



# Track Reconstruction During CRUZET-IV

Tracker DPG  
August 26, 2008

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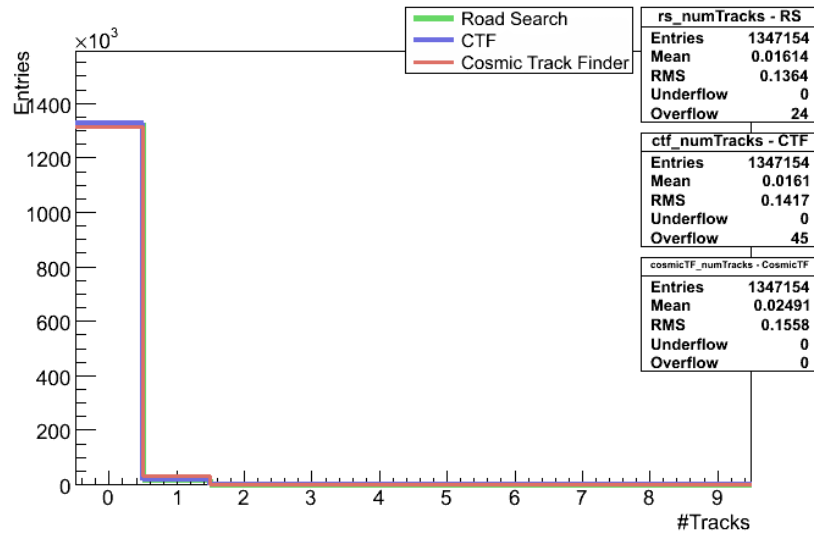
# Introduction



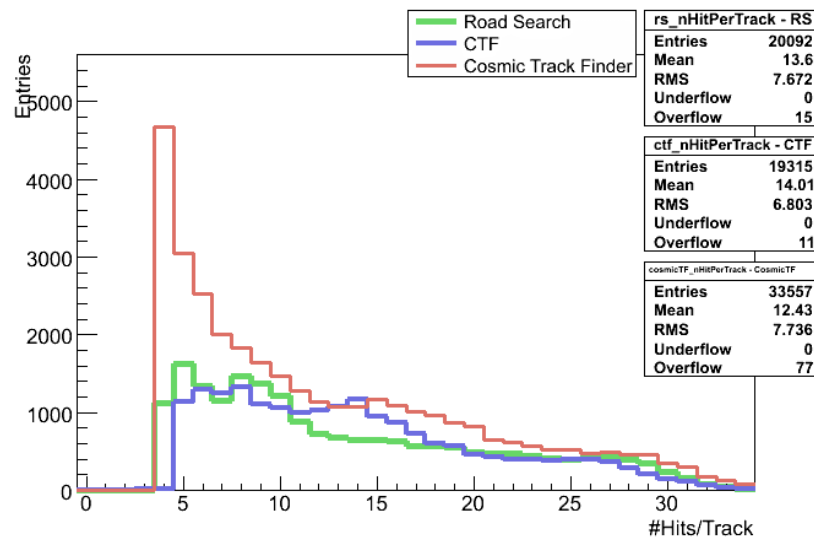
- Prompt Reconstruction from three reconstruction algorithms: cosmicTF, CTF, RS
- Used EDAnalyzer to study results of prompt reconstruction and compare results of three algorithms
  - Code developed by Carsten Noeding and Kevin Burkett
- Processed several runs from Cruzet4 but not every event (unless it was a small run)
- Also have a trend plots of the means over most of the runs
- NOT a complete study!



