GEM testing status

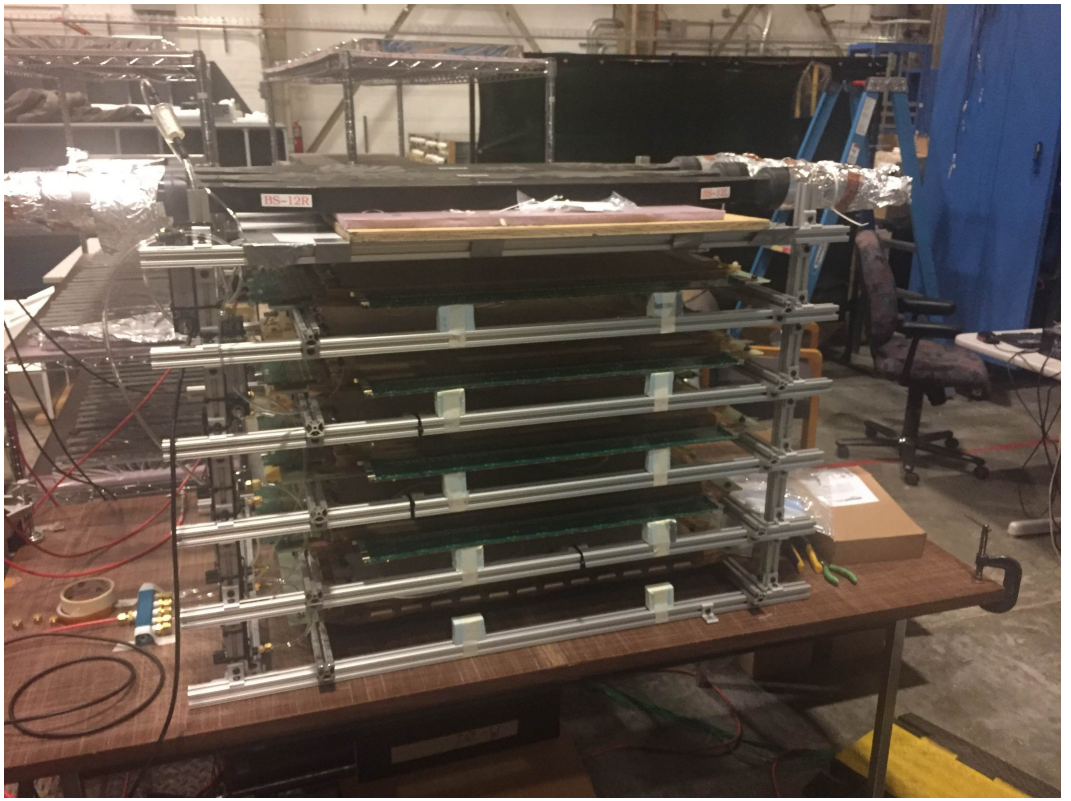
Danning

Outline

- Cosmic test
- Current setup in HallA

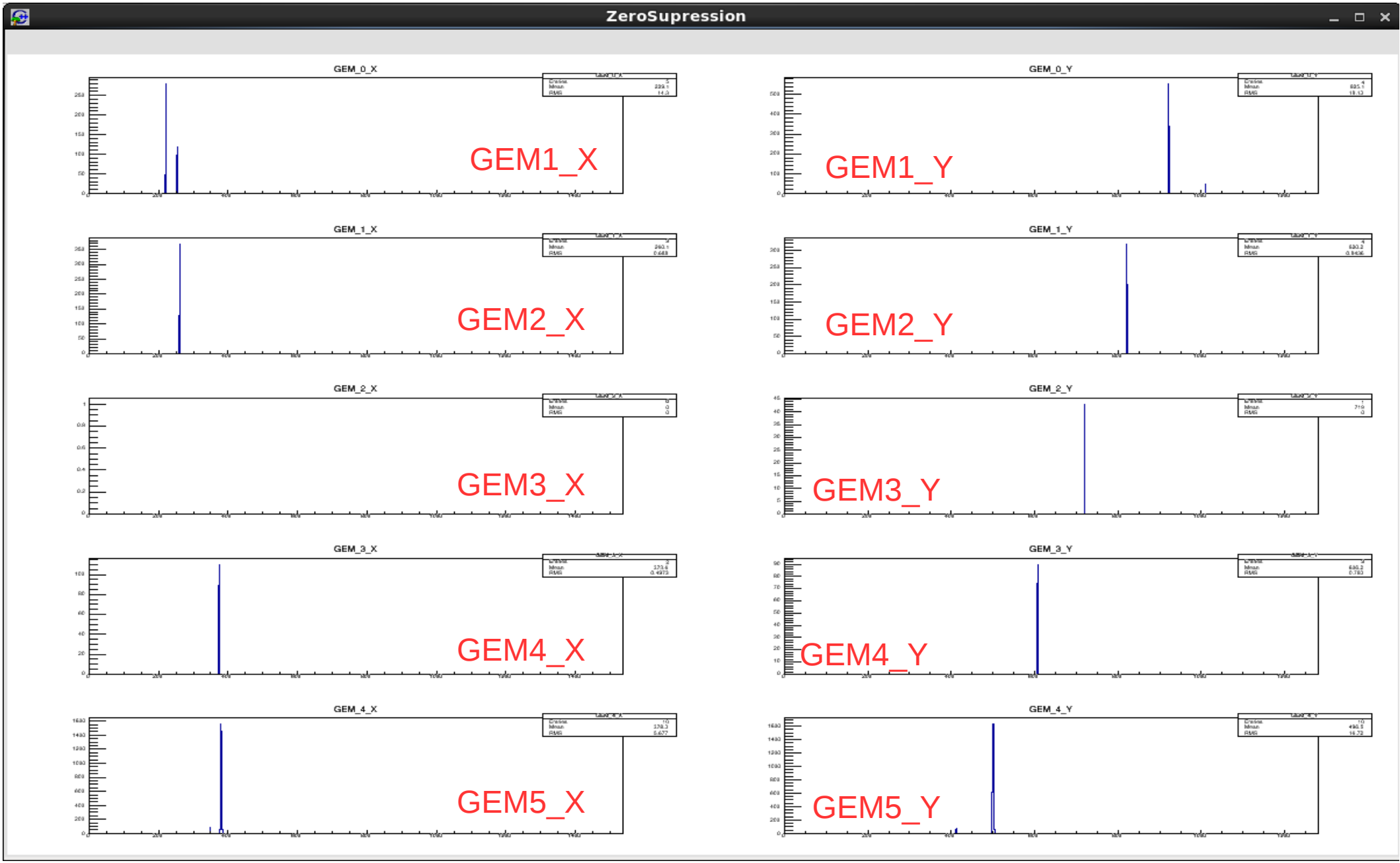
Cosmic test

- 5 layers of 60x50cm GEMs
- Trigger: coincidence of scintillator(on top) and calorimeter(underneath)
- Working gas: Ar/CO2(75%/25%)

