Pedestal Scan

Task:

- Scan the ADC for changes in the Pedestal over time
- Completed this with calibration run files
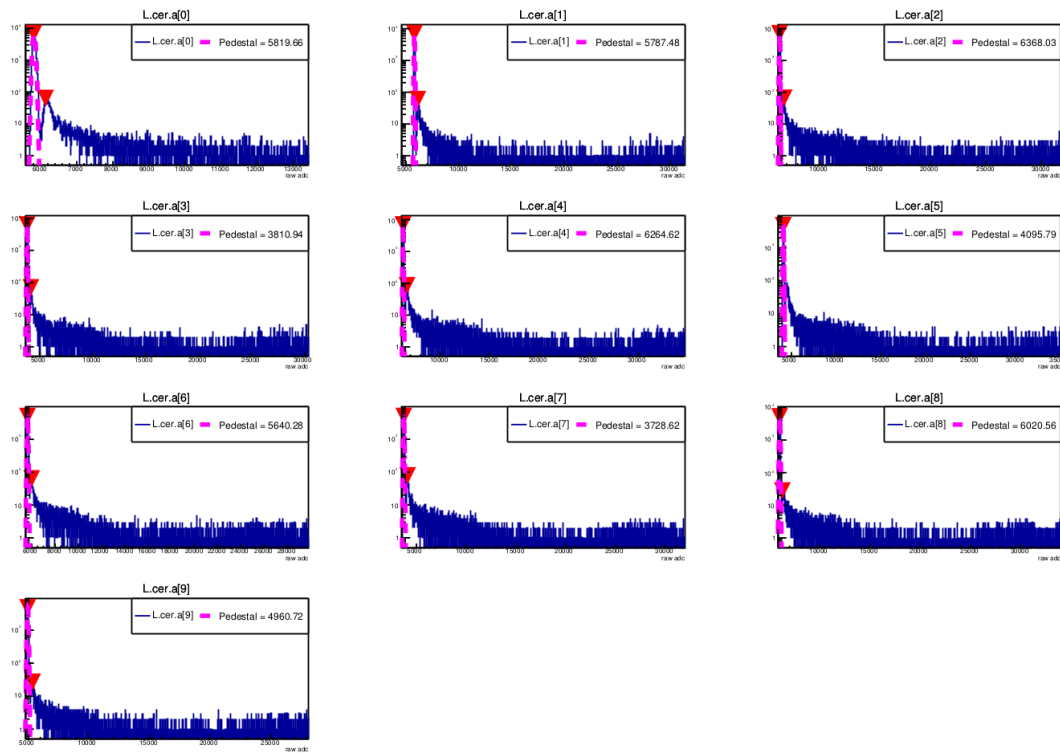