# Results from Run 57795 (20th)

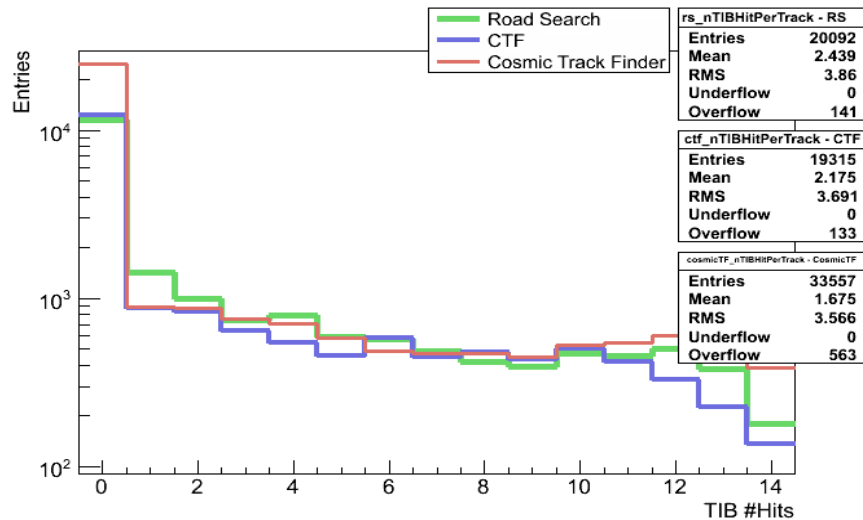
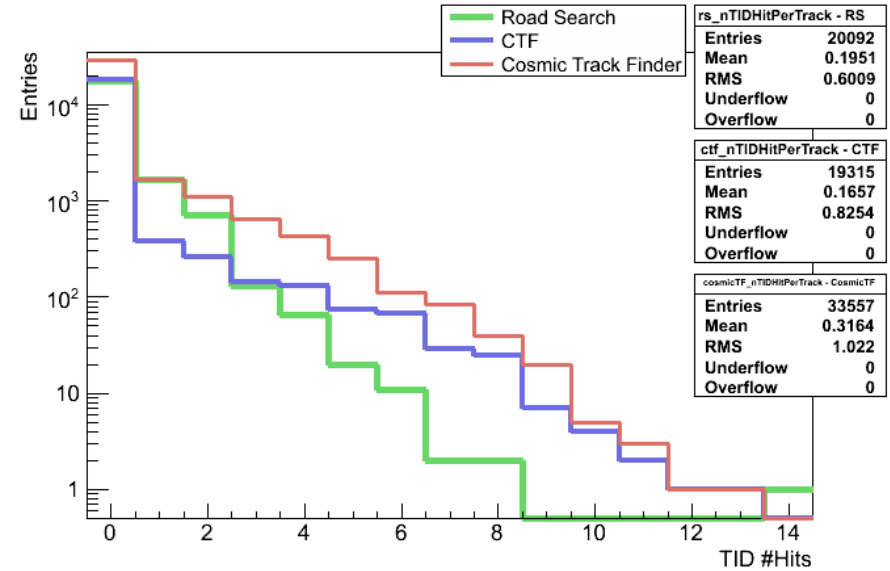
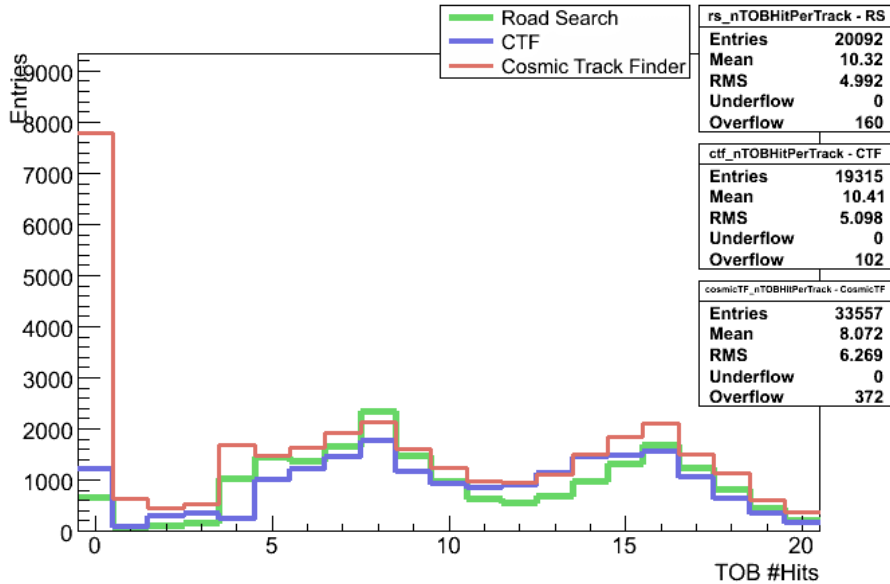


- Later long run using TIB+TOB+TID+TEC+PXF
- Only ~2-3% of the events have tracks
- Mean # hits per track is 13-14 hits
  - Same as CRUZET3
  - Cosmic TF seem to also have tracks with few hits?





