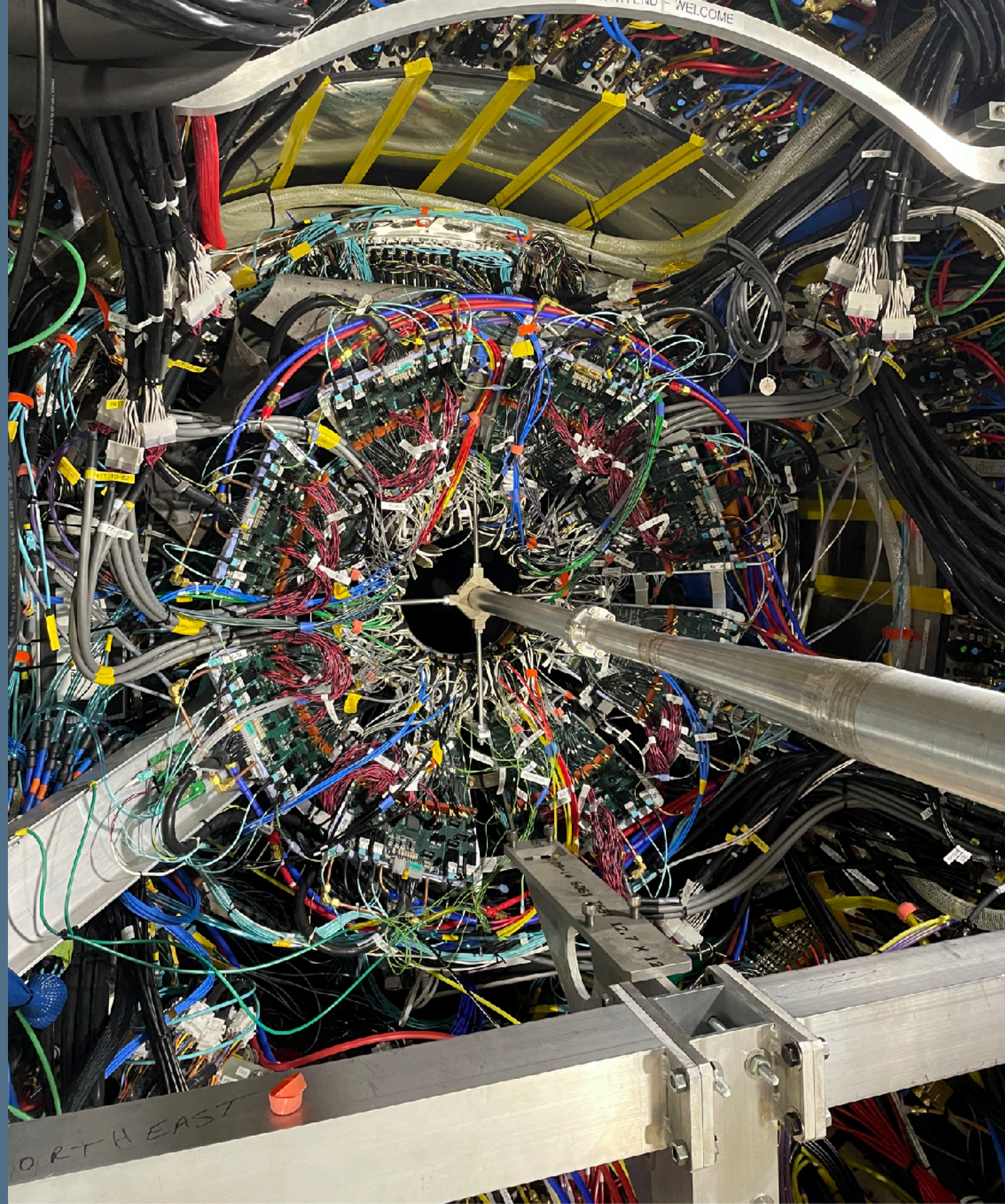


sPEHNIX - INTT commissioning

Cheng-Wei Shih, Chia-Ming Kuo
National Central University



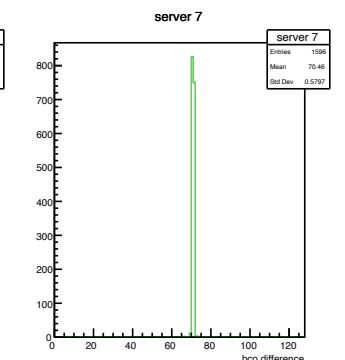
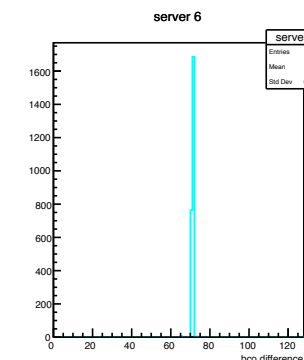
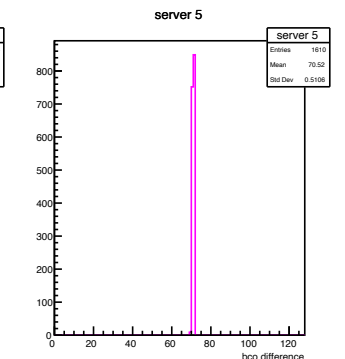
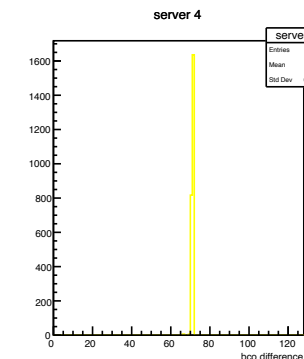
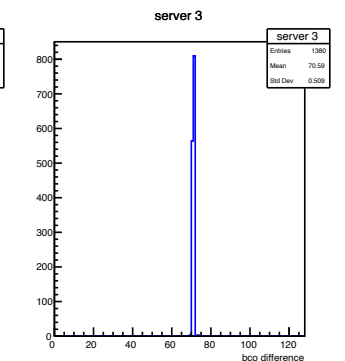
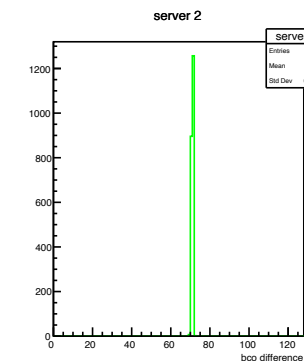
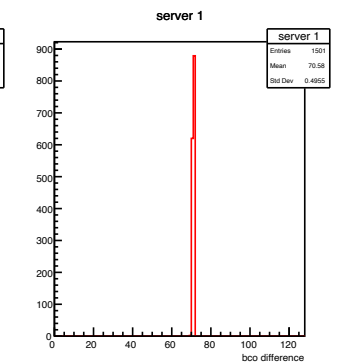
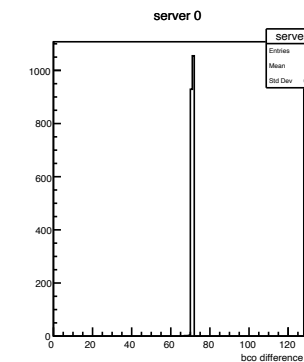
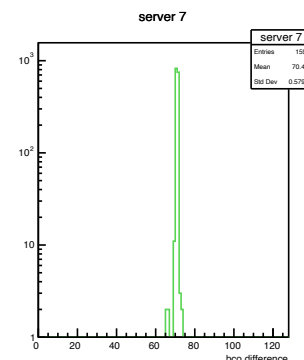
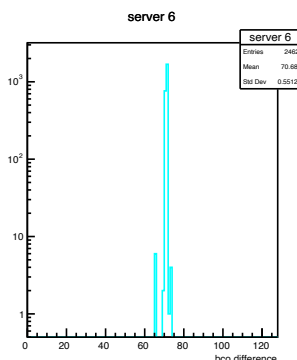
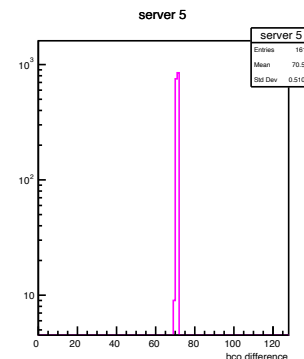
