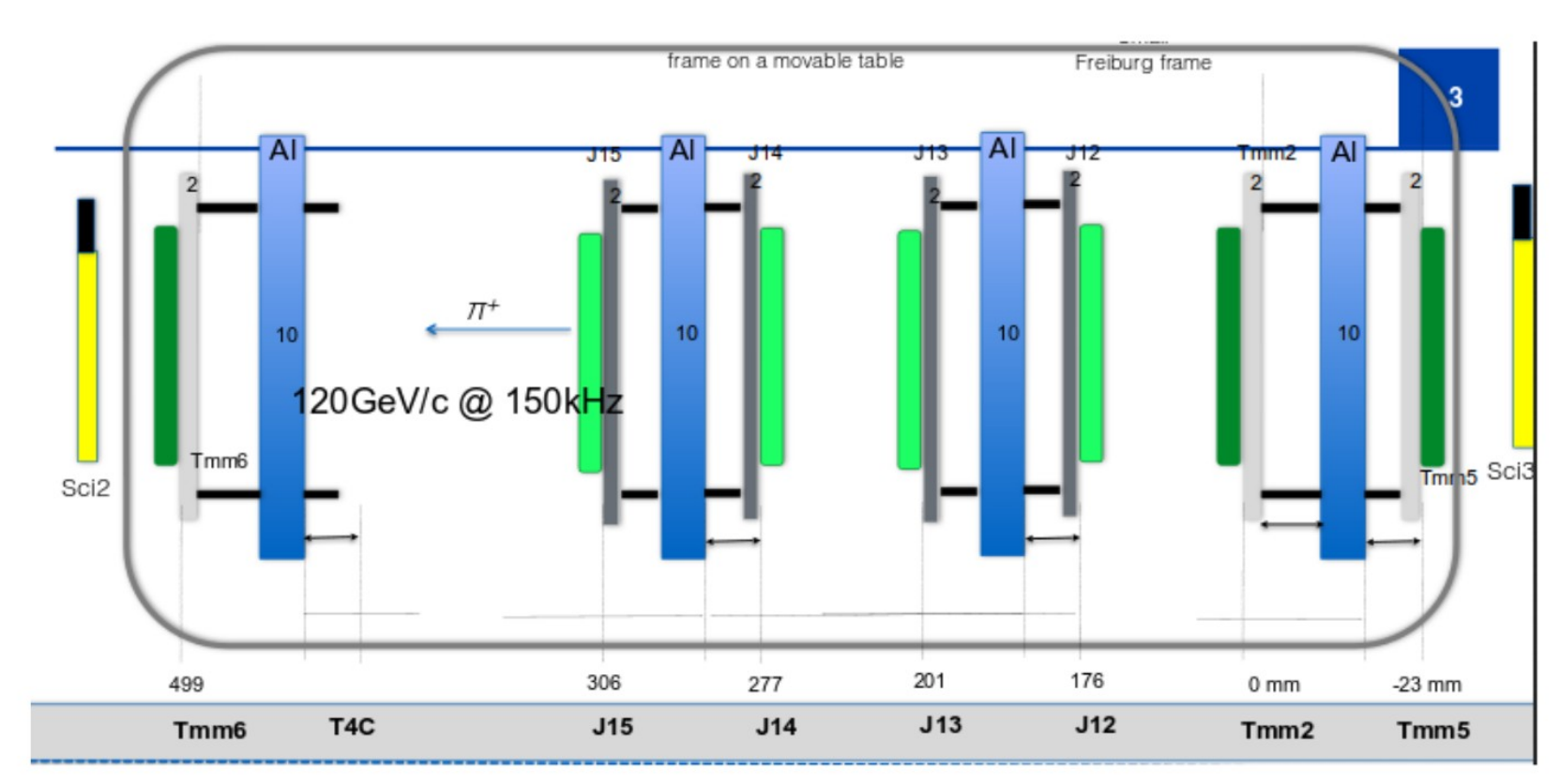
- Main Purpose: Systematic study of J chambers at different angles: 0° - 10° - 20° - 35°



- J12-13-14-15: floating mesh chambers, dimensions 10 × 10 cm^2 , 128 μm pillars
- Layout: 2 doublets of J chambers with same orientation: J14-J12 and J15-J13
- Settings:

1. Selected events with exactly 1 cluster
2. Applied Cross-Talk corrections plus a threshold on the strip charge of 3σ of the pedestals distributions
3. Clusters made of minimum 2 strips and maximum 2 consecutive holes

- Main Purpose: Systematic study of J chambers at different angles: 0° - 10° - 20° - 35°

FIRST STEP Reproduce A. Betti results obtained with run 13058; the run we're using is 13057; from the logbook found on https://twiki.cern.ch/twiki/bin/view/Atlas/MicromegasTestBeams we read:

- Run 13058: HV Tmm=550/300, J=580/300, theta_J=35, theta_Tmm=25
  Position=(2.38, 3.44)
- Run 13057: HV Tmm=550/300, J=580/300, theta_J=35, theta_Tmm=25

By the way, what is the “Position” note about??

However, at the beginning of her talk on 3-12 we found:

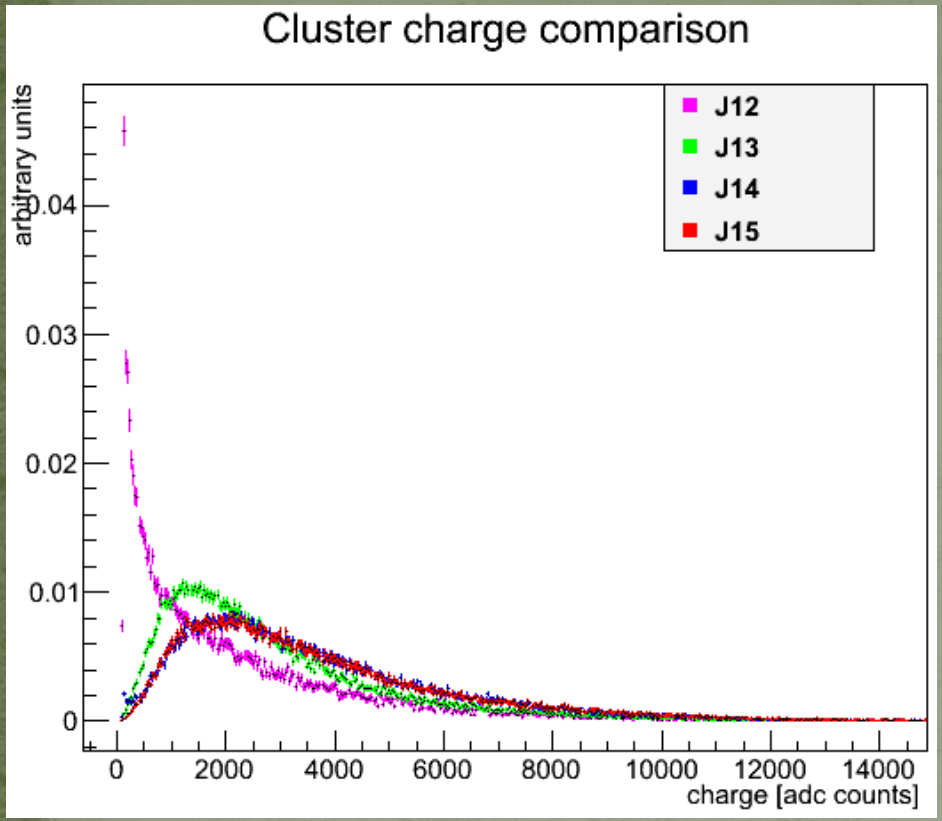
Selected good events with a track using the centroids of the telescope chambers (3 Tmm chambers at 0 degrees)

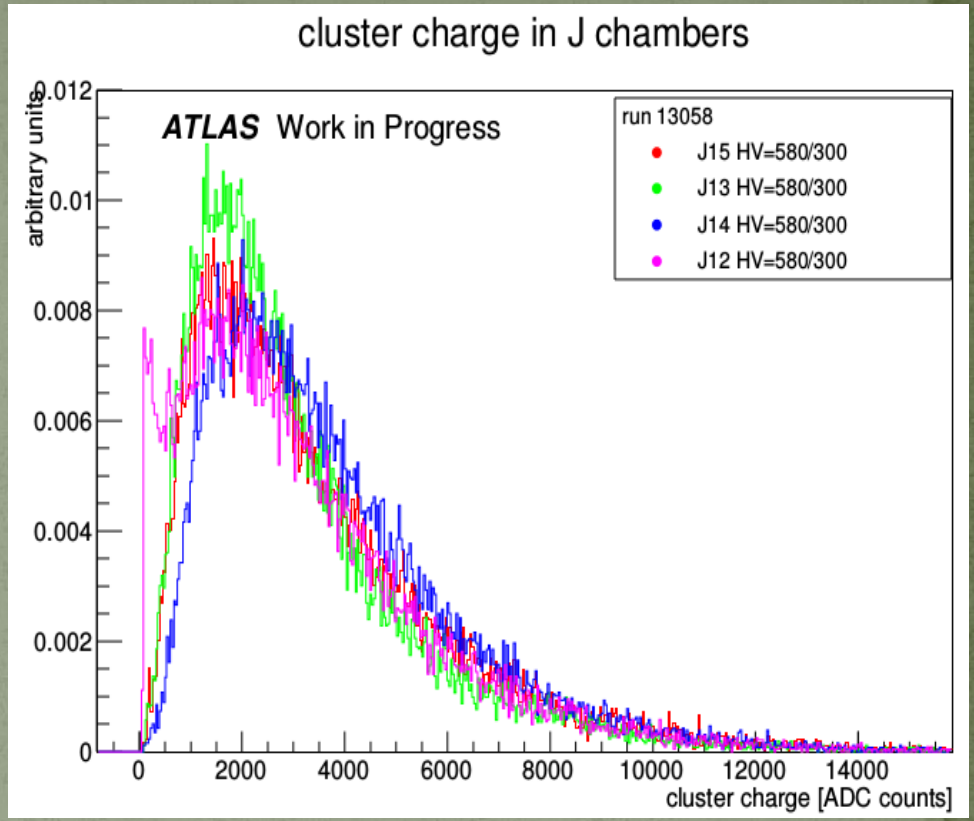
1st difference, since we set them at 25 as reported in the logbook

The second one is about the cluster choice, since there's this implemented feature:

Analyzed the cluster that is the closest to the track in the analyzed chamber

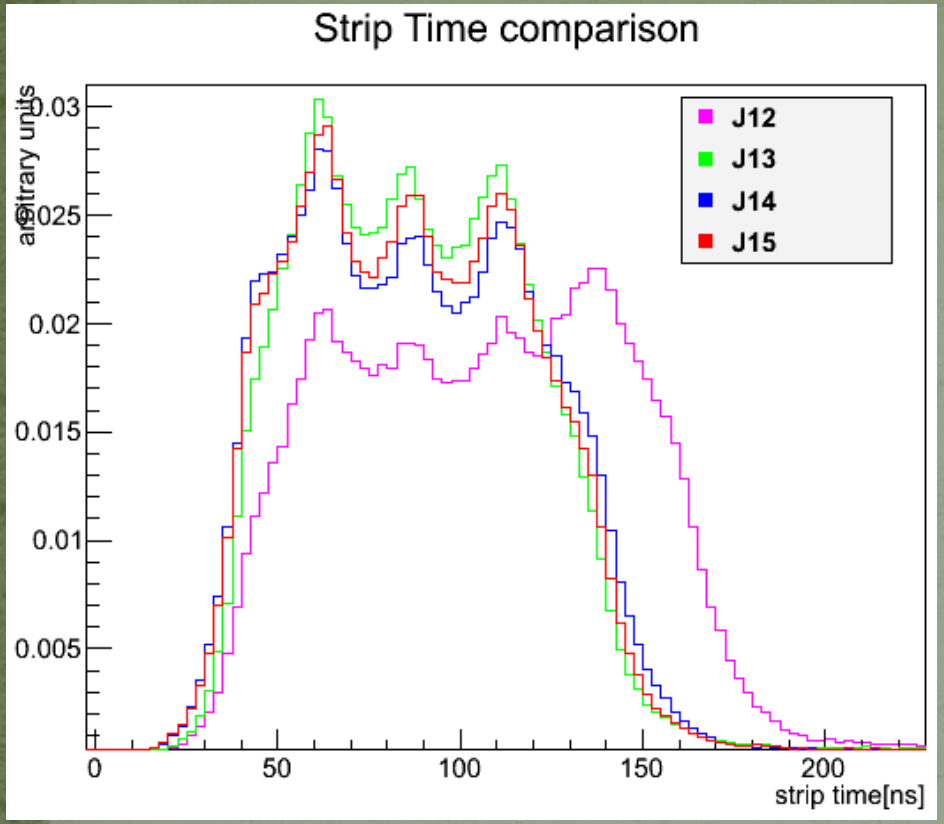
Run 13057: J chambers at 35° to be compared with A. Betti results (run 13058)