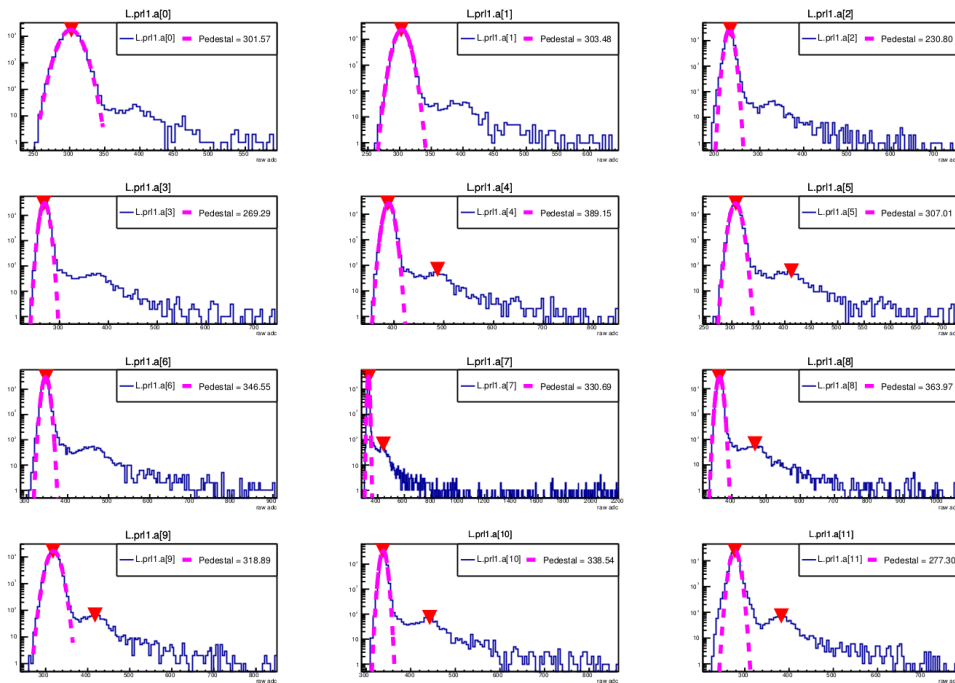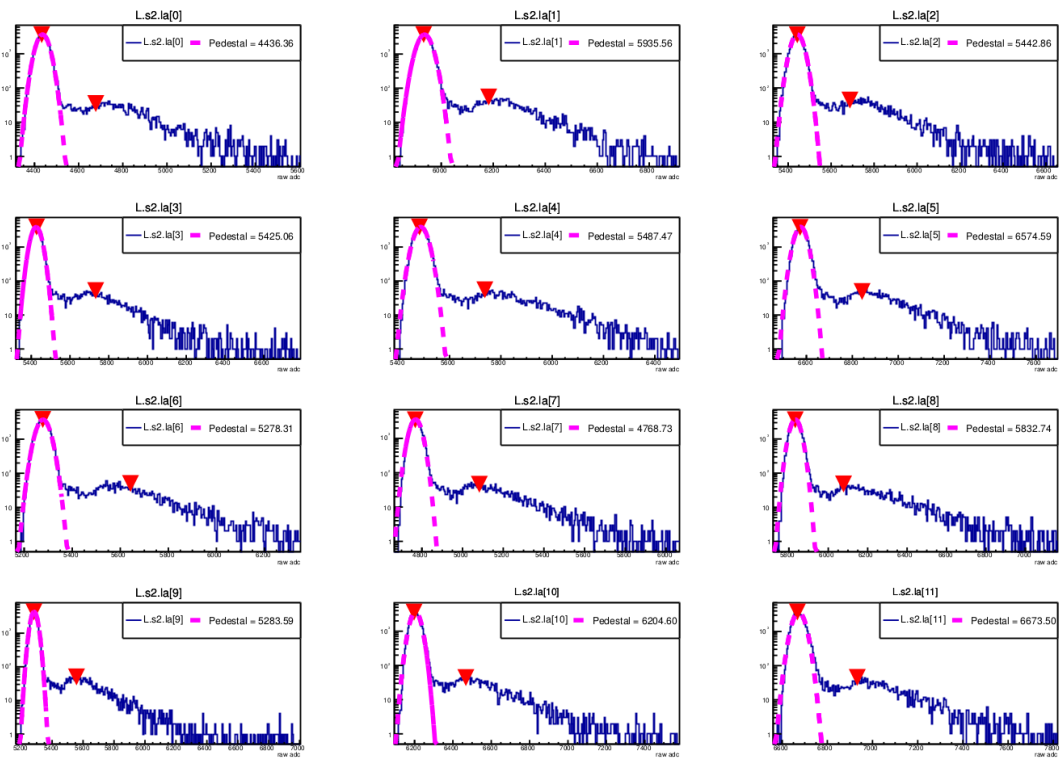
  /mss/halla/triton/prod/calibration/….