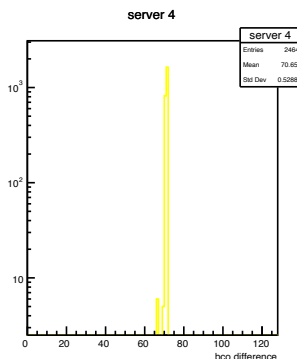
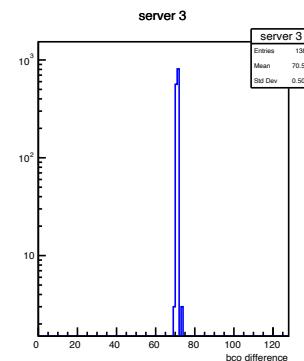
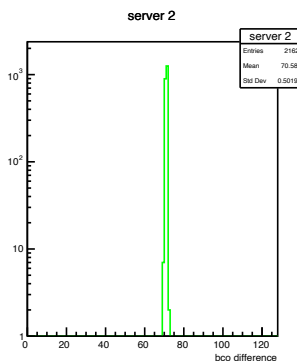
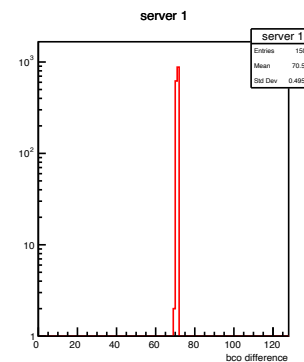
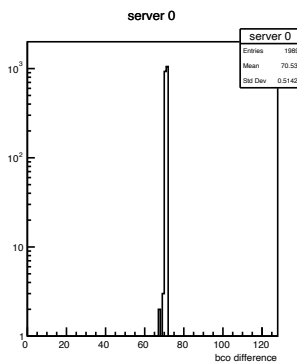
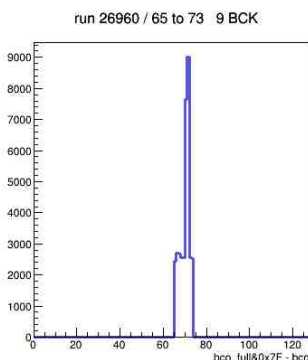
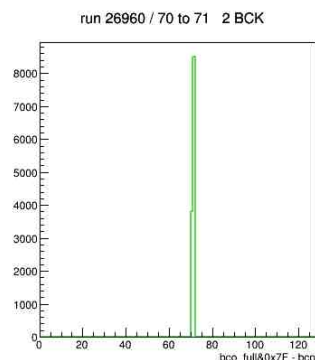
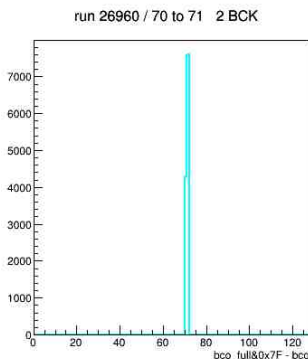
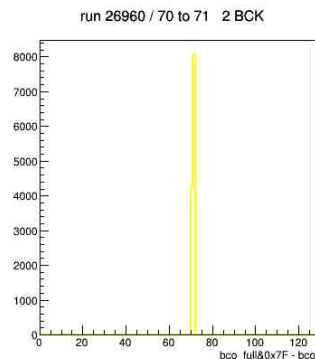
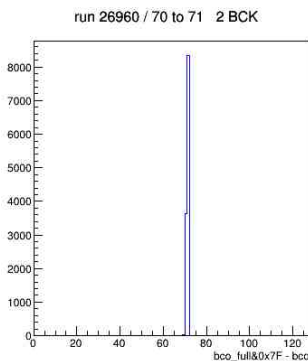
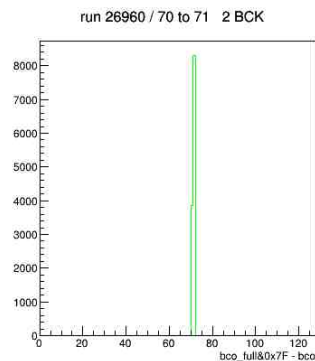
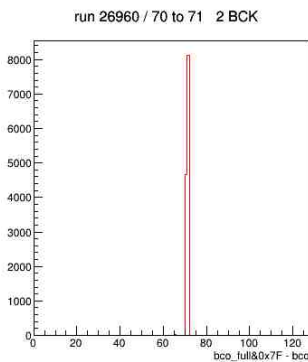
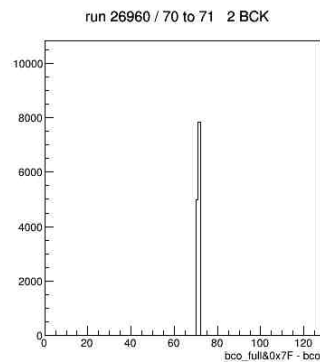
BCO_diff of good cosmic tracks

