First tests with

ACD scripts

6 September 2005

Martin Kocian
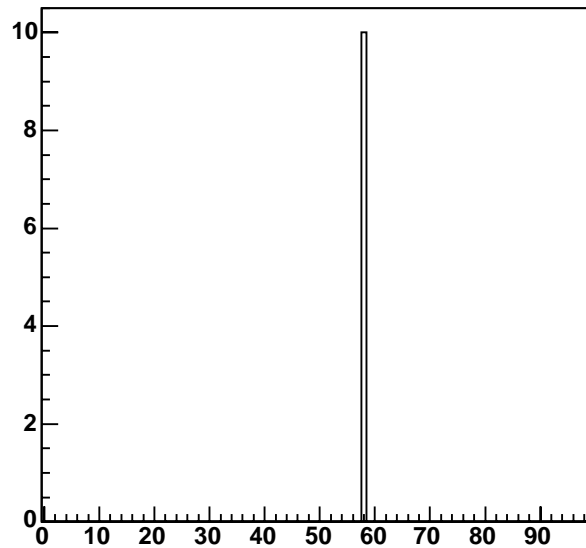
Test Setup

- Dalek teststand

  - 1 TEM

  - 4 FREE boards

  - Any charge injection tests can be done

- Mini-LAT

  - Mini tracker

  - EM2 CAL

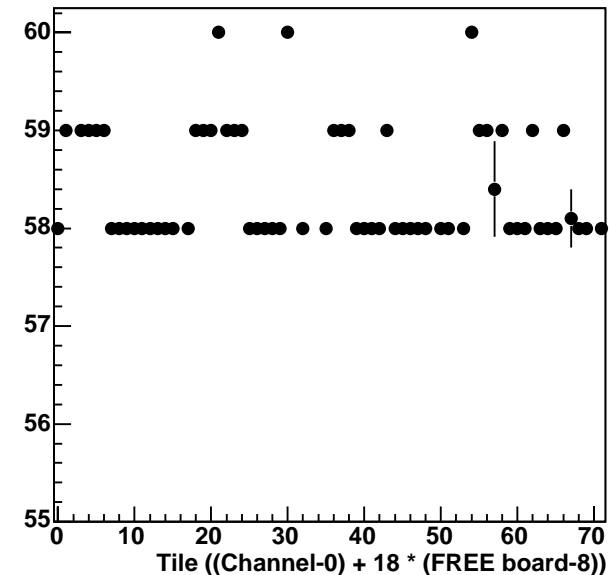 - Mini ACD (1 FREE board, 4 channels with PMT)

  - Muon telescope

Trigger Timing with CI

Script injects charge into a single channel, measures time until the channel triggers, and compares GEM hitmap to expected channel. Timing can be done for both veto and CNO.
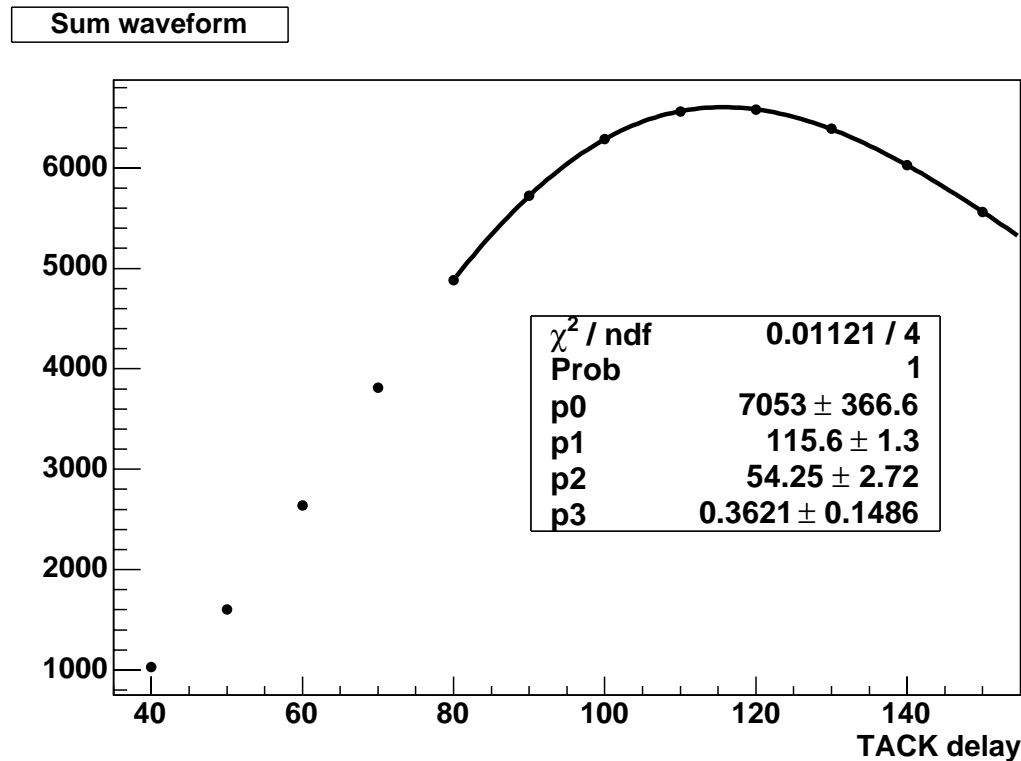

