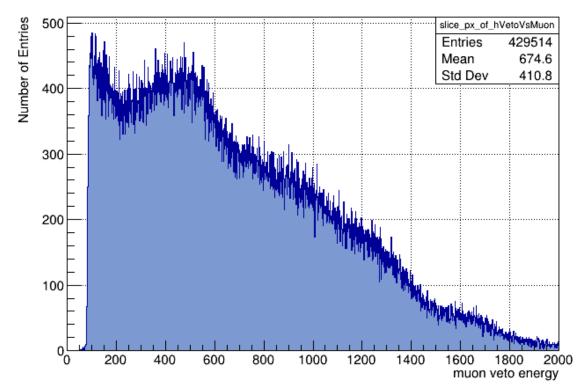


Muon veto time correlation – muon entrance

tVeto – tEntrance \rightarrow Stuff in veto after entrance muon (Michel electrons?)



hVetoVsMuon



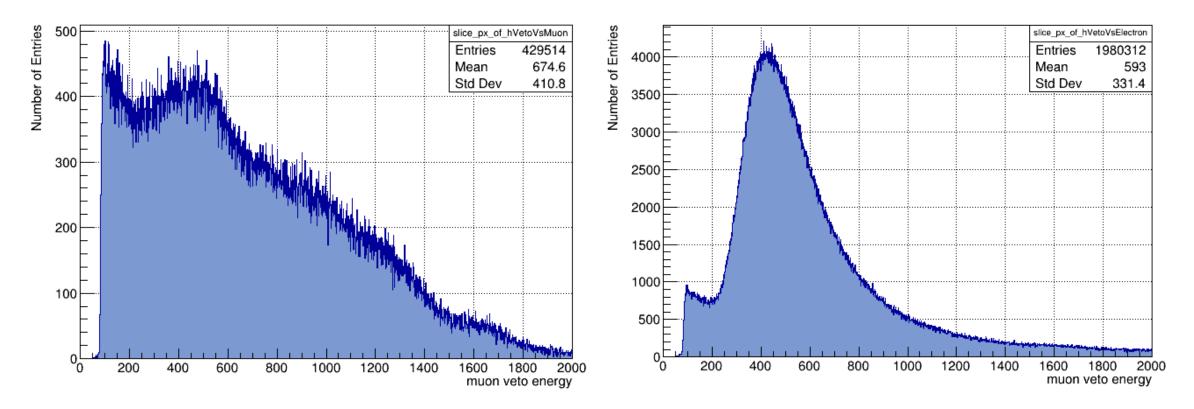
Muon veto time correlation – electron veto

Number of Entries slice px of hVetoVsElectron hVetoVsElectron Entries Mean hVetoVsElectron Std Dev 331.4 Entries 1.059686e+07 Mean x Mean v 825.5 Std Dev x 486.6 Std Dev y -500 muon veto energy

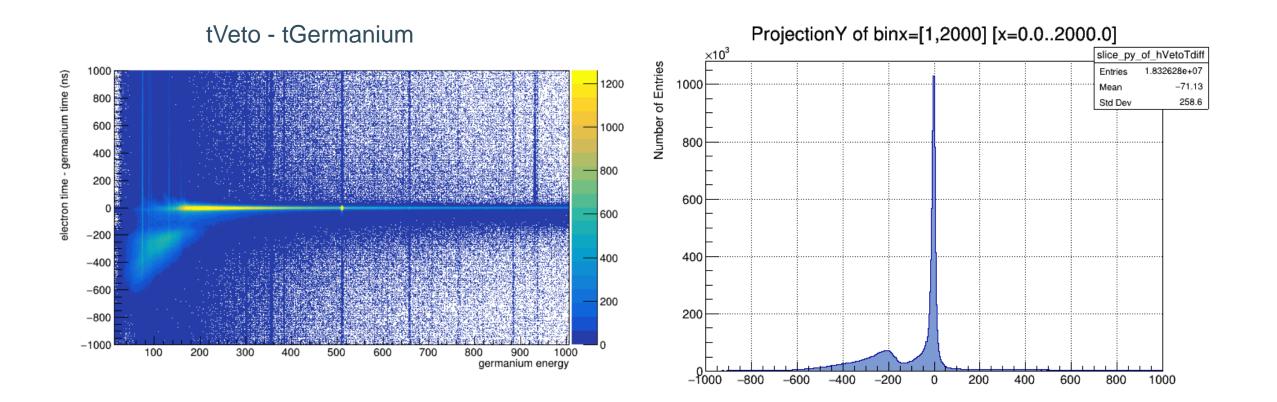
tElectron – tVeto \rightarrow count in veto before electron veto (muons?)

Threshold for muon veto?

• 200?