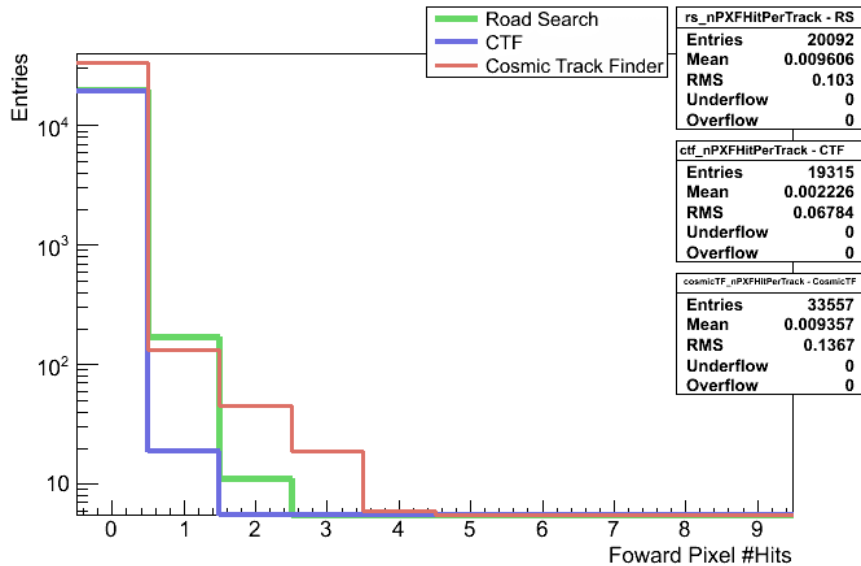
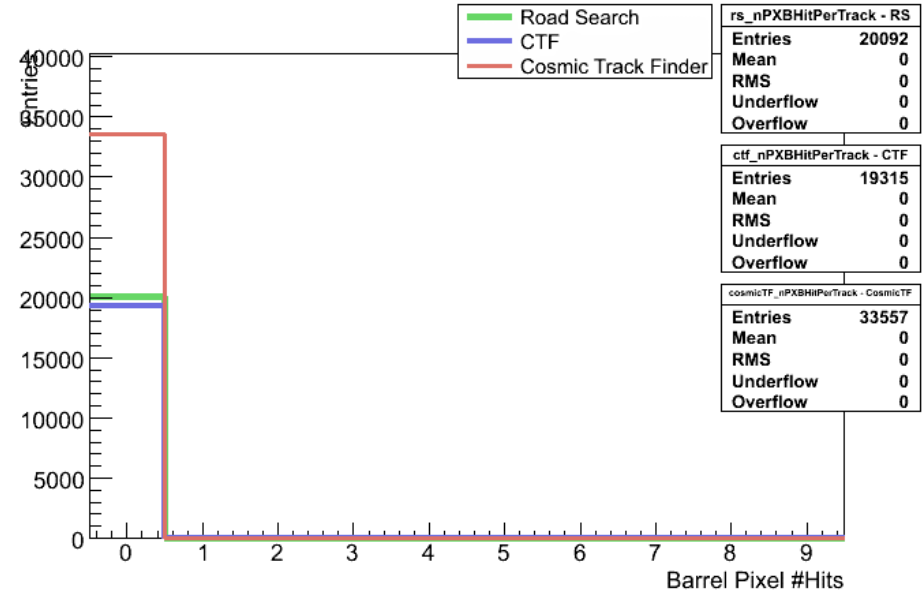
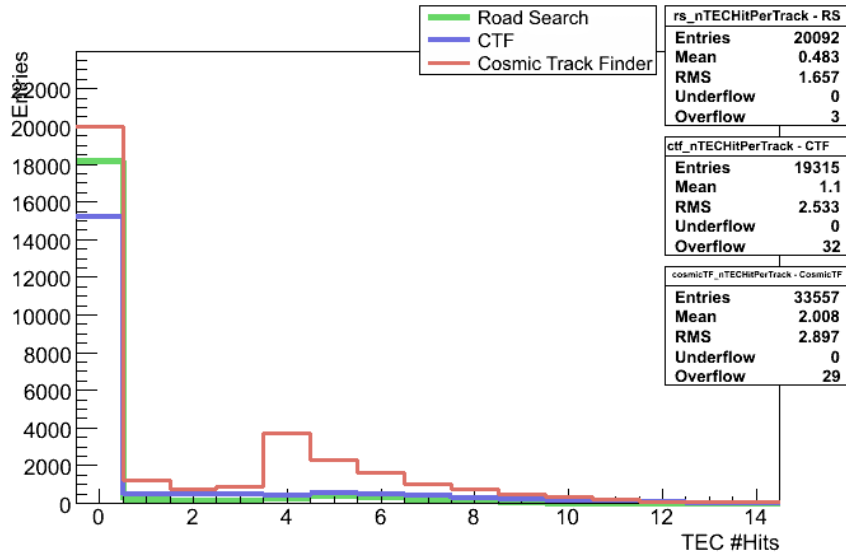
# # Hits from Run 57795



- Same features as CRUZET3
  - Most tracks have TOB hits (more cosmicTF have none)
  - Two peaks for track that pass through top and top+bottom
  - Few TID hits (plotted in log scale)