The process!

- Use the batch system, with run depended scripts
  - The job generator will double check the access for the root file in volatile
  - If in volatile will generate the job to use said file
  - If the file is not in volatile, it will submit the job with an input of the /mss/ version
- In /mss/…../calibration/
  - Files divided by kin
  - So I made a bash script to scan through the kin run files to determine the correct kin.

Files not in volatile

- The batch system will then determine if the file is in cache.

- If the file is in cache then, the job gets put in the queue.

- Otherwise, the file gets strapped with a depend status and waits for the files on tape before hopping on the queue.
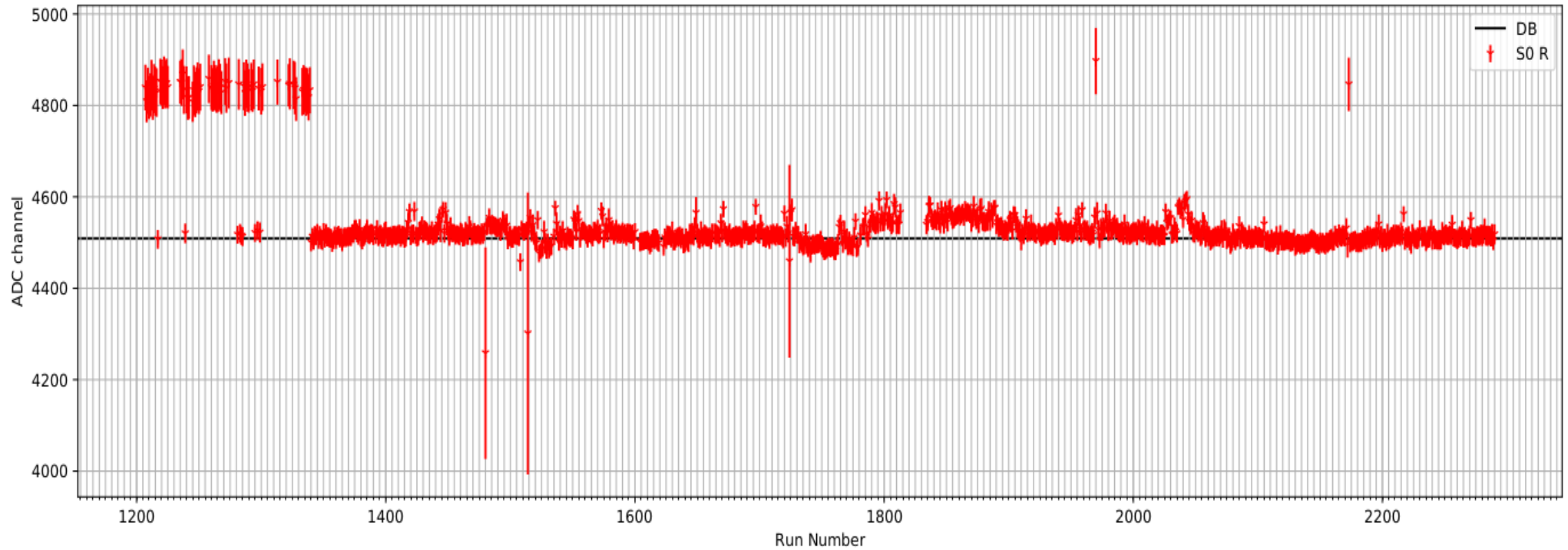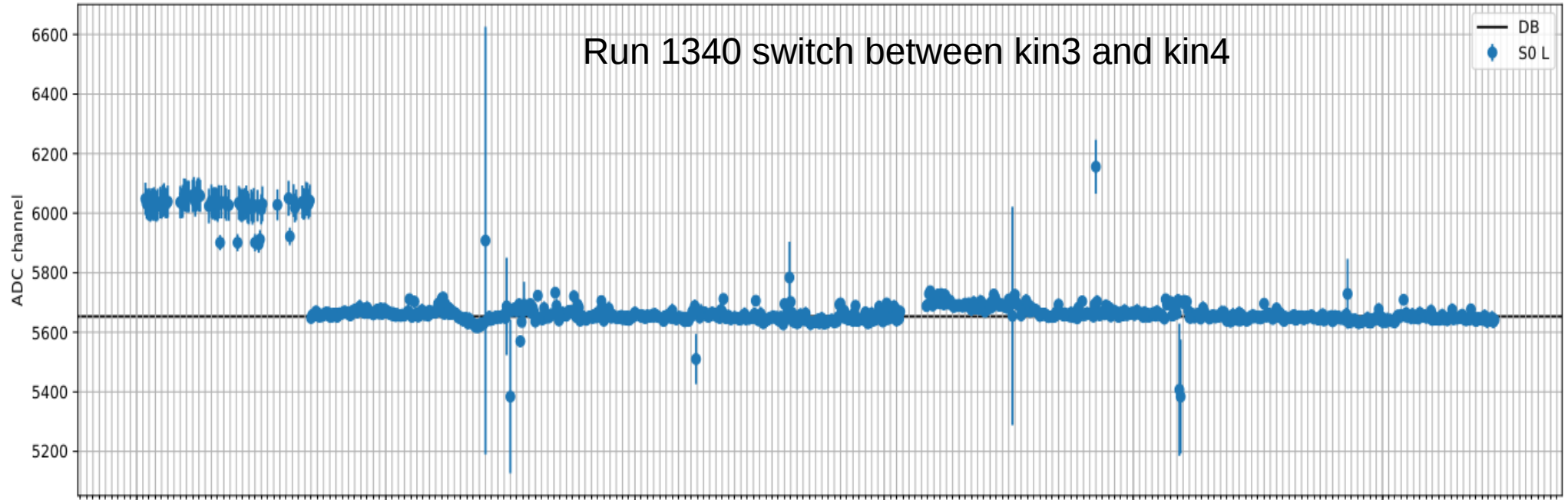
The stdout piped to file. "For debugging" :)

```
Processing batch_ped_scan.C(2088,1)...
Debug is turn on: if you supply a run number this will be the first statment printed!!

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L.s0.a          0       0
L.s0.la         0x4f5f7f0    1
L.s0.ra         0x4f66c60    1
L.s2.a          0       0
L.s2.la         0x4f7c450    16
L.s2.ra         0x4f865c0    16
L.prl1.a        0x4f42400    34
L.prl1.la       0       0
L.prl1.ra       0       0
L.prl2.a        0x4f51220    34
L.prl2.la       0       0
L.prl2.ra       0       0
L.cer.a         0x4f370c0    10
L.cer.la        0       0
L.cer.ra        0       0
L.sh.a          0       0
L.sh.la         0       0
L.sh.ra         0       0
L.ps.a          0       0
L.ps.la         0       0
L.ps.ra         0       0
```