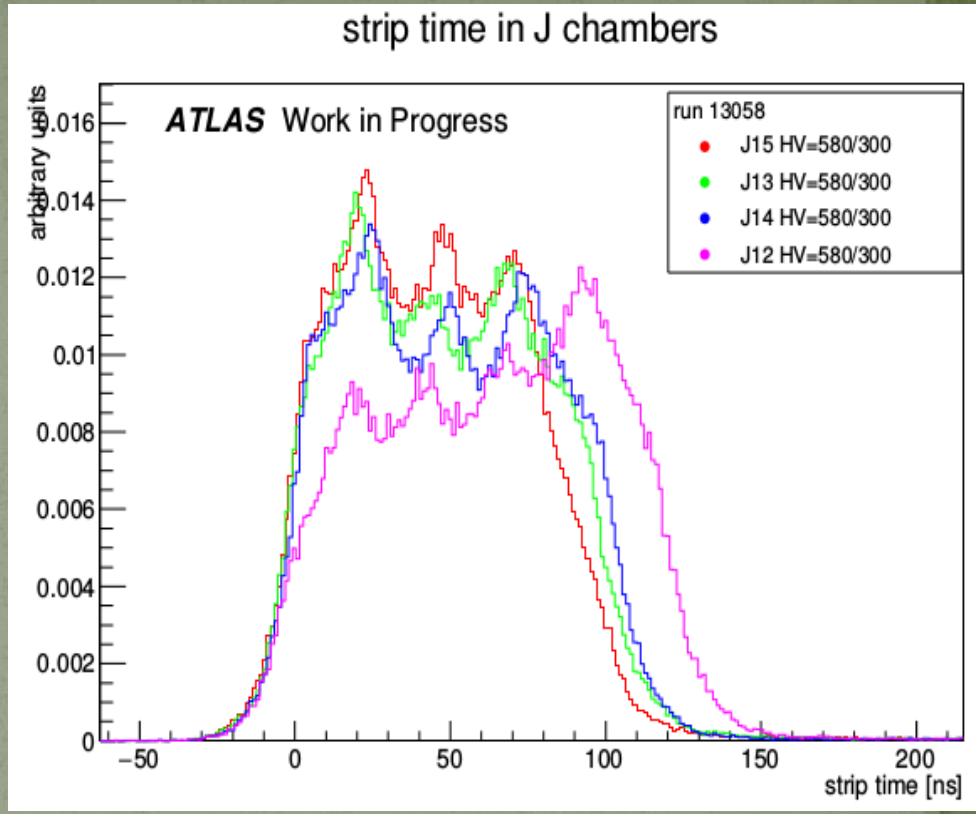




- Normalized histos...
- No cuts applied on charge...
- J12 chamber gives completely crazy results...
- If there're other changes, we don't know nothing about them...

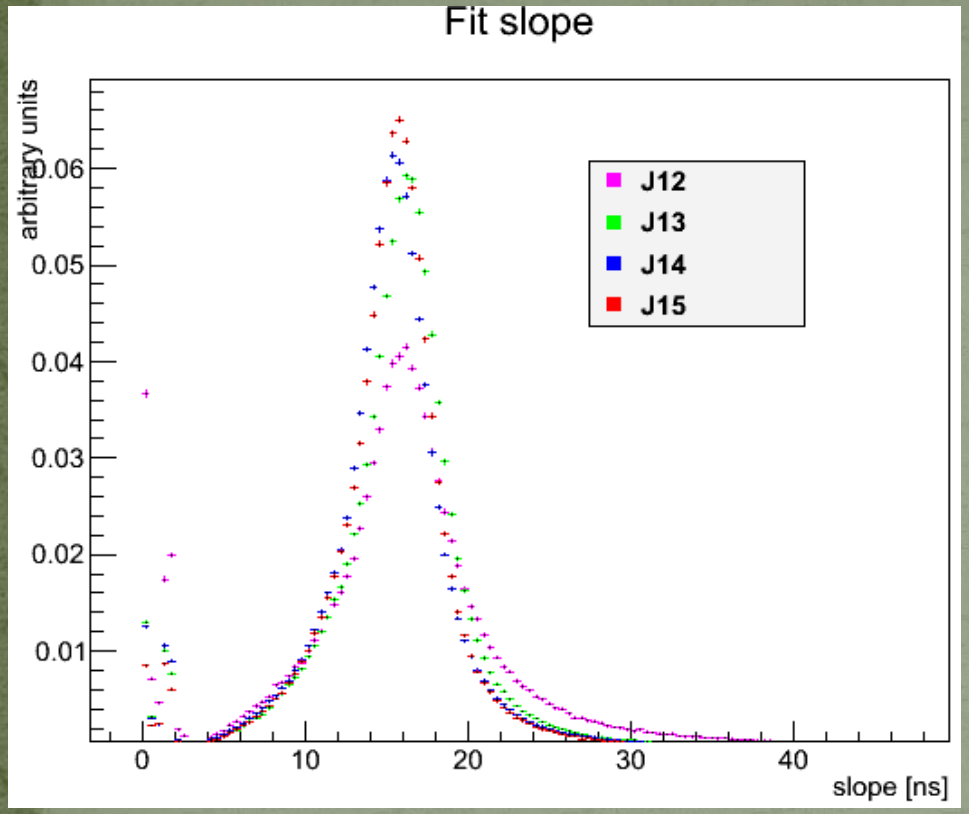
Run 13057: J chambers at 35° to be compared with A. Betti results (run 13058)

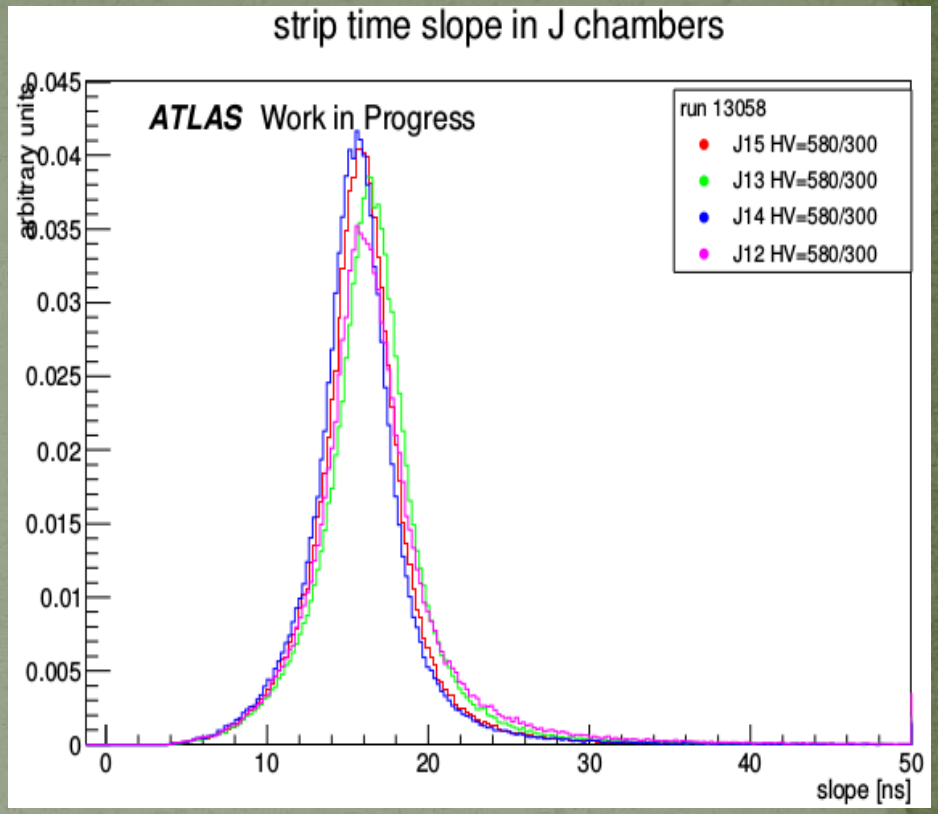




- Normalized histos...
- It seems to be a global shift in time, perhaps related to the value of T0: in our case the setting is T0=0. When we run M. Vanadia's code a T0 calibration file is produced; re-running the code once again with, forcing it to use the calibration file produced before, nothing changes since the setting is still T0=0...
- Maybe they're using a user-defined T0 value or an offset someway related to it...

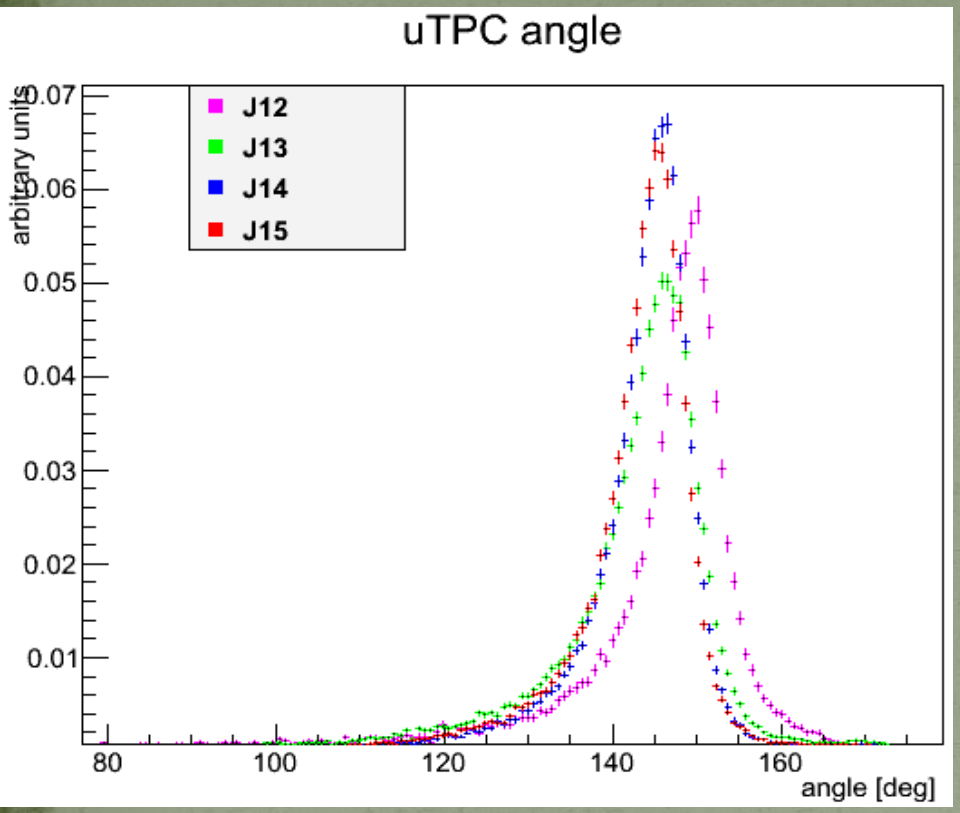
Run 13057: J chambers at 35° to be compared with A. Betti results (run 13058)

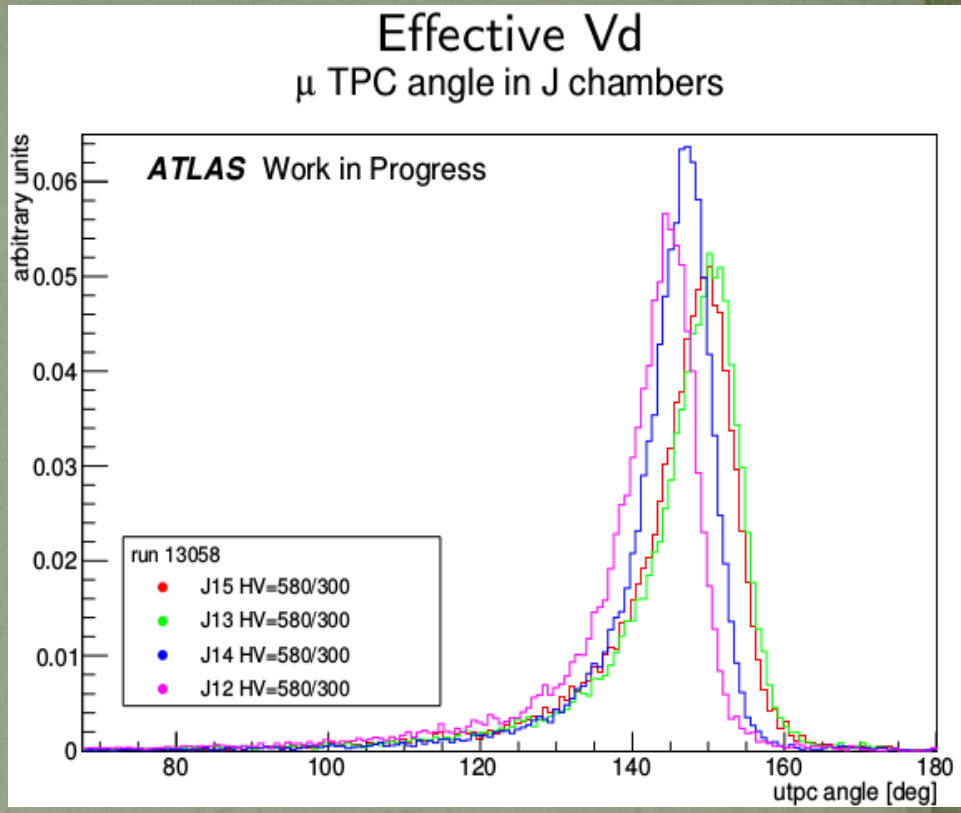




- Normalized histos...
- Here we have the plot of the slope, which comes from the fit with the Fermi-Dirac function... even in this case we have some points near the zero-value, which shouldn't be there...we wonder why...

