



# INTT cosmics analysis update

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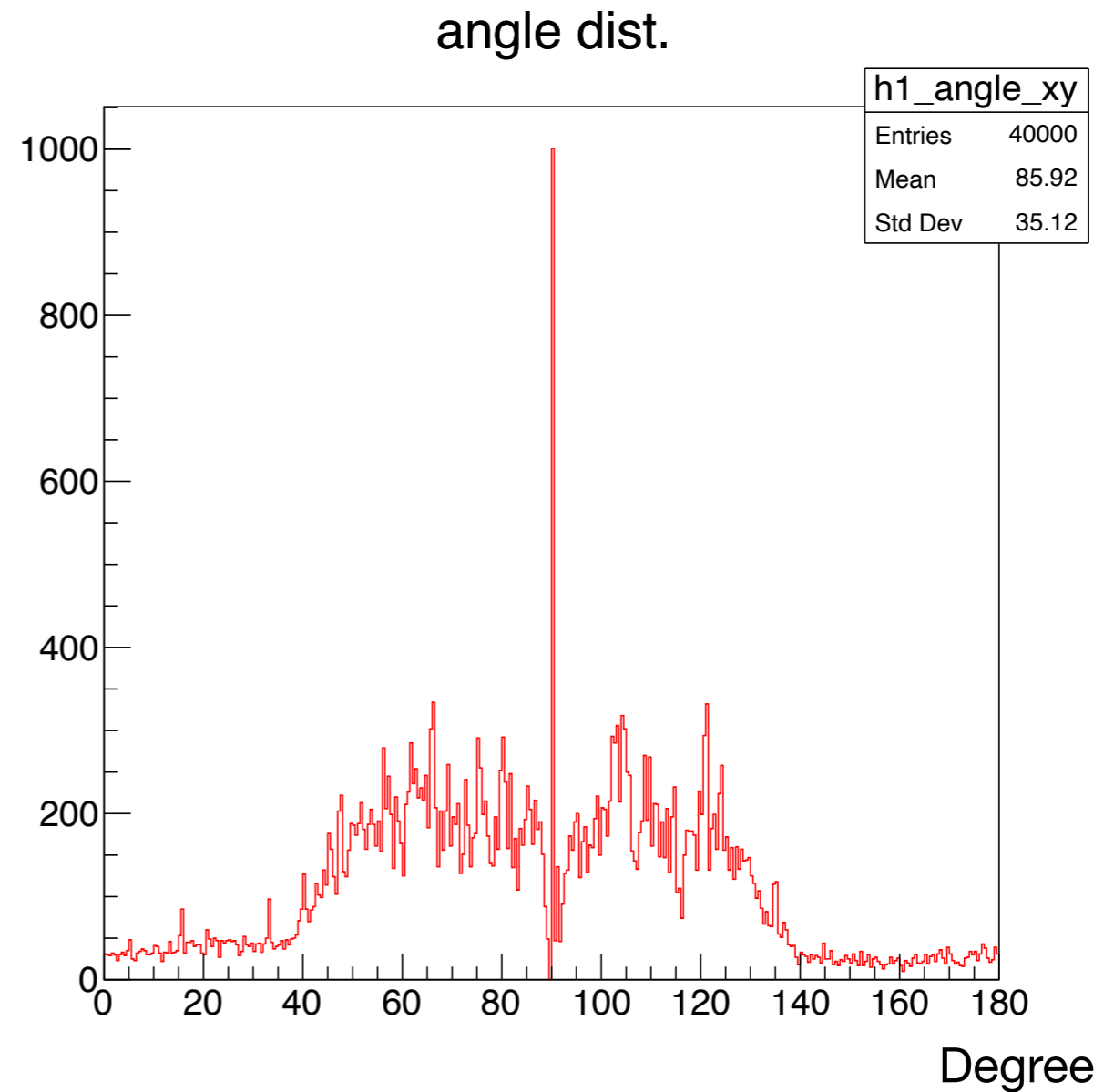
