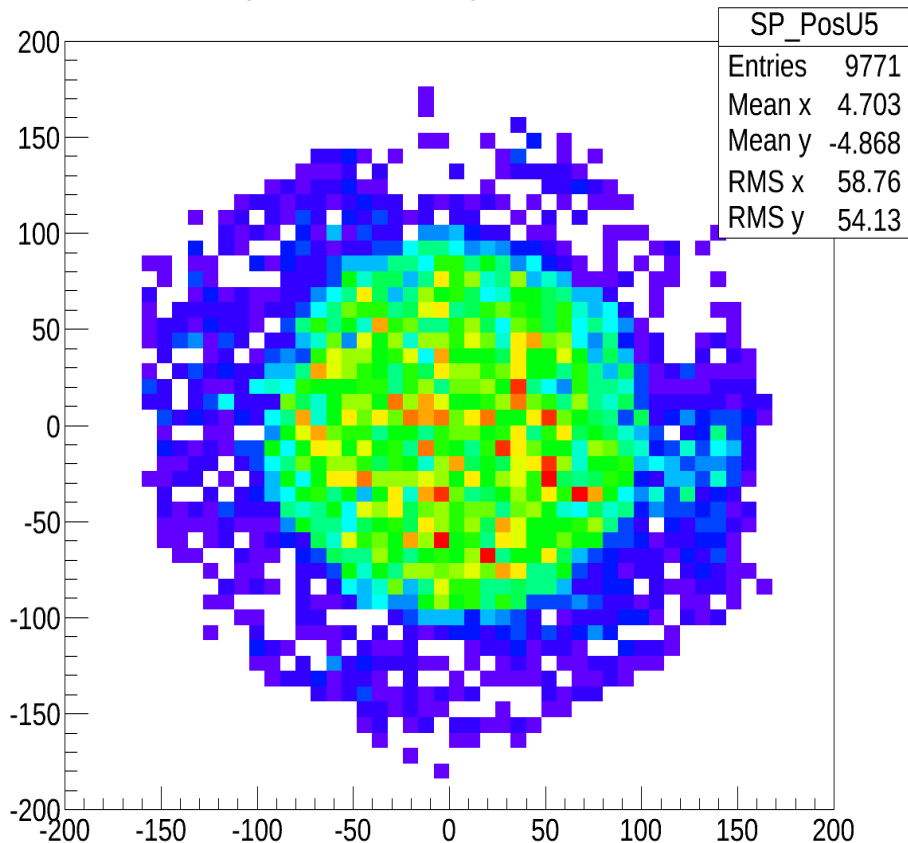


# Tracker Characterization in Beam

Space Point Triplets TkU S5



Chris Heidt  
CM 42 RAL  
June 22<sup>nd</sup> 2015

# Some Background

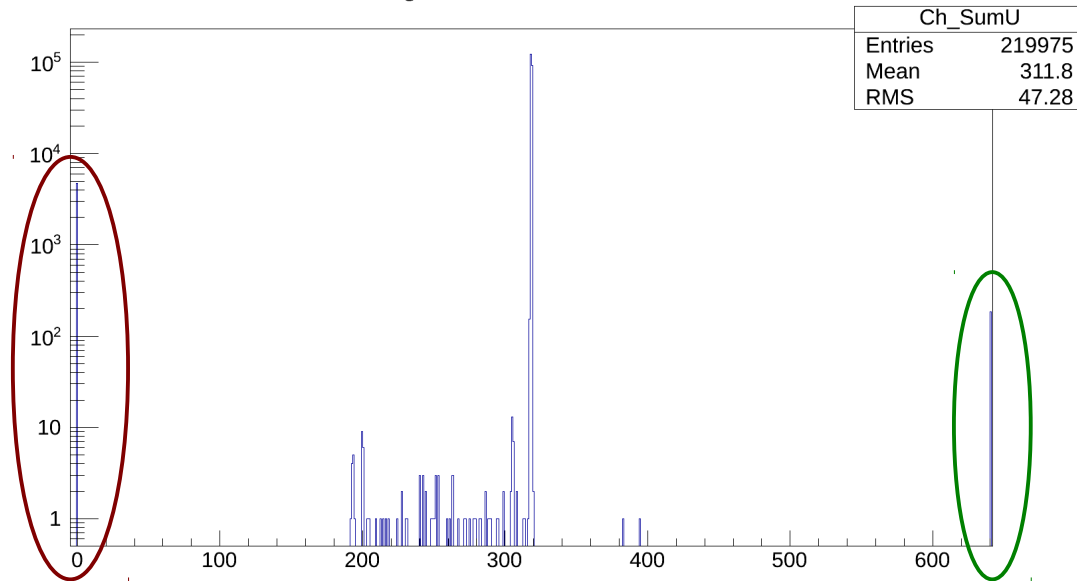
- Plots are from Run 7050
  - TOF calibration run
  - June 19<sup>th</sup> 2015
  - Triggers recorded: 201687
  - Not all of this has been processed at this time
- Plots are presented “as is”
  - We have all been very busy, in depth analysis and fancy plot labels will have to wait until we all have a chance to sit down and look over things.