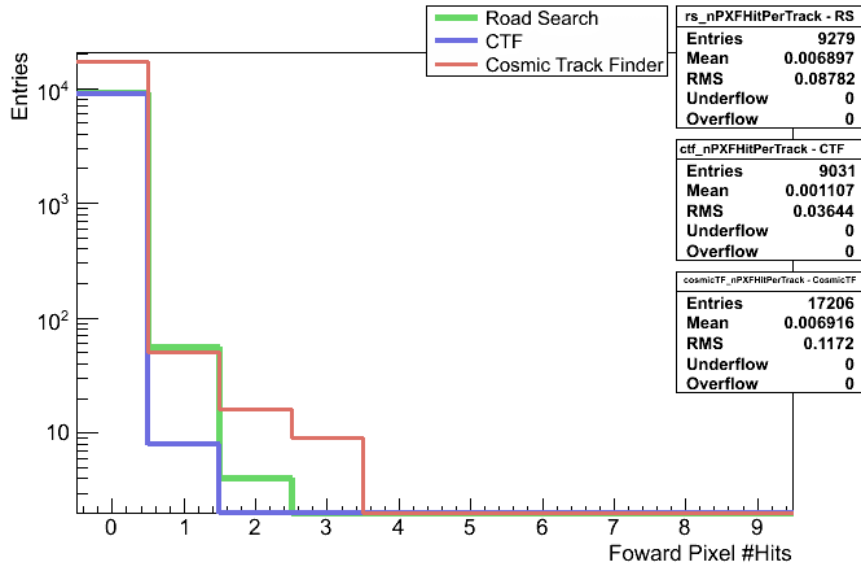
# # hits from Run 57795



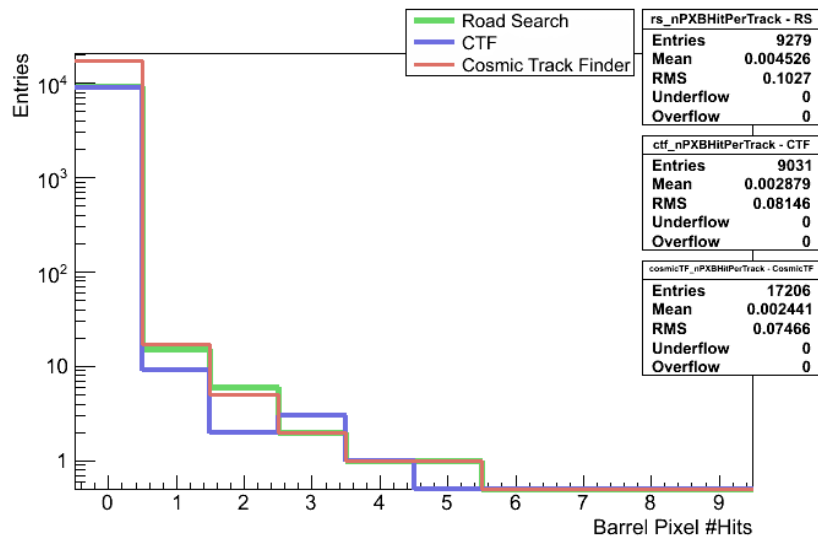
- This run has forward pixel hits (log)
- Cosmic tracks with 4-6 TEC hits
  - Correlated with 0 TOB hit bin



# # Pixel Hits from Run 58614 (23th)

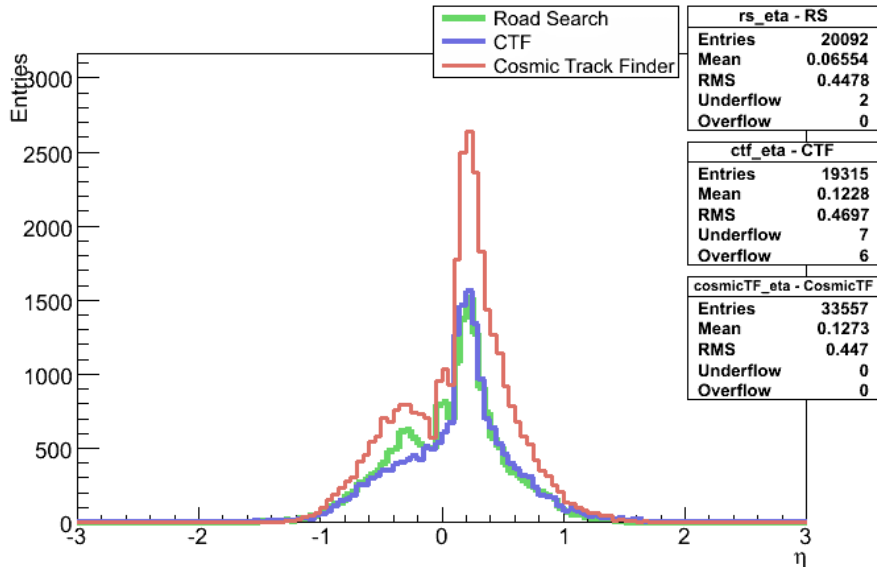


- This run has forward and barrel pixels (log)
- The other distributions looked similar to run 57795
  - Few tracks had barrel pixels so wouldn't expect much difference