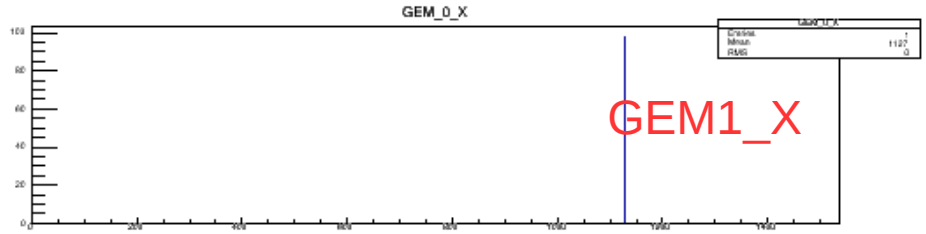


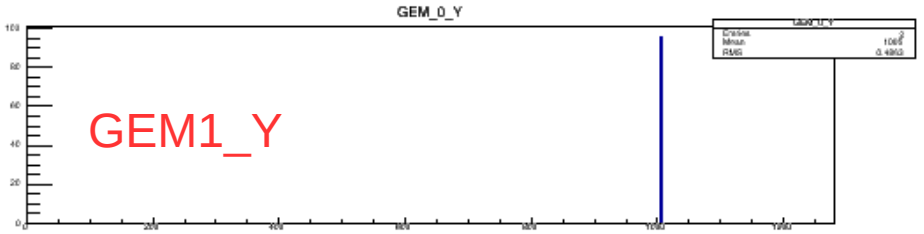
Raw data(6 time sample)