# First Plots: Kuno's Conjecture

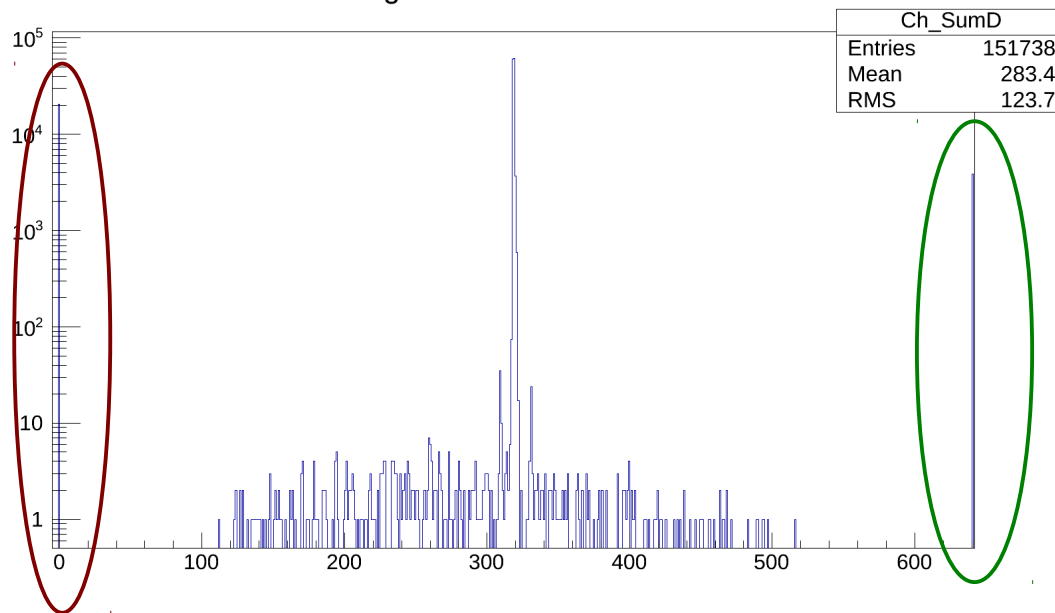
- From the MAUS software document:
  - For a given triplet space-point, the sum of the channel number of each cluster will be a constant
  - If the sum is performed using the fiber numbers for the channels hit, the sum of the the three views will equal the sum of the central fiber numbers
- The important number for finding space points is then:
  - $318.5 = 106.5 + 106.5 + 105.5$

# First Plots: Kuno's Conjecture

Digit Channel Sum TkU



Digit Channel Sum TkD

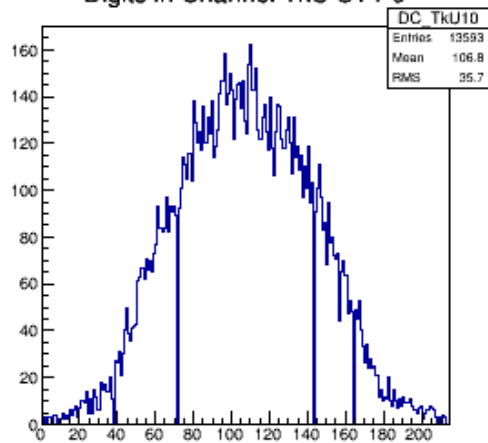


- Independent of space points
- In an event digits:
  - Share station #
  - Do not overlap plane
  - Three digits present
  - Sum Channel numbers and plot
- **Underflow** plotted as -1
- **Overflow** if can not sum to ~318, plotted as 641

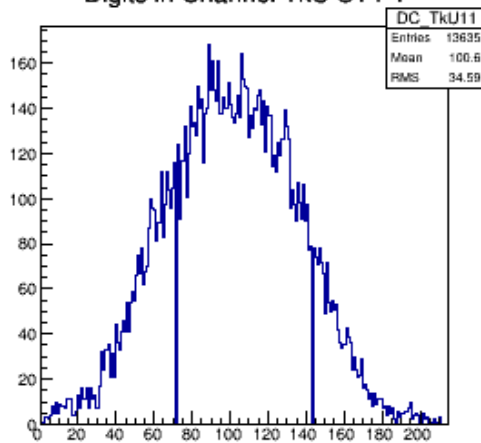
# Digit Coverage

- Large 4 PE minimum cut on digits
- Clearly shows dead or noisy channels
- I suspect missing or malfunctioning boards produce data chopping seen downstream.