Code only depends on the run number:

- Will run for either arm
- Will find the pedestal for every adc in a predefined list.
- Will scan through all the PMTs for each detector
  - This Number is grabbed from the Ndata.adc branch
- This produces mulitple pdfs of all the adc signals from a detector and csv file of the pedestals and the width of the gaussian fit.
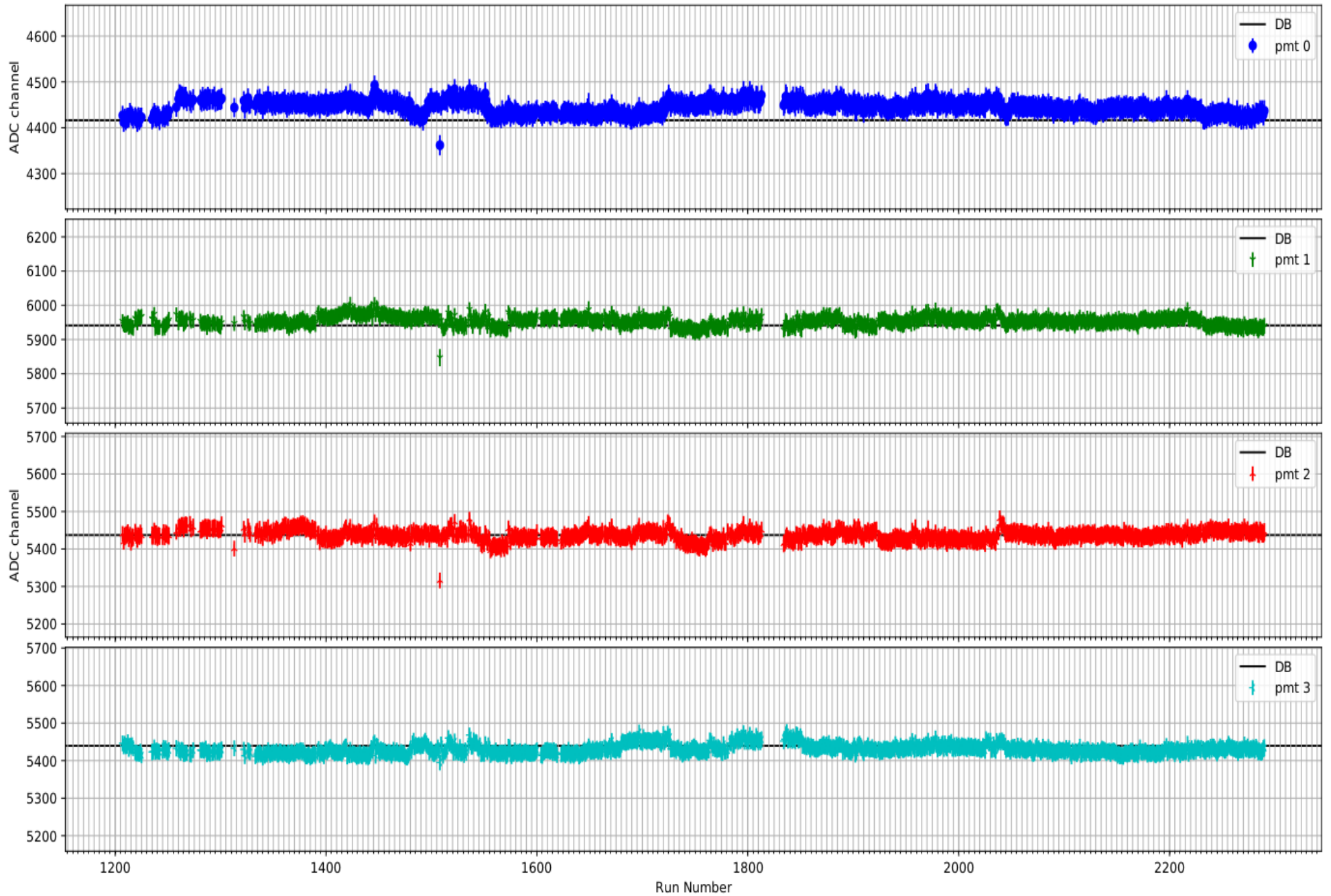- For the run given!!