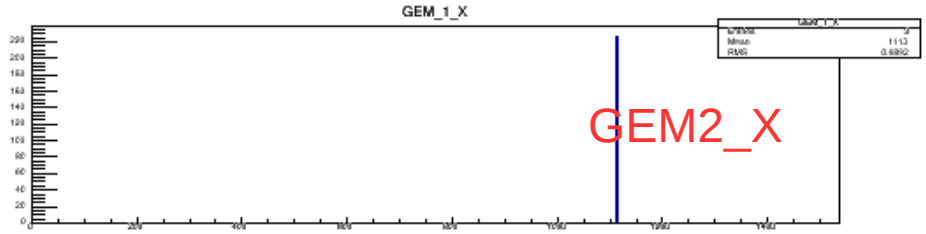
Hits after zero suppression

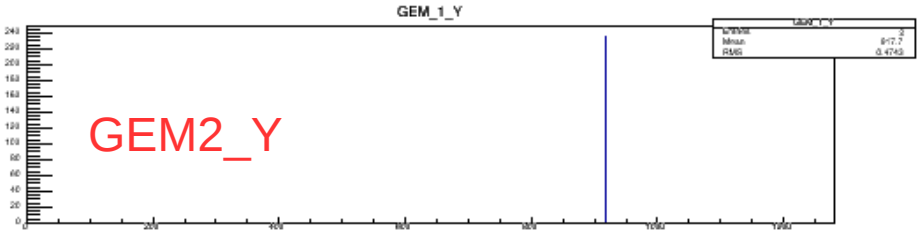


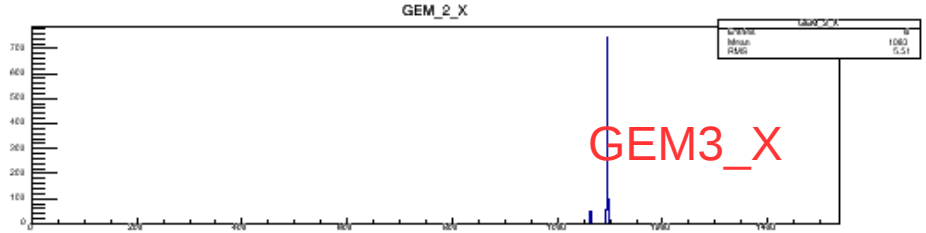
ZeroSupression

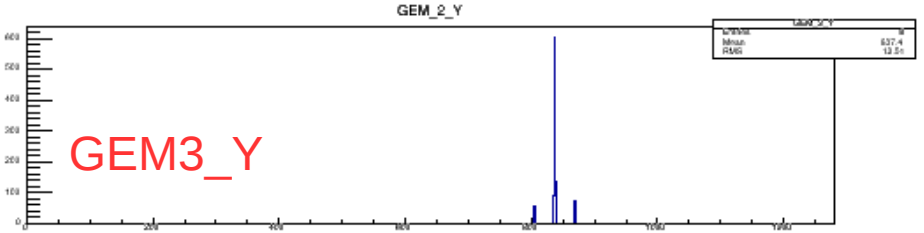


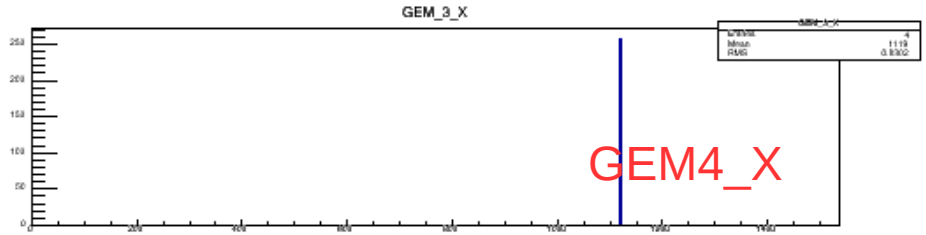


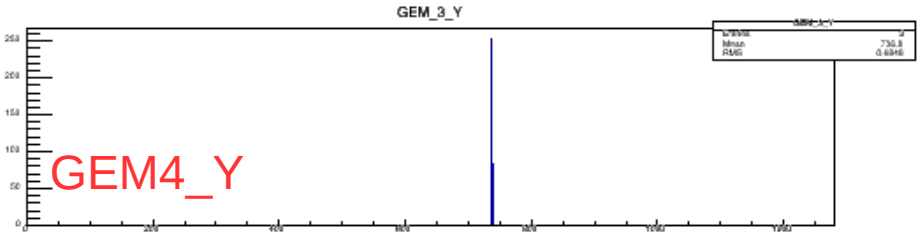


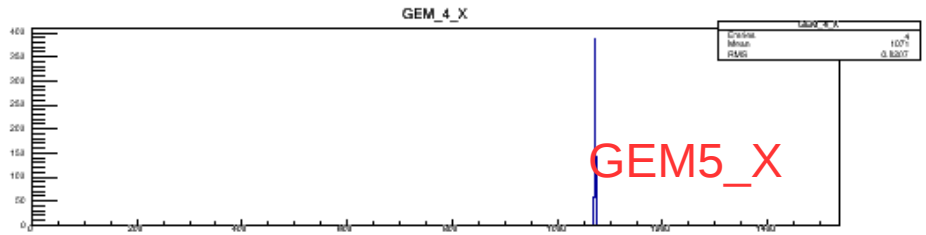


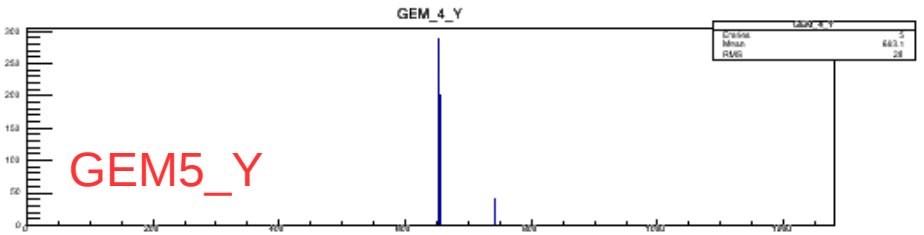




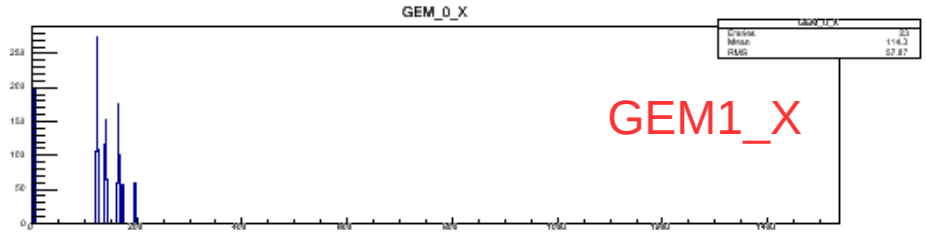