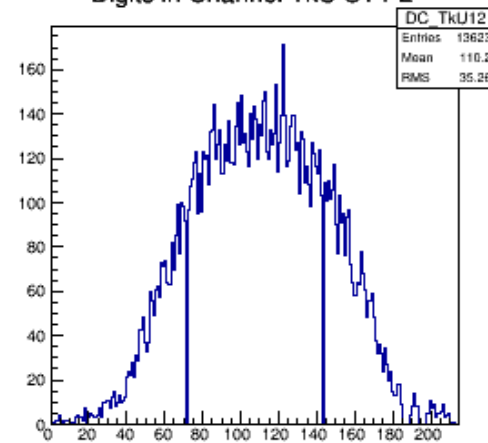
Digits in Channel TkU S1 P0



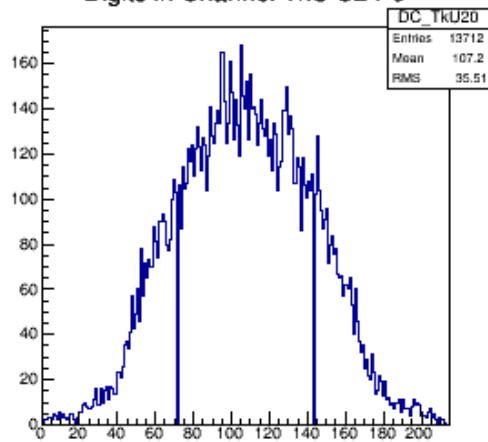
Digits in Channel TkU S1 P1



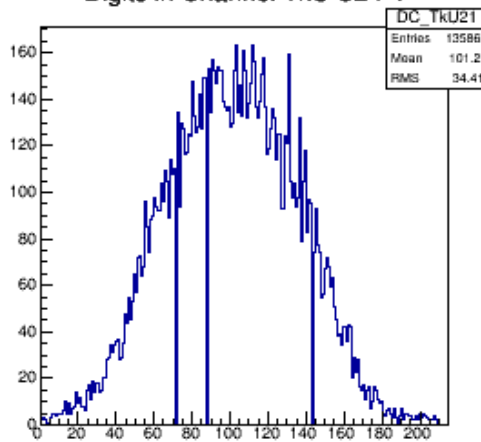
Digits in Channel TkU S1 P2



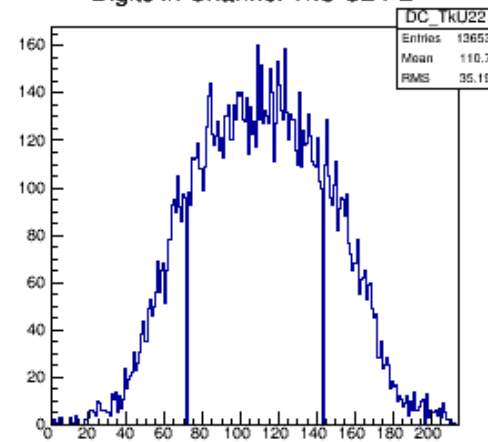
Digits in Channel TkU S2 P0



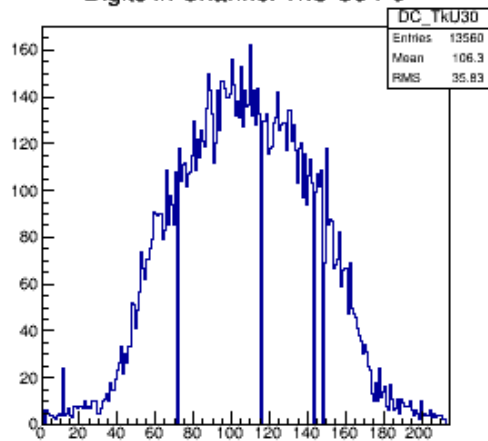
Digits in Channel TkU S2 P1



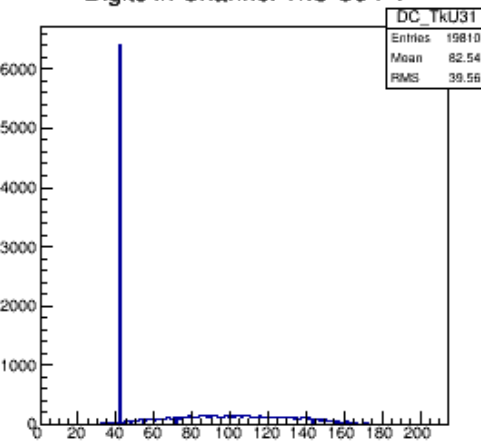
Digits in Channel TkU S2 P2



