

# Various Updates

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Oct 30th, 2024  
INTT meeting



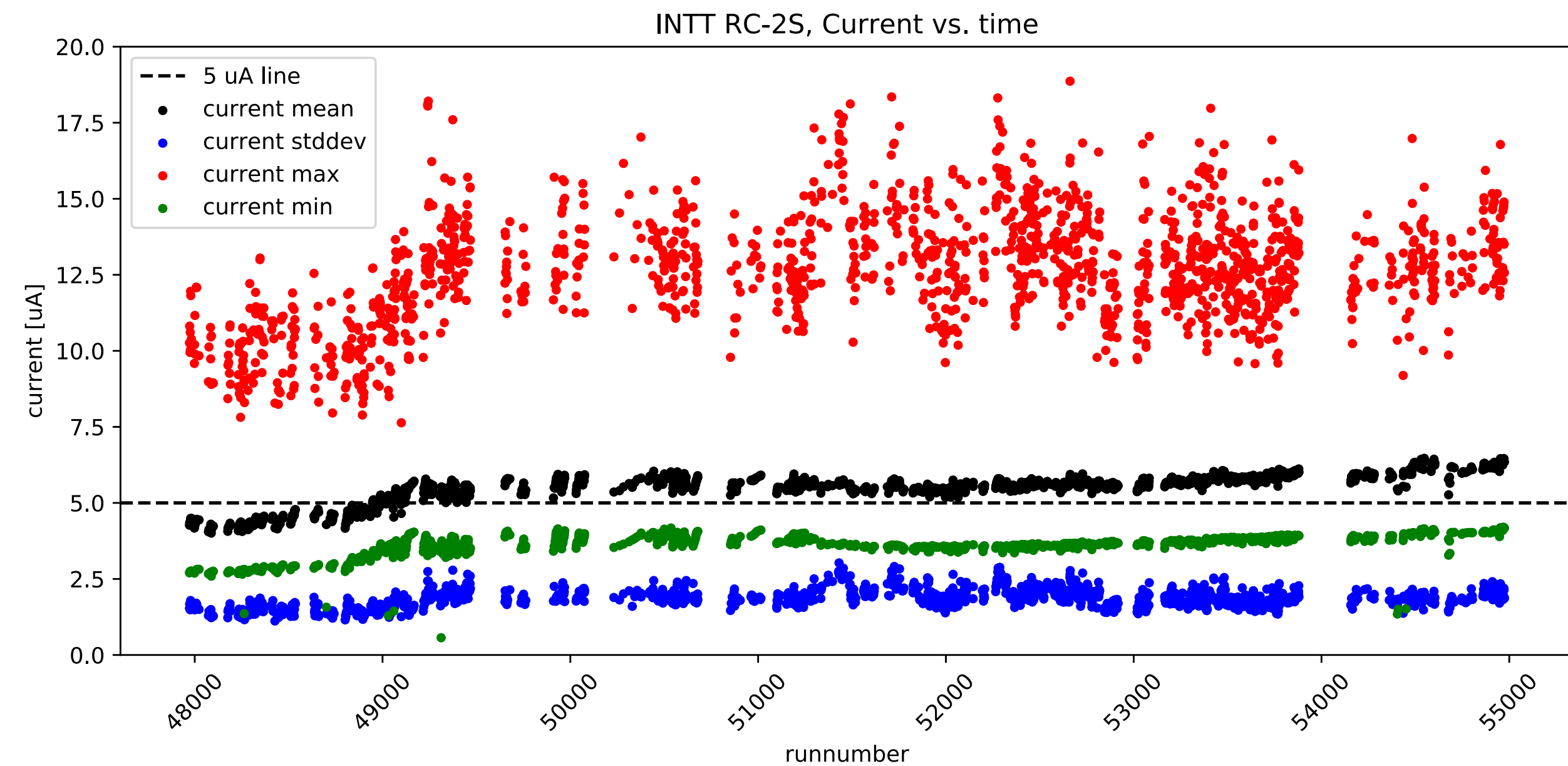
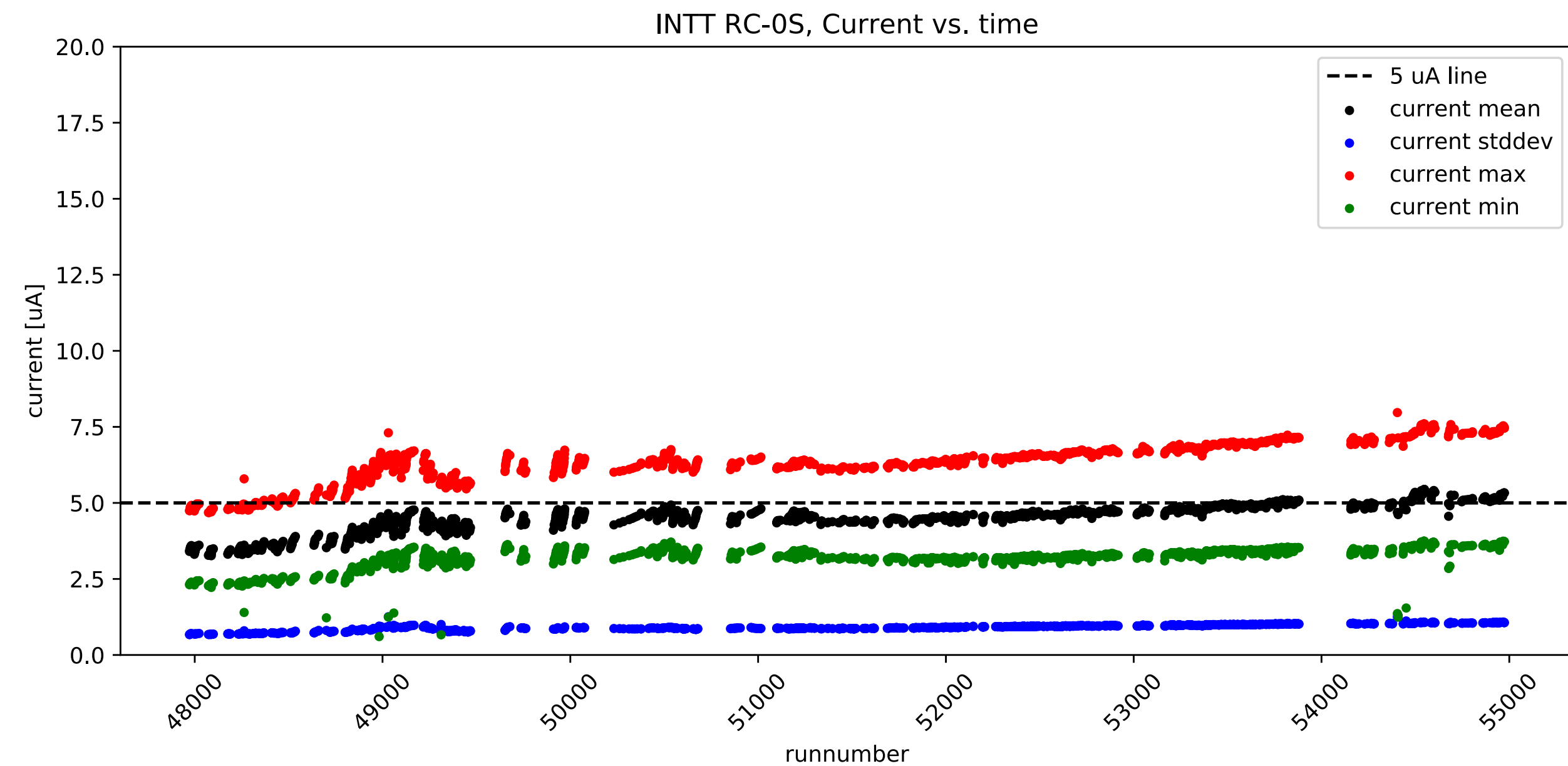
國立中央大學  
National Central University