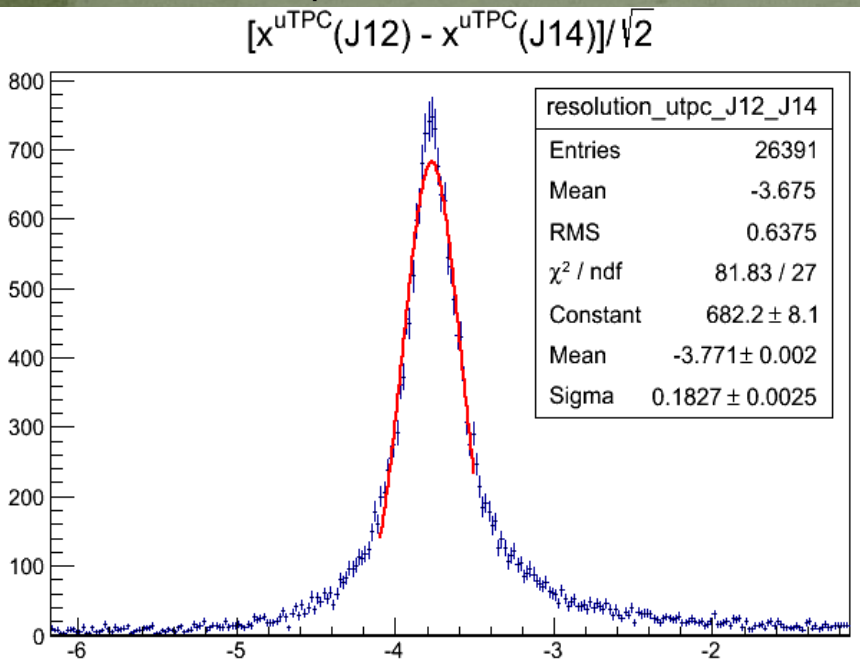
Run 13057: J chambers at 35° to be compared with A. Betti results (run 13058)

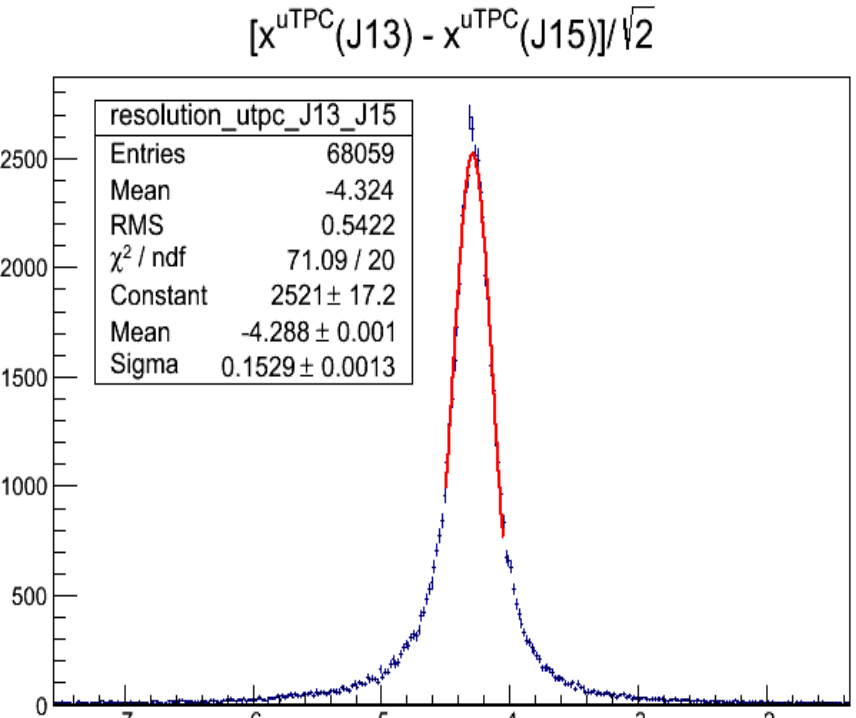


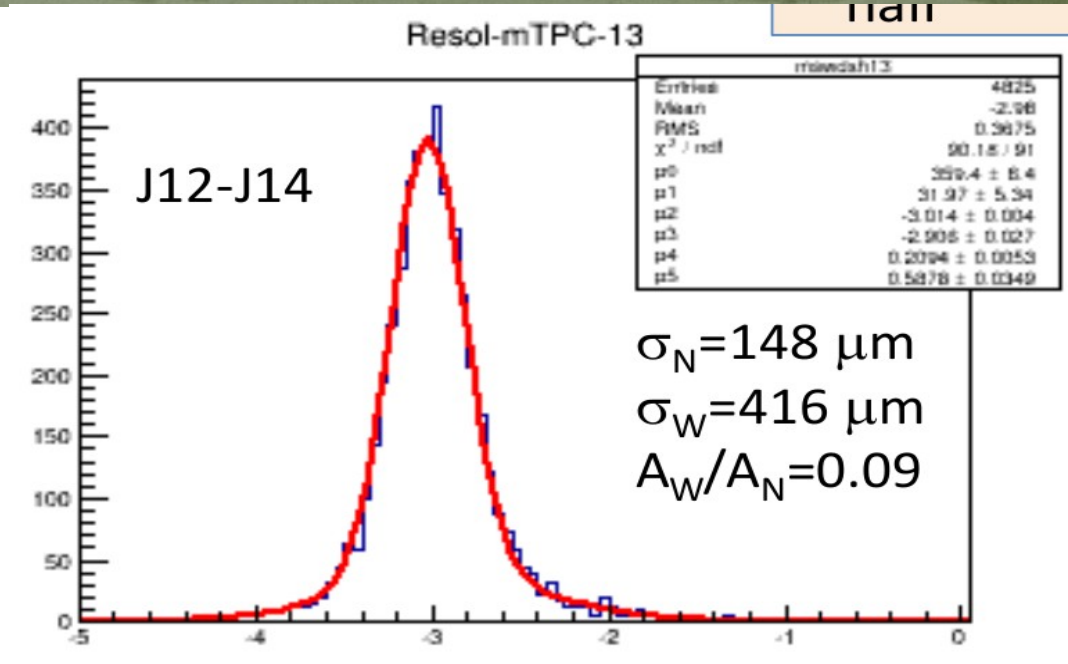


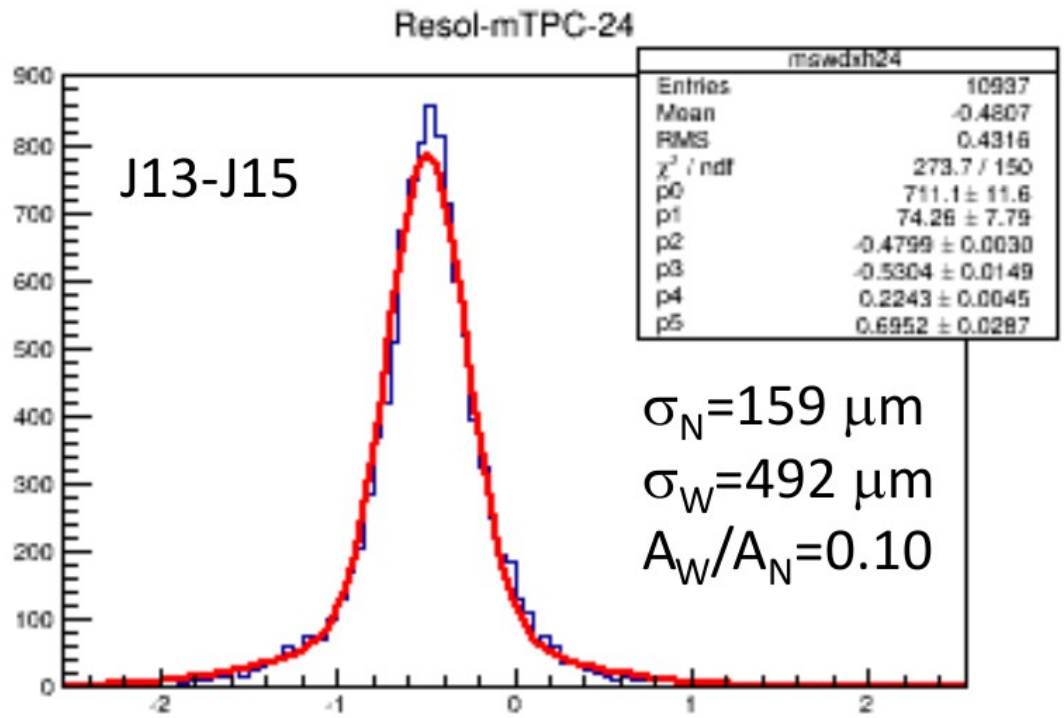
- Normalized histos...
- Here we have the reconstructed uTPC angle...chambers behaviour (apart from J14) seems to be reversed...

Resolution plots...