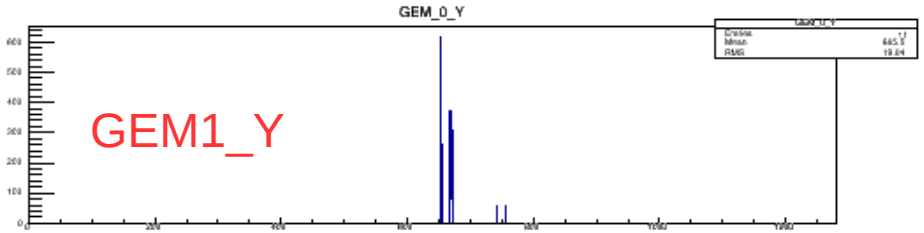


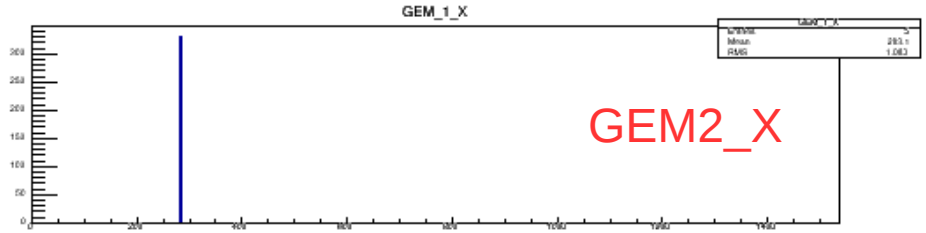


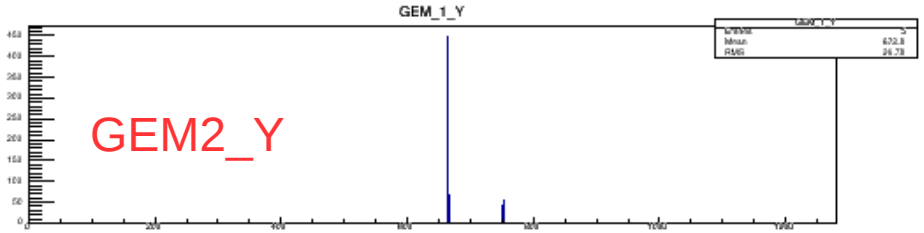


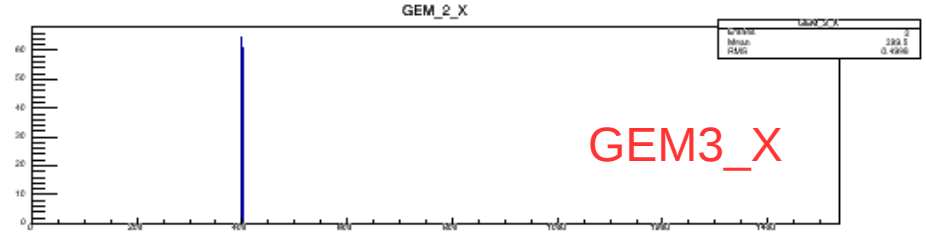
ZeroSupression

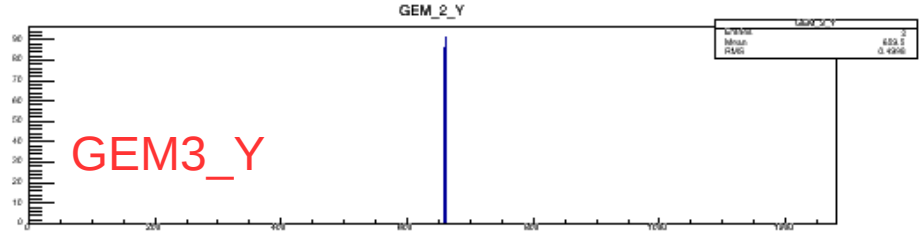


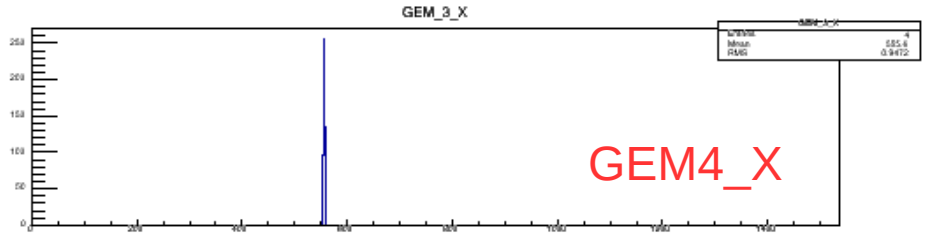


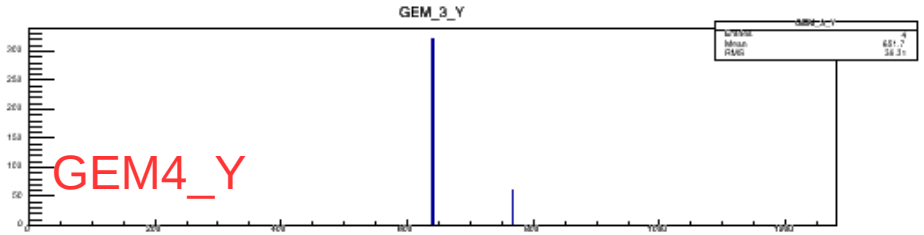


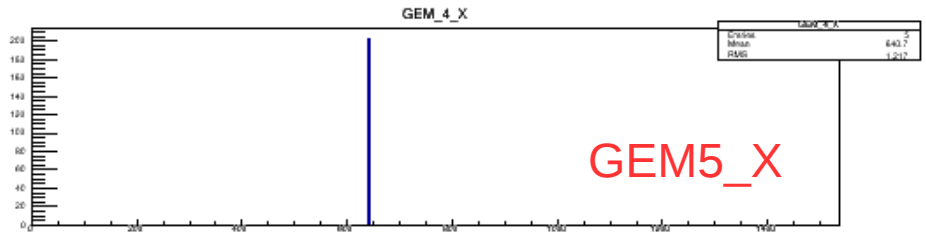


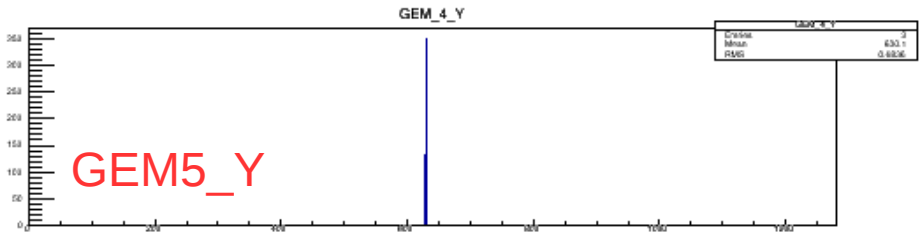




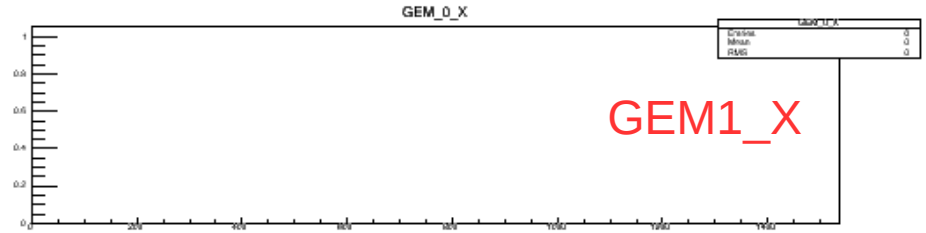