# INTT sensor leakage current

- Duration: 2024-07-11 to 2024-10-21
- Number of runs: 24431
- Run type: physics
- Run duration > 10 mins

pp and AuAu collision runs both included

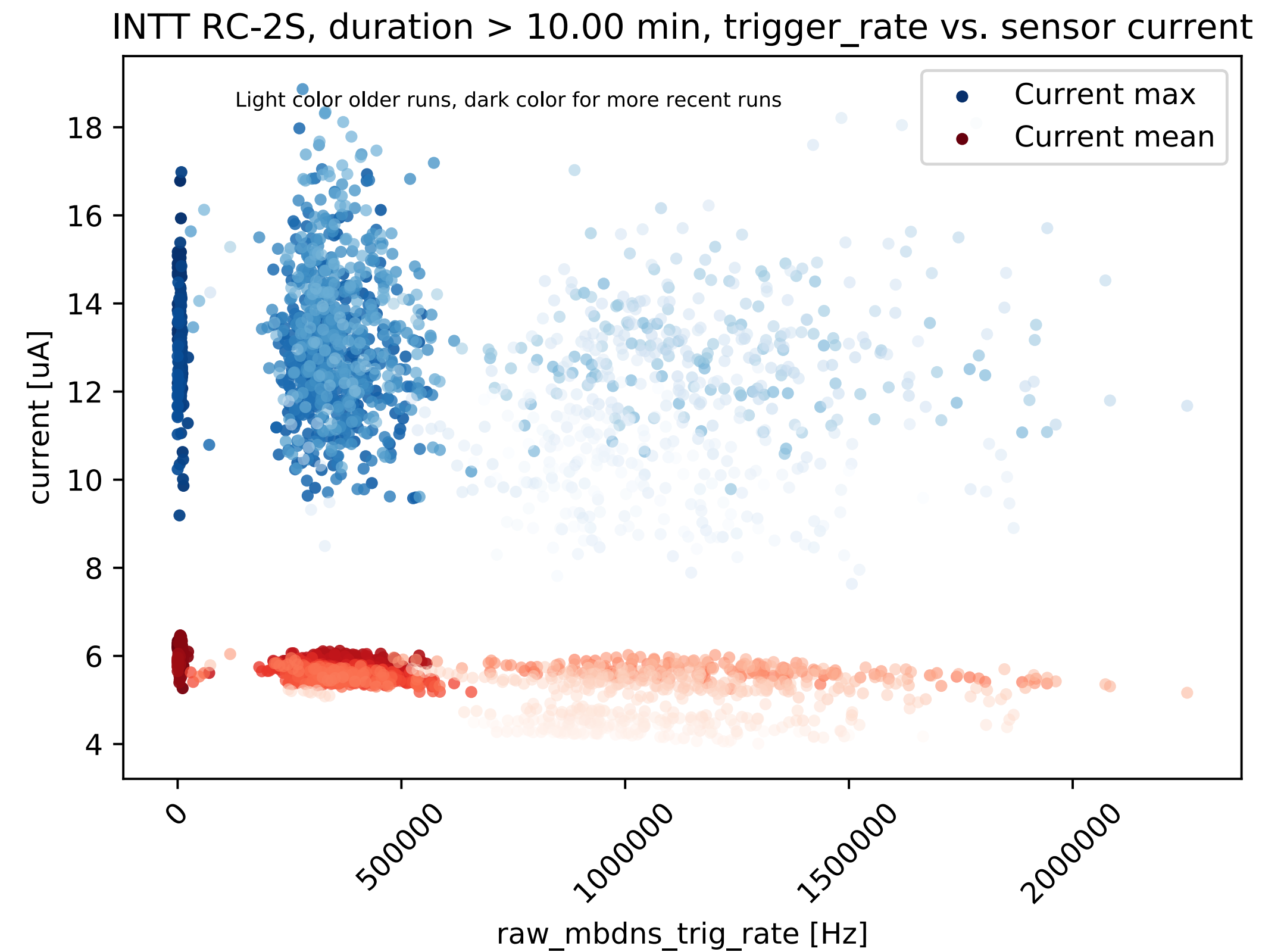
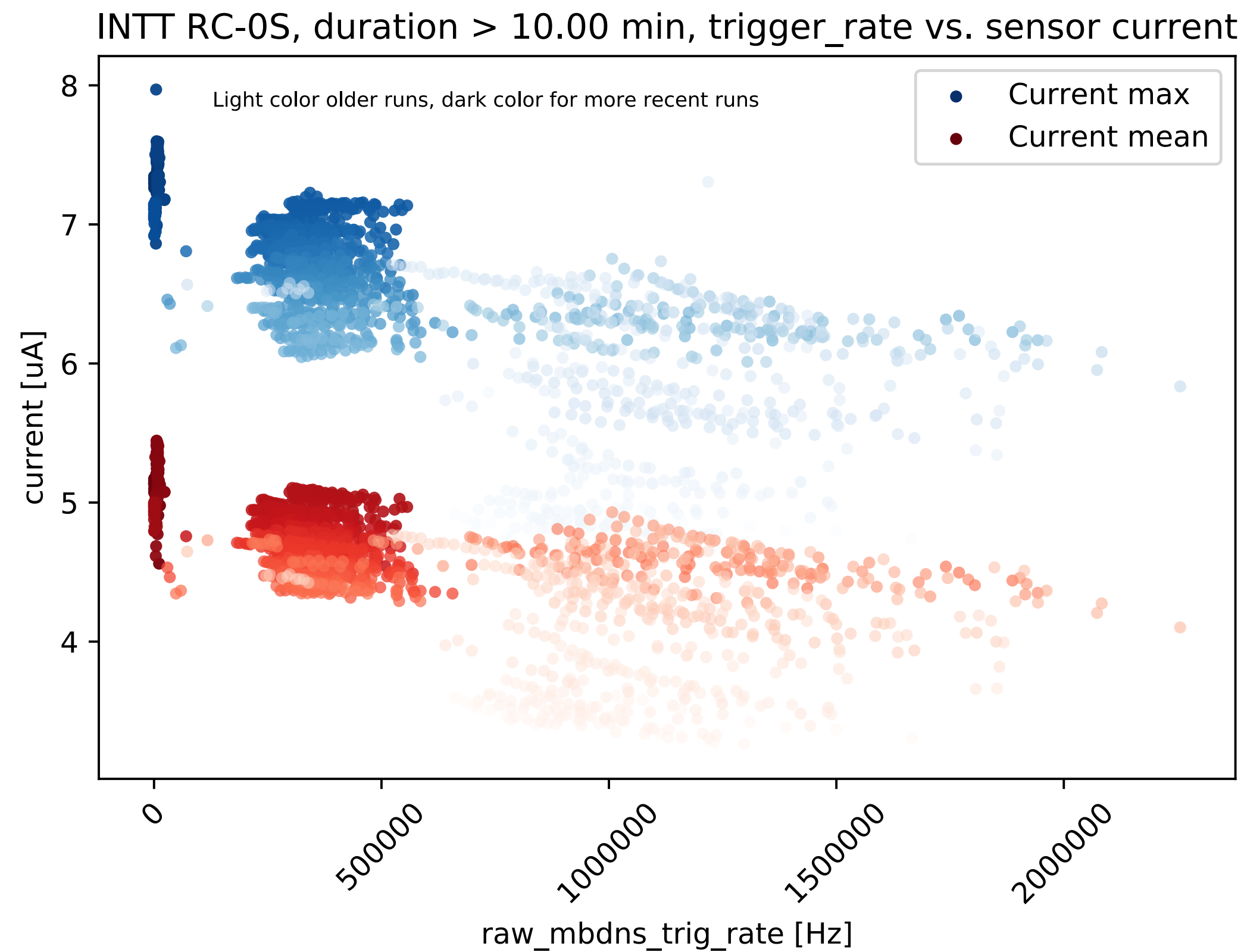


The INTT sensor leakage currents are steadily increasing  
The indication of the radiation damage? → MIP as a function of runs and data taking time!

# INTT sensor leakage current

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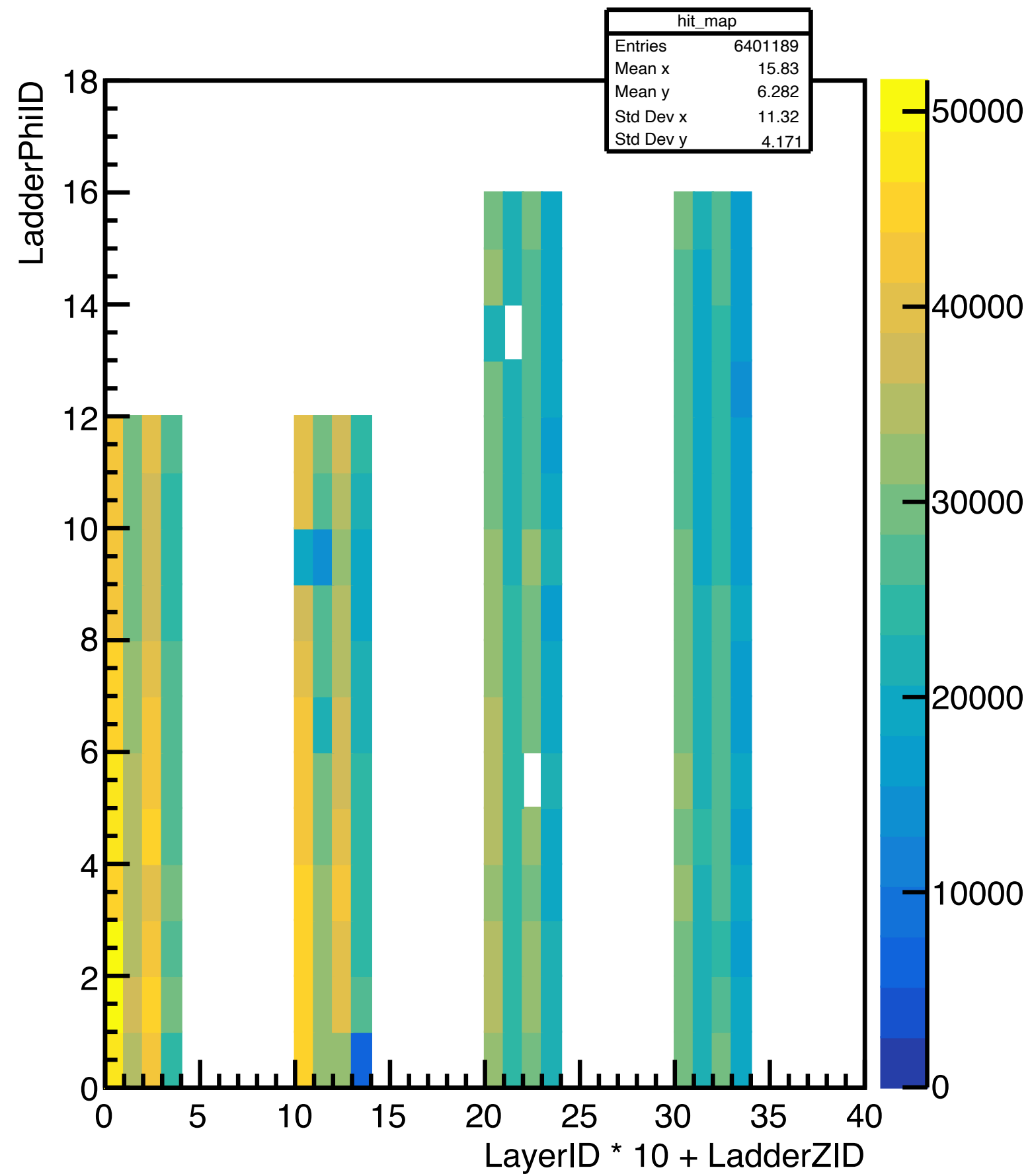
pp and AuAu collision runs both included