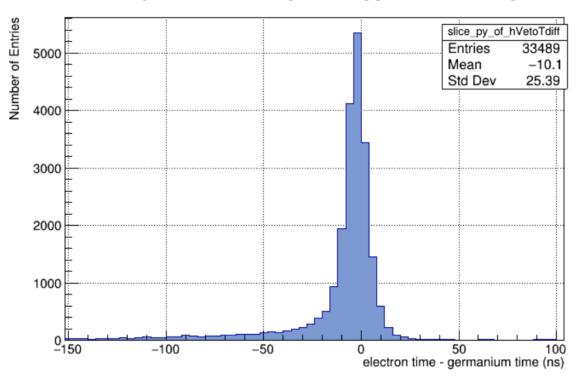
Electron veto timing



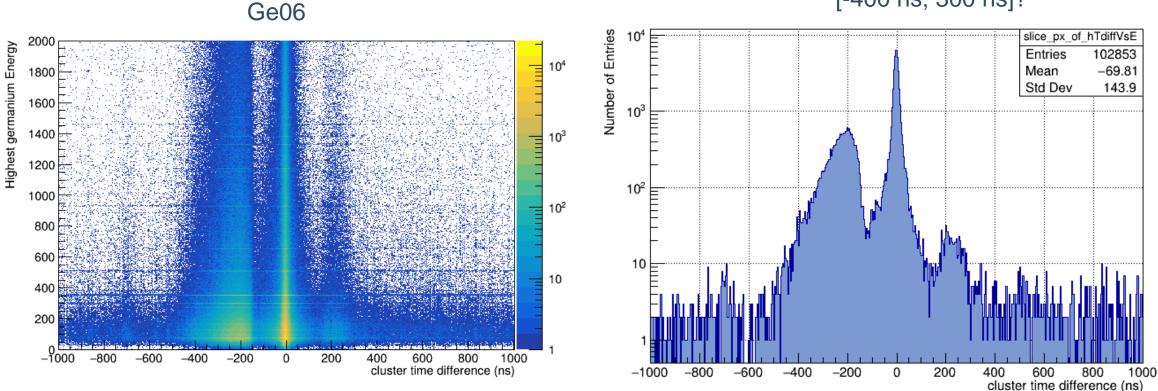
Electron veto timing

- Take cut around 700 keV (near potassium 2p-1s)
- Tail at negative time doesn't seem to come from germanium (not present at 511 keV)
- Window [-50 ns; +20 ns]?

ProjectionY of binx=[696,705] [x=695.0..705.0]



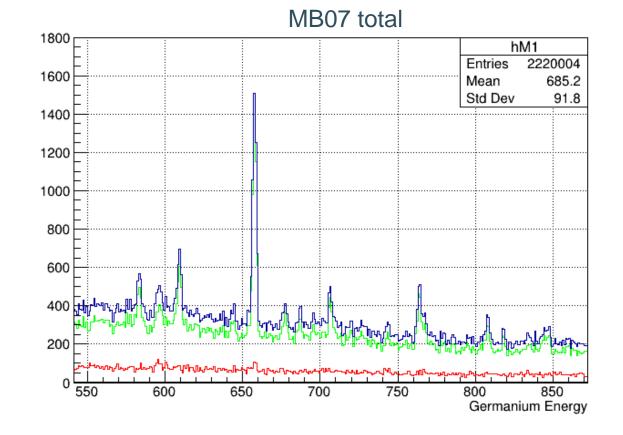
Compton suppression with cluster detectors



[-400 ns; 300 ns]?

Compton suppression with cluster detectors

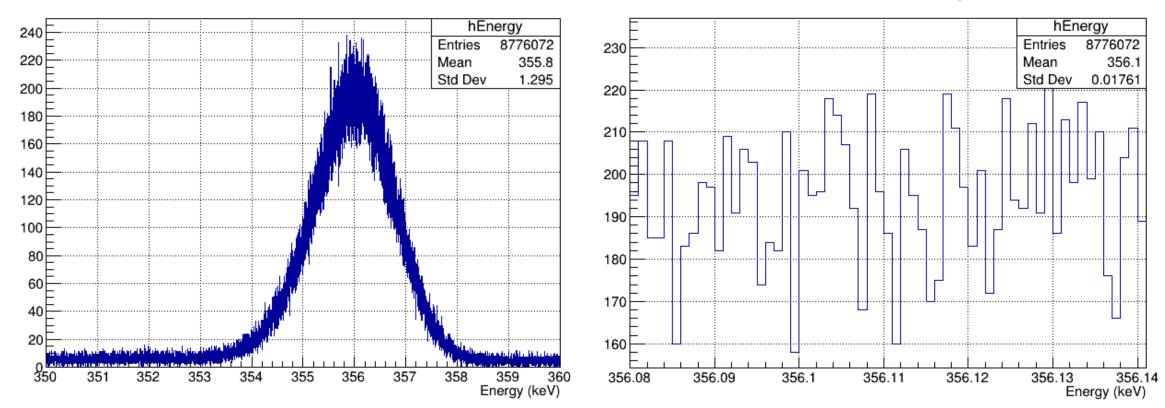
- Taking 300 ns window
 - Blue = singles
 - Red = multiplicity > 1
 - Green = multiplicity = 1
- Reduction of Compton at 700 keV:
 - Ge06 clover: 28%
 - MB07: 21%



Pushing to finite binning limit – 1 bin per eV

Trapezoid filter is doing wonders

No finite binning effect



Pushing to finite binning limit – 1 bin per 0.1 eV

hEnergy hEnergy 8776072 Entries 8776072 Entries 35 356.1 Mean 355.8 Mean Std Dev 0.001912 Std Dev 1.295 30 25 20 15 10 5 **n i - 18**10 i i i - 1 i i i - 1 0^{Li} 0 350 351 352 353 354 355 356 357 358 359 360 356.11 356.111 356.112 356.113 356.114 356.115 Energy (keV) Energy (keV)

Clear finite binning effect

45

40

35

30

25

20

15

10

5

What's next?

- Applying cuts to data:
 - Thresholds on scintillators ok?
 - Electron veto timing ok?
 - Compton suppression idea + time window ok?
- Everyone agrees on 100 bins per keV ok?
- Recalibrate using anticoincidence trees