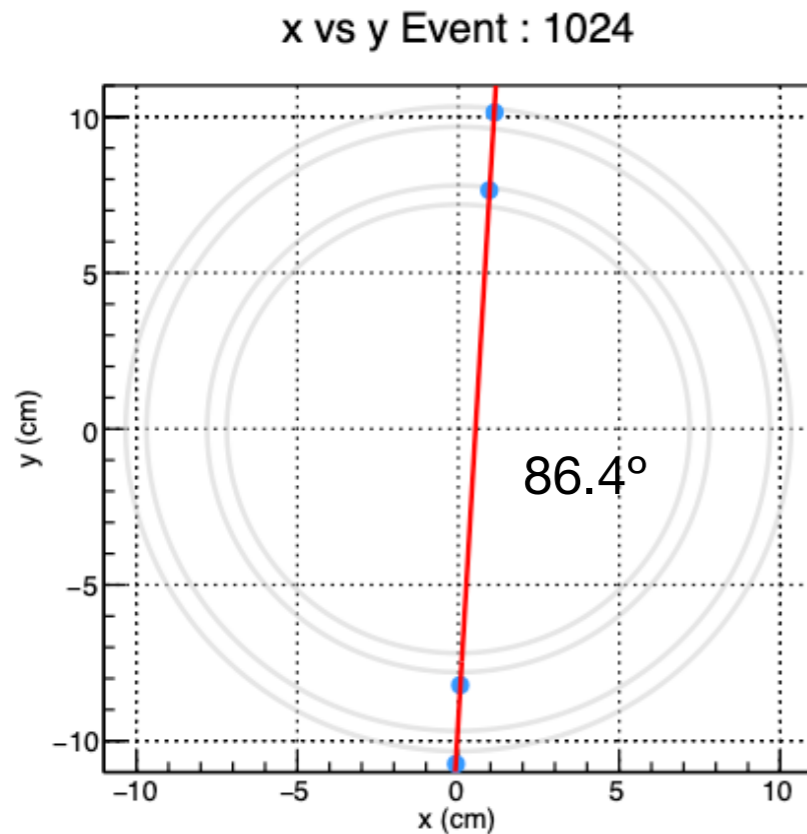
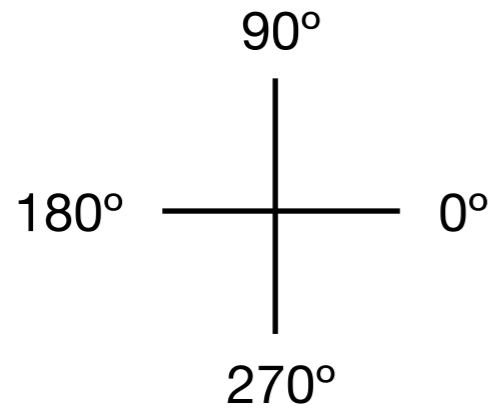
2024/10/02 group meeting