Python

- Read in the tables of pedestal values from the batch job using pythons read_csv function

- Manipulate the data arrays to list the pedestal for one PMT over different runs

- Plot those pedestals versus run number

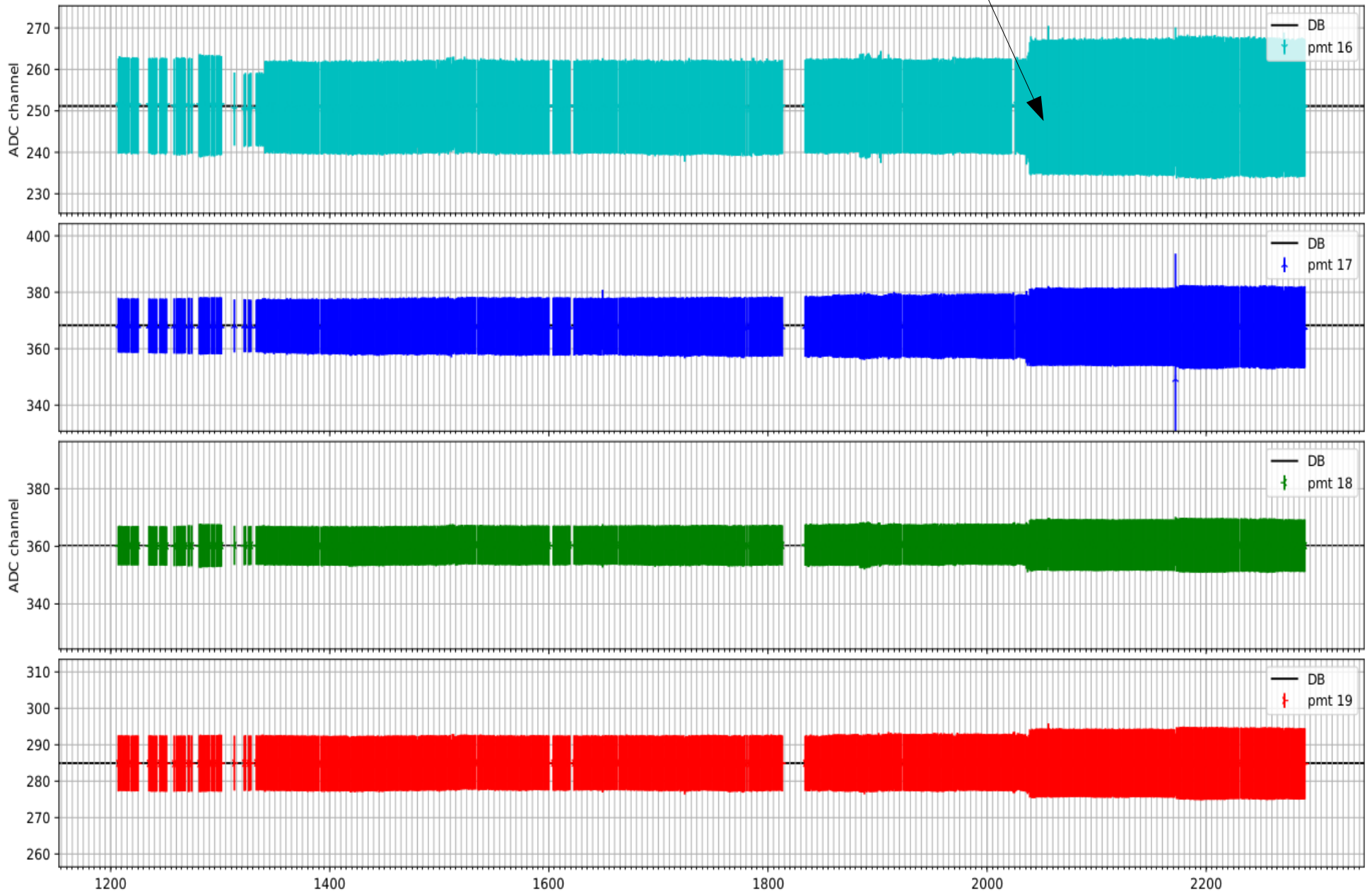- Add in a line for the DB value of the pedestal.