Cosmic run 26960

Before tracking (linear)

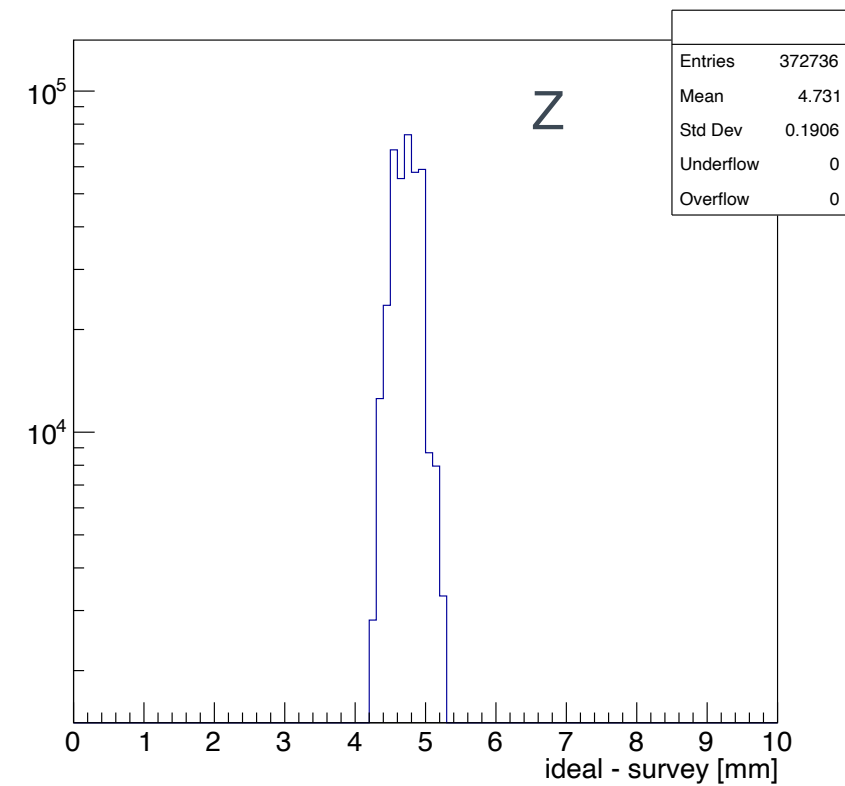
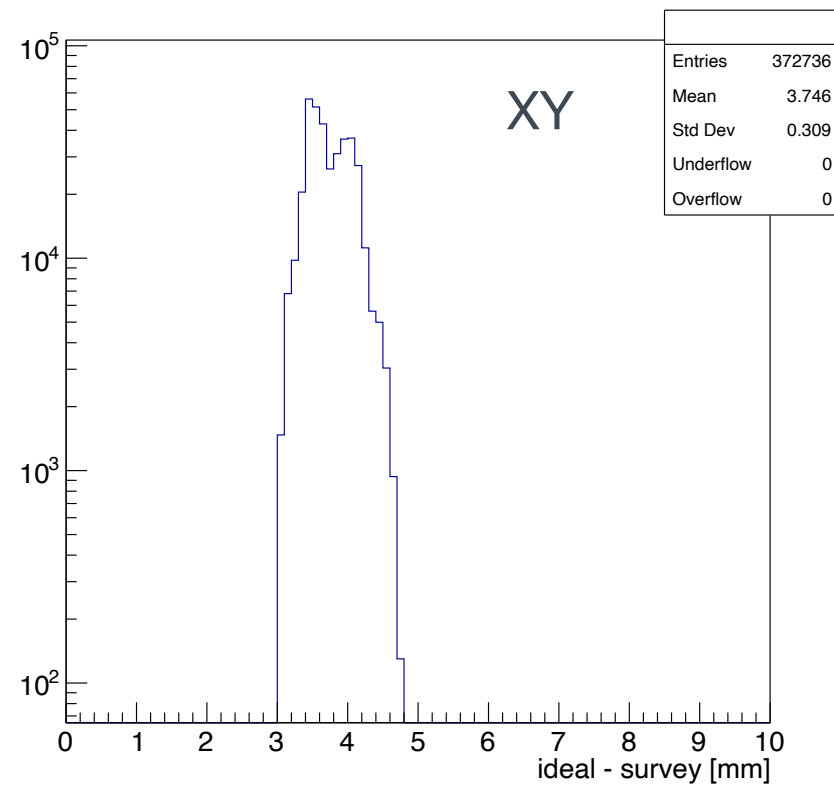
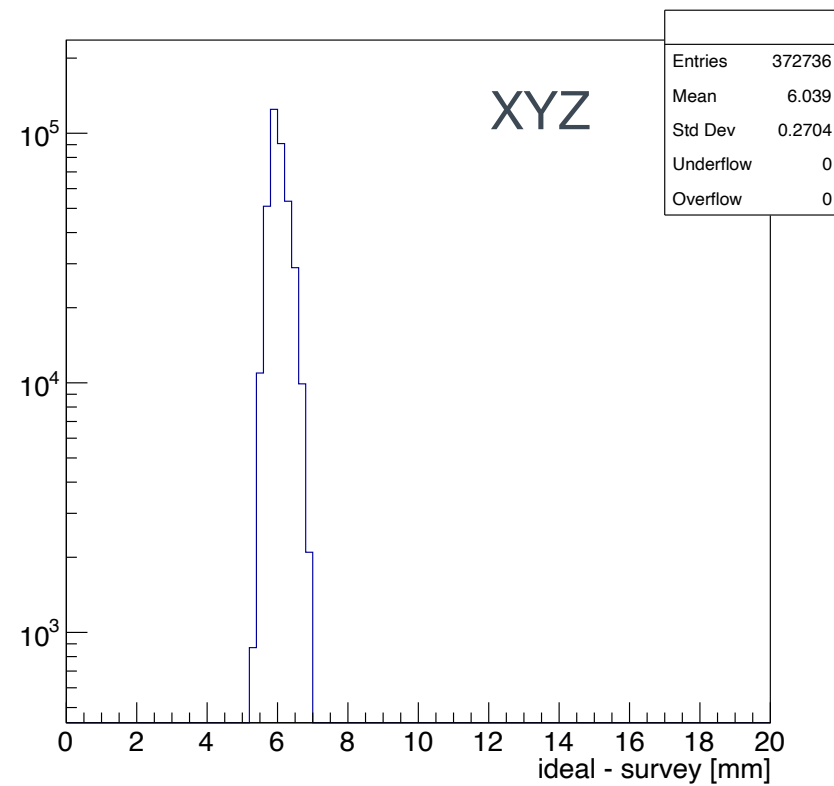