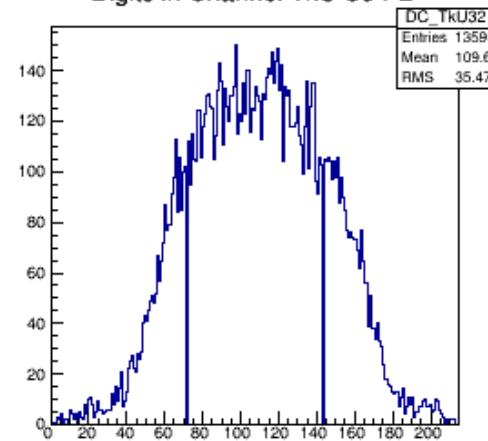
Digits in Channel TkU S3 P0



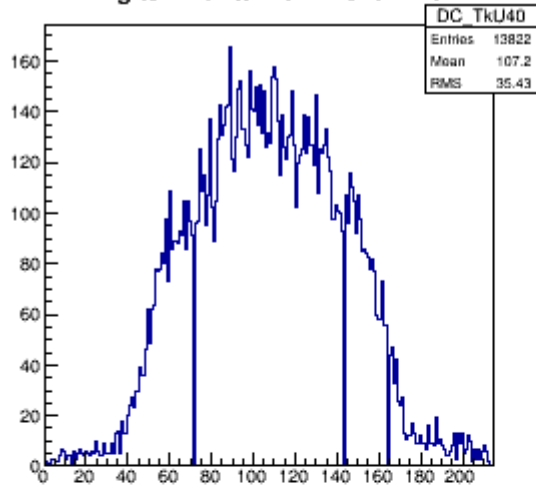
Digits in Channel TkU S3 P1



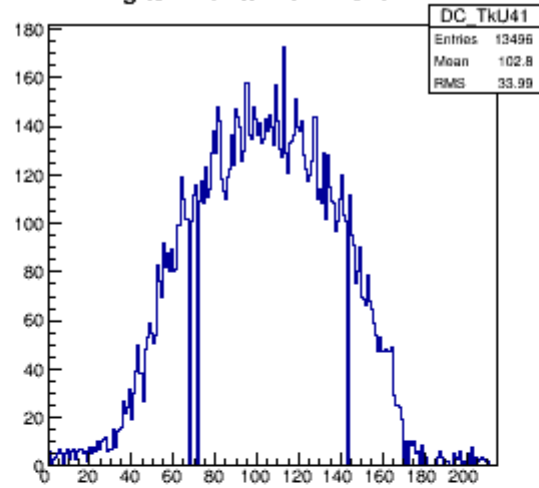
Digits in Channel TkU S3 P2



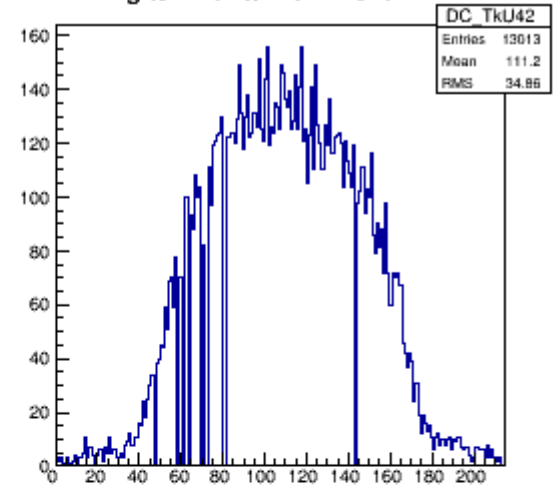
Digits in Channel TkU S4 P0



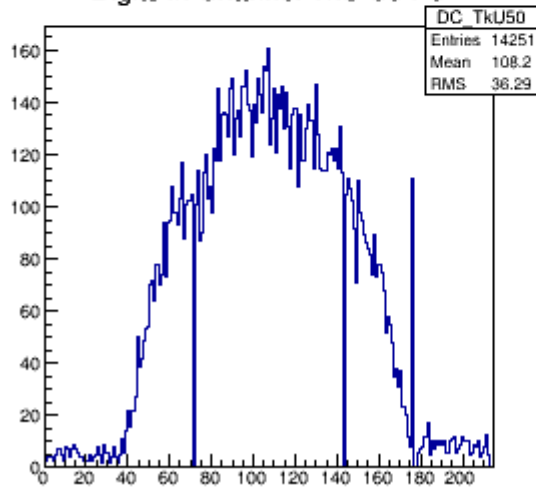
Digits in Channel TkU S4 P1



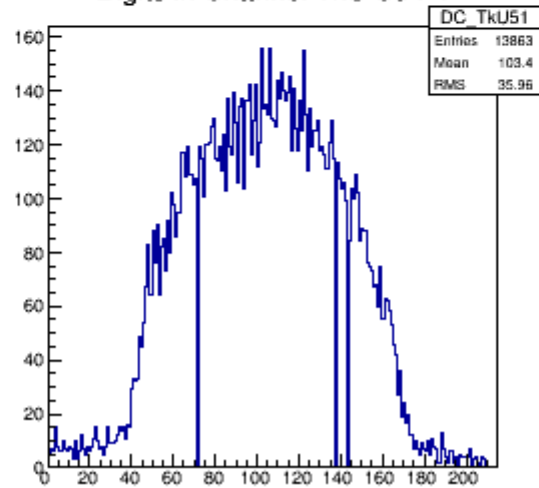
Digits in Channel TkU S4 P2



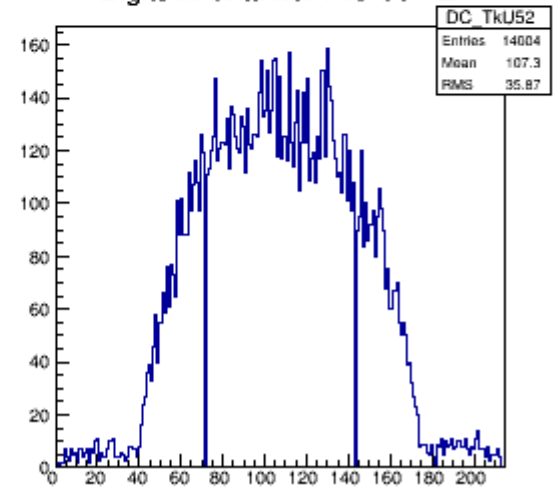