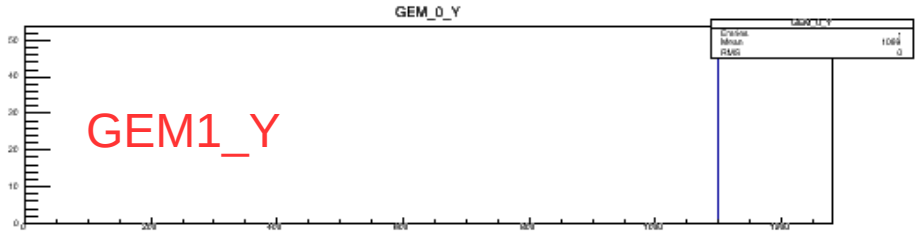


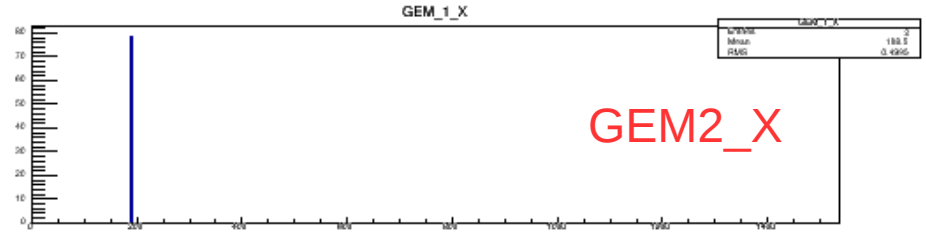


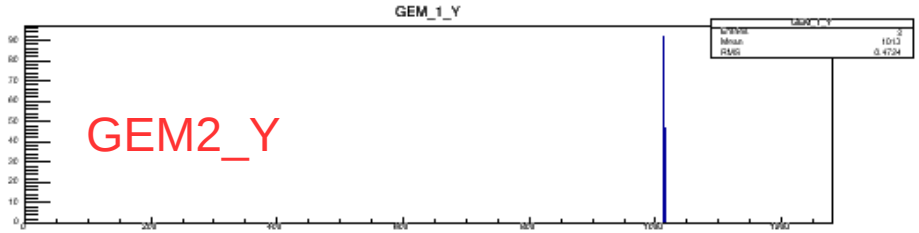


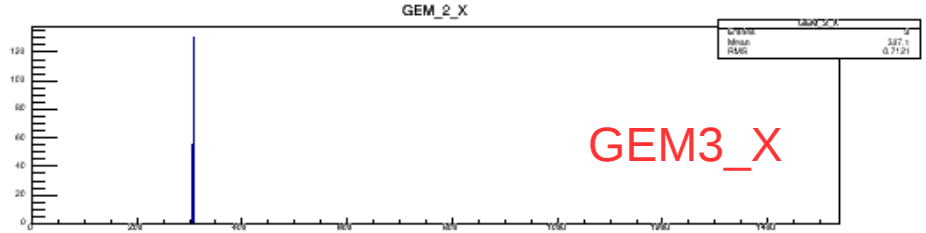
ZeroSupression

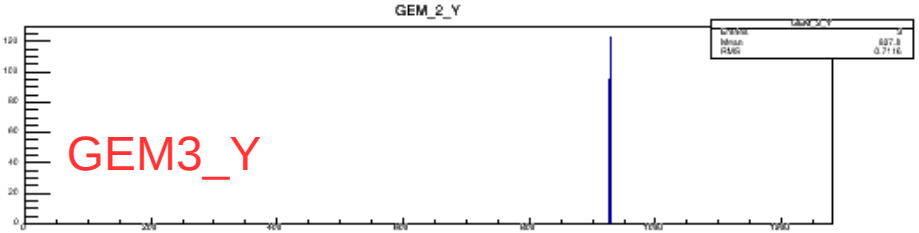


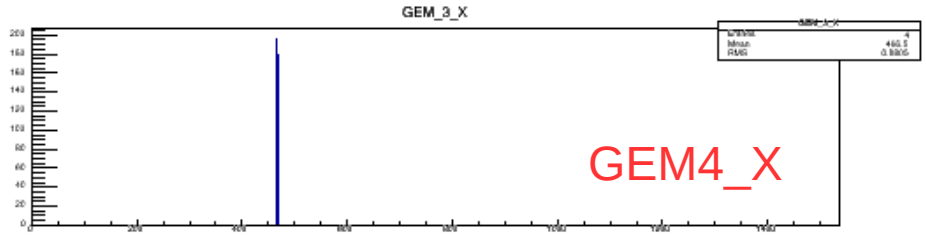


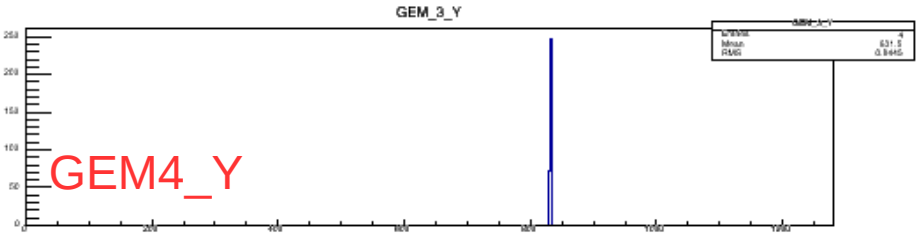


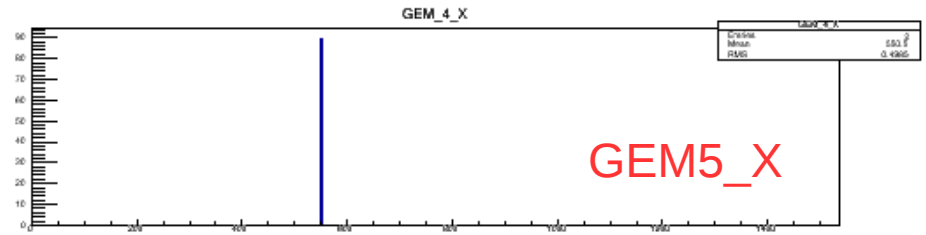


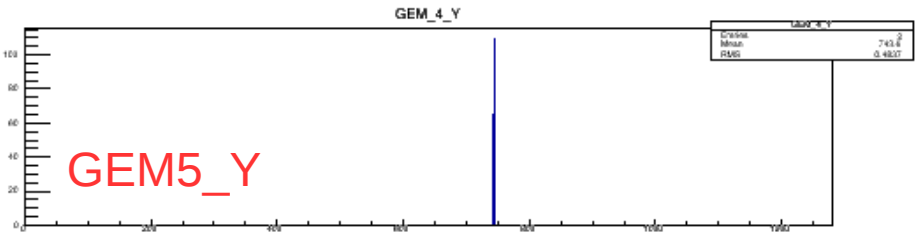