After tracking (log)

After tracking (linear)

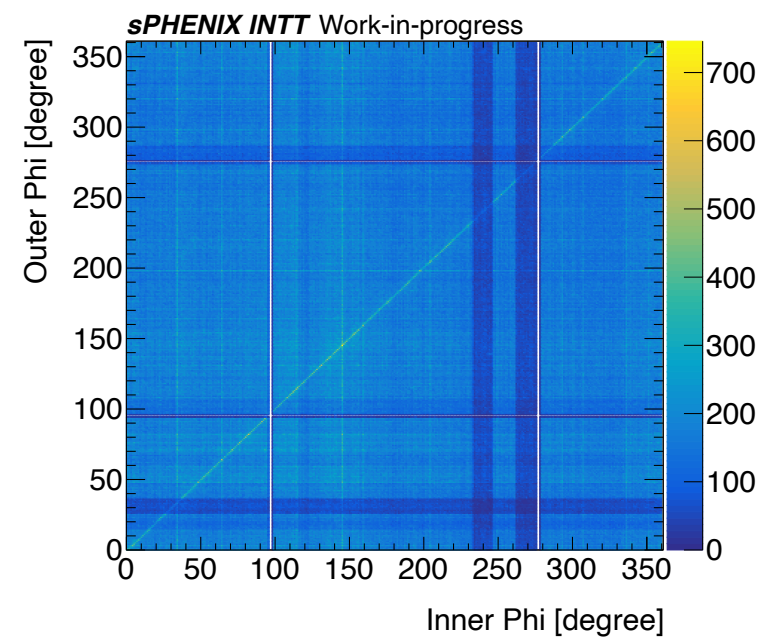


Survey data confirmation, compare with ideal geo.