Digits in Channel TkU S5 P0



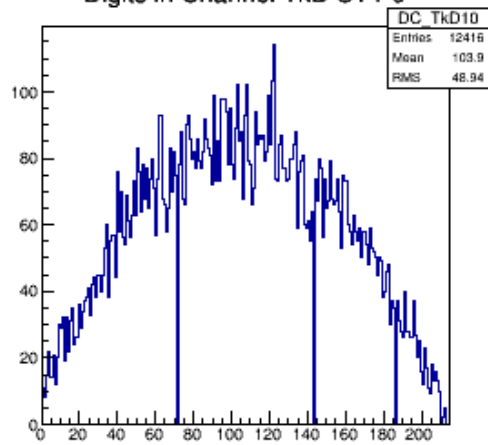
Digits in Channel TkU S5 P1



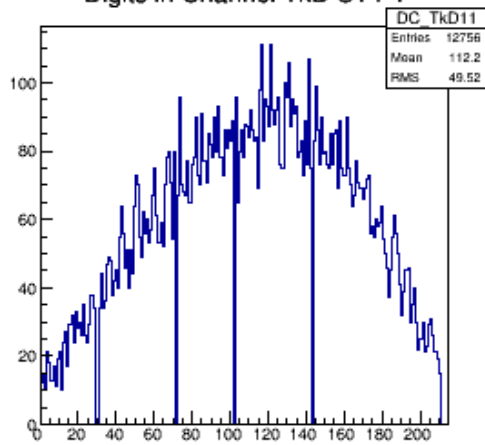
Digits in Channel TkU S5 P2



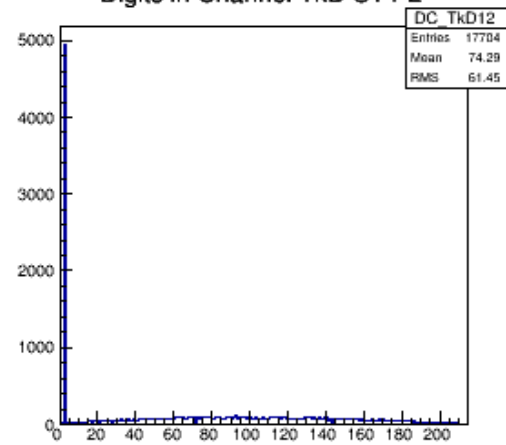
Digits in Channel TkD S1 P0



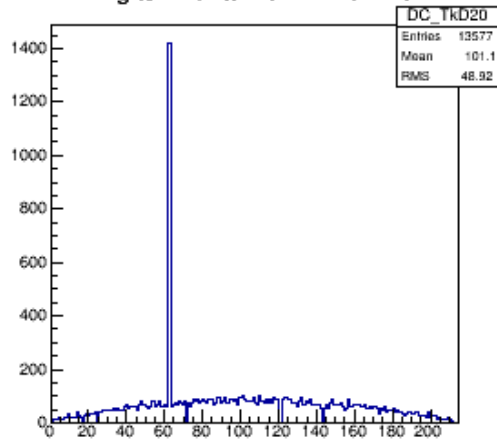
Digits in Channel TkD S1 P1



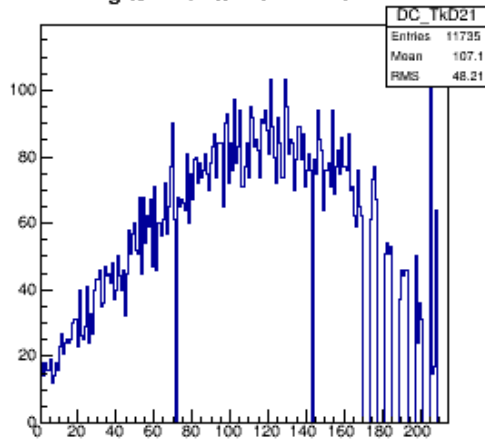
Digits in Channel TkD S1 P2



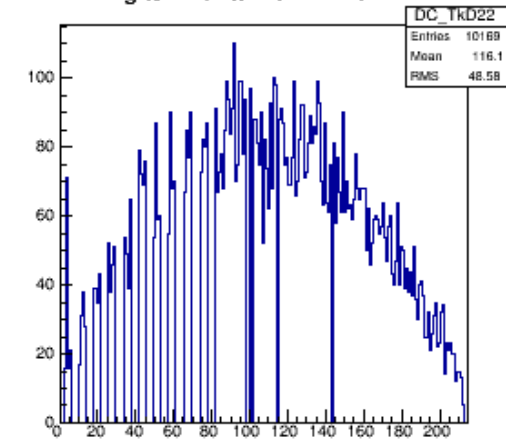