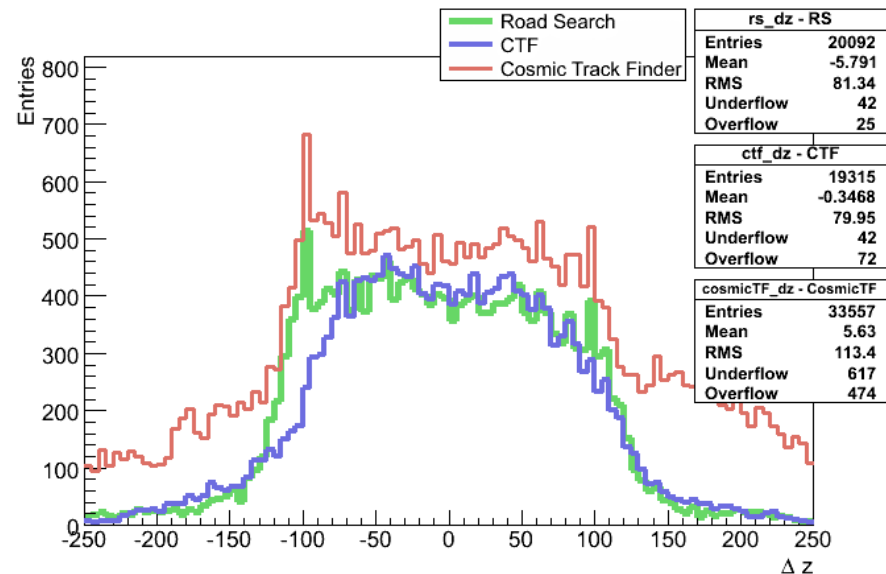
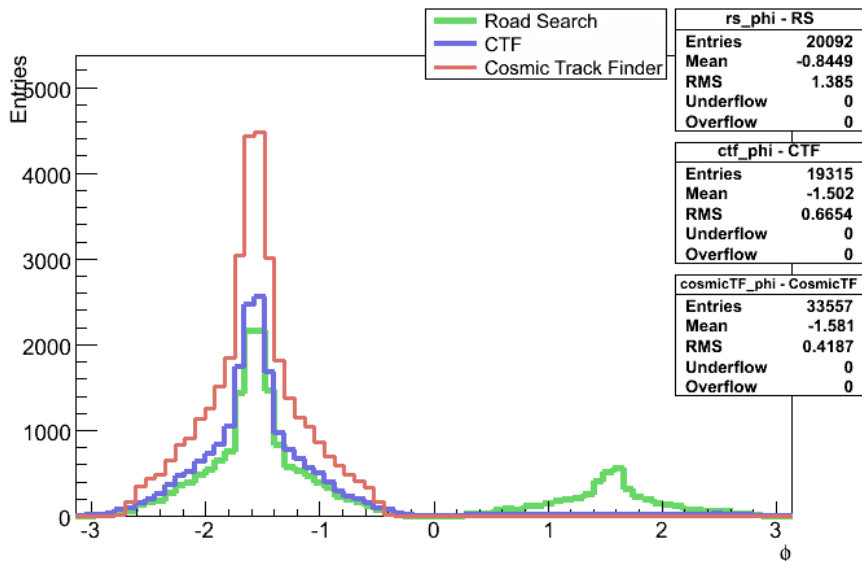