The distribution of the position discrepancies of all the channels
Entries of the distributions : 128 channels x 26 chips x 112 half-ladders = 372,736

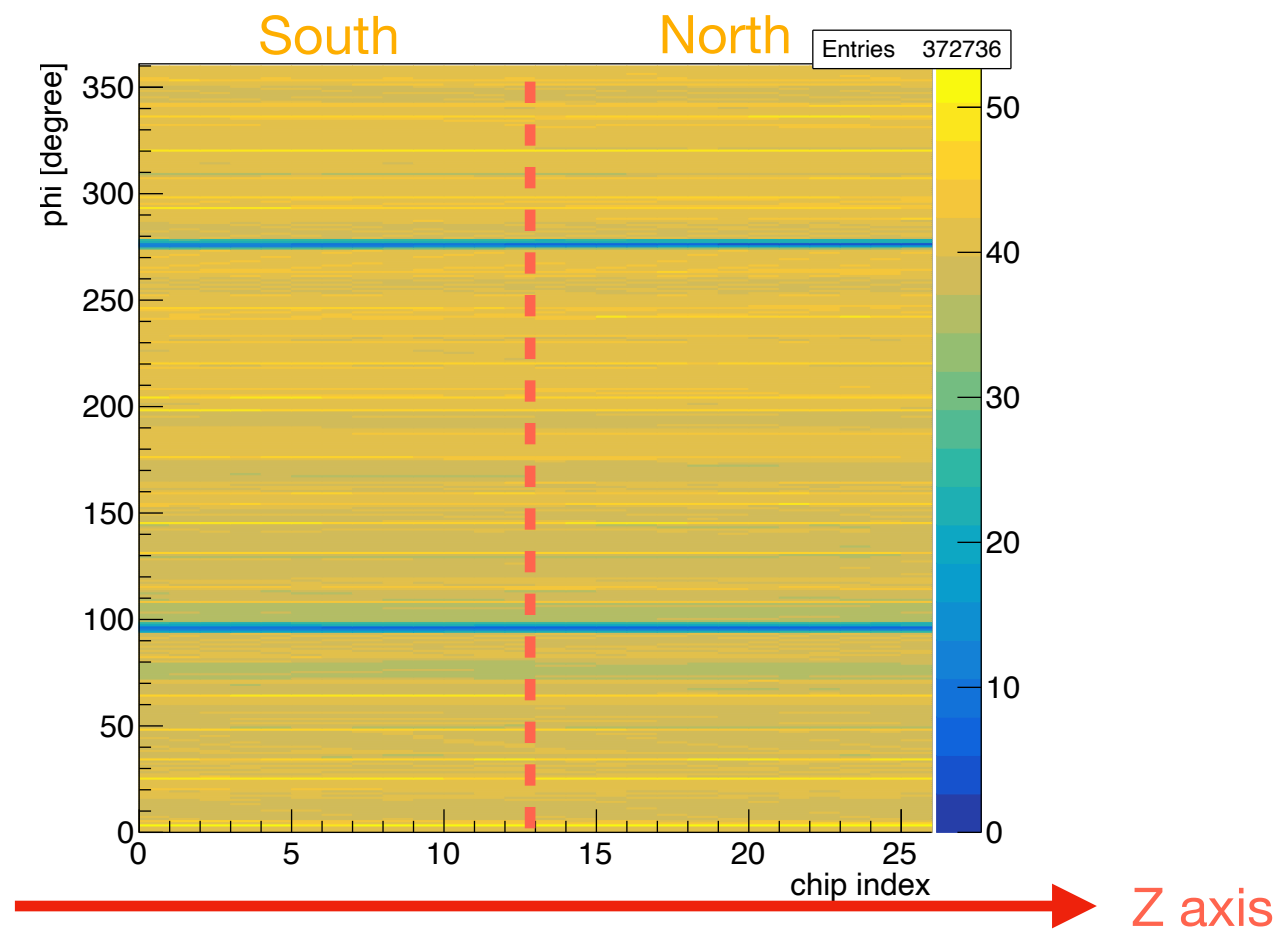
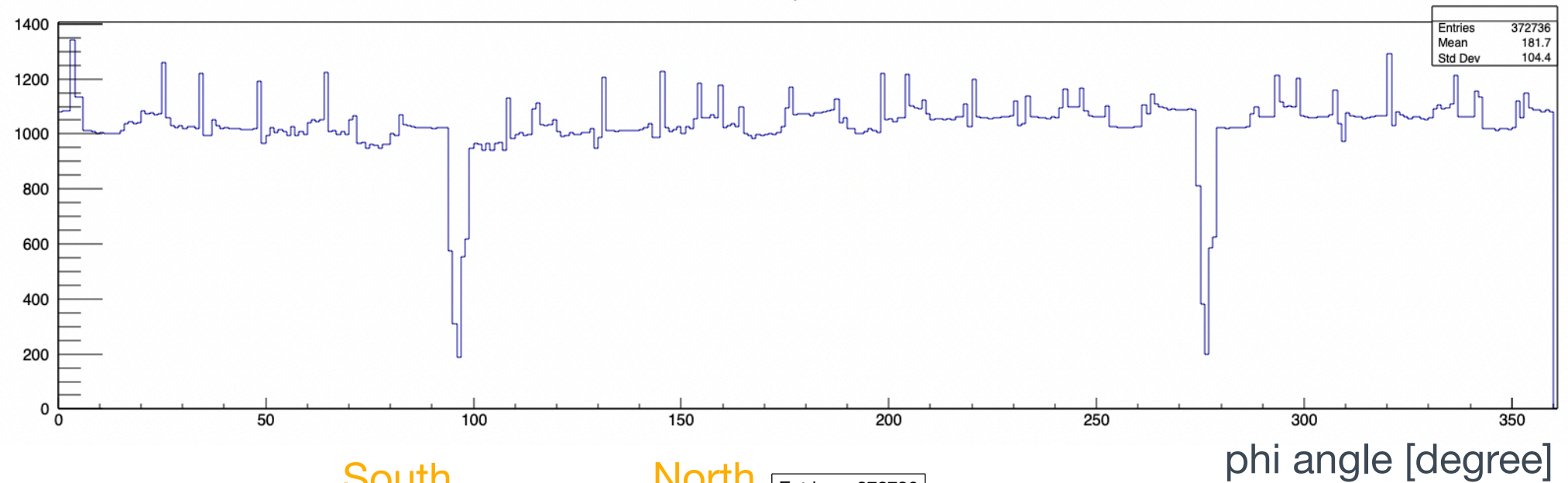
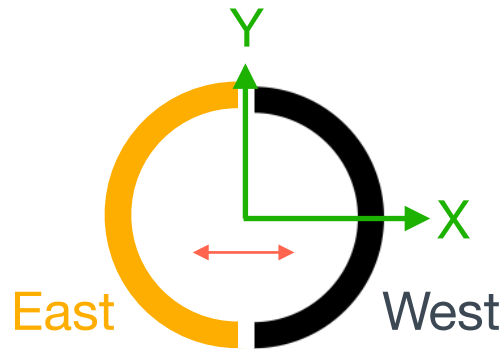