Digits in Channel TkD S2 P0



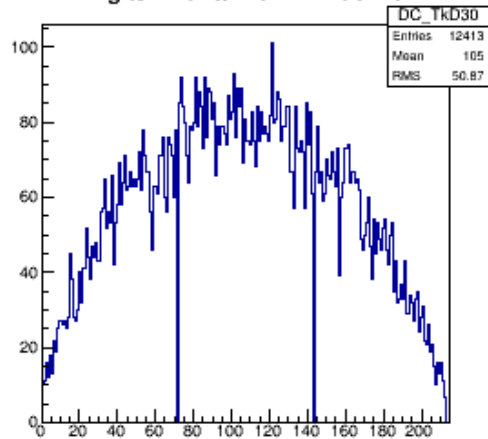
Digits in Channel TkD S2 P1



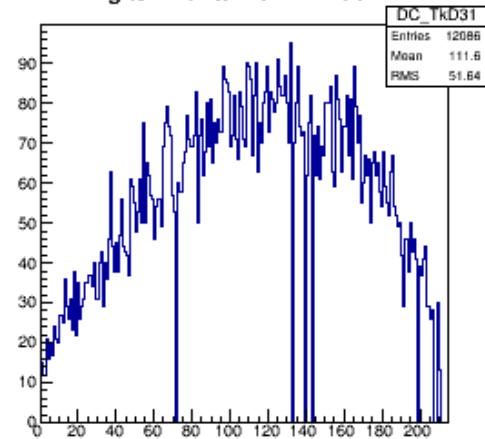
Digits in Channel TkD S2 P2



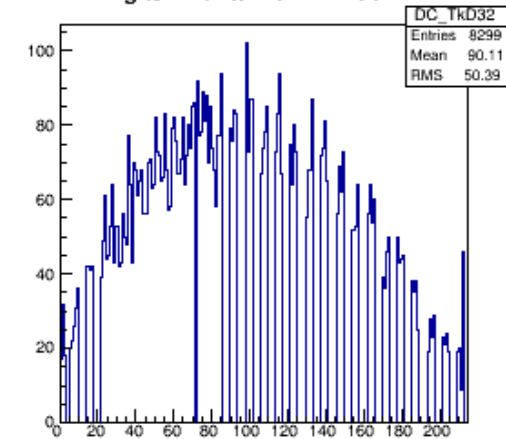
Digits in Channel TkD S3 P0



Digits in Channel TkD S3 P1

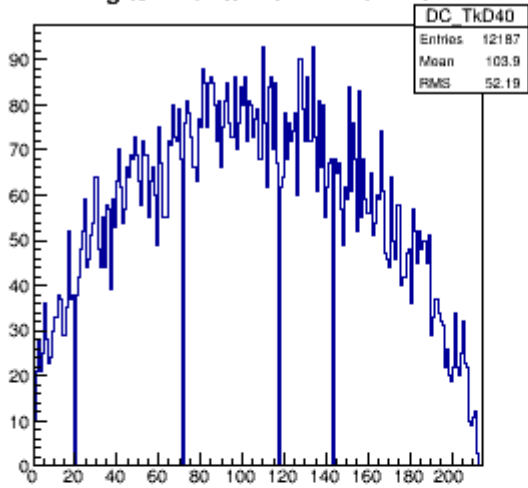


Digits in Channel TkD S3 P2

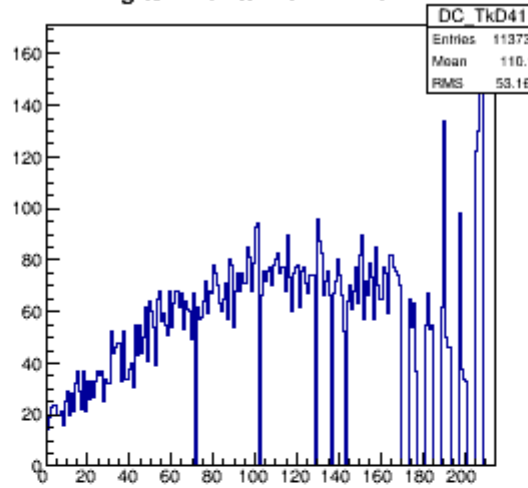




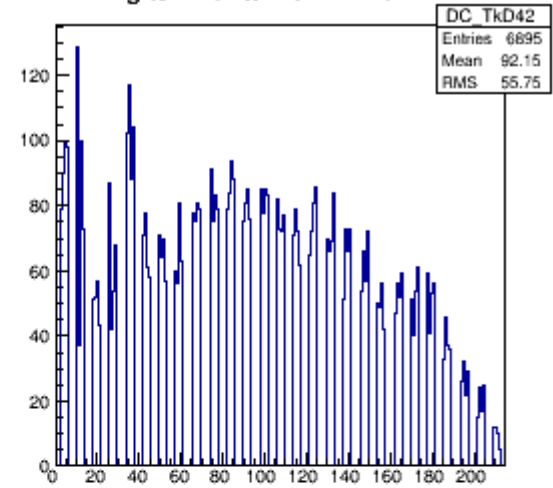
Digits in Channel TkD S4 P0