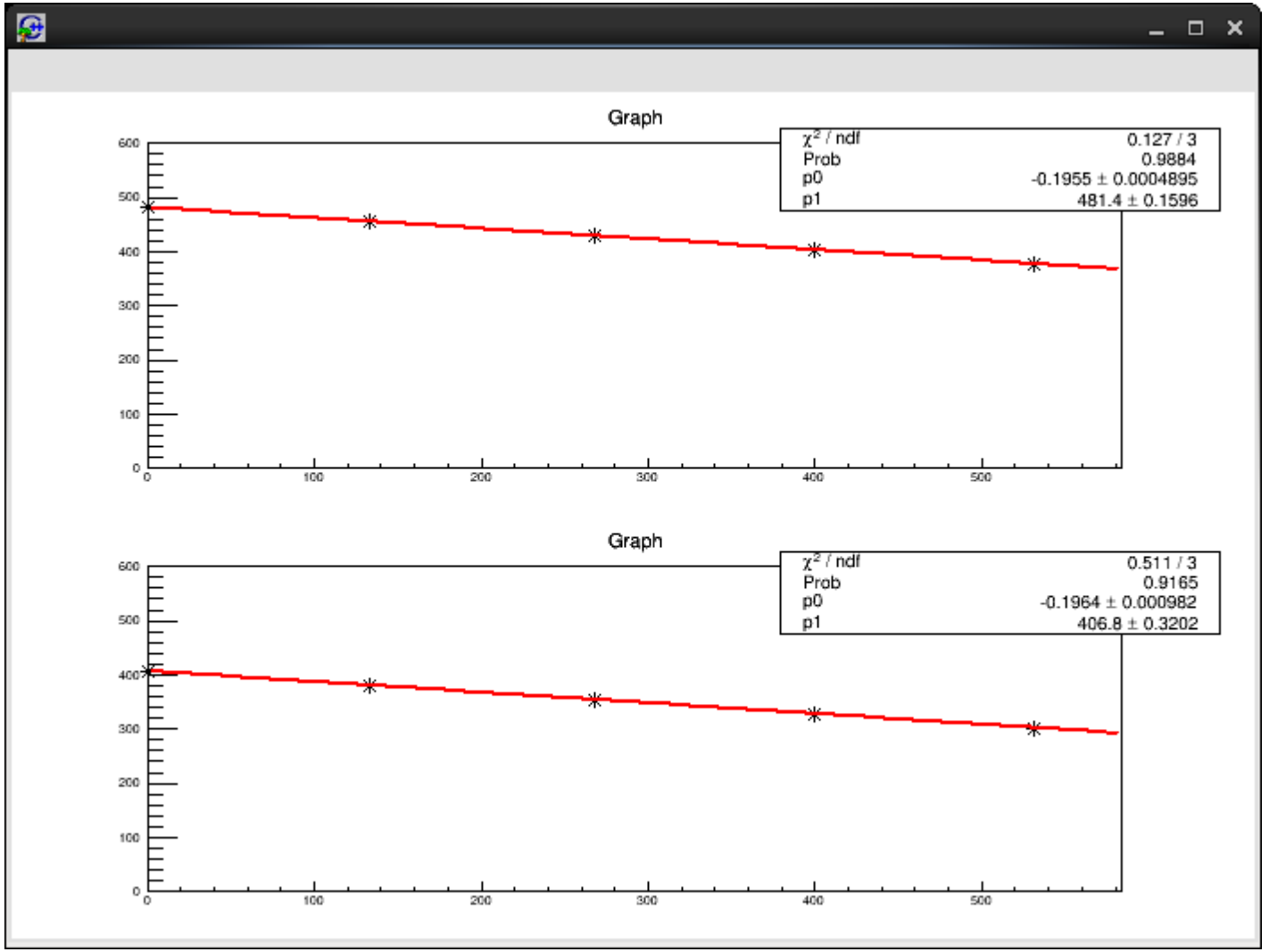




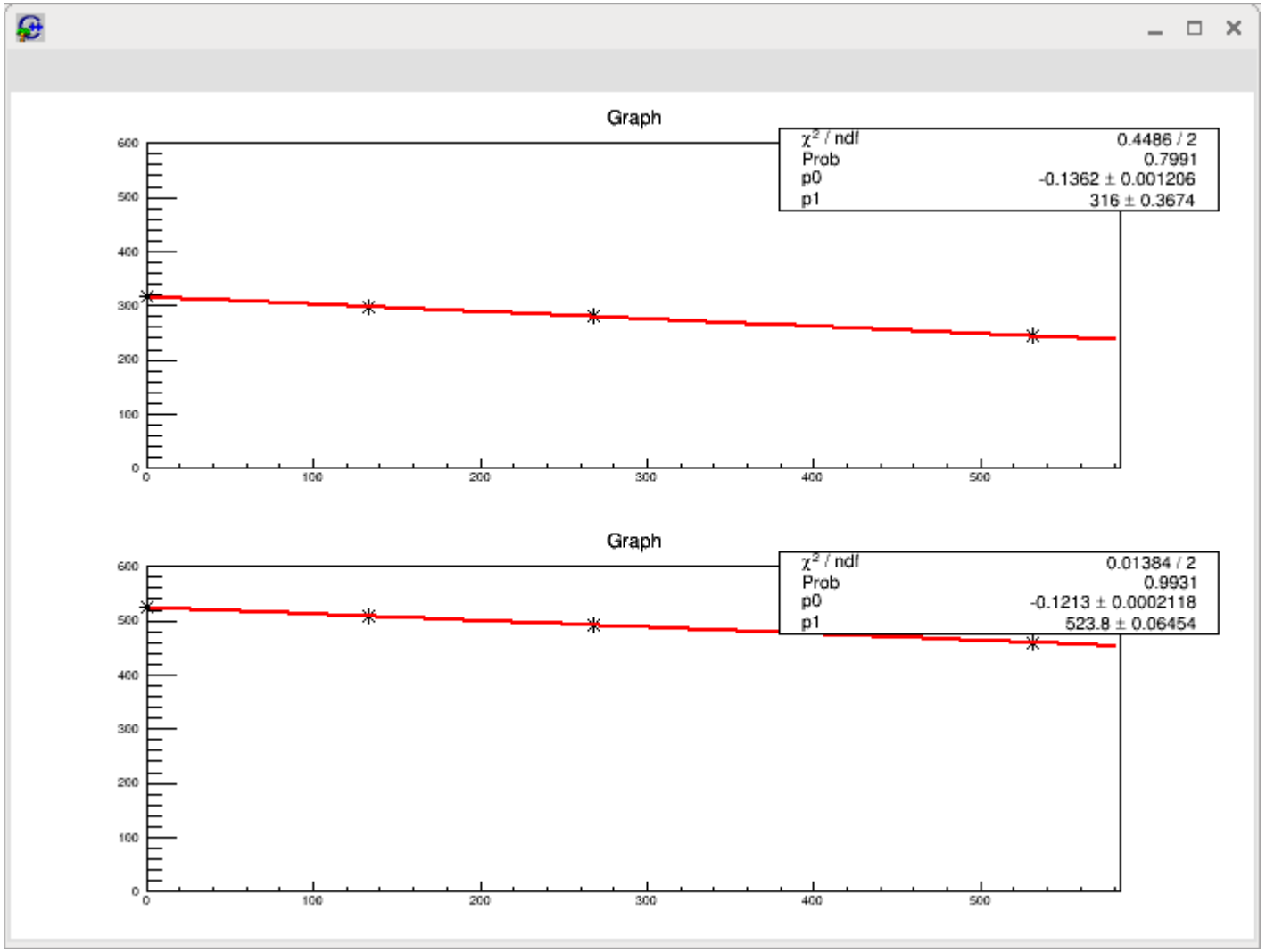
Tracks(preliminary)

- Find offset from cosmic data
  - Z offset to an accuracy of <1%
  - X/Y offset to an accuracy of 1mm(bad)
- Working on getting GEM resolution from tracks. Need better X/Y offset between GEMs.
- Using offset from cosmic on data taken in HallA, adding a series of cuts practicing distinguish hits related to trigger from background