Beam run 20869
Clear correlation is seen



The calculation seems to be correct
The survey data is the input from Joseph!

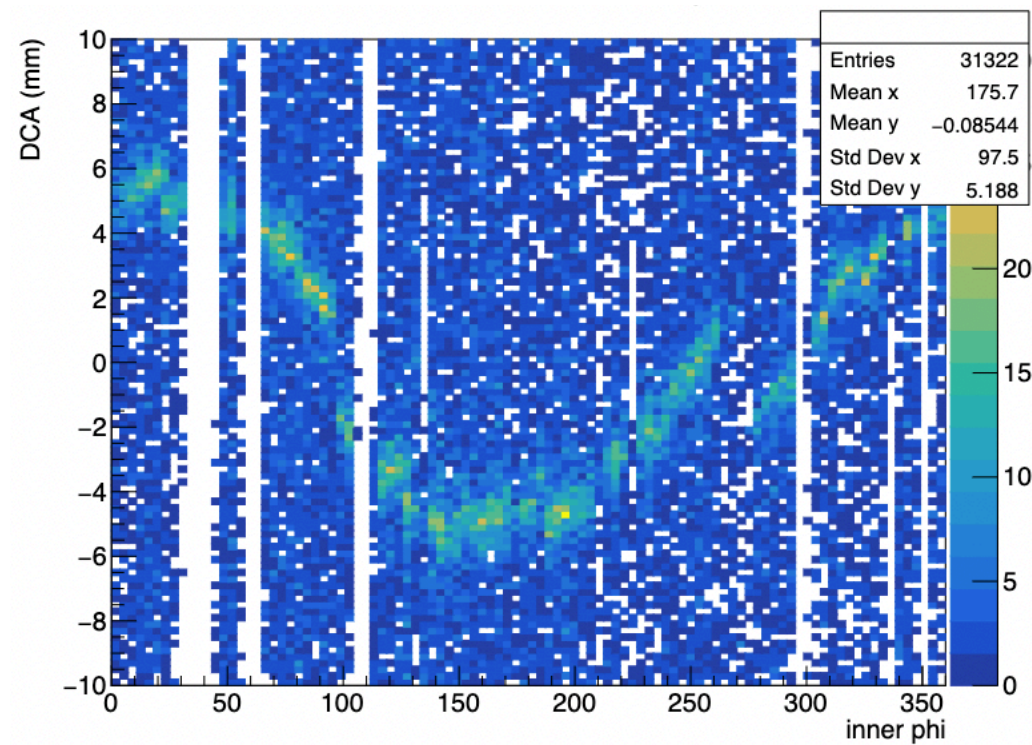
Survey data confirmation, compare with ideal geo.



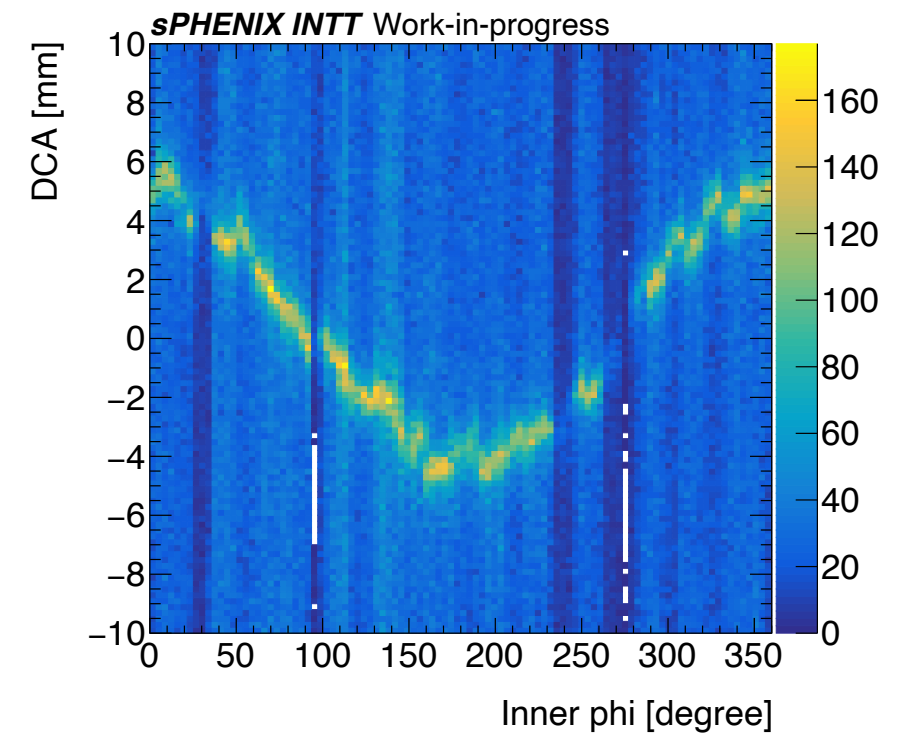
The indication that INTT halves were not closed well
The open ϕ region seems to be z-position independent