# Cosmic Analysis updates

- The Goal is to find out a base of good cosmic tracks at this step.
  - Check the comic tracks quality
    - Cosmic tracks  $\phi$  angle distribution
    - Cosmic tracks Z position distribution
      - To see whether those data make sense or not
    - Residual distribution of tracks
      - To determine whether a track is good or not

# Angle distribution check

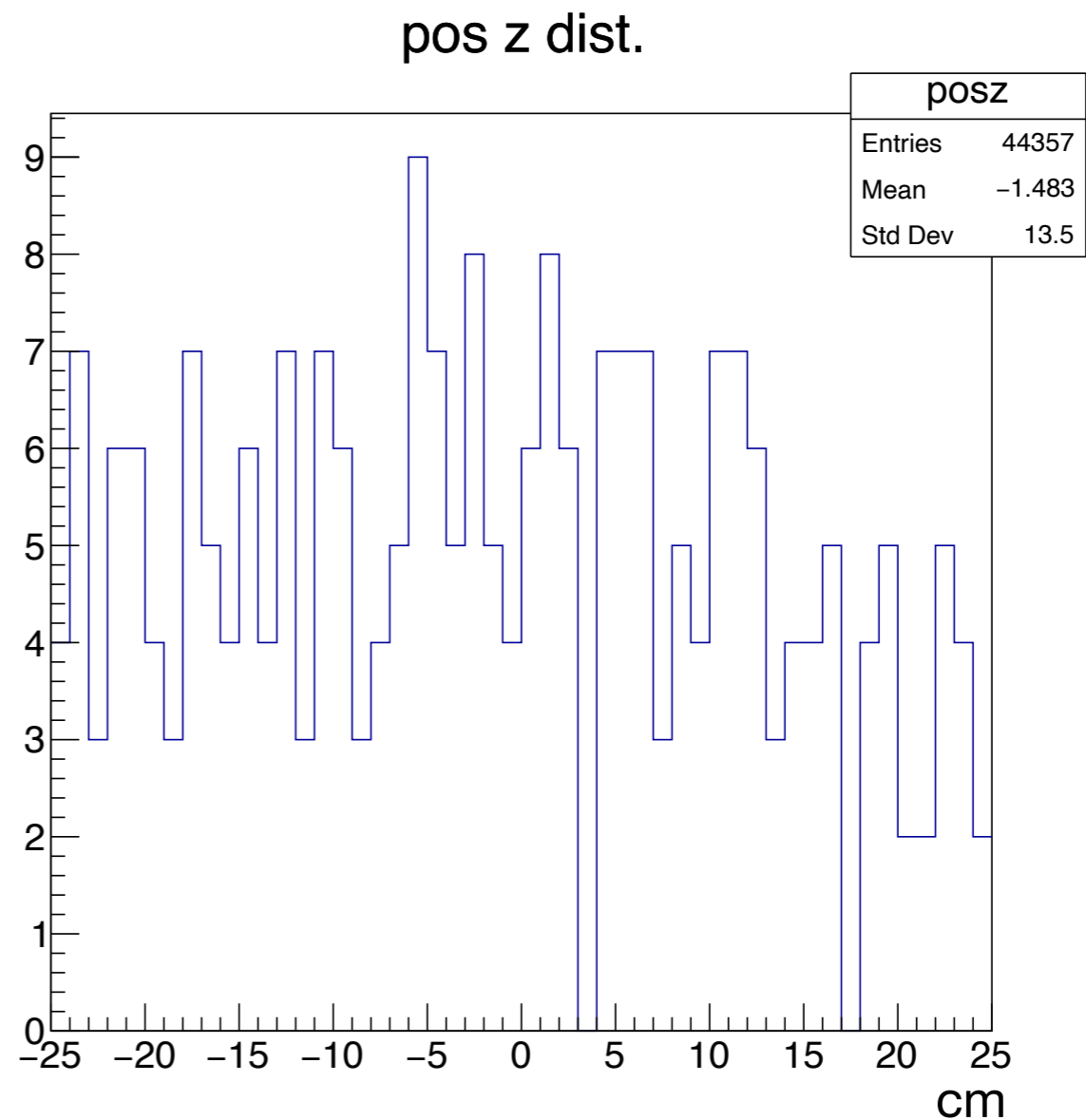
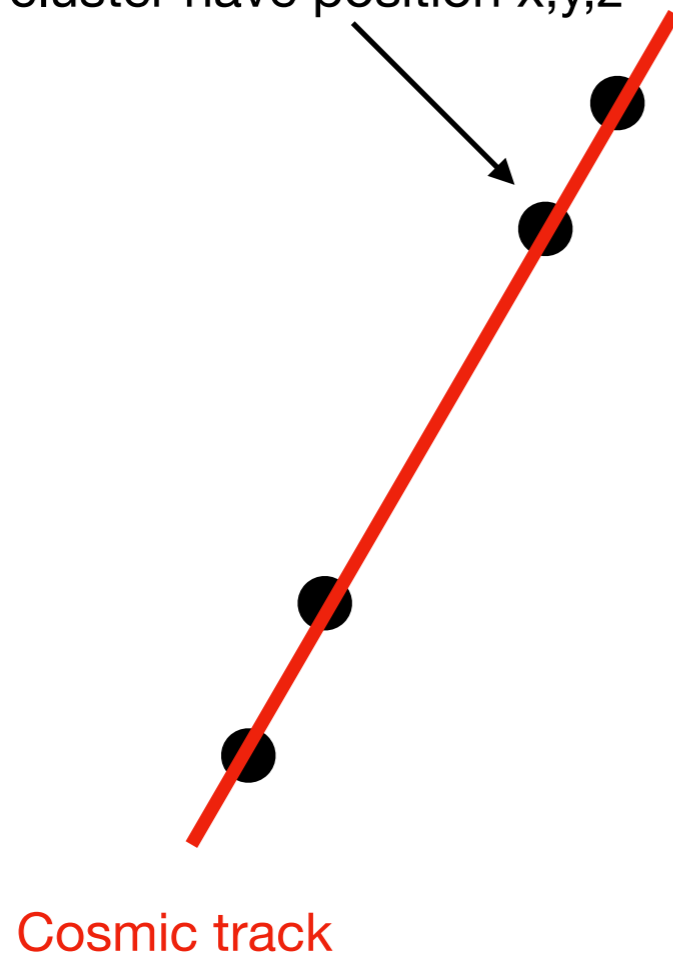
- The distribution of the  $\phi$  angle