# Kinematic Distributions form run 57795

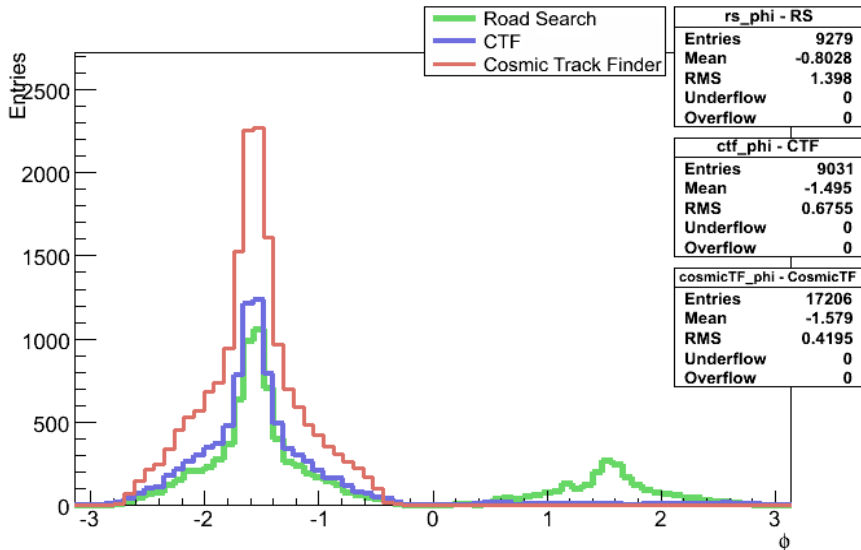
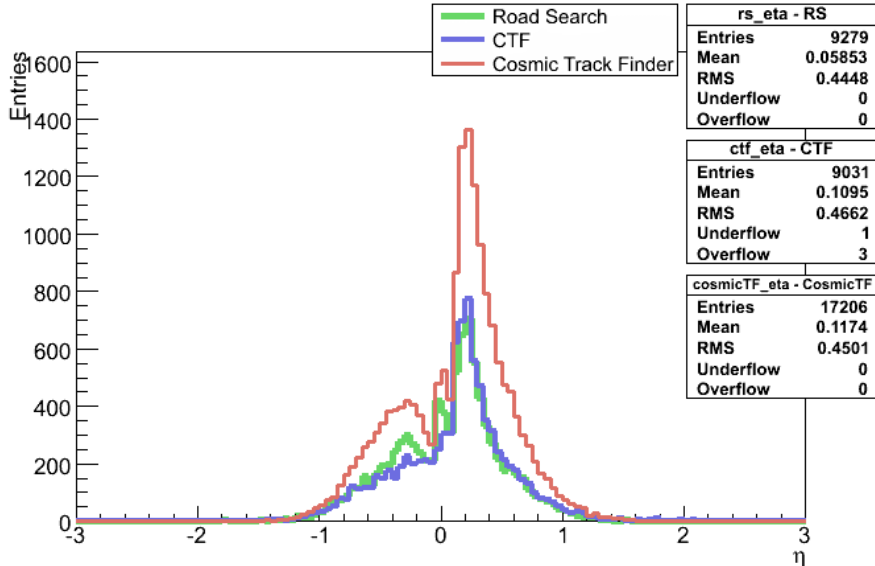


- Tracks mostly vertical
- RS track don't really have  $f > 0$ 
  - RS tracks in top half are built inside-out so a sign flip is needed
- dz distribution is broader for cosmicTF due to the higher efficiency for TEC tracks