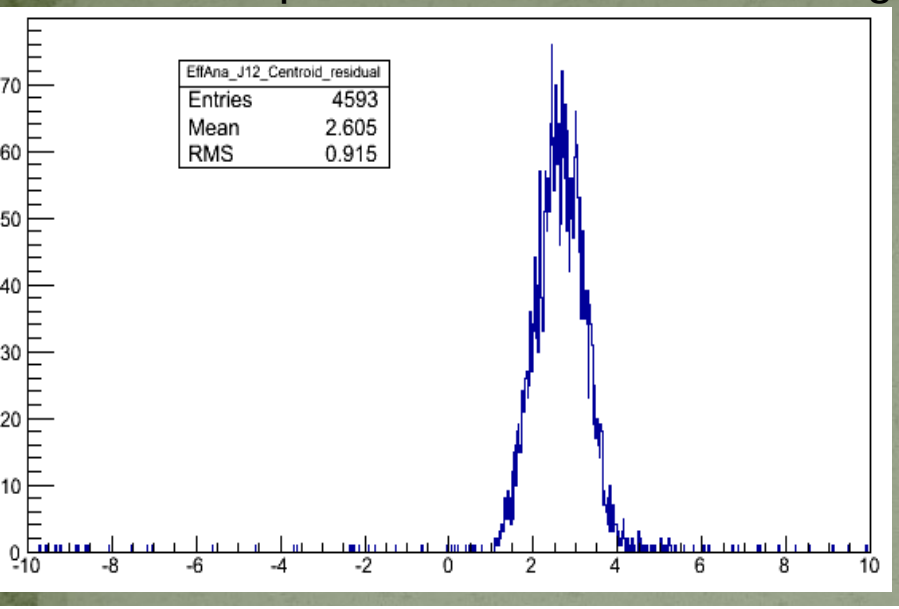


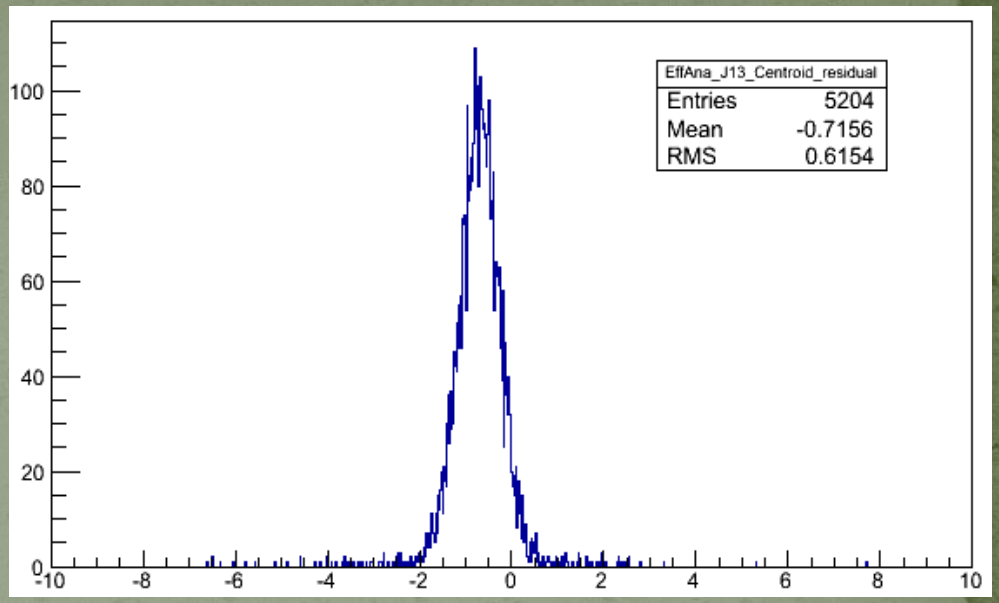


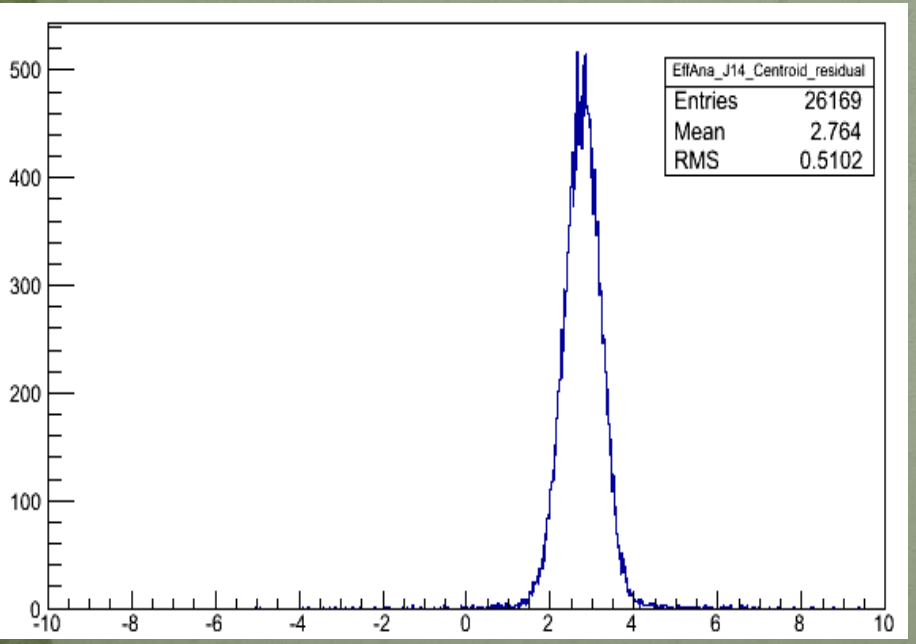


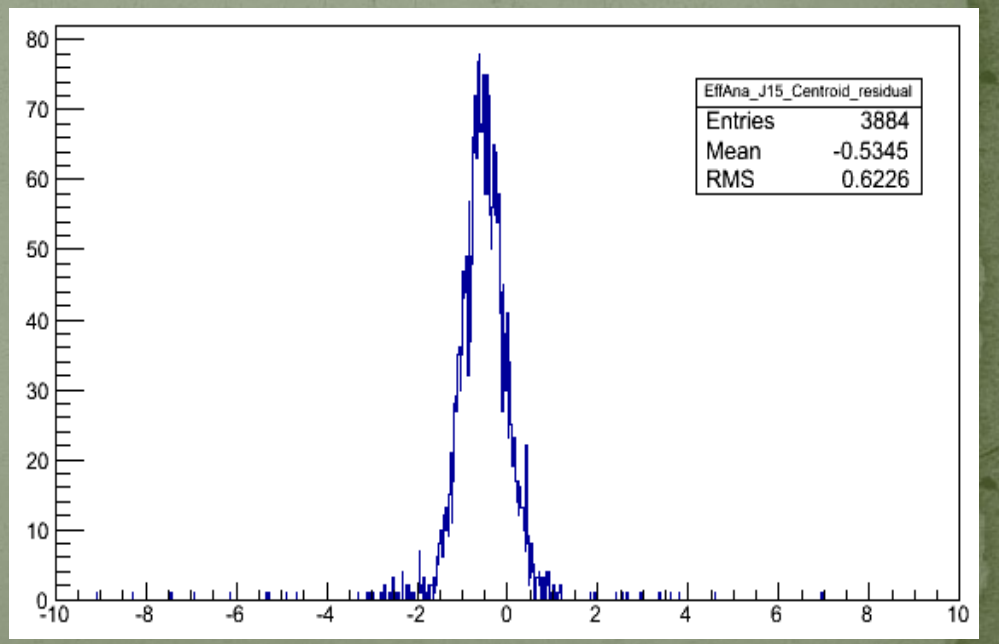


Residual plots show a chamber disalignment:

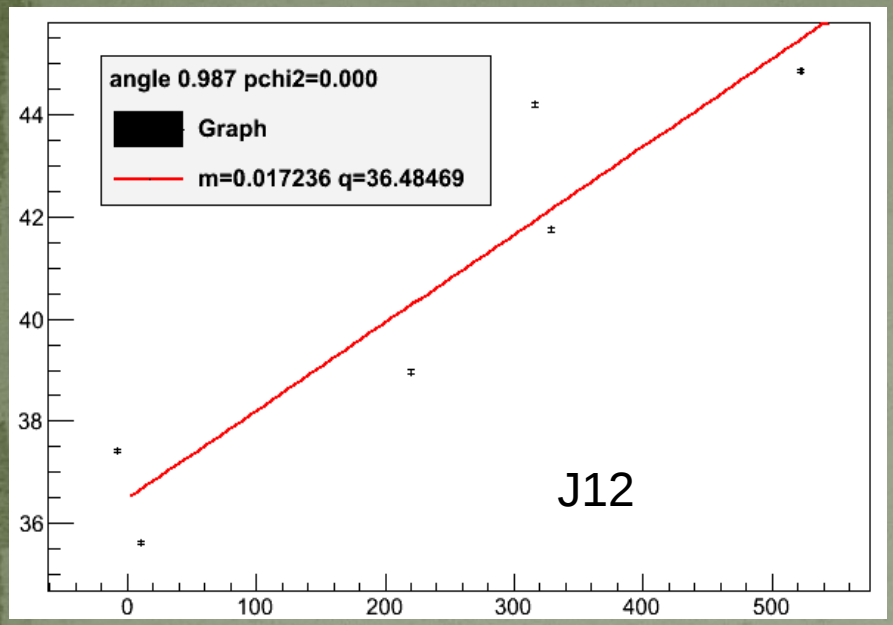


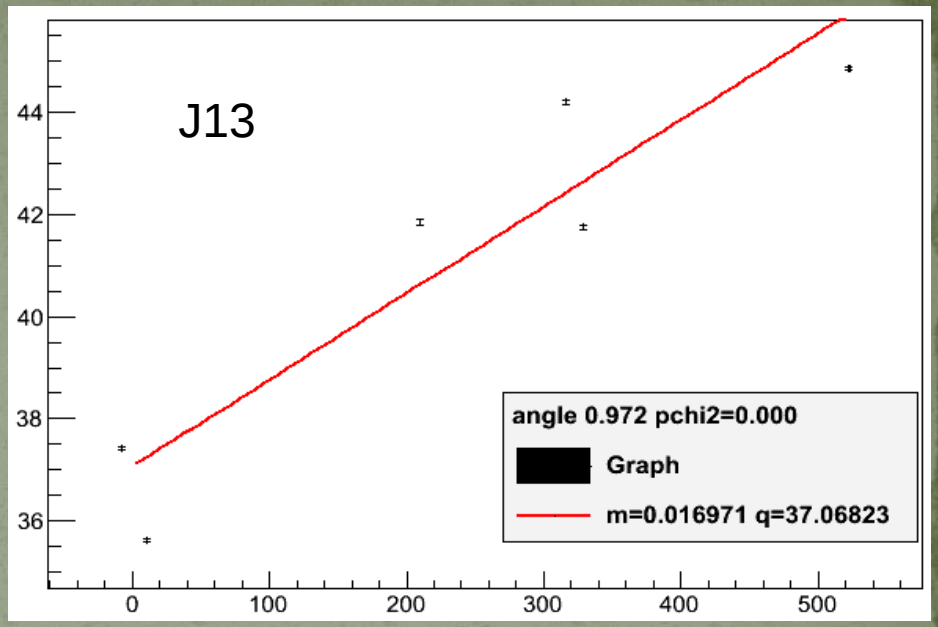


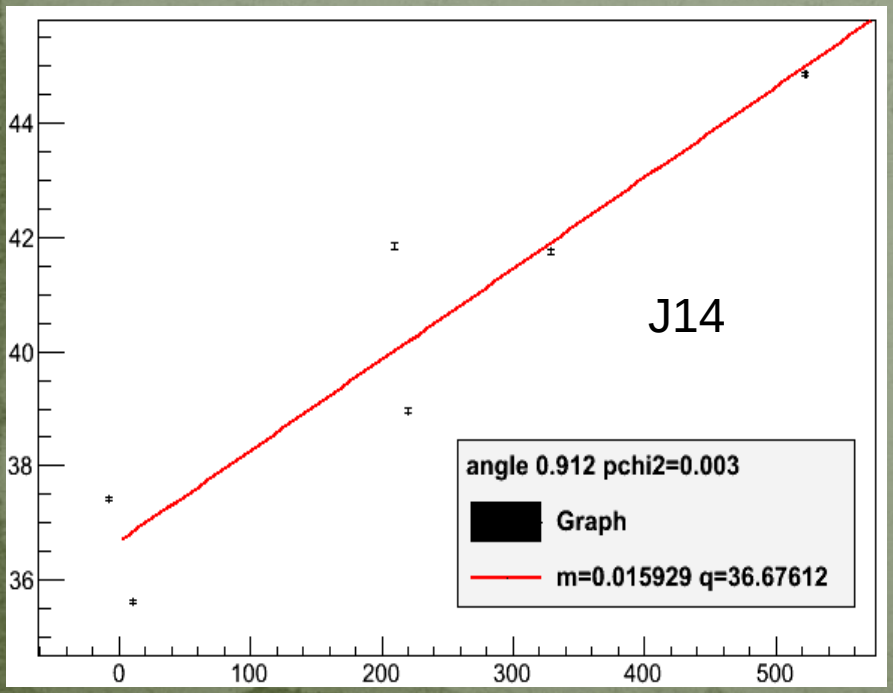


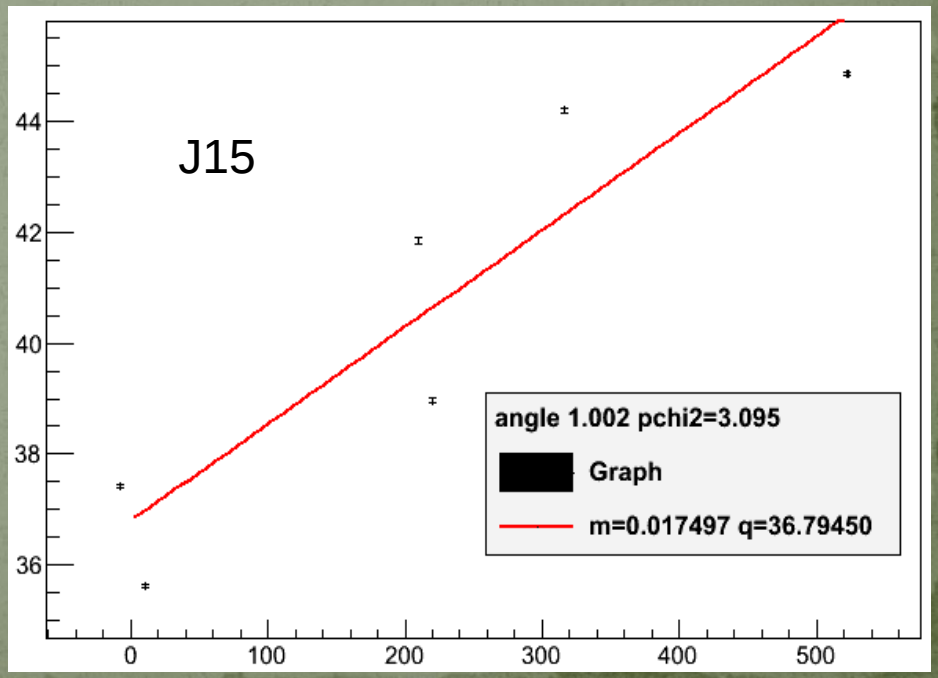


And track fits confirm this...