# Z position check

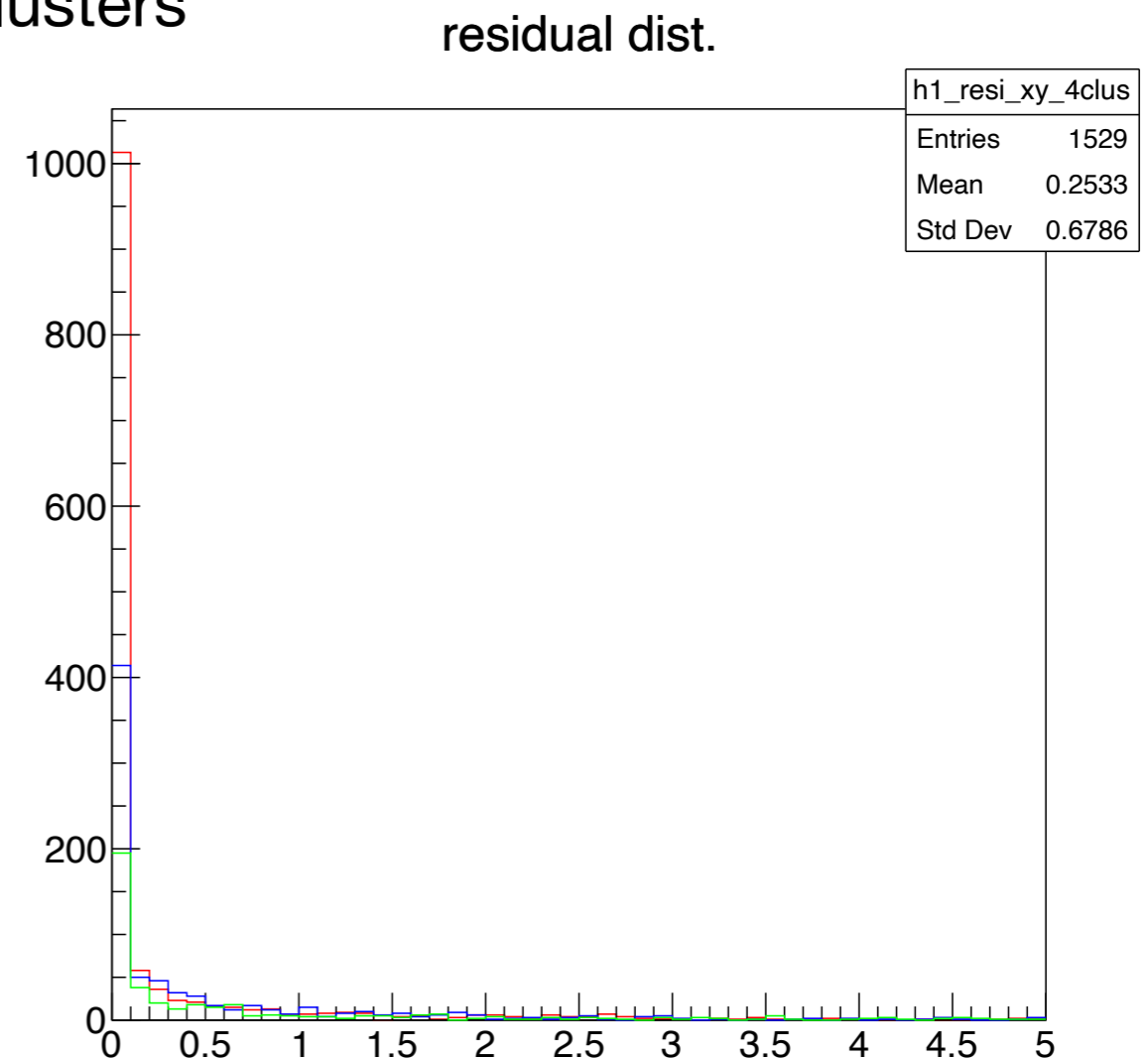
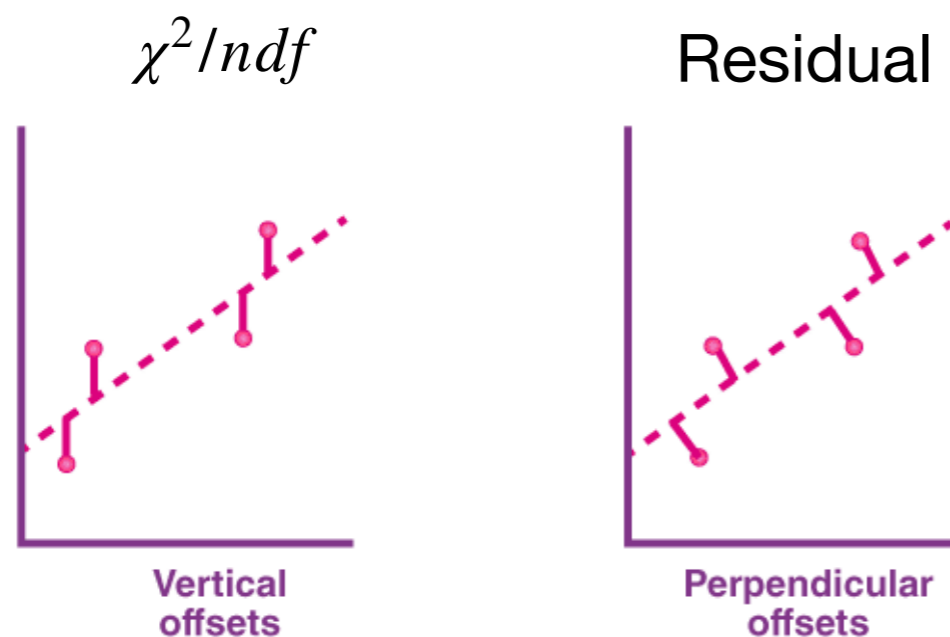
- Position distribution of z.
- Adding all the position of z and divide by the number of clusters.
- In principle, a flat distribution should shown.