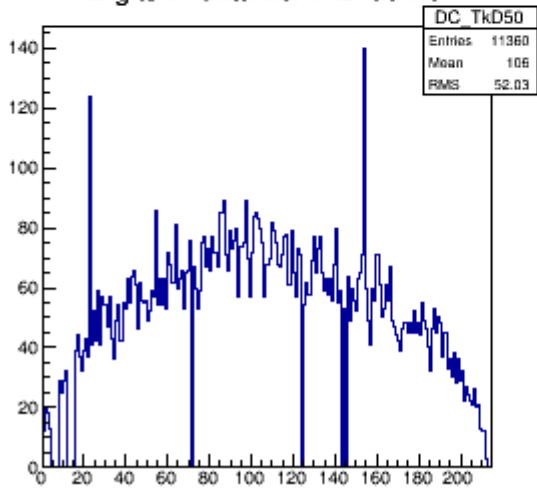
Digits in Channel TkD S4 P1



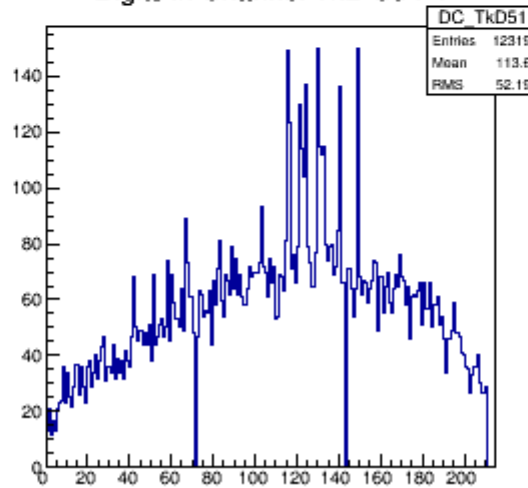
Digits in Channel TkD S4 P2



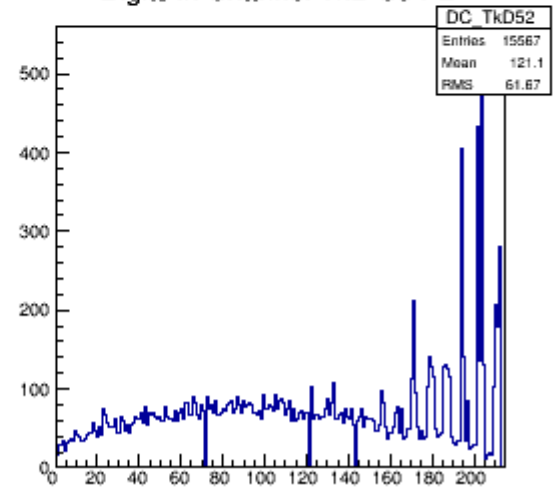
Digits in Channel TkD S5 P0



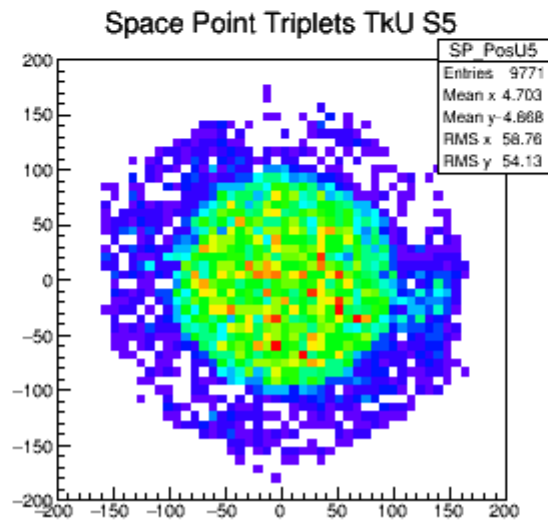
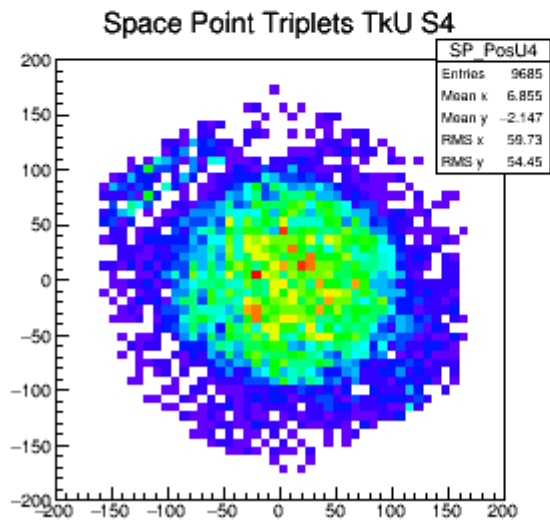
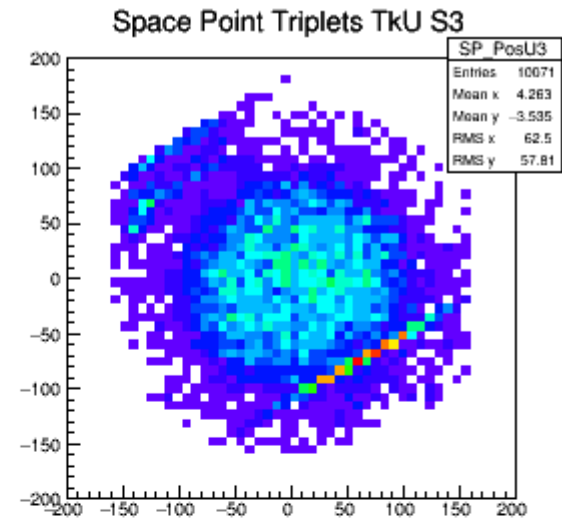
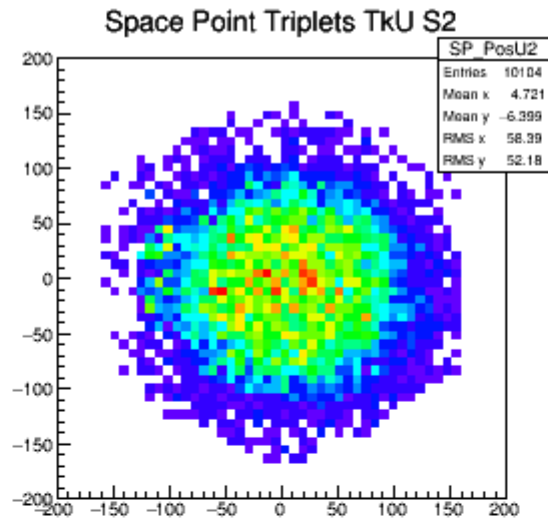
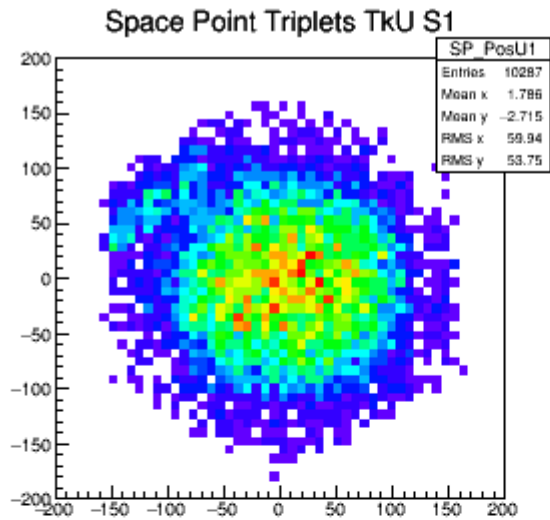
Digits in Channel TkD S5 P1