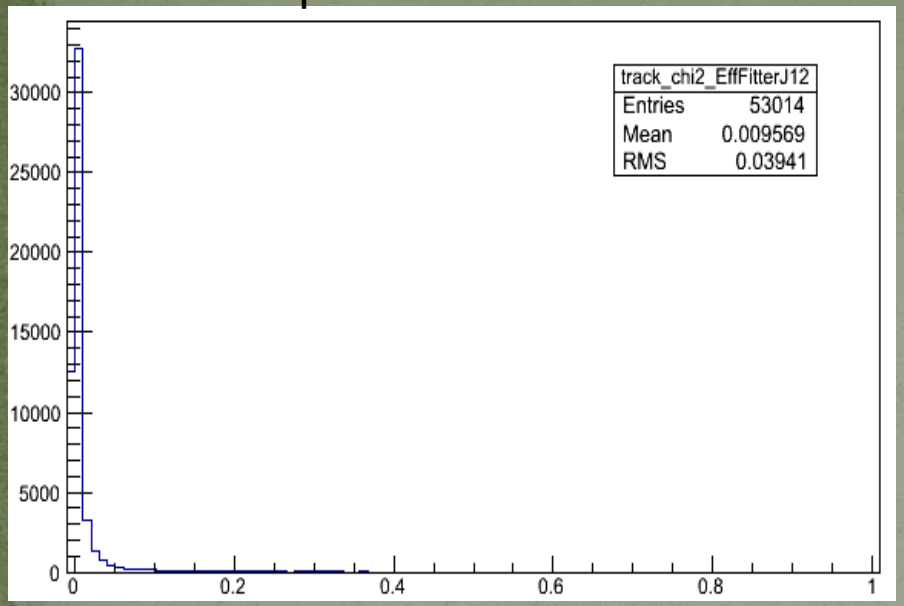


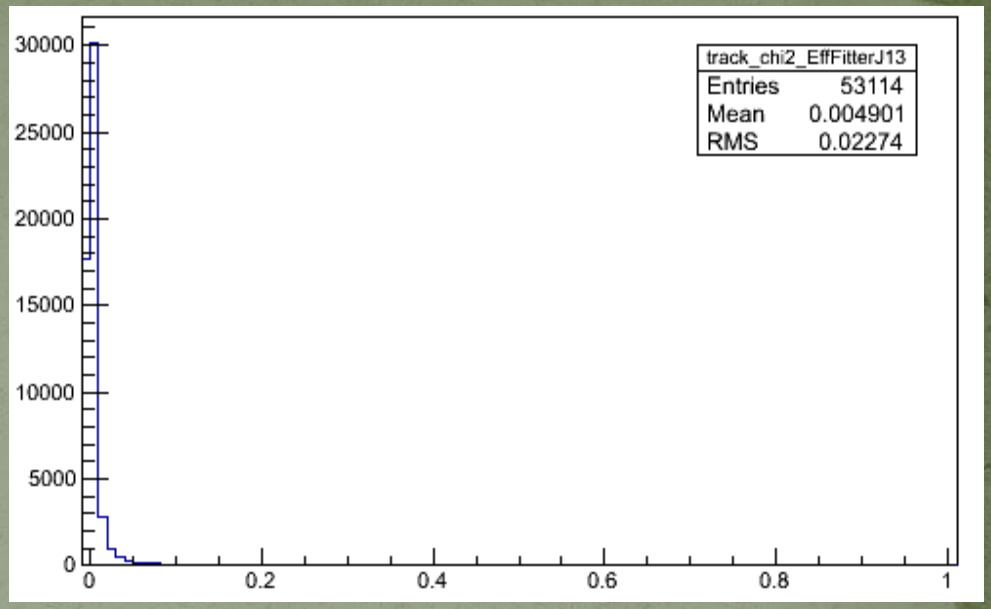


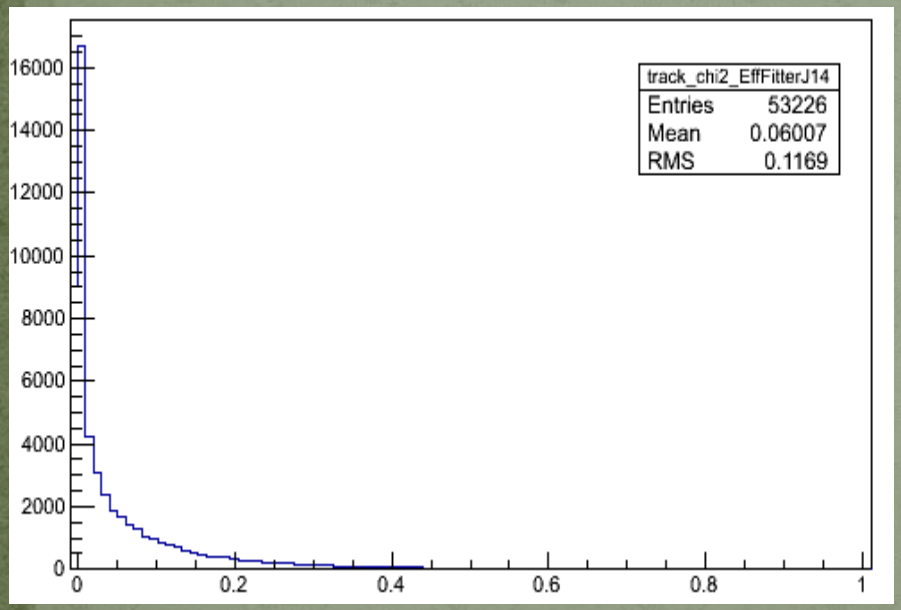


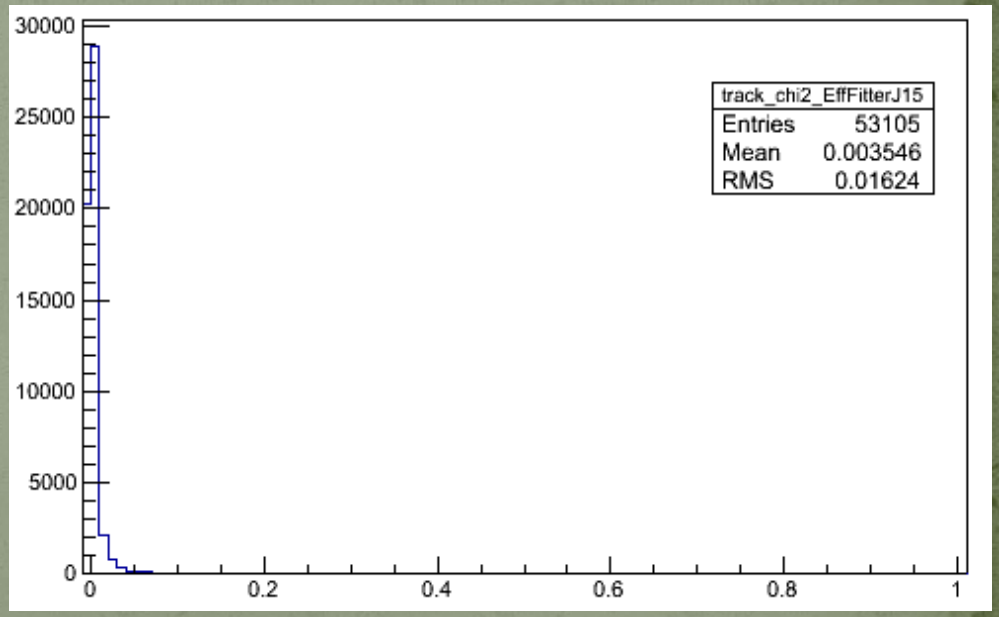


Tracks chi2 per chamber:

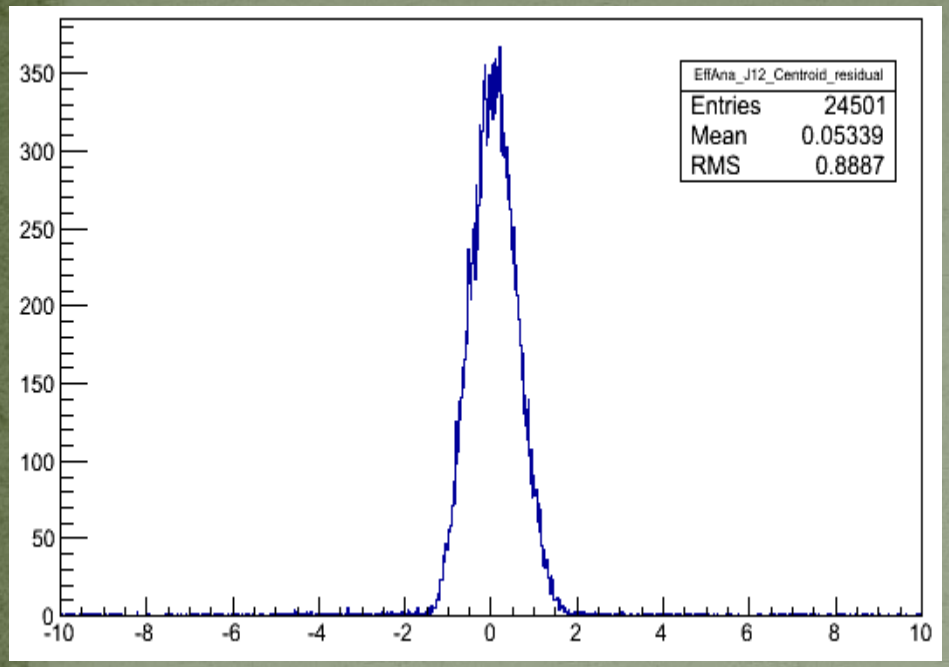


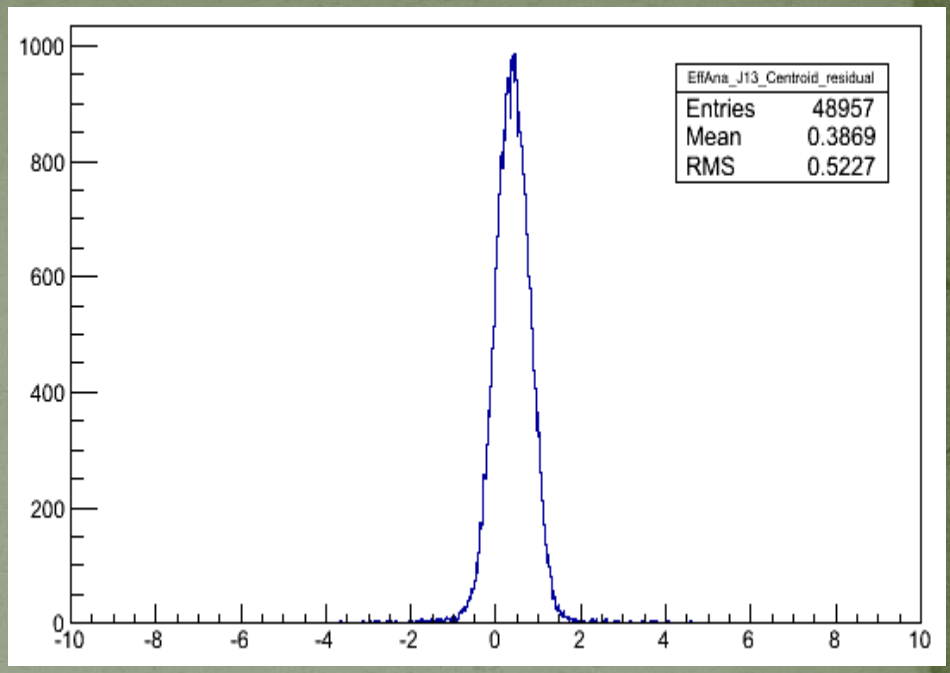


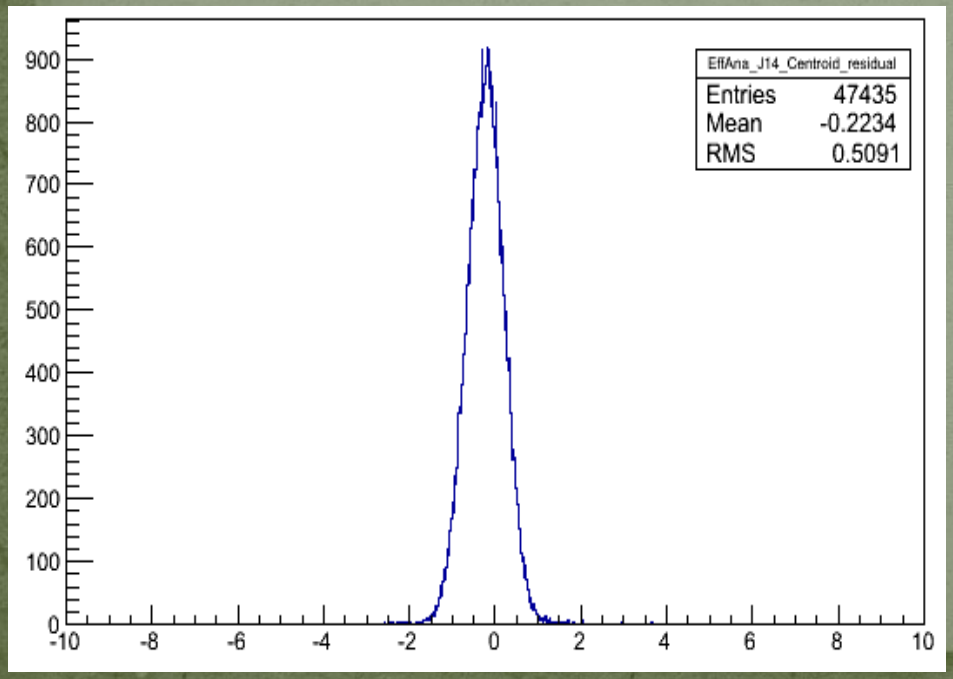


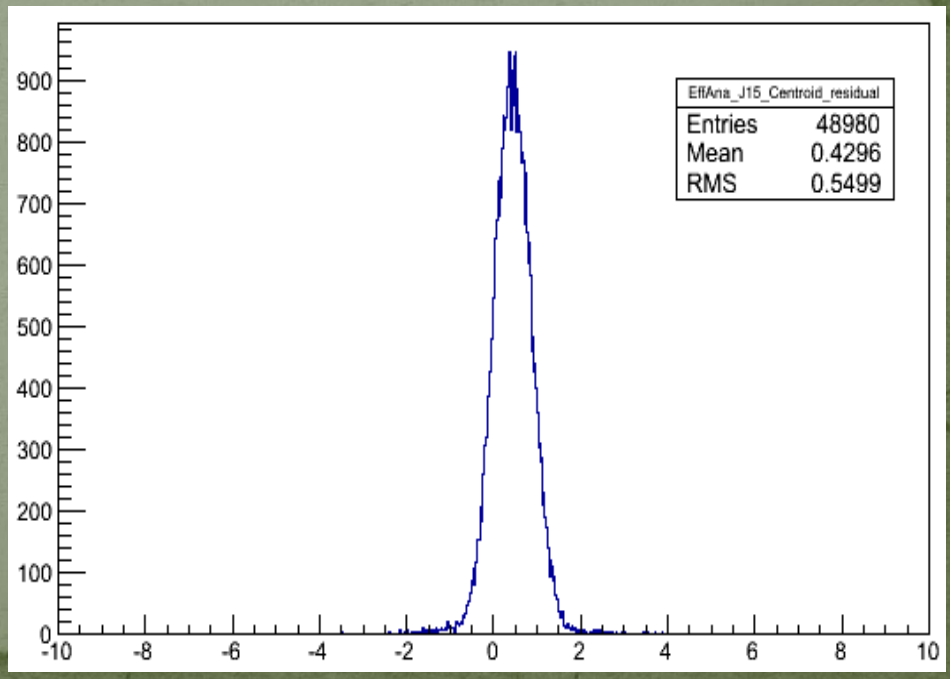


By changing angle signs (according to orientation: +1 –> Positive angle; -1 –>Negative)