Is the survey data closer to the true geo. ?

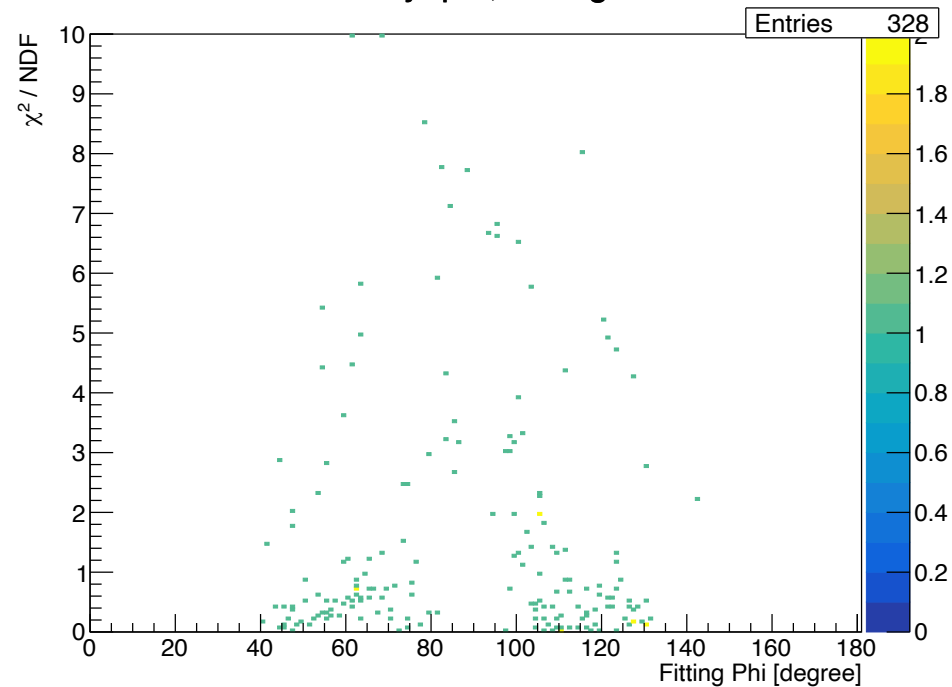
Ideal geometry



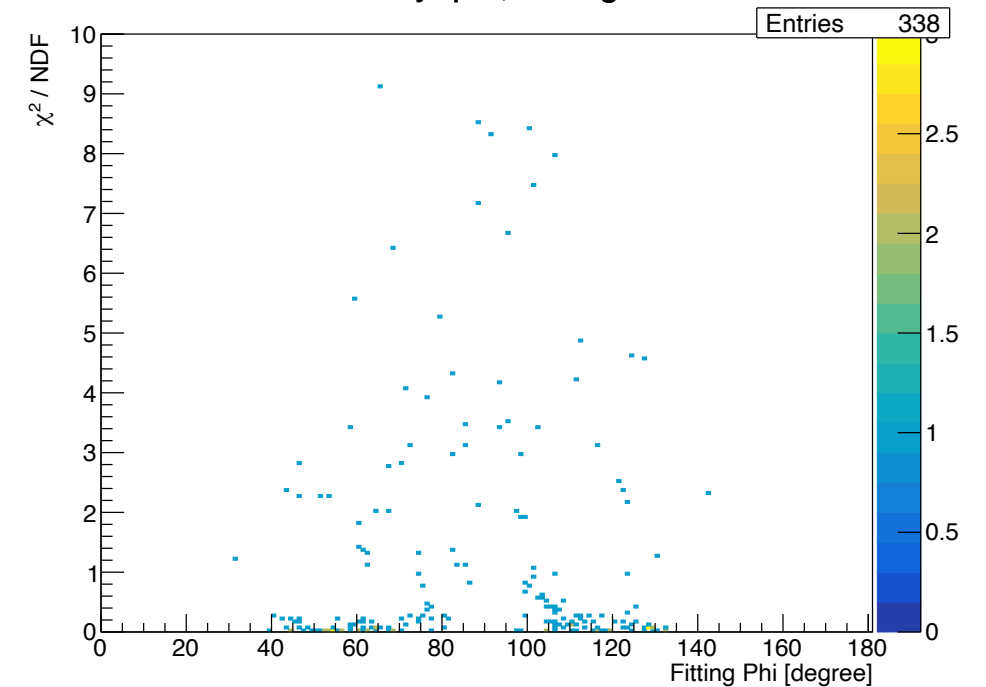
Full survey geometry



Rchi2_xy_phi, z range : 2

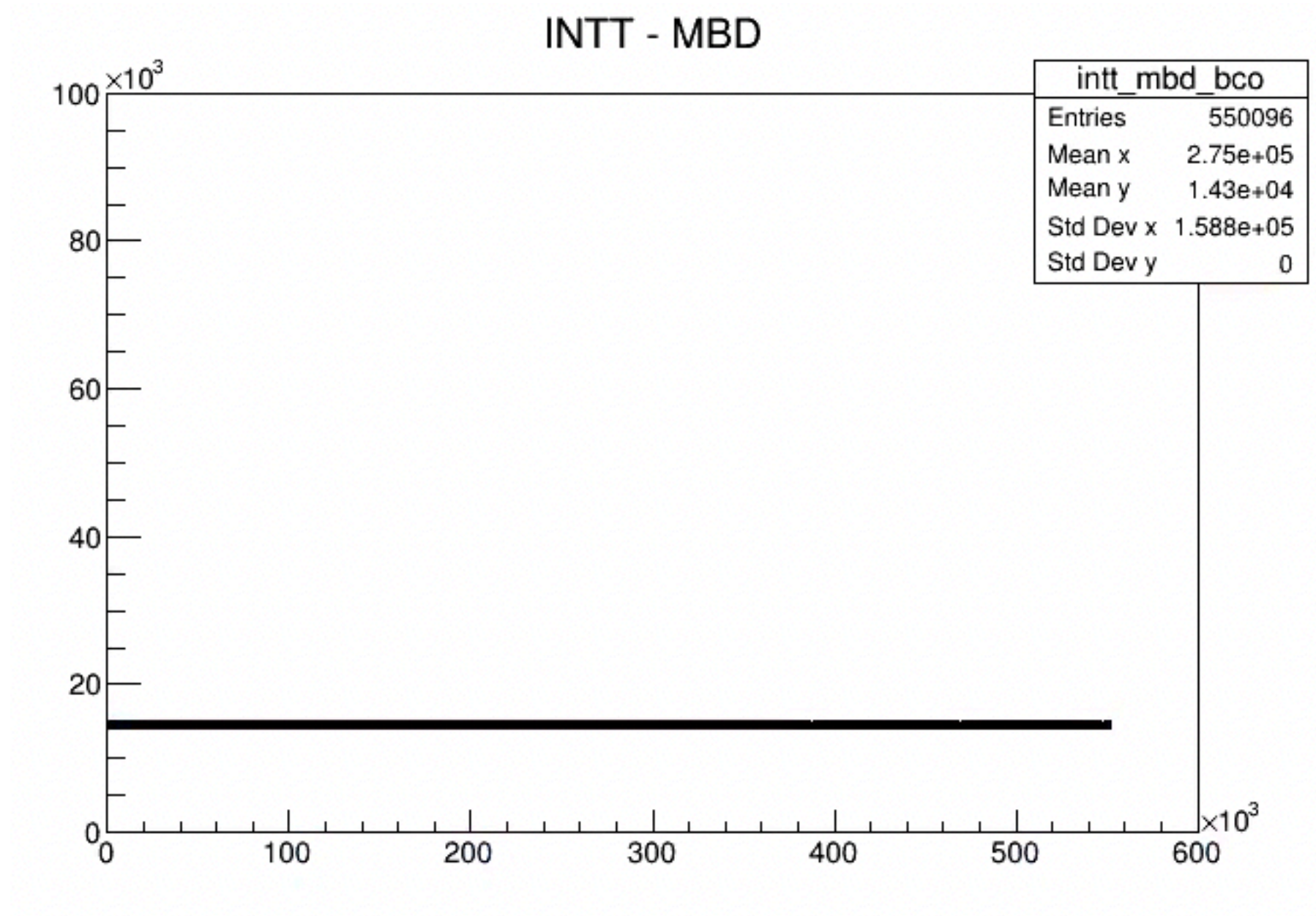


Rchi2_xy_phi, z range : 2



The survey geometry is closer to the true position. More studies can be developed

Run 20869 INTT - MBD auto-synch with no issue (all 550k events)



- BCO difference
- Study of dead/hot channels
- Half-entry chip identifier
- Study the half-ladders with TLK issue
- Continue the calibration test
 - To understand the total acceptance before it's too late
- Survey data confirmation
 - Is the calculation correct?
 - Is the survey data closer to the true positions?

- The root file contains the position information of all the channels
 - SDCC : /sphenix/user/ChengWei/INTT/test_build/survey_data_all_3.32.root
 - Full survey data considered
 - With 3.32 mm correction inward to correct the stave-peek mis-consideration issue
- Tree structure
 - Total entry : 128 channels * 26 chips * 112 half-ladders = 372,736

pid	0 to 7	INTT FELIX server ID (south : 0 to 3 & north : 4 to 7)
module	0 to 13	Each FELIX server has 14 half-ladders
chip	1 to 26	
chan	0 to 127	
x	mm	Given by survey data
y	mm	
z	mm	
phi	0 to 360 degree	Calculated by x and y

- According to the software meeting today, Tony said that the tracking group will definitely TRY to work on the geometry fine tuning with cosmic rays (exercise it, said by Tony)
- Don't have the timeline for the moment
 - Not yet start it
 - Waiting for the large scale data process which is still under development
- The timeline is unexpected
- We can first develop the code to quantify how the performance of the geometry we load

The discussion in the INTT meeting

- zero filed
 - relative delata phi alignment, ladder by ladder
 - only two layers
 - Millepede-|| package
- Cosmic rays handle the unresolved part
 - Apply the constraint
- Talk to Jin to get some feedback
- provide the first vertex in pp 🎉

Backup