S0 Pedestals
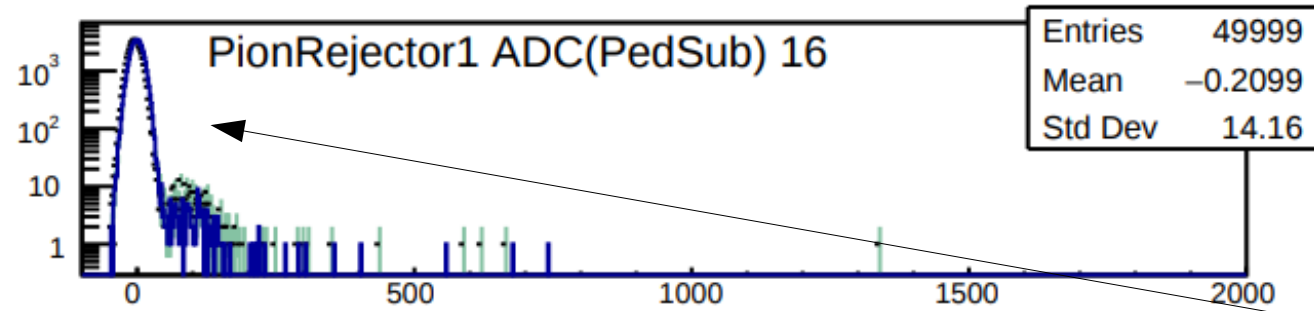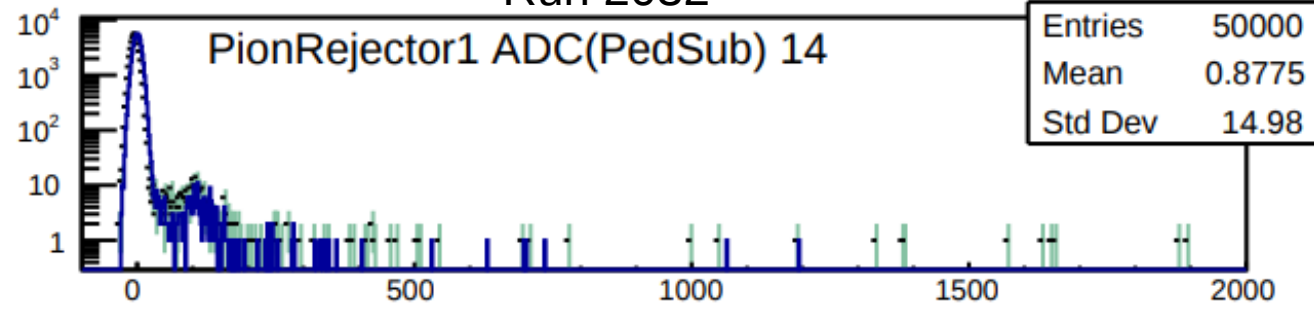
Run 1340 switch between kin3 and kin4

S2 L pedestals

L.prl1.a pedestals

Large increase in fitting error.