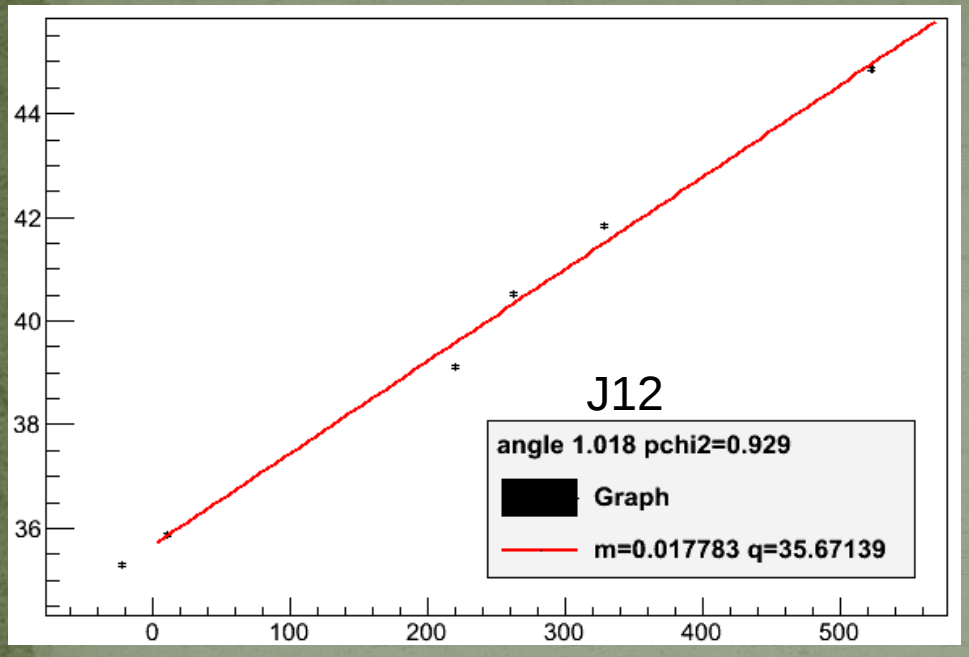


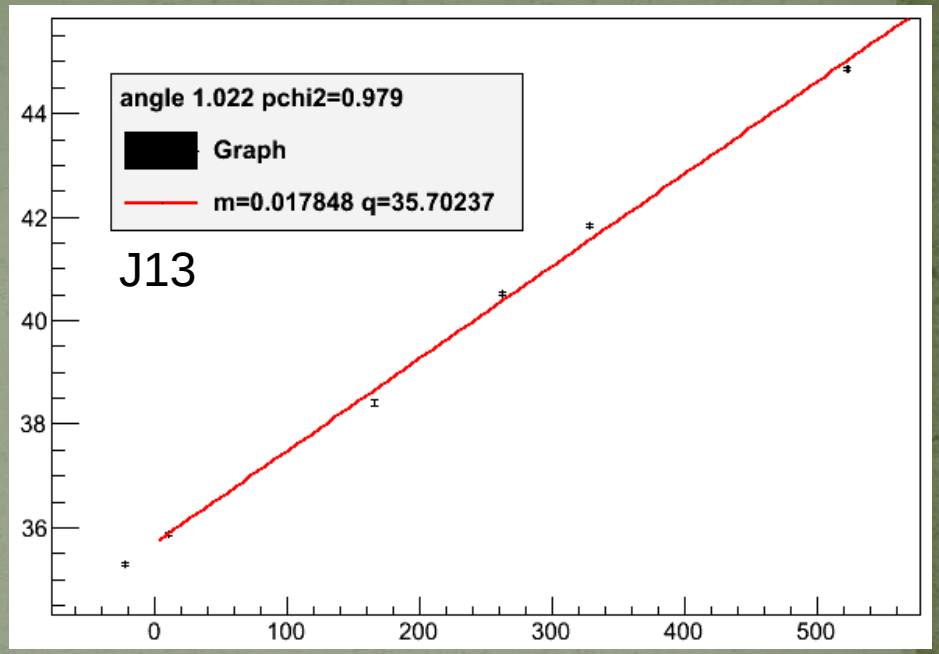


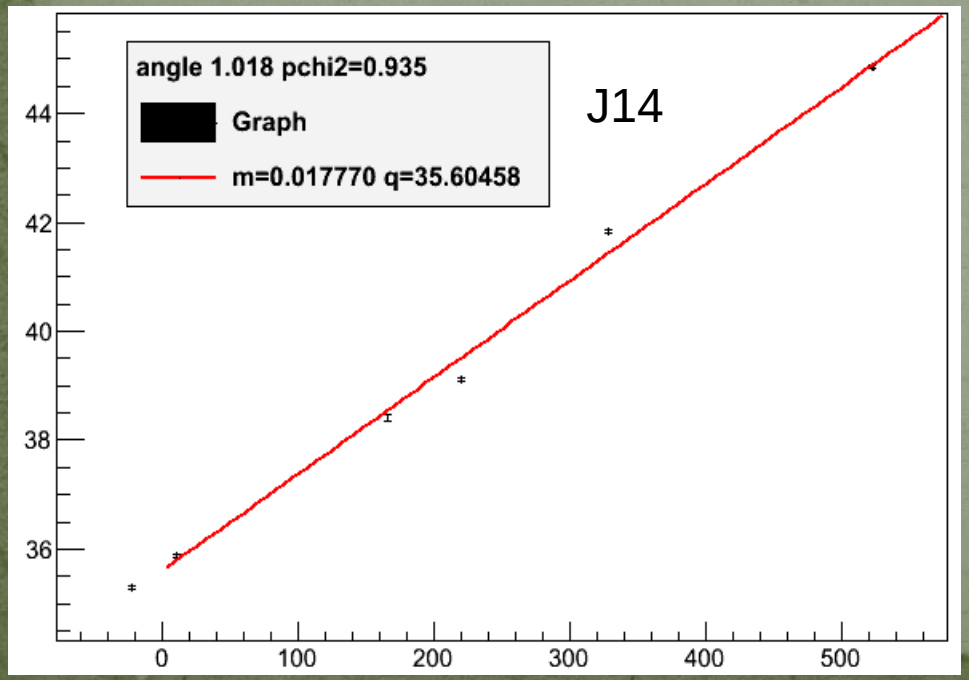


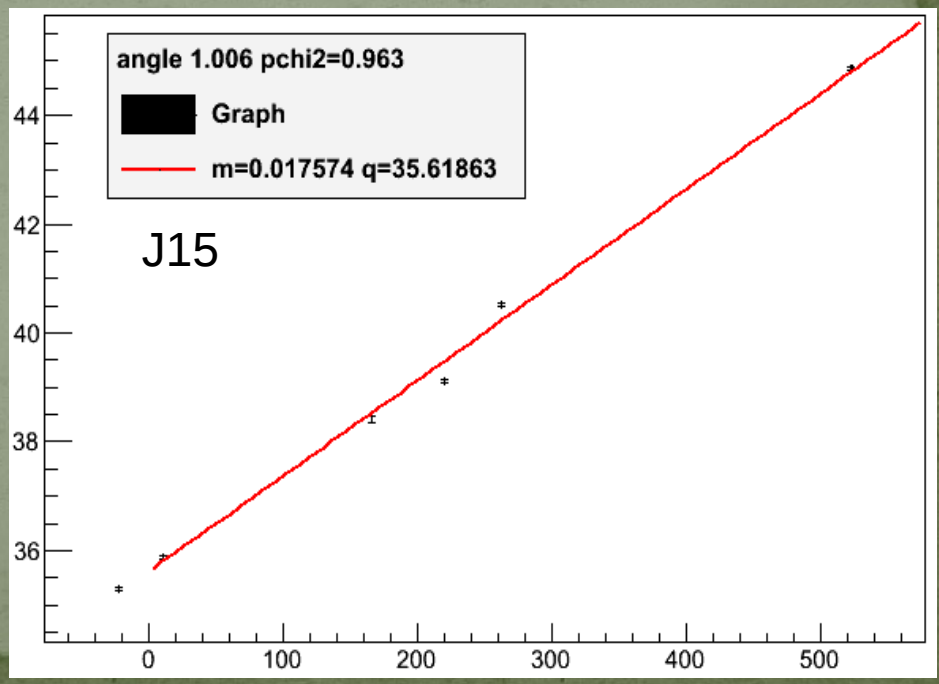


Also track fits is different...