Digits in Channel TkD S5 P2

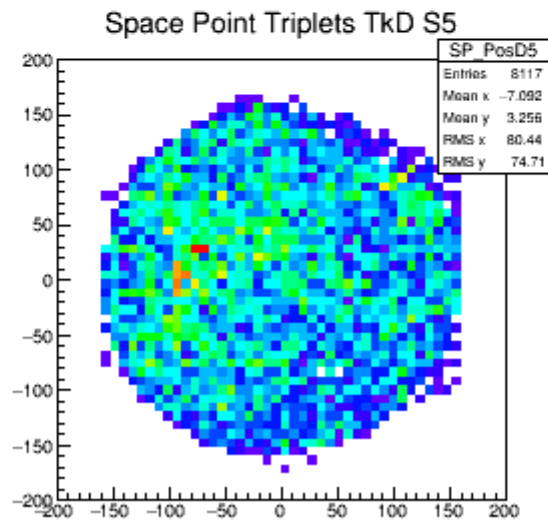
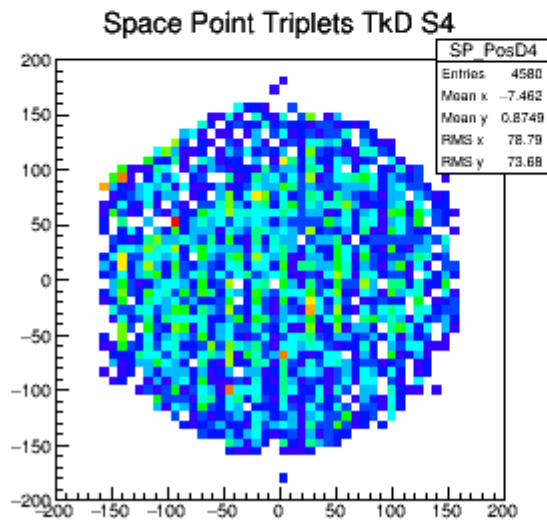
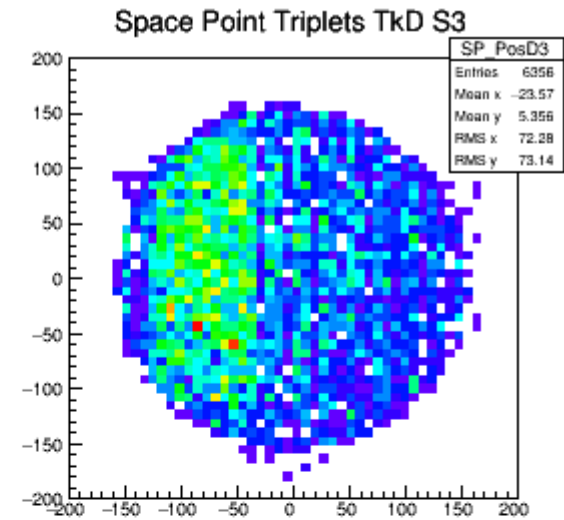
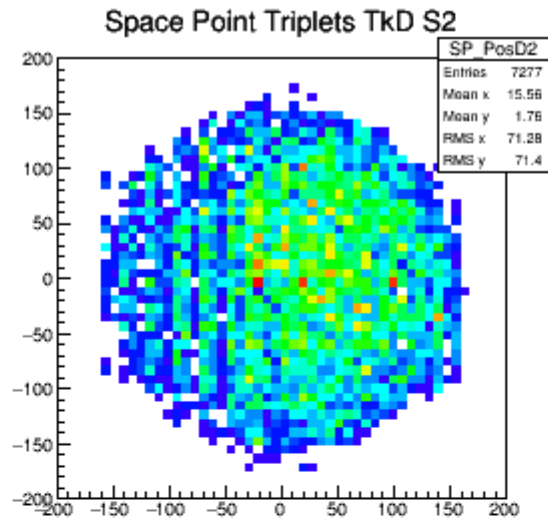
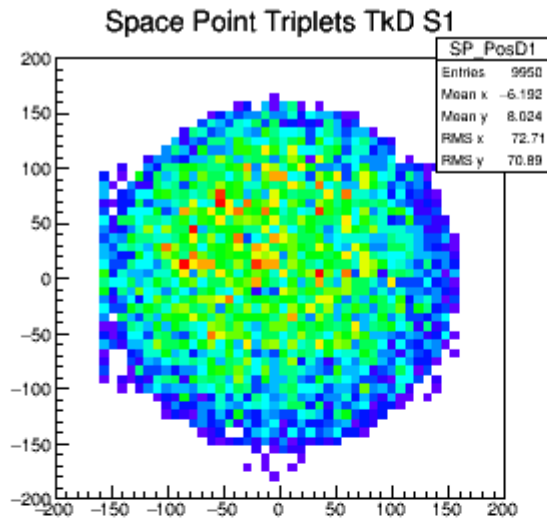


# Beam Profile



# Beam Profile

BEAM



# Channel Efficiency Estimates

- Binomial

- Triplet over Doublet  
Total: 0.877

- Triplet over TOF  
Event Total: 0.846

- Five Triplet Event  
Upstream: 0.914

- Five Triplet Event  
Downstream: 0.852

- Five Triplet Event  
Average: 0.883