This is working on the teststand as expected, and no swapped channels were found in the range of the four FREE boards. The timing for large waveforms looks comparable for veto and CNO.

Waveform scan with CI

The script injects charge into all frontends, reads out PHA. A scan over tack delays is performed.
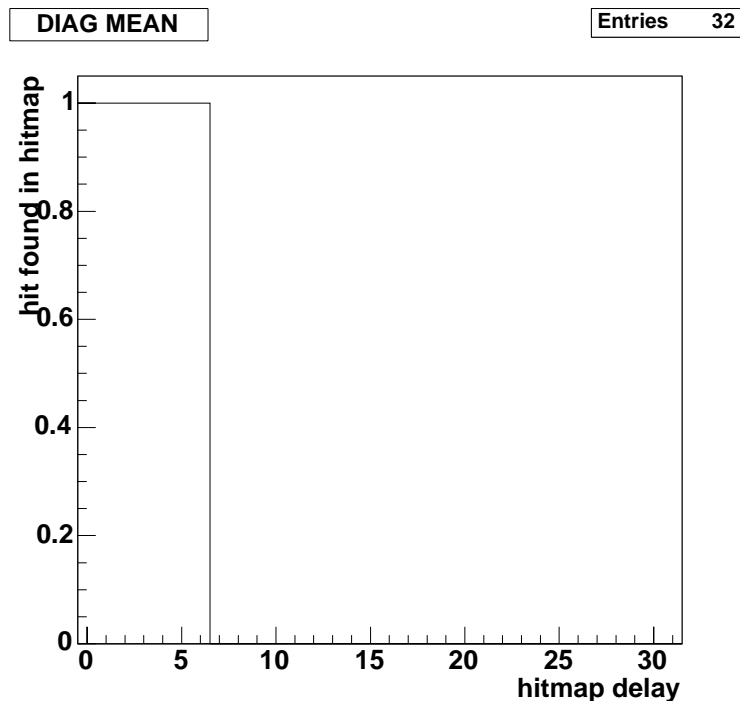
Sum waveform

χ^2 / ndf	0.01121 / 4
Prob	1
p0	7053 ± 366.6
p1	115.6 ± 1.3
p2	54.25 ± 2.72
p3	0.3621 ± 0.1486

TACK delay

This works, but only when varying trgseq and not hold_delay. Can one not use hold_delay when doing triggers with Calstrobe + TACK? Have to investigate...

AEM hitmap scan with CI

Script injects charge into a single channel, sets up various parameters, scans over hitmap_delay.
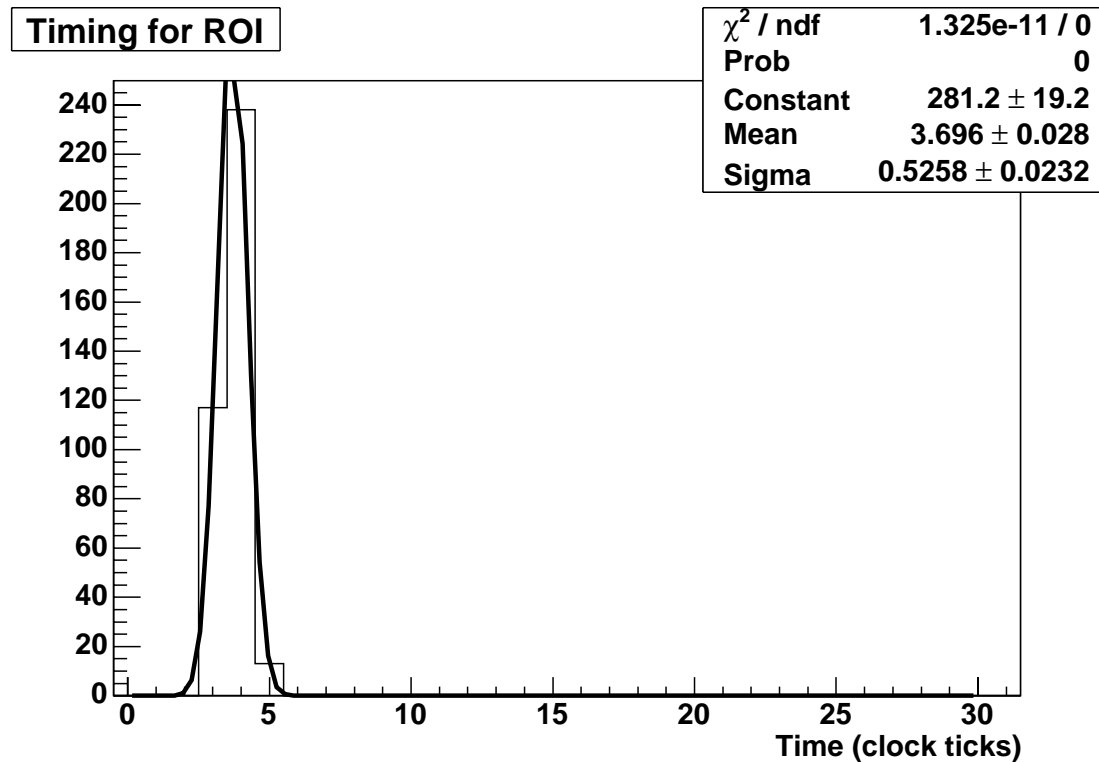
The script also compares the hitmap entry to to the expectation for the channel to identify swapped channels.