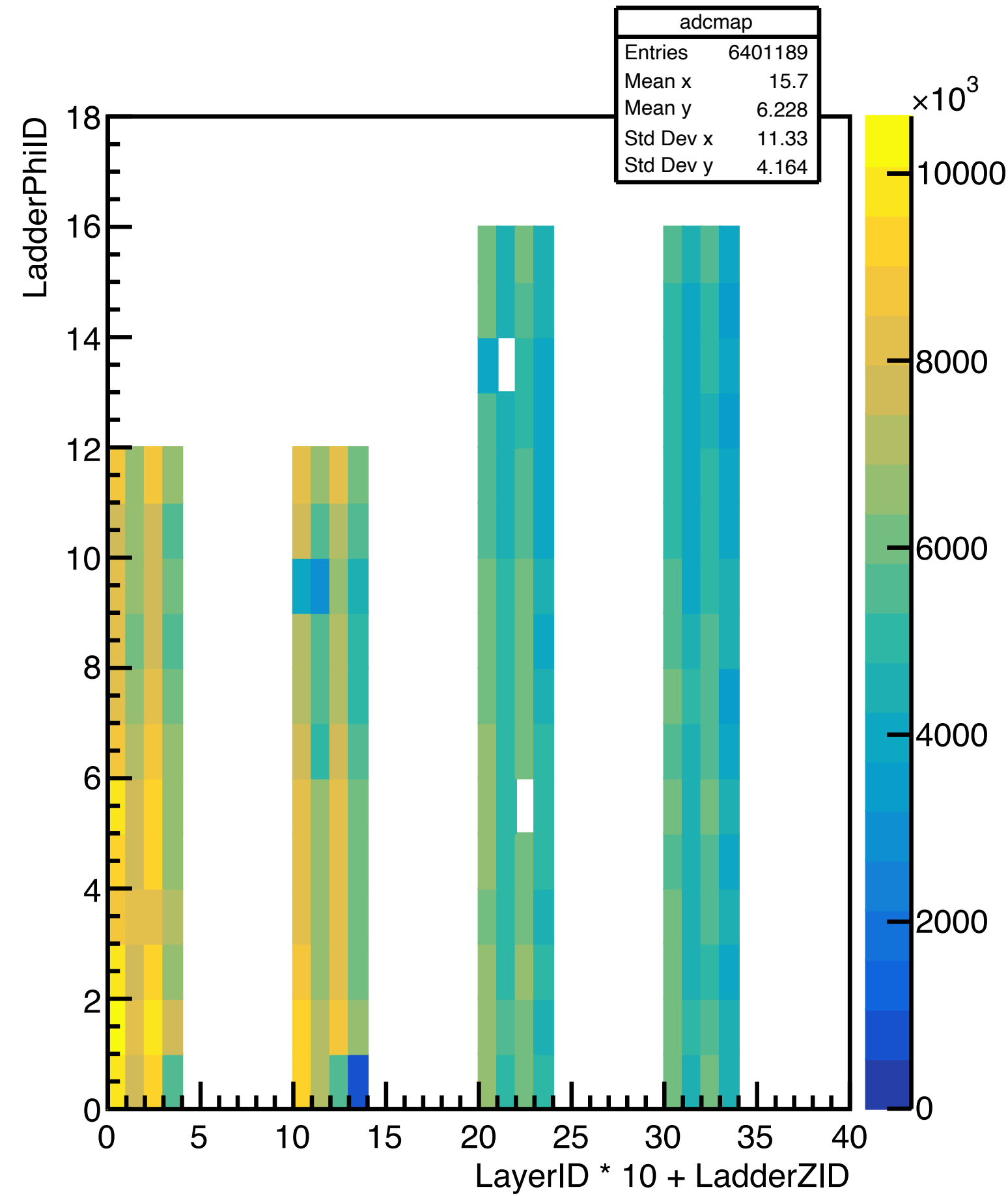
# Average cluster ADC

Run 54280 (AuAu run in Zero field)