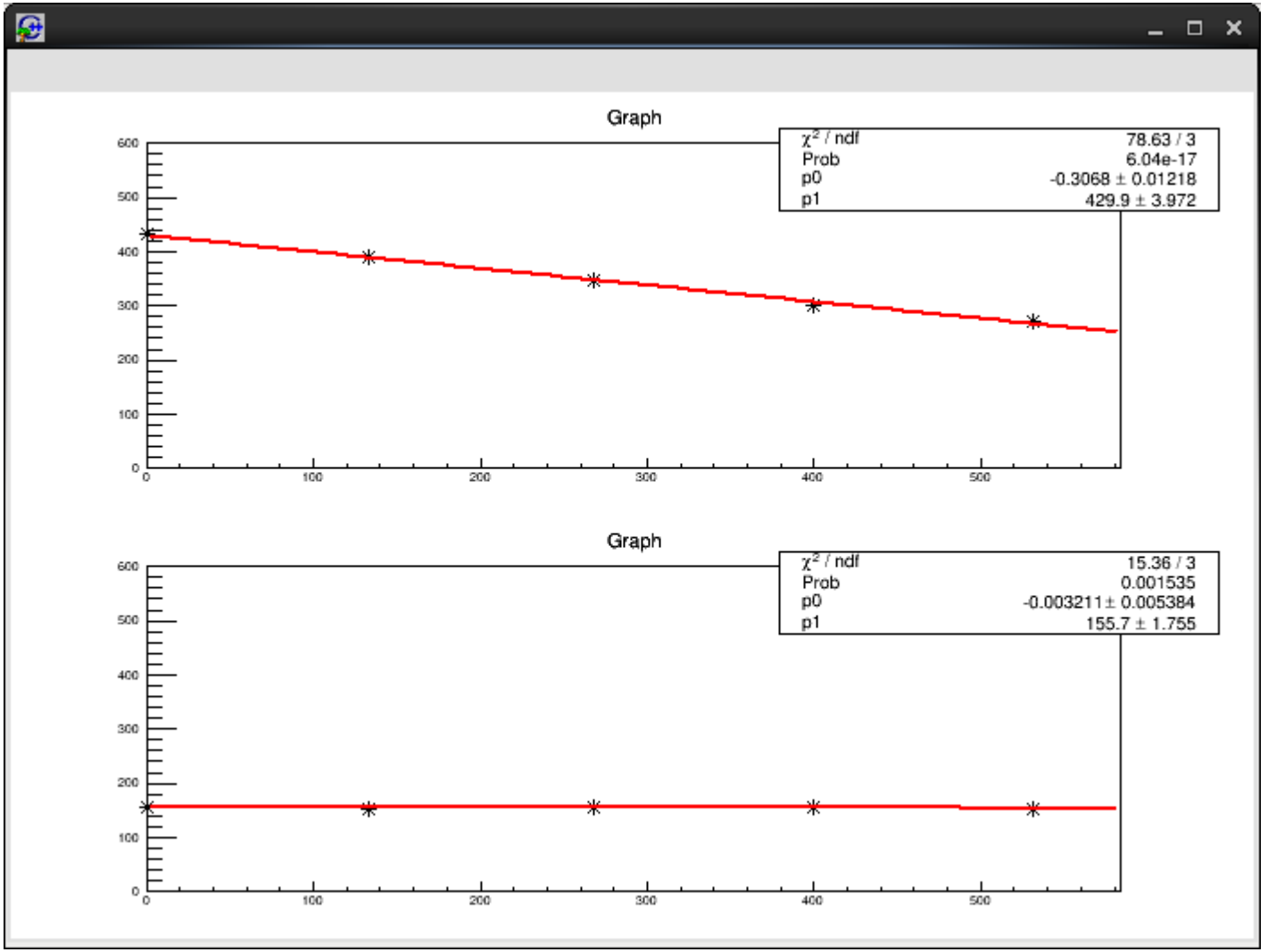
Tracks(preliminary)



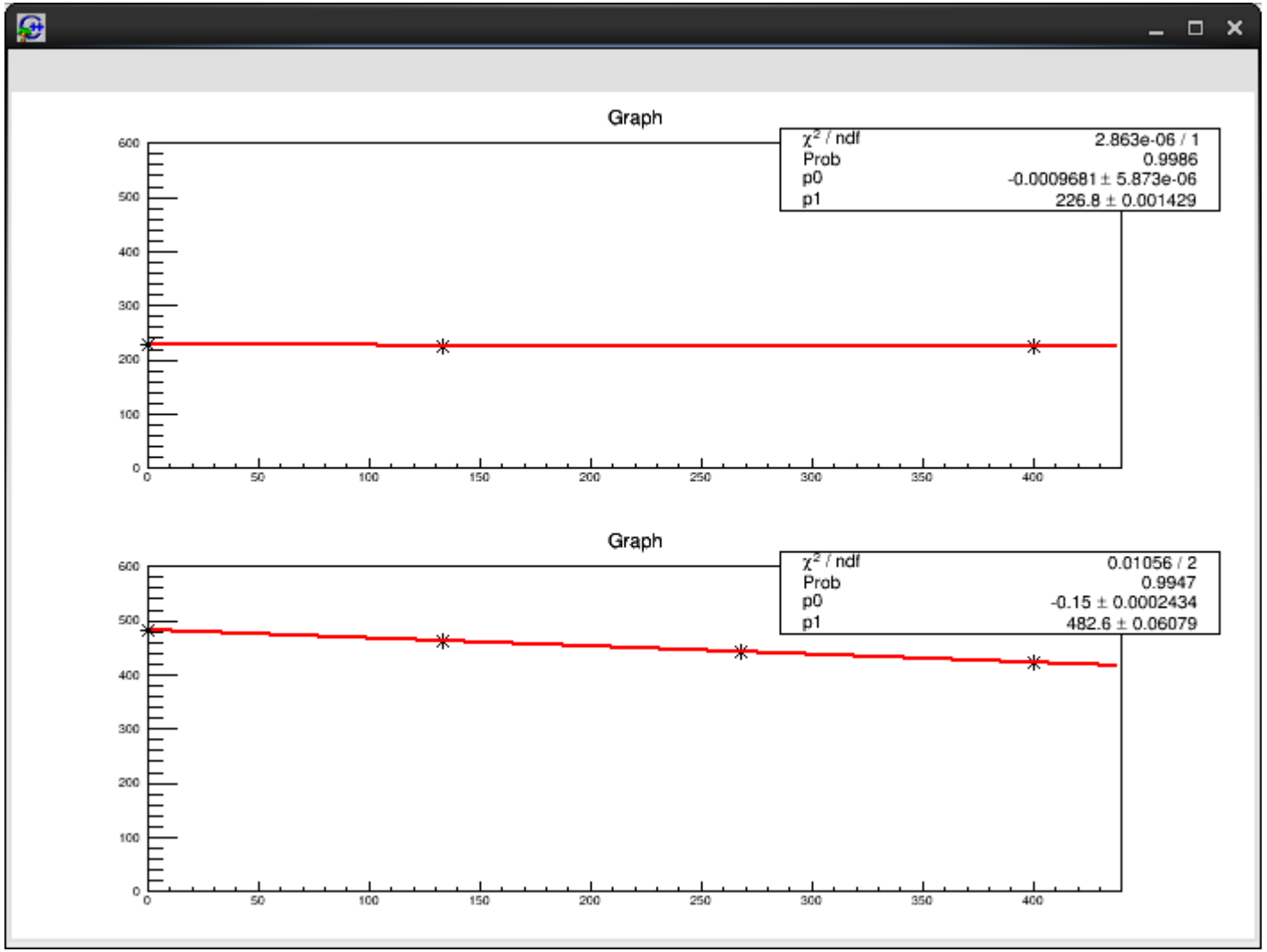
Tracks(preliminary)