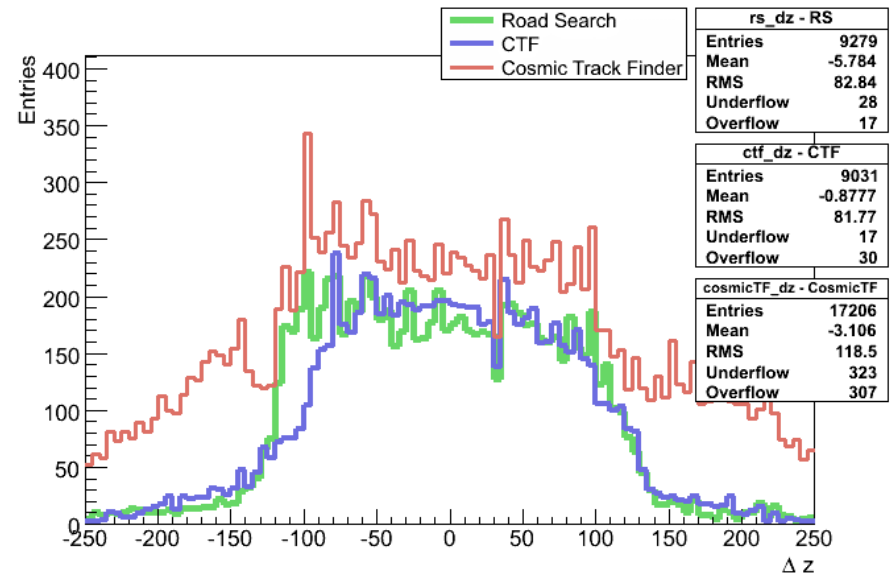




# Kinematic Distributions form run 58614



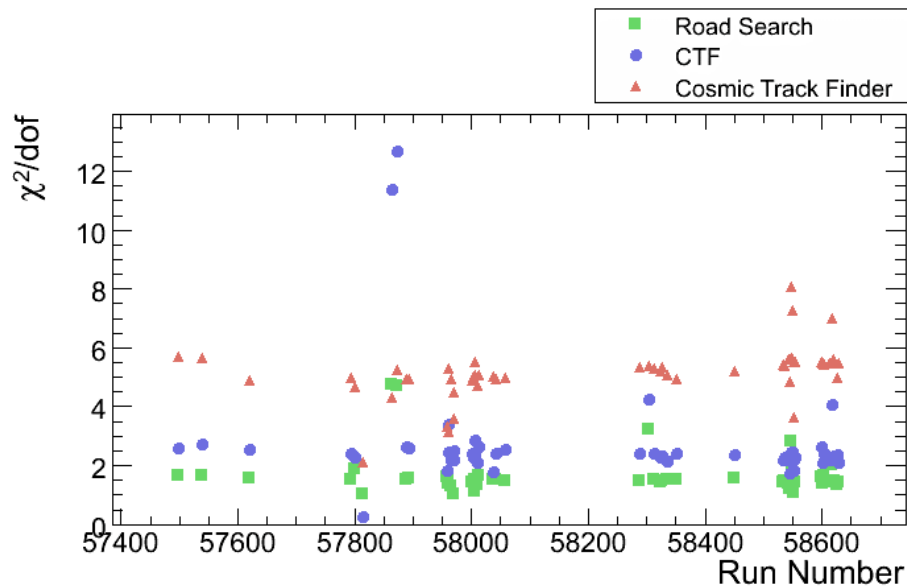
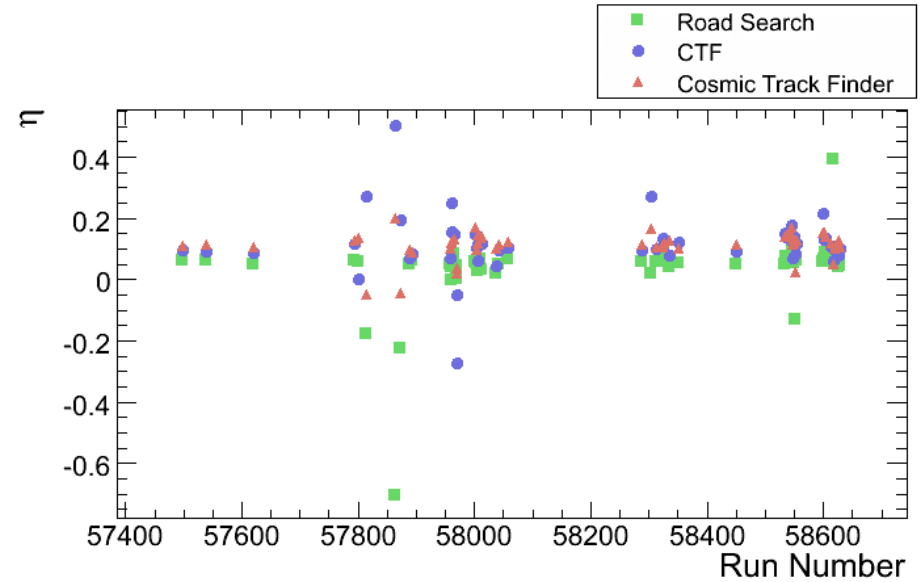
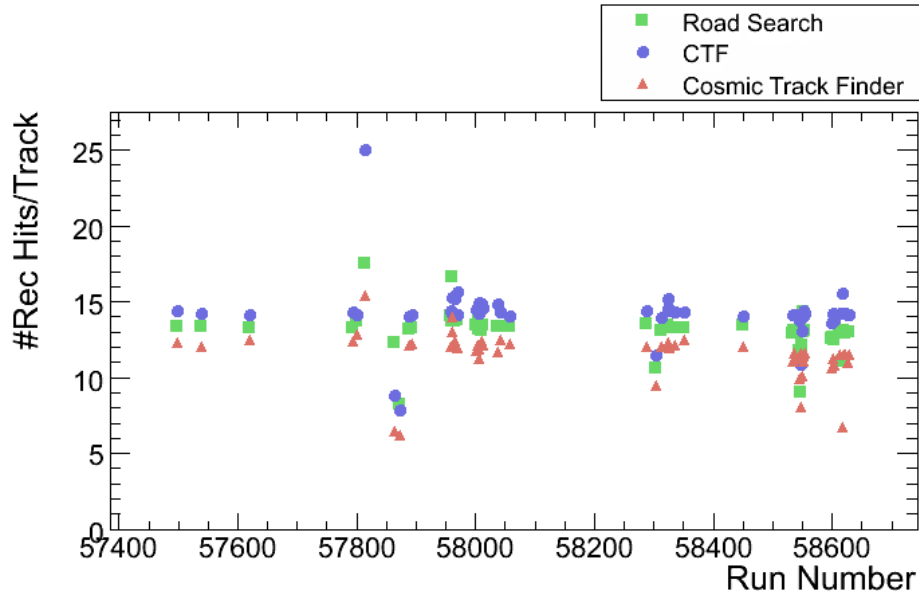
- Similar Distributions for run with barrel pixels