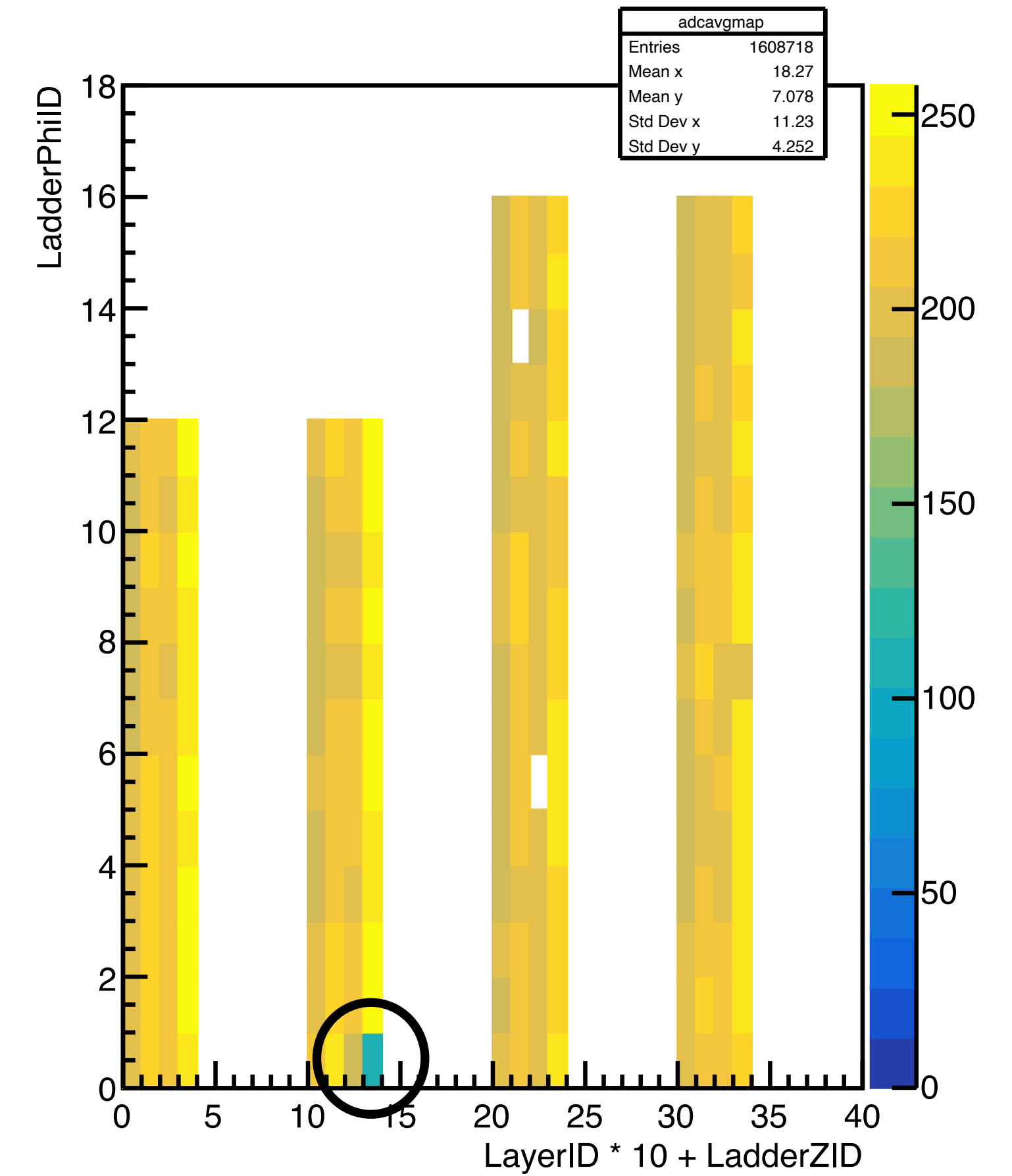
H1: HitMap



H2: Filled by cluster ADC



H3: H2/H1

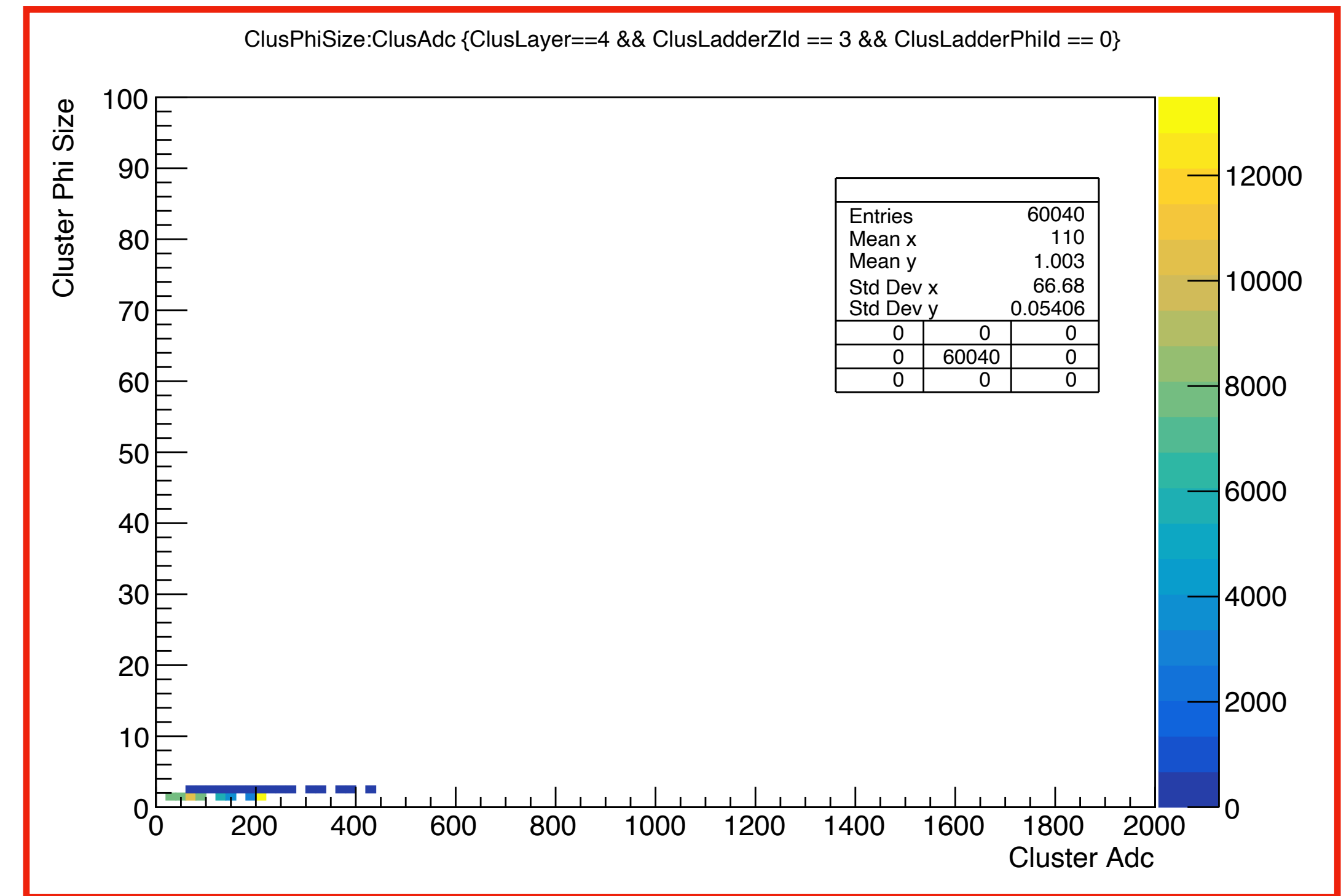
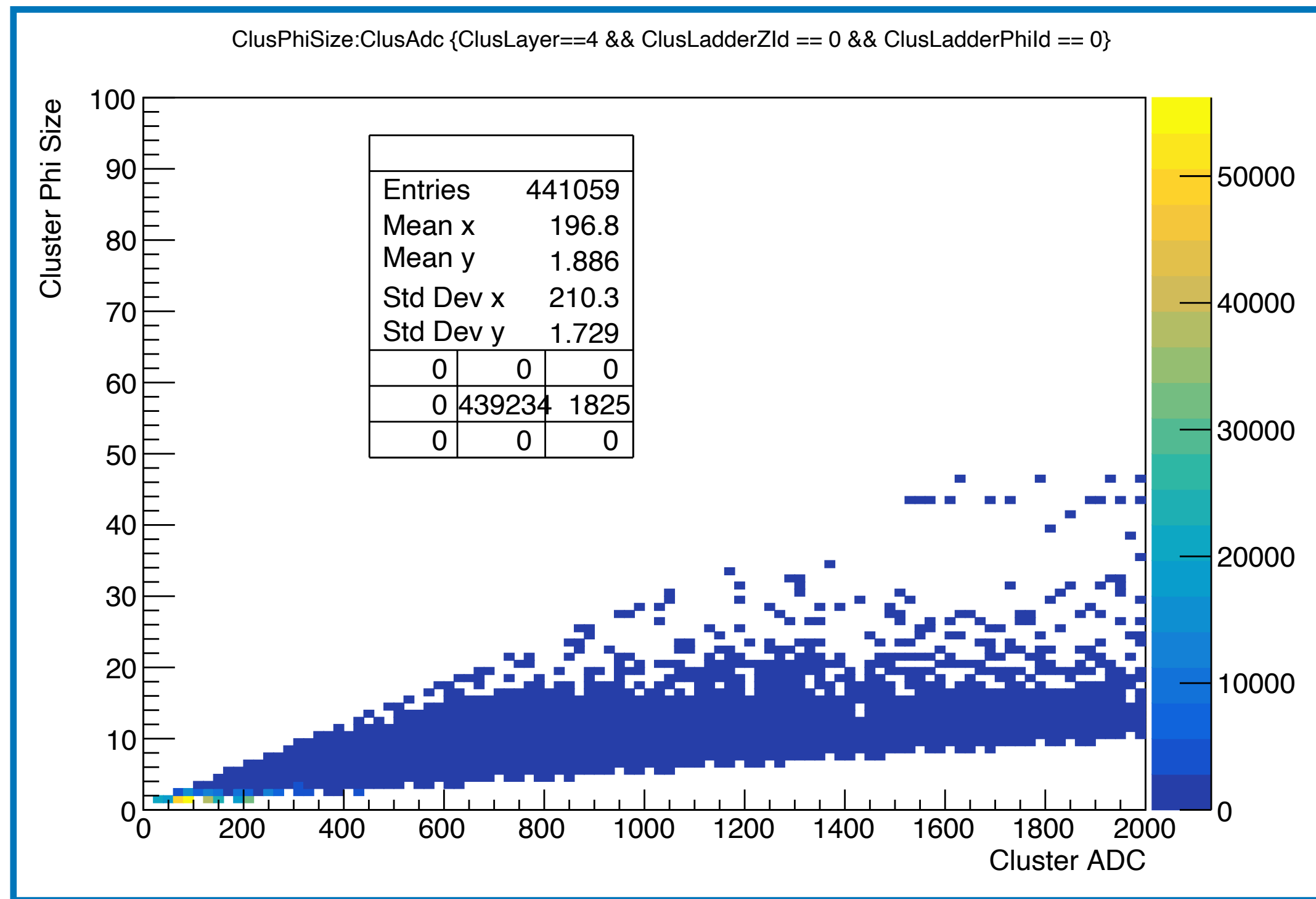
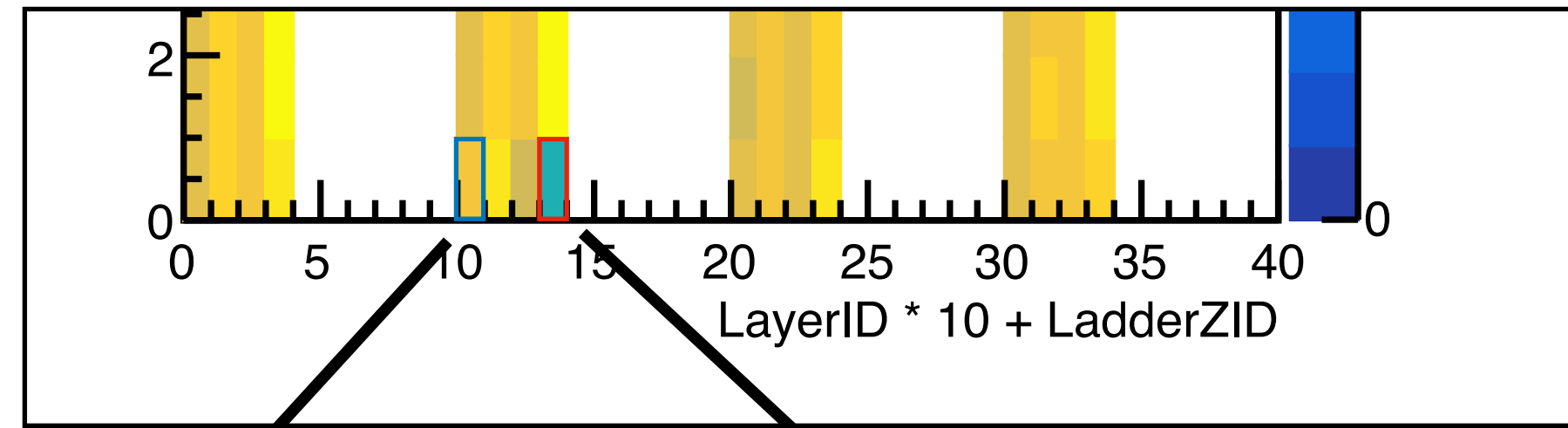