Run 2032

PionRejector1 ADC(PedSub) 14

Entries	50000
Mean	0.8775
Std Dev	14.98

PionRejector1 ADC(PedSub) 16

Entries	49999
Mean	−0.2099
Std Dev	14.16

Run 2600

PionRejector1 ADC(PedSub) 14

Entries	50004
Mean	3.579
Std Dev	32.43

PionRejector1 ADC(PedSub) 16

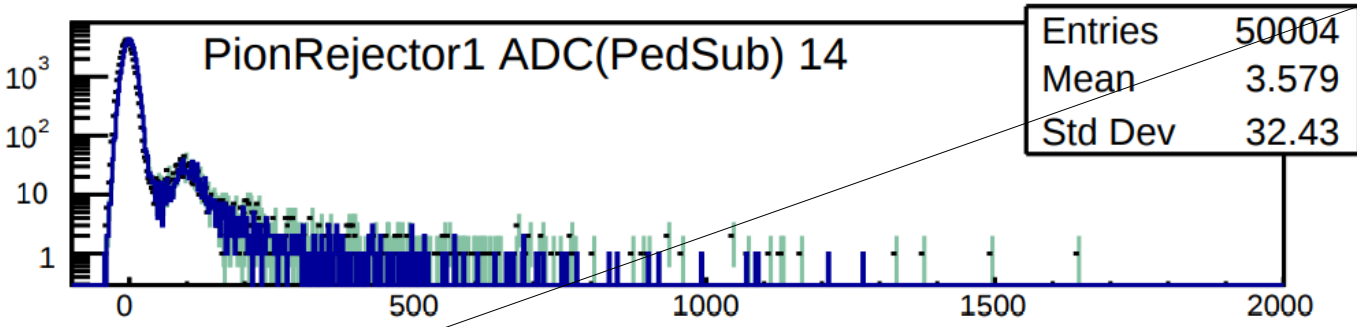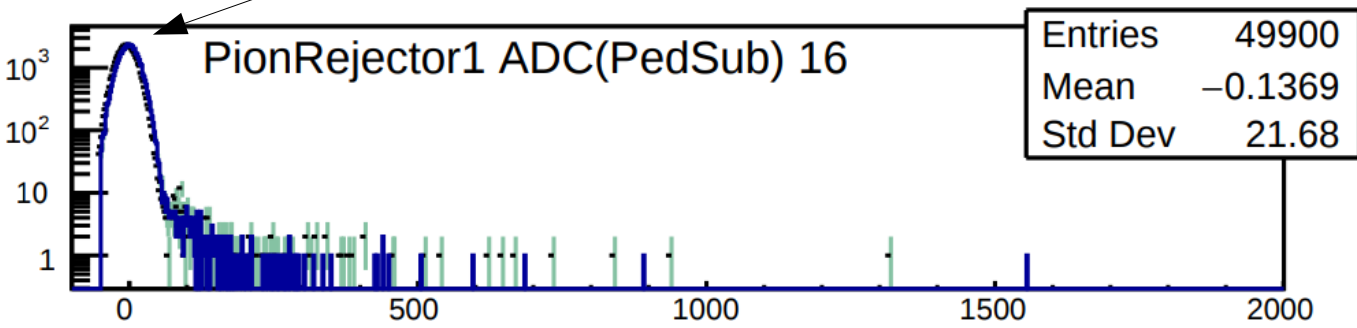| Entries	49900
Mean	−0.1369
Std Dev	21.68

This increase of Pedestal size was noticed before. There was discussion of investigating some of the calorimeter blocks over the summer.

Looks like, https://logbooks.jlab.org/entry/3579492 . Addressed all calorimeter blocks

Whats next

- Investigate all of the major outliers and shifts in pedestal values
- Clean up the plots a little
- Post the plots of pedestal verses run number on elog
- If you want to view the current pdfs
  - /w/halla-scifs17exp/triton/