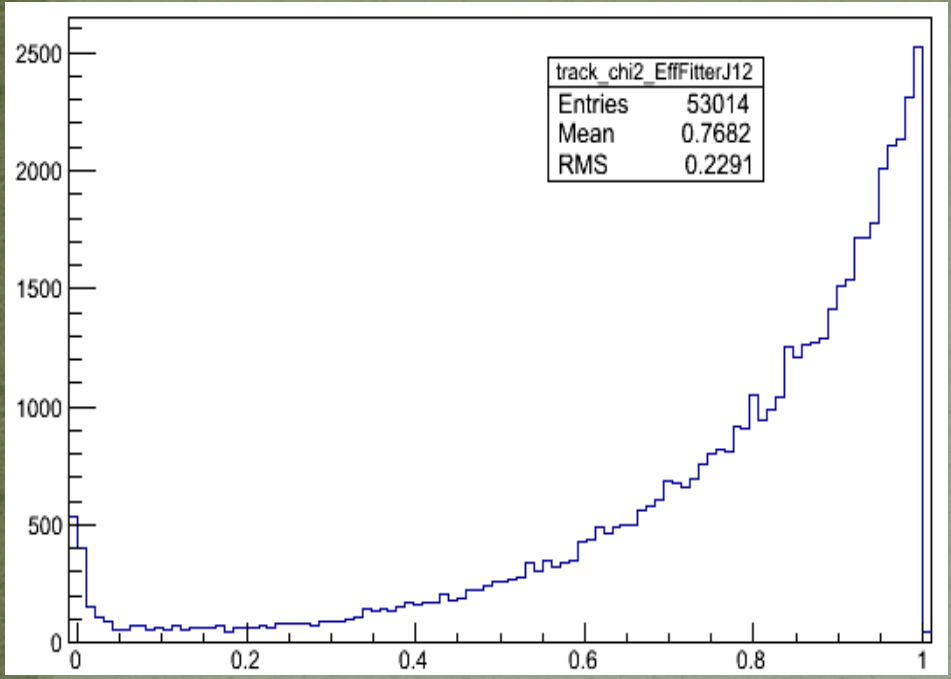


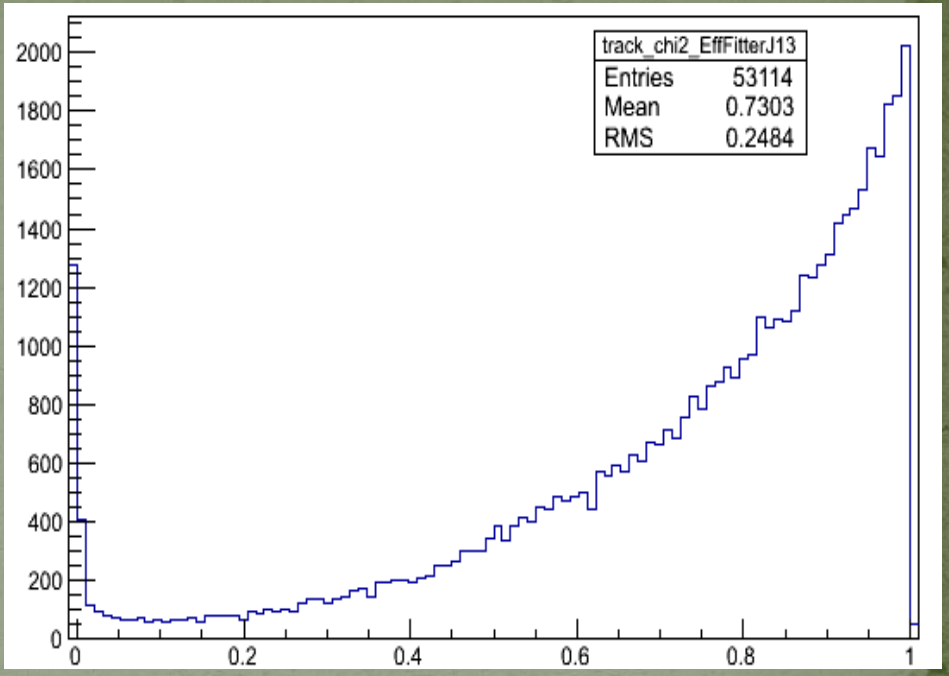


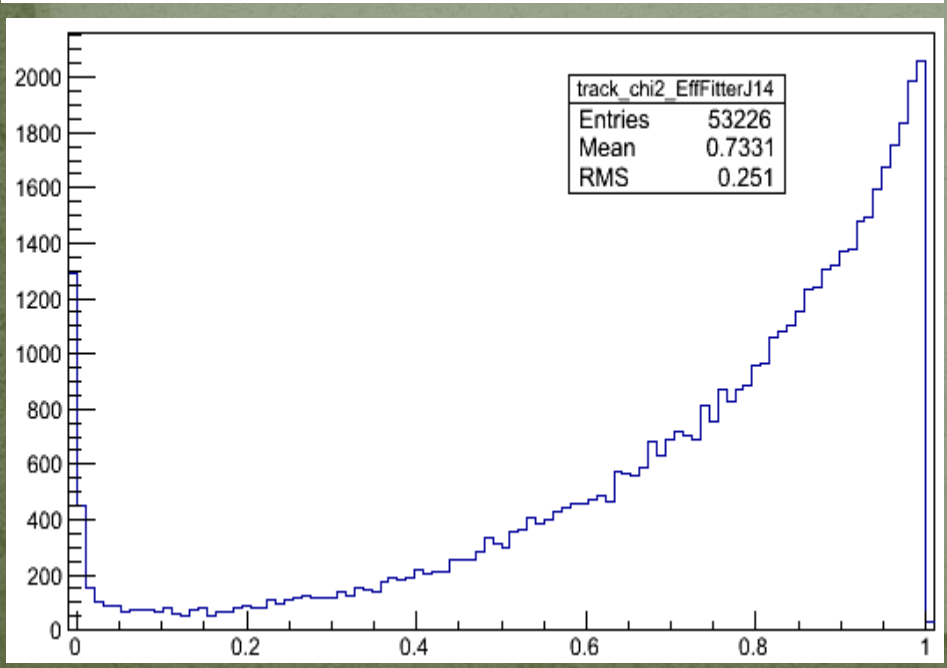


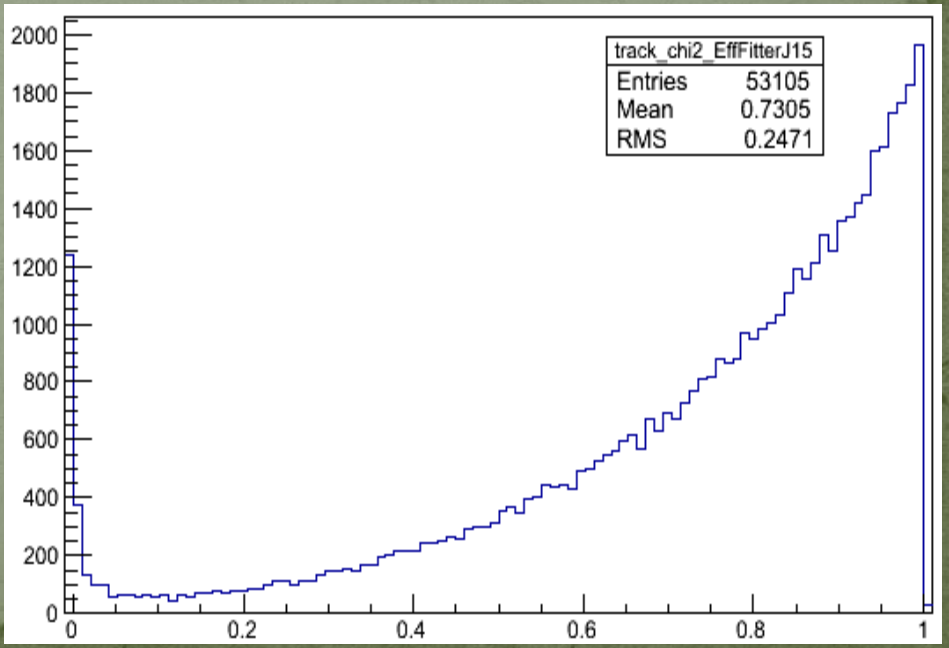


Now tracks chi2 per chamber:

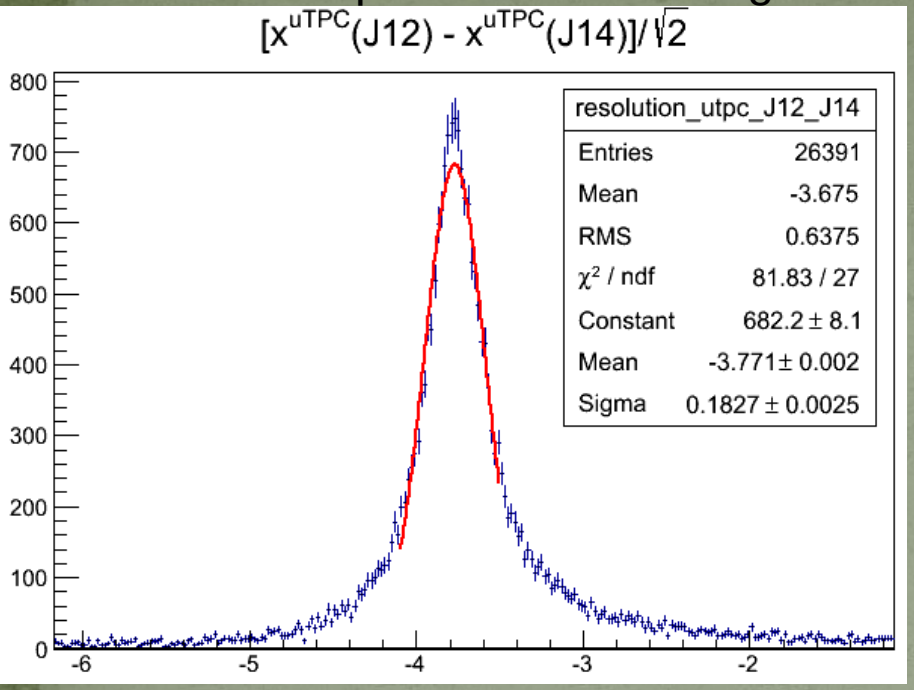


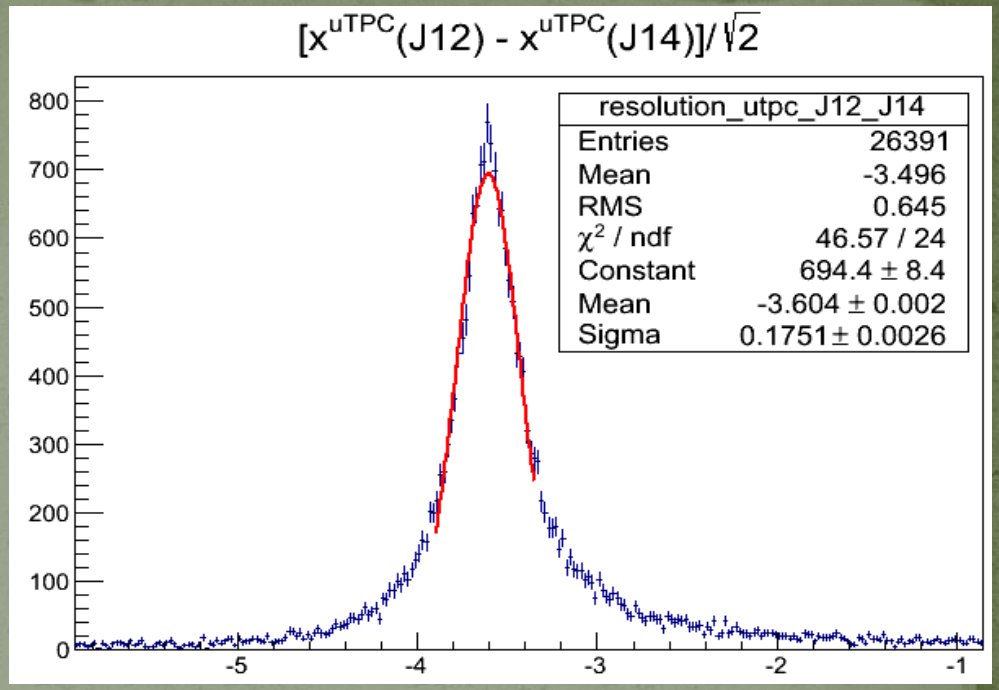


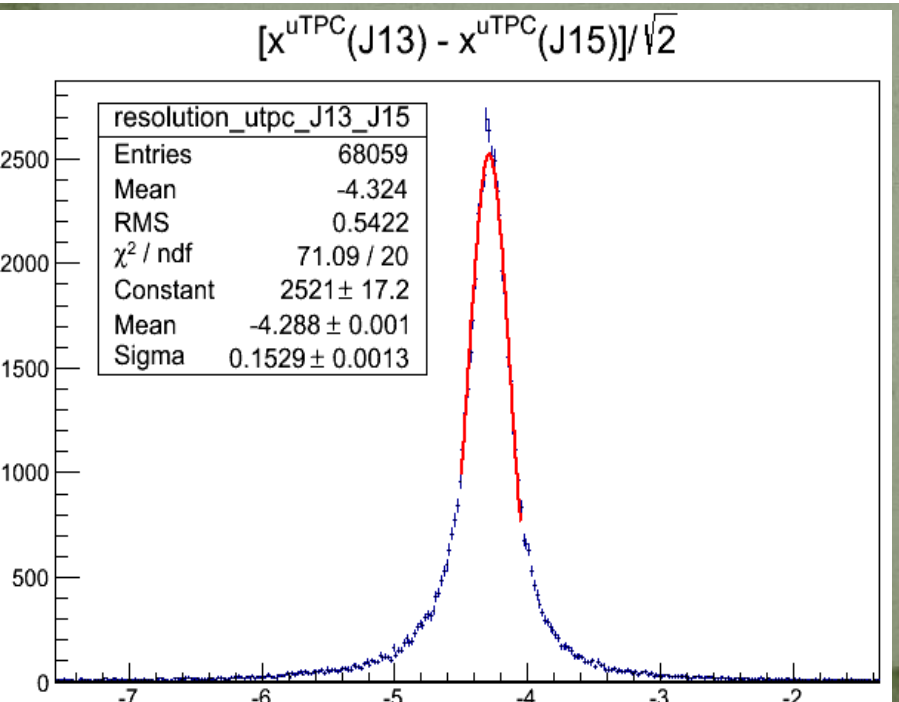


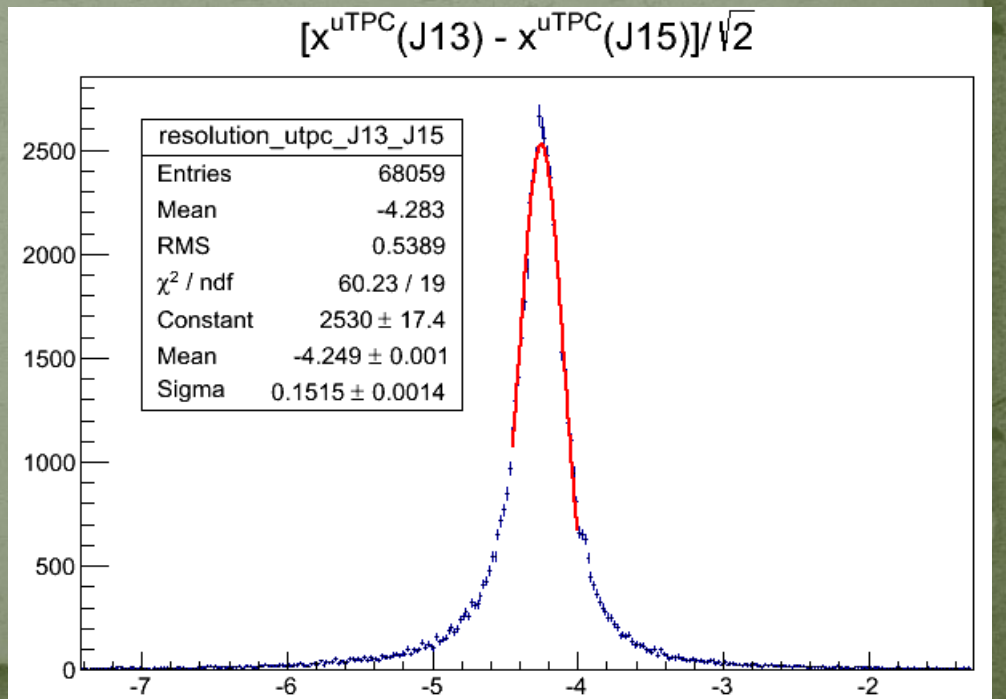


But resolution plots don't show big differences: LEFT before – RIGHT after



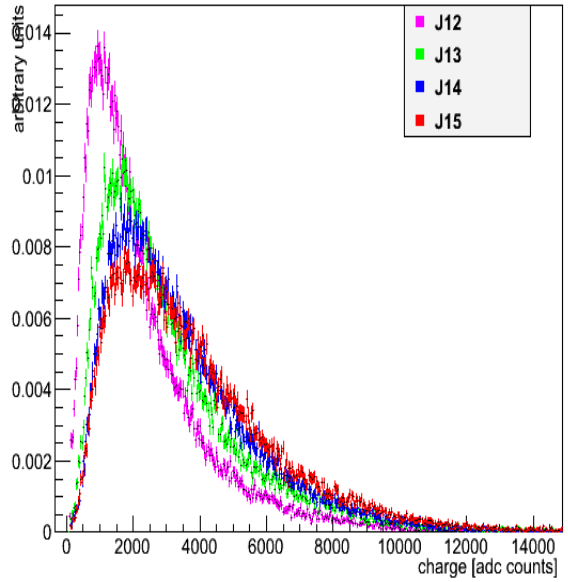




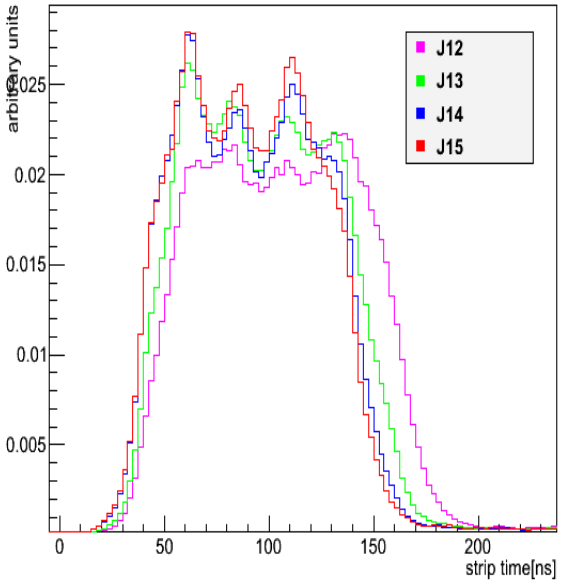


Run 13064: J chambers at 20°

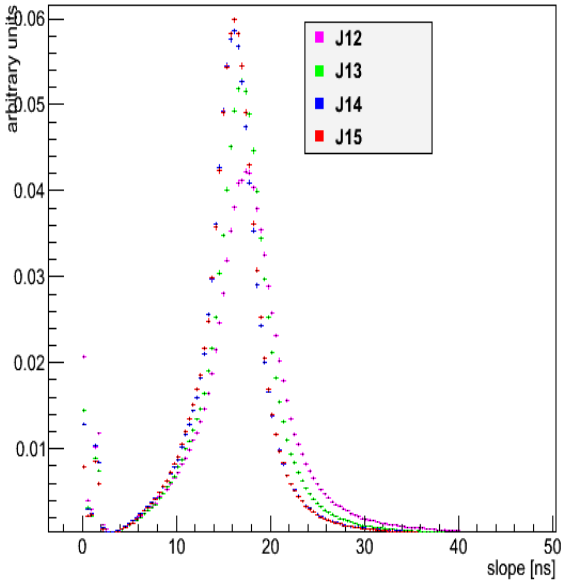
Cluster charge comparison



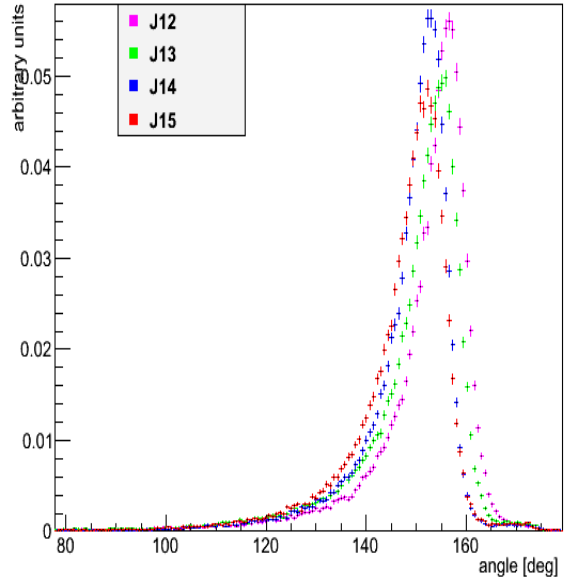
Strip Time comparison



Fit slope

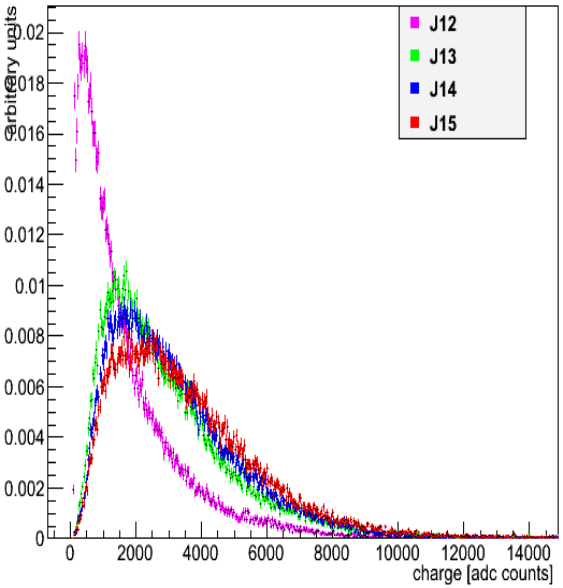


uTPC angle

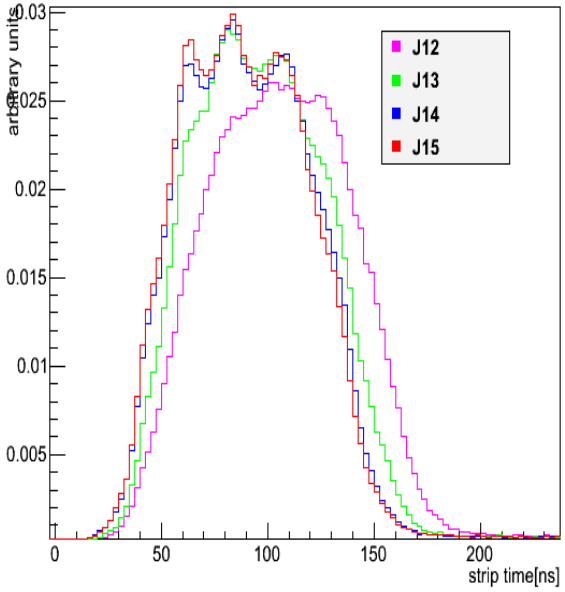


Run 13069: J chambers at 10°

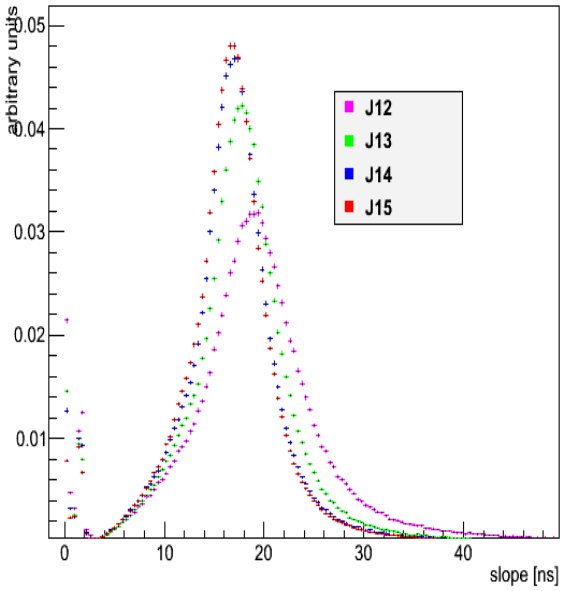
Cluster charge comparison



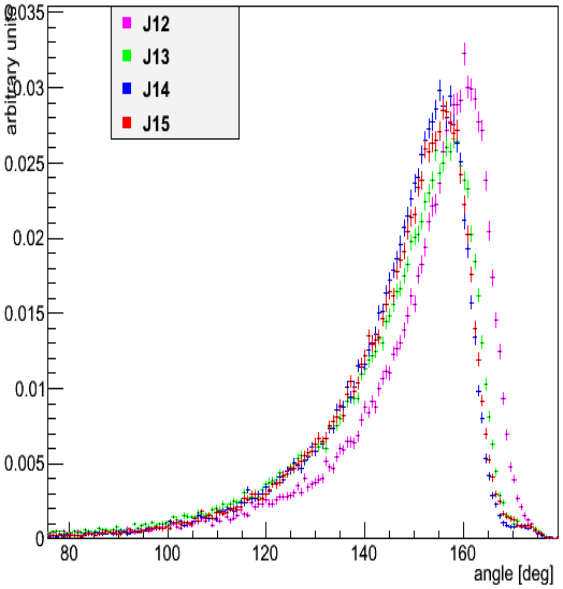
Strip Time comparison



Fit slope

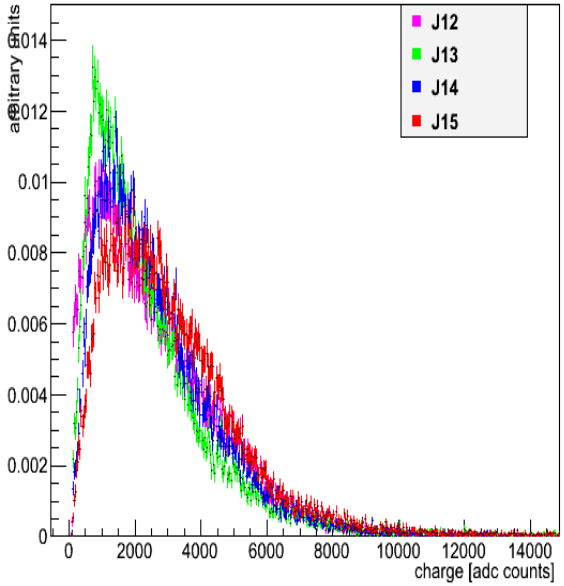


uTPC angle

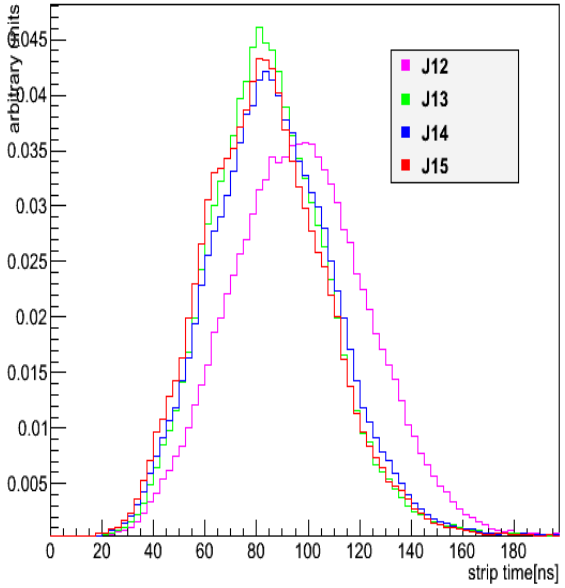


Run 13026: J chambers at 0°

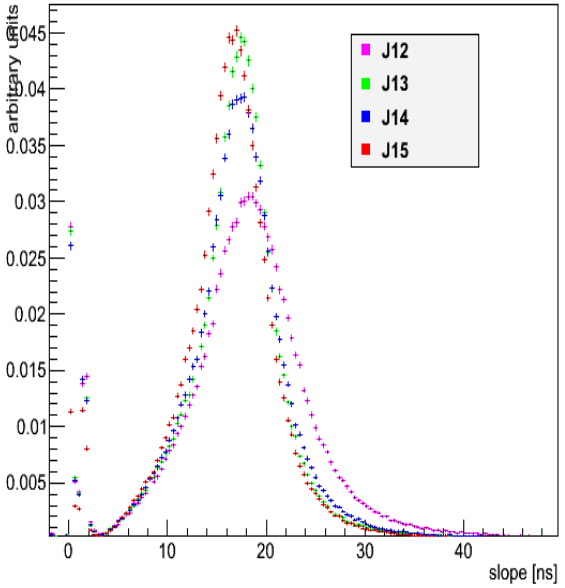
Cluster charge comparison



Strip Time comparison



Fit slope



uTPC angle