Spotted by Hao-Ren

The sensor at **LayerID 4, LadderZID 3 and LadderPhiID 0** has very low average cluster ADC in average

# Average cluster ADC

Run 54280 (AuAu run in Zero field)

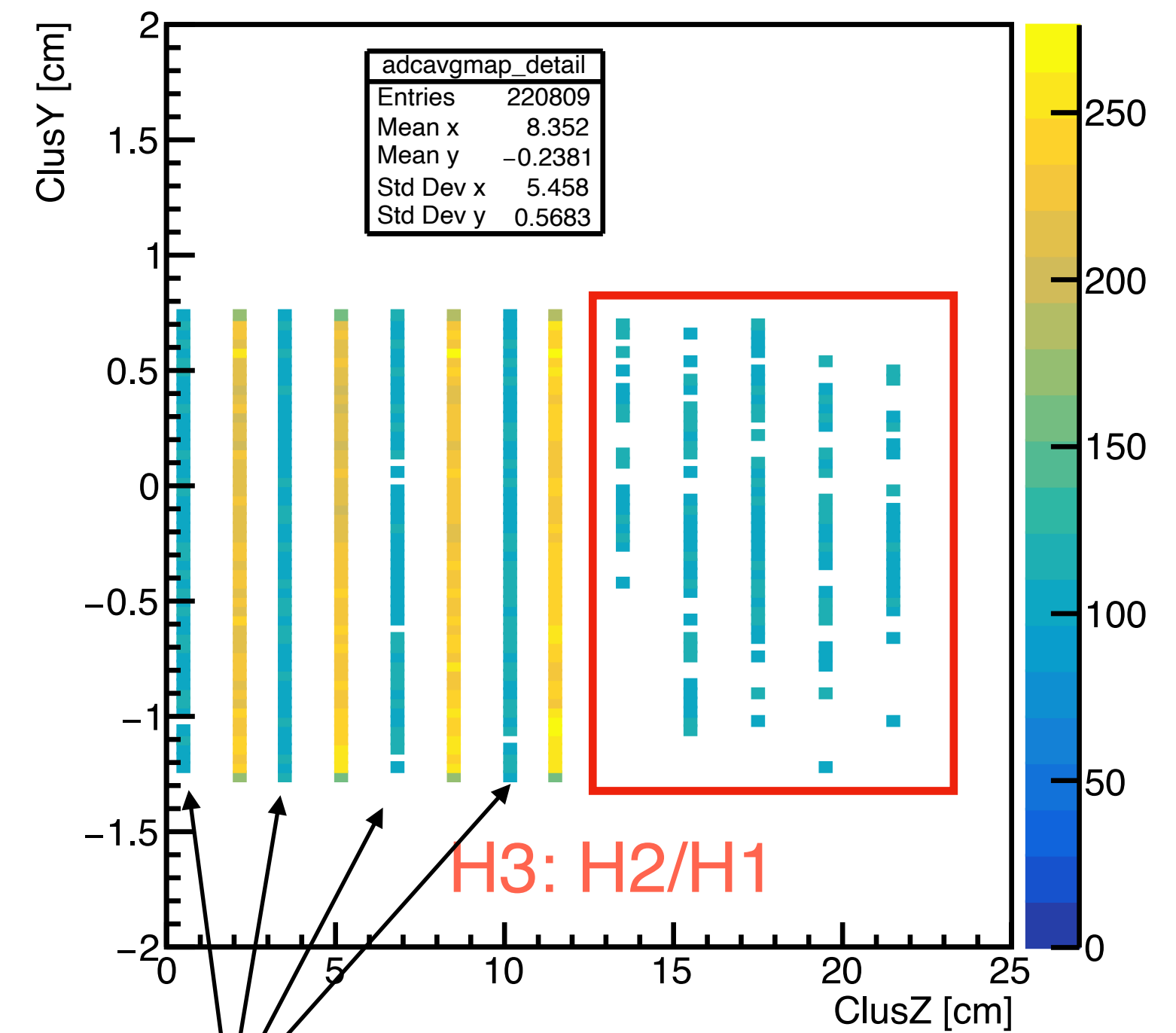
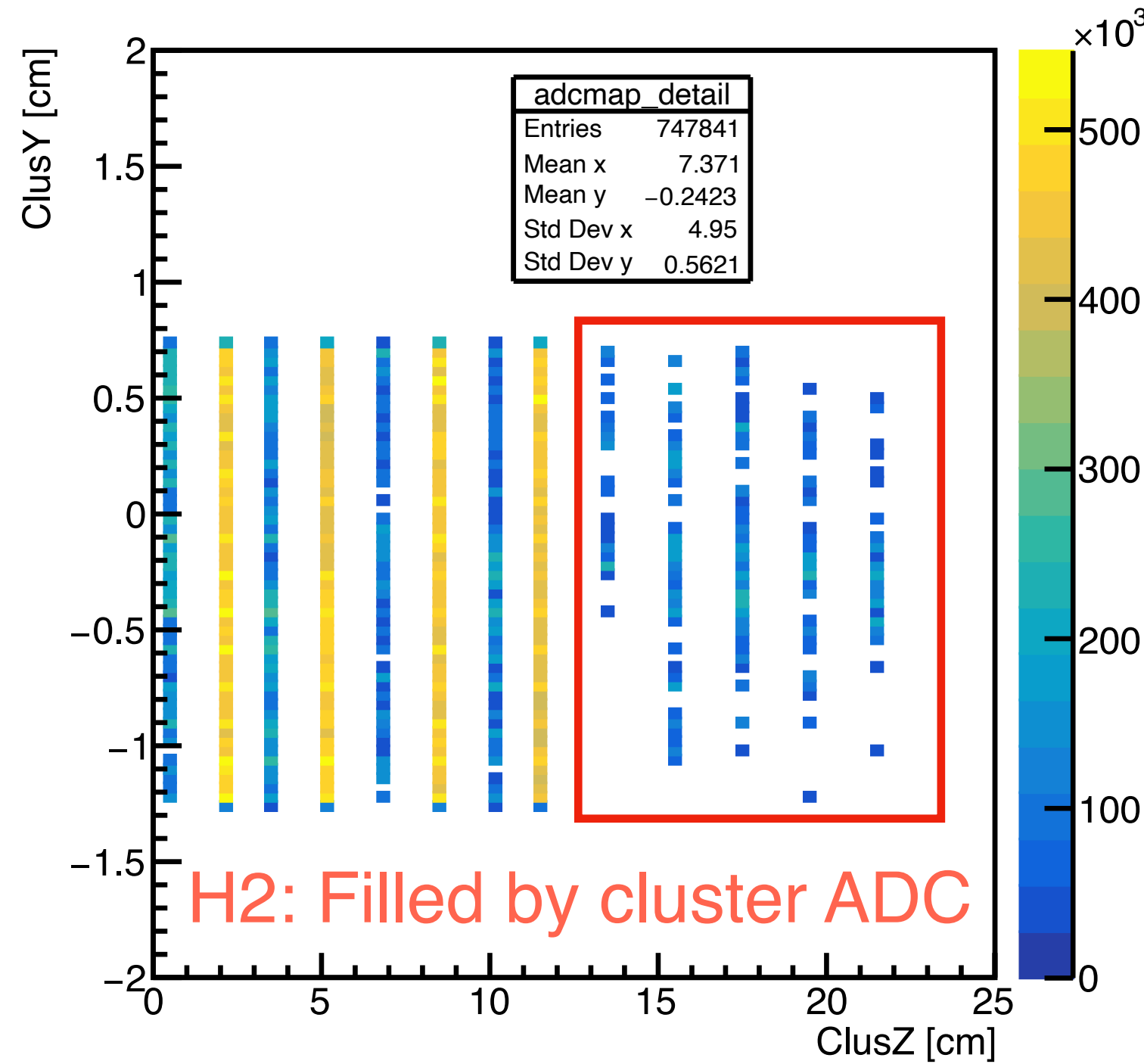
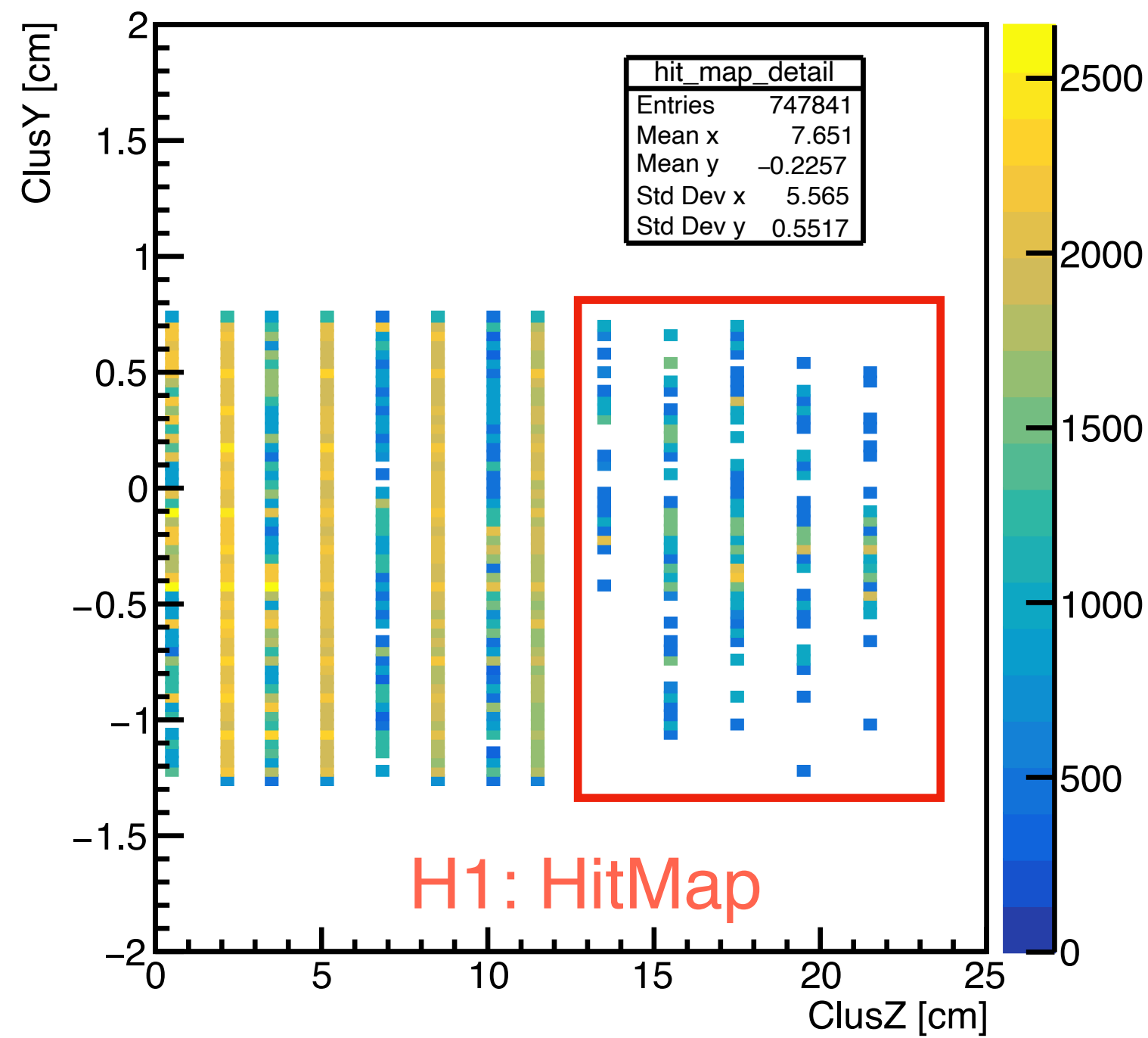
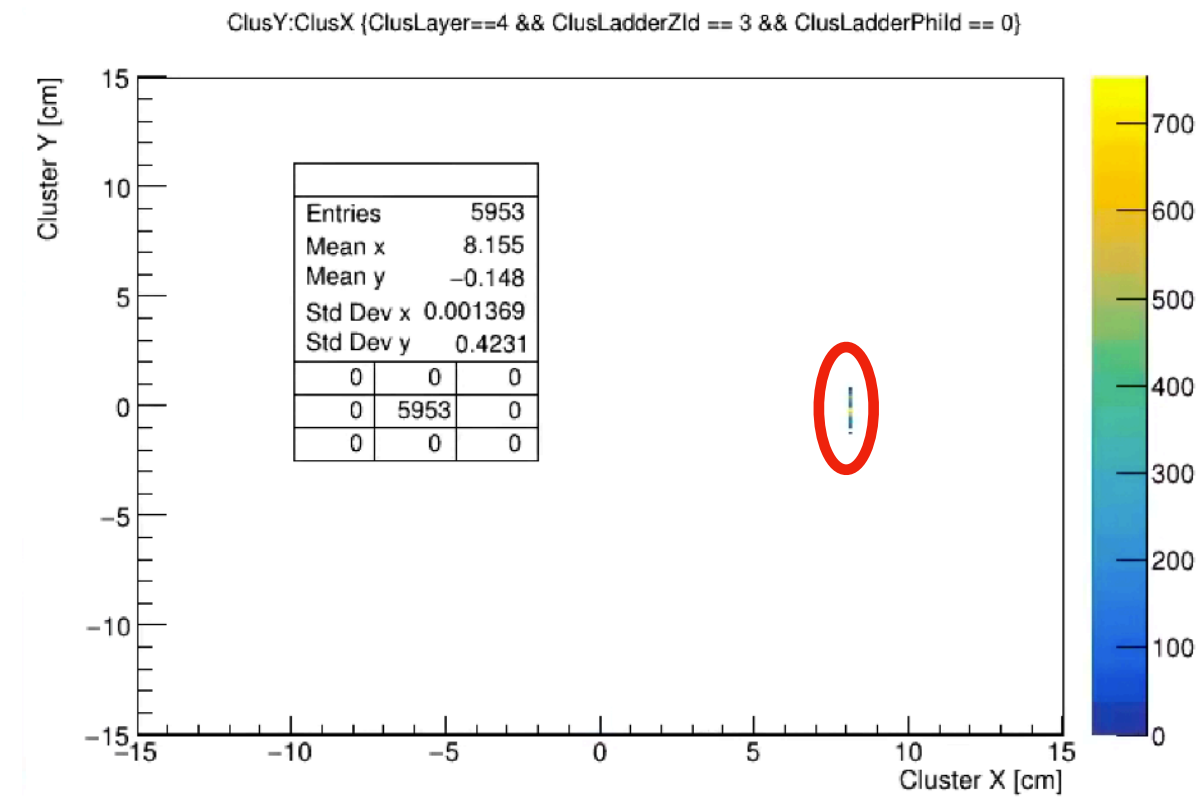