Works, but sometimes there are spurious hitmap entries from disabled channels. No longer reproducible on Dalek. Need to investigate. hitmap_width and hitmap_deadtime work as advertised.
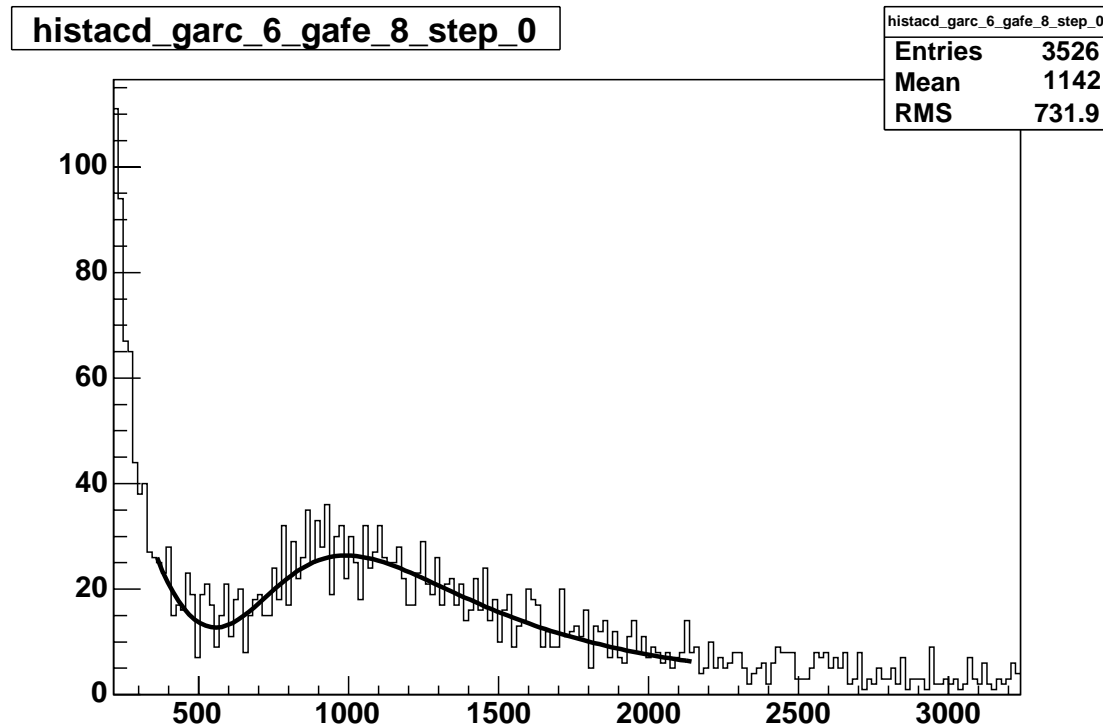
TREQ

TREQ for ROI can be done vs. muon telescope or tracker. Plot is vs. muon telescope on mini LAT:

Note: When doing charge injection with high charge (10 mips) there is retriggering on the ROI.

TACK

A script to acquire cosmic data at different hold_delay settings exists. Fits to the spectra have been optimized on cosmics data from the real ACD.

Mini-LAT spectra do not look like real ACD spectra. Voltage too low? Hardware problems?

Conclusions

- ACD scripts have been tested and are converging.

- Some minor problems have occurred that need to be sorted out.

- Some of the scripts could be run on the real ACD without the other subsystems.