Tracks(preliminary)



Tracks(preliminary)



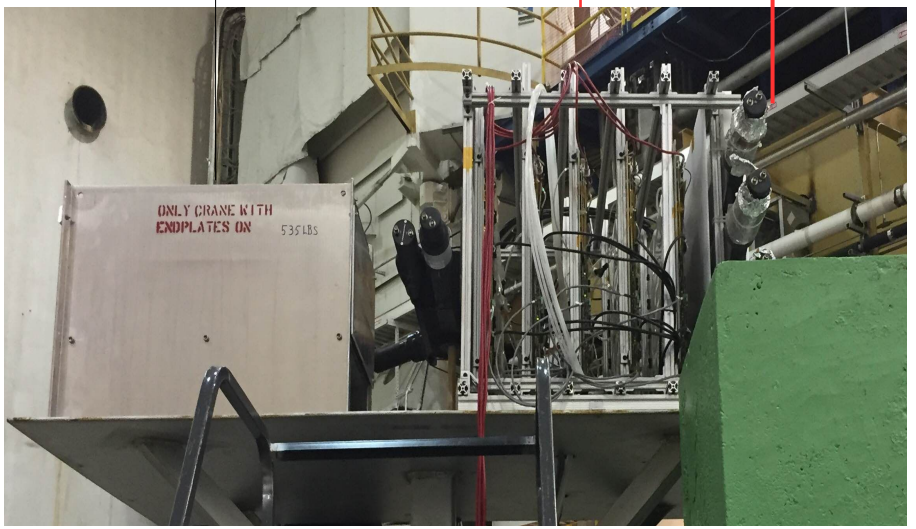
Current setup in HallA

Facing beam at about 70°

Calorimeter

GEMs

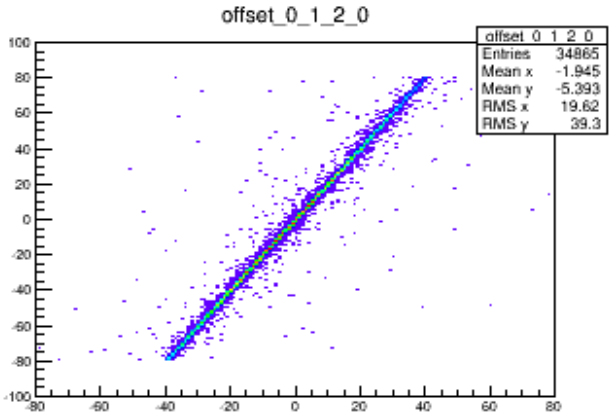
Scintillator

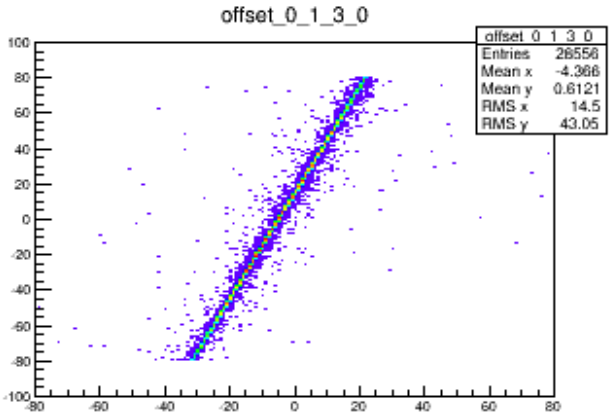


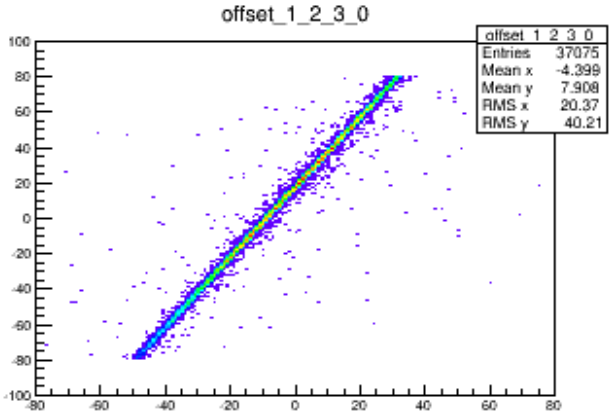
Current setup in HallA

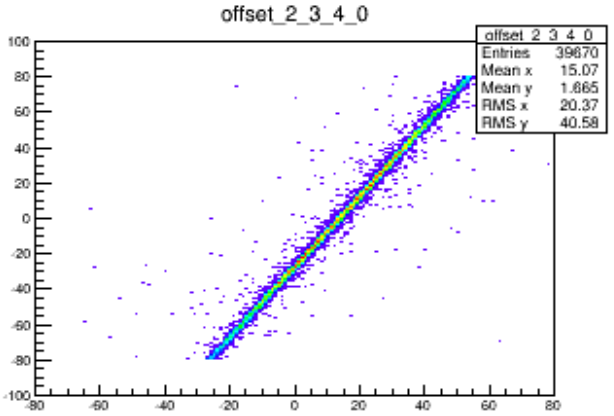
- DAQ busy time : 20ms...reading 9 MPD in series using BLT32 mode transfer on MPD firmware 3.0. Optical link transfer on MPD firmware 4.0 not ready yet.
- Goal is to practice selecting hits related to trigger from huge background hits.

backup


offset_0_1_2_0
offset_0_1_2_0
Entries 34865
Mean x -1.945
Mean y -5.393
RMS x 19.62
RMS y 39.3


offset_0_1_3_0
offset_0_1_3_0
Entries 26556
Mean x -4.366
Mean y 0.6121
RMS x 14.5
RMS y 43.05


offset_1_2_3_0
offset_1_2_3_0
Entries 37075
Mean x -4.399
Mean y 7.908
RMS x 20.37
RMS y 40.21


offset_2_3_4_0
offset_2_3_4_0
Entries 39670
Mean x 15.07
Mean y 1.665
RMS x 20.37
RMS y 40.58