- The correlations seem to be reasonable for both, but somehow the problematic one tends to have smaller cluster\_phi\_size. More check needed

# Average cluster ADC

Run 54280 (AuAu run in Zero field)

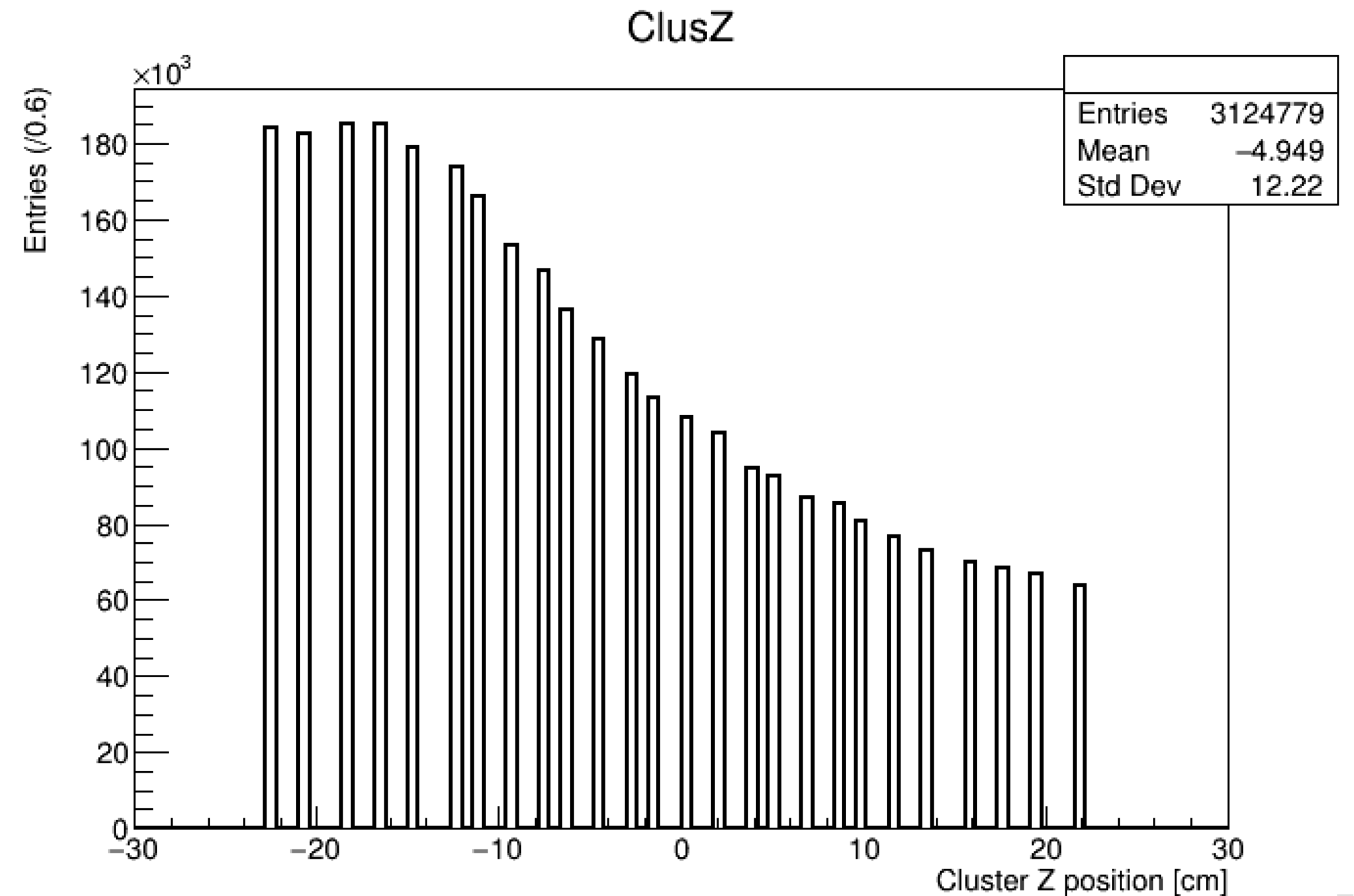
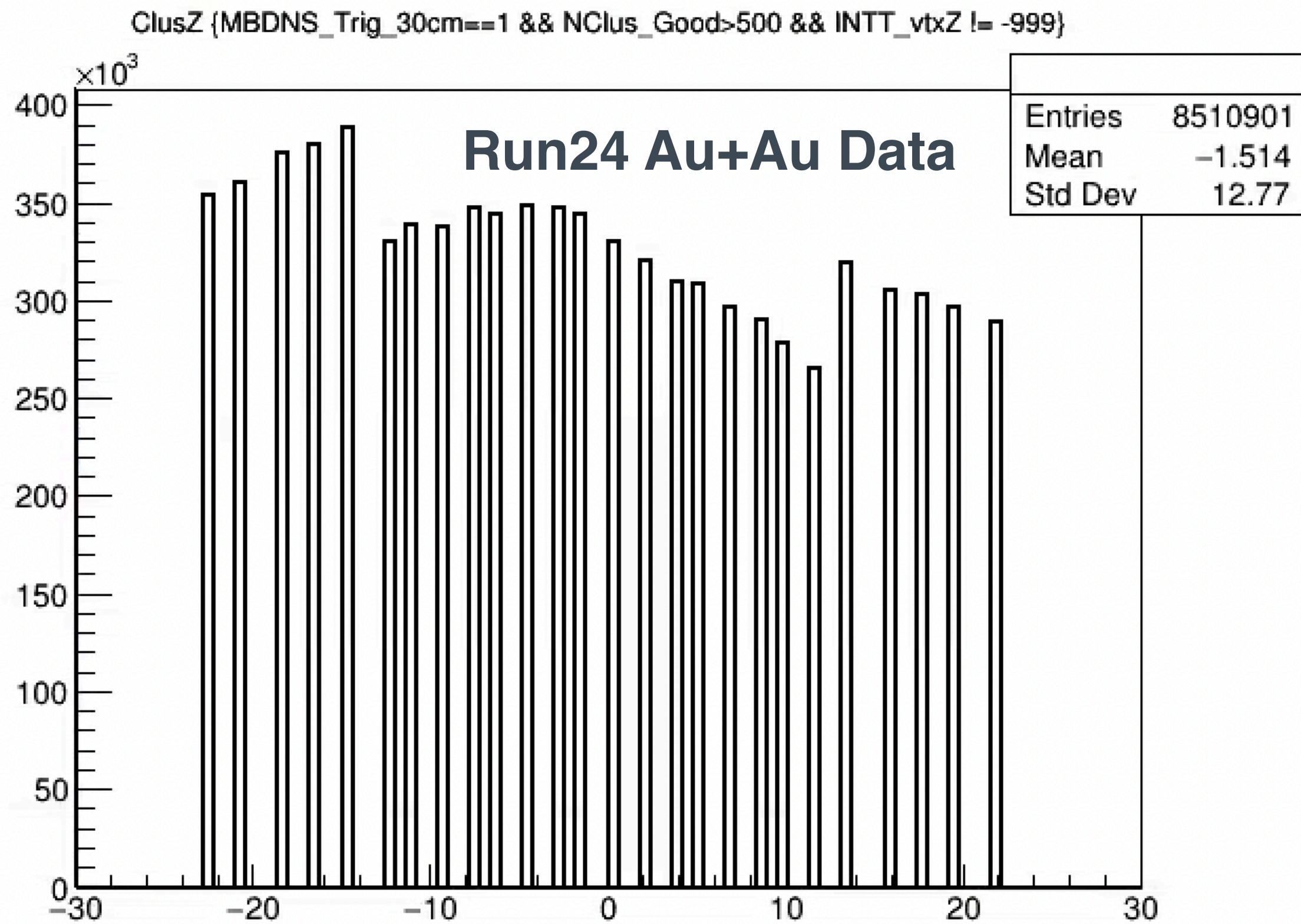
LayerID 4, LadderZID 3 and LadderPhIID 0



Not sure what happened....

First 10k events

Simulation  
Zvtx off by -20 cm



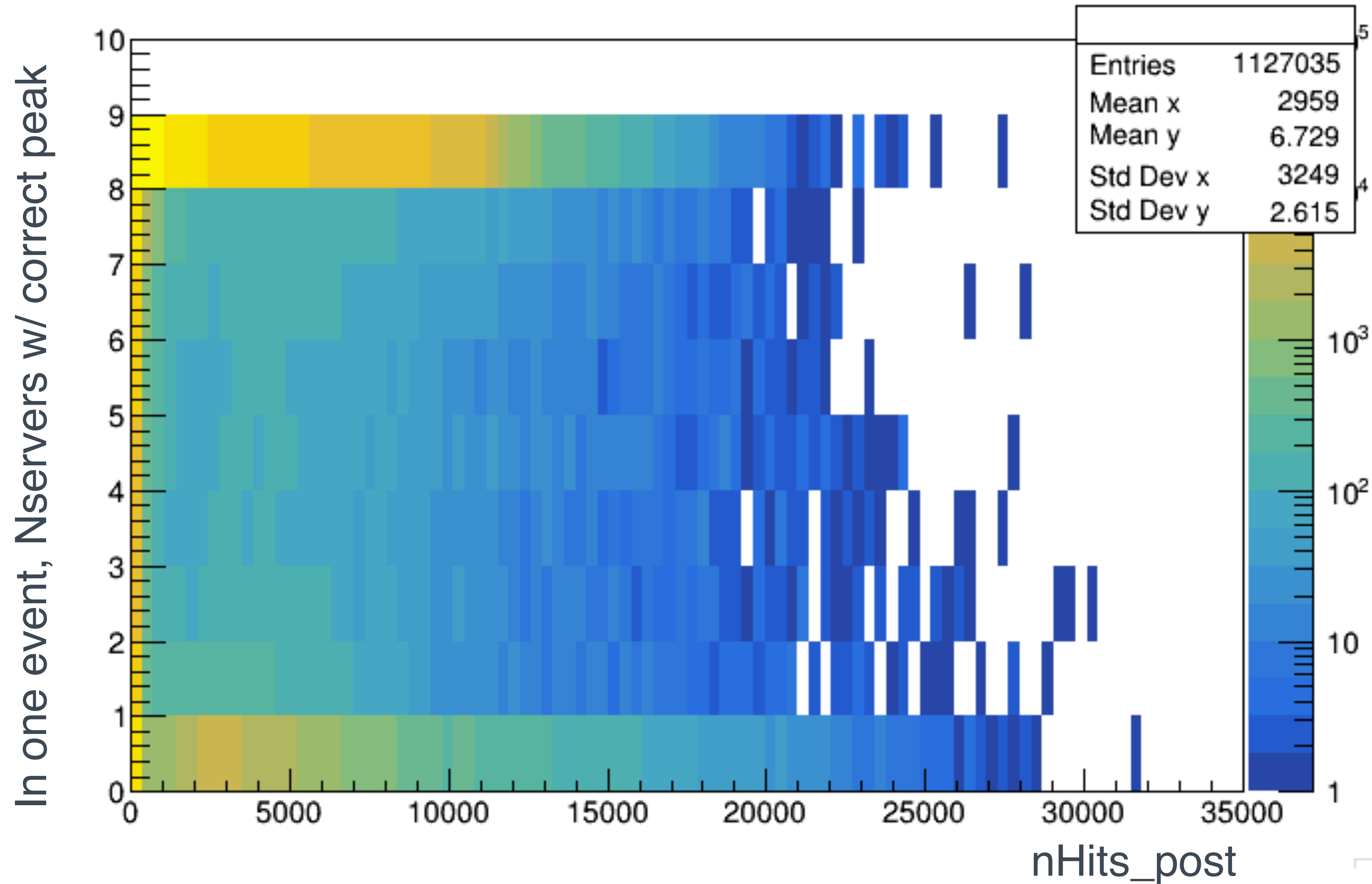
A big problem in our INTT simulation!!