Each cluster have position x,y,z



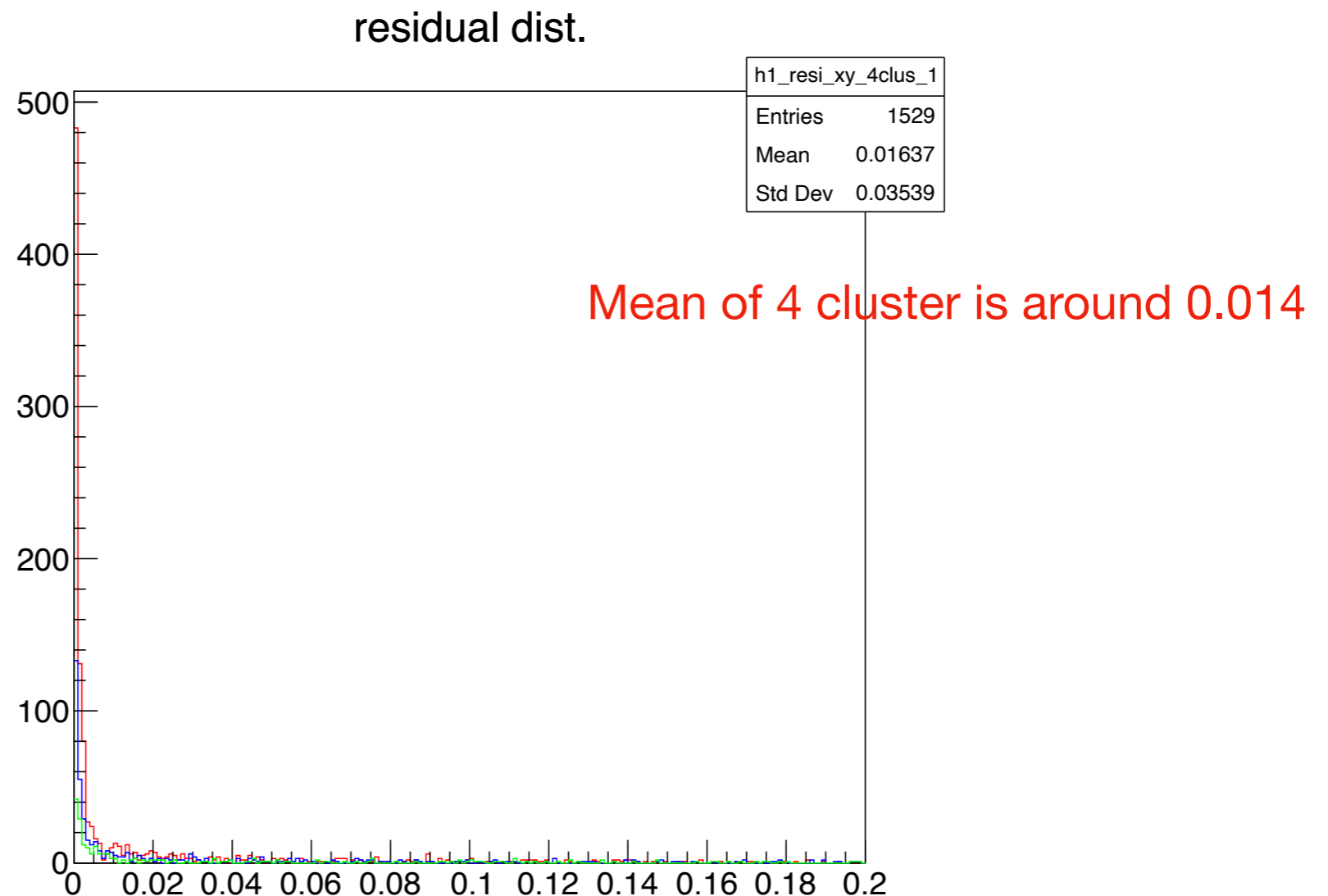
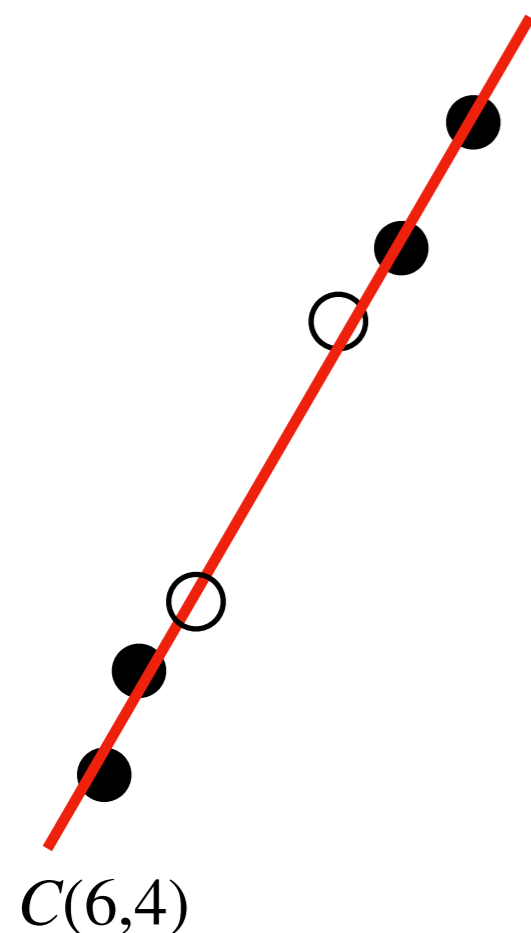
# Residual distribution check

- The cosmic tracks are fitted with a straight line,  $y = c + mx$
- Residual distribution of the tracks. (instead of  $\chi^2/ndf$  distribution)
- Because the cosmic tracks mostly come from vertically, calculating the residual by perpendicular way is a better method.
- There are different combinations of clusters



# Residual distribution check

- There are some events are not only have 4 clusters, but even more.
- There are combinations of clusters  $C(n, k)$  for those events.
- For the tracks that have more than 4 clusters, if the residual of them is similar or close to ones with 4 clusters, they may can be accepted.



# To do

- Checking the cosmic tracks quality by a larger base of data.
- Figure out the weird peak at angle distribution.
- Residual study for multiple clusters tracking.

**Back up**