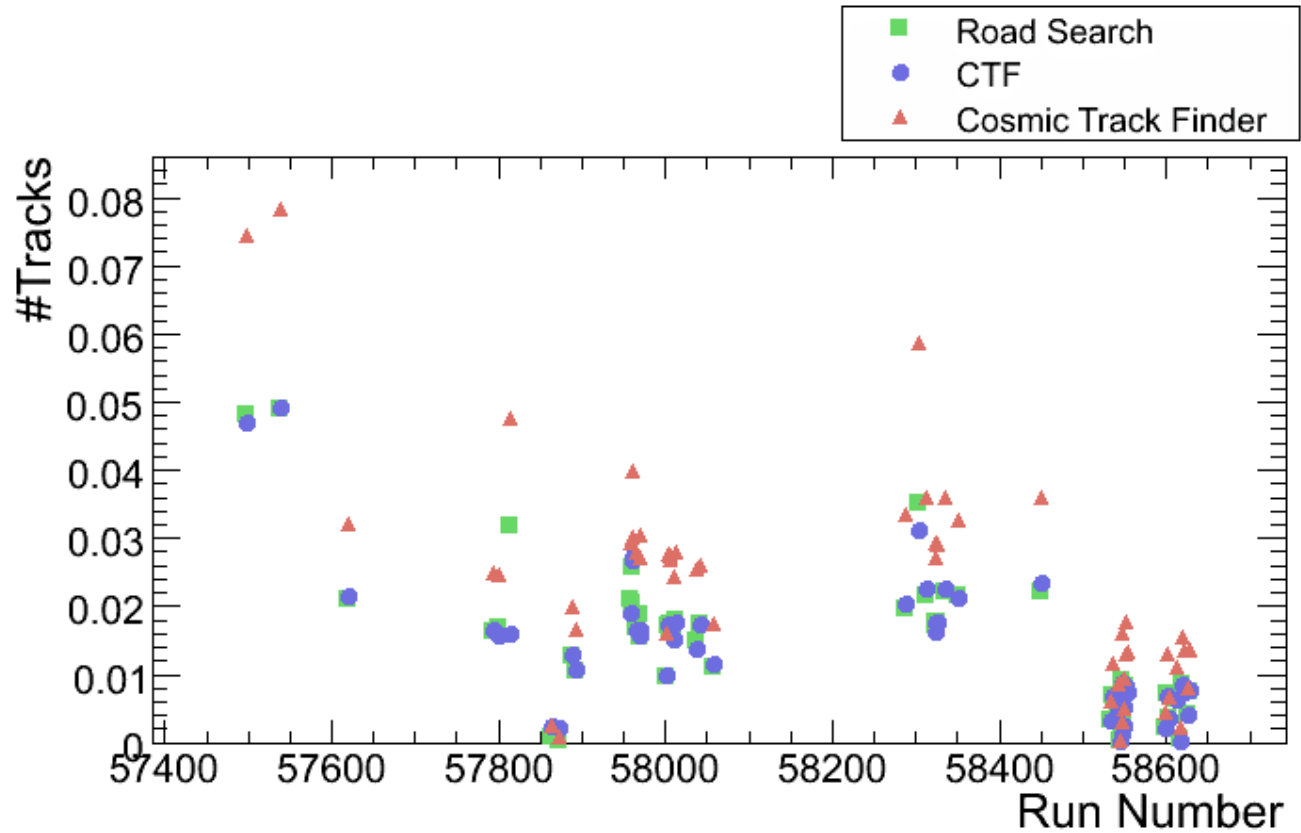
# Stability vs. Run Number



- Reconstruction has seemed stable over these runs (57498-58630)
- Still see differences in cosmicTF over RS and CTF



# Stability vs. Run Number



- Number of tracks decreasing.



## Conclusions



- Default track reconstruction performed well in CRUZET-IV
- All the plots can be viewed at (thanks to Gaelle for hosting)
  - <http://lpsc.in2p3.fr/ams/gaelle/run58614/>
  - <http://lpsc.in2p3.fr/ams/gaelle/run58604/>
  - <http://lpsc.in2p3.fr/ams/gaelle/run58555/>
  - <http://lpsc.in2p3.fr/ams/gaelle/run58546/>
  - <http://lpsc.in2p3.fr/ams/gaelle/run58537/>
  - <http://lpsc.in2p3.fr/ams/gaelle/run58351/>
  - <http://lpsc.in2p3.fr/ams/gaelle/run58012/>
  - <http://lpsc.in2p3.fr/ams/gaelle/run57889/>
  - <http://lpsc.in2p3.fr/ams/gaelle/run57795/>
  - <http://lpsc.in2p3.fr/ams/gaelle/run57553/>
  - <http://lpsc.in2p3.fr/ams/gaelle/run57539/>
  - <http://lpsc.in2p3.fr/ams/gaelle/run56493/>
- To do:
  - Need to understand the extra tracks from cosmicTF
  - Study the relative performance of the three algorithms
    - will used for alignment
    - Have more TEC tracks than CRUZET3