(I believe) this is not from our end. This is the problem in the step of converting the G4Hit into INTT fired strip  
How should we proceed the fix? Talk to Chris?

# Bonus: BCO\_diff study

Run 54280 (AuAu run in Zero field)

is\_peaks\_correct:total\_nHit\_post {MBDNS\_tight\_vtx30cm == 1}



The more I think, the more nervous I feel with INTT data in terms of the timing resolution

**Plan: create the node tree to keep this information**

nHits\_post: after applying the hot channel removal, clone\_hit removal, hitQA



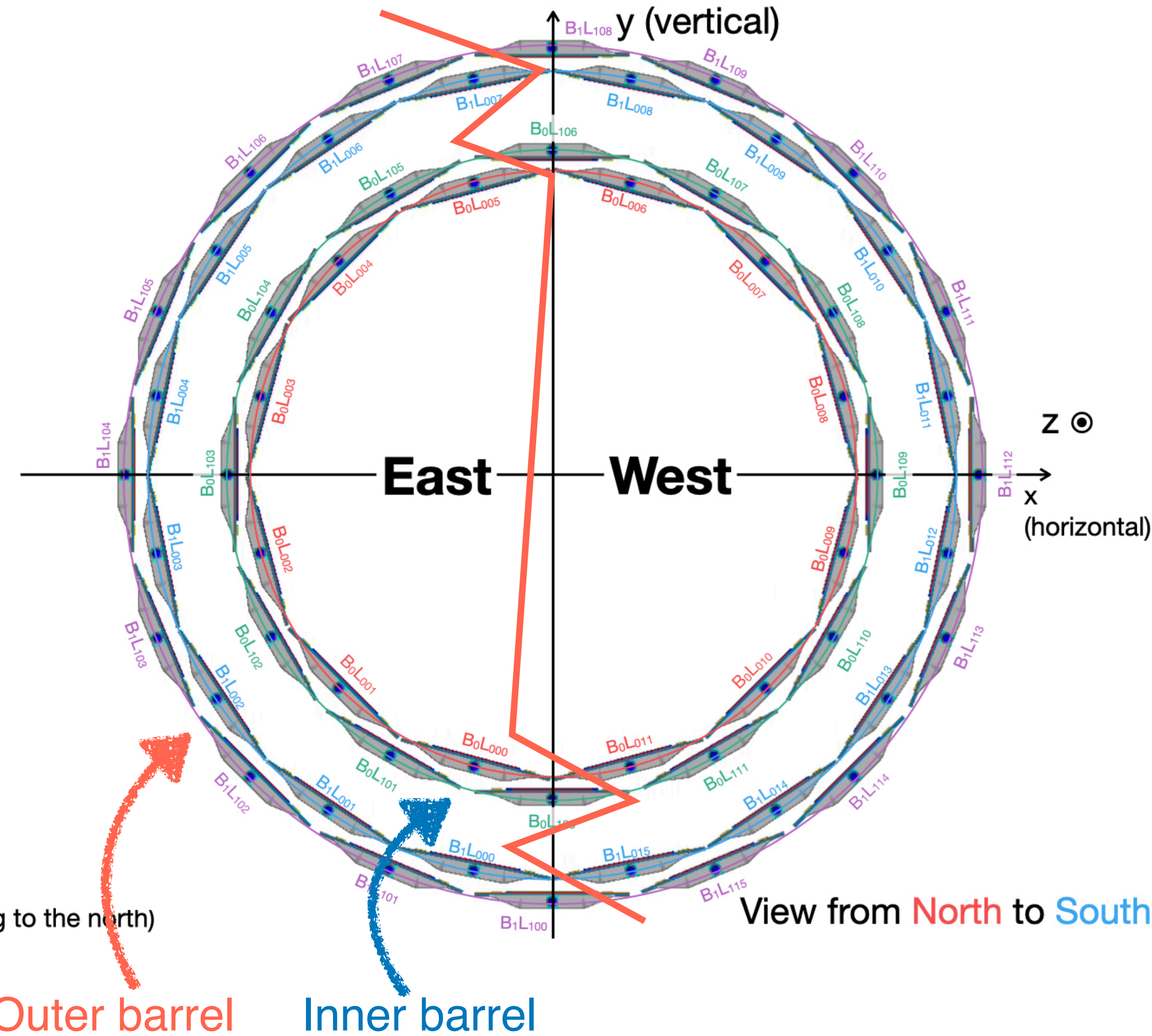
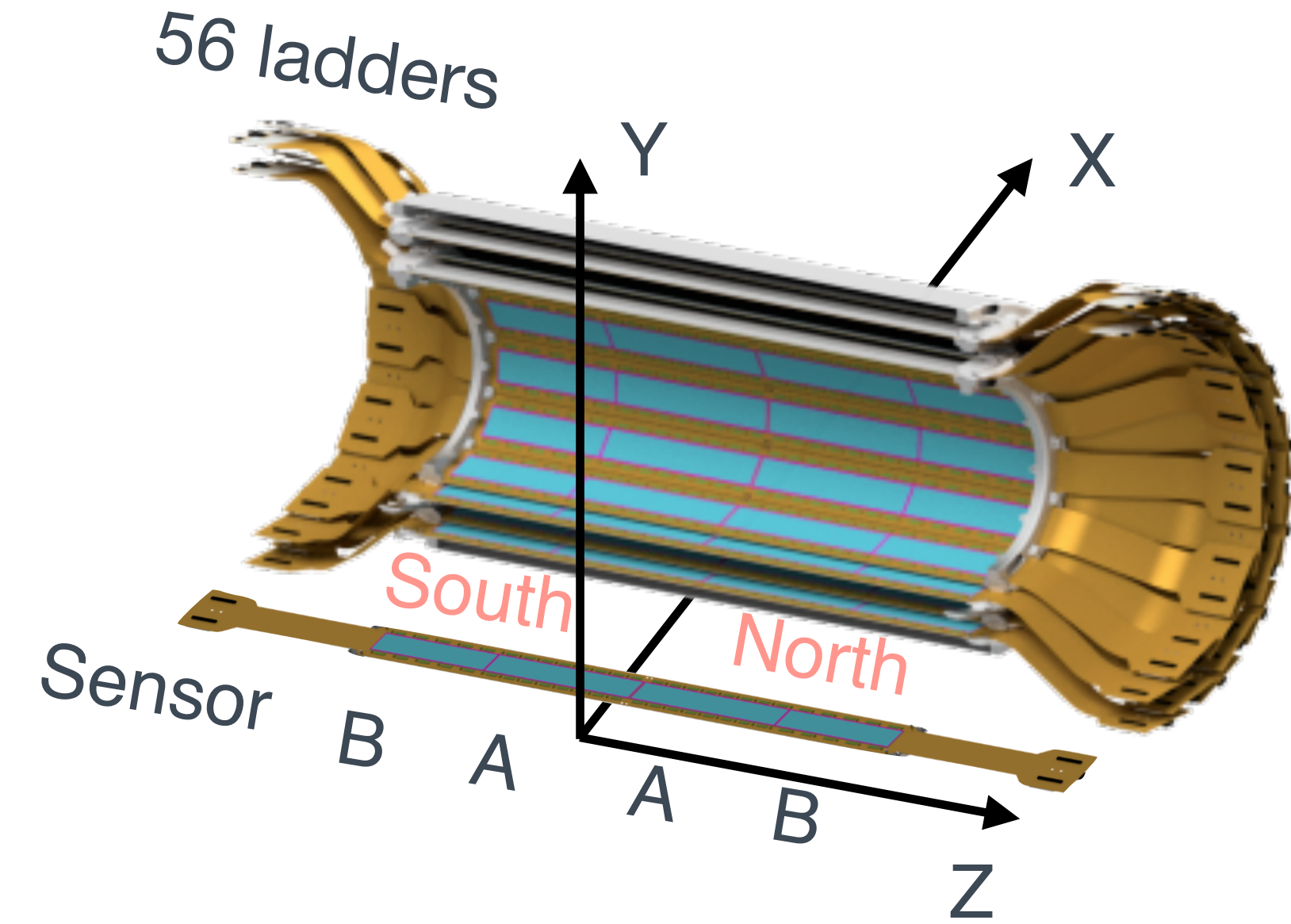
**Back up**

- Au+Au collisions at  $\sqrt{s} = 200 \text{ GeV}$  in zero field
- Data taking time: 1 hour (2024-10-10 05:43:52 → 2024-10-10 06:44:03)
- Number of events: 10,610,255
- Official DST production was not available\* → Private production with F4A
  - .evt files → INTTRawHit DST → TrkrHitSet → TrkrCluster
  - Analysis build: ana.439
- 1M production is still ongoing, the first 10k events are analyzed

\*Now we have 10k INTTRawHit available in the official production directory

INTT: 2 sensors X 2 sides of half-ladders X 56 ladders = 224 sensors

Notation:  $B_xL_yz_z$   
 x: Barrel ID (0 for inner or 1 for outer)  
 y: Layer ID (0 for inner or 1 for outer)  
 zz: Ladder ID (from 0 to 15)



Axis (Right-handed coordinate)  
 x-axis:  $\vec{y} \times \vec{z}$   
 y-axis: Vertically upward direction  
 z-axis: The blue beam direction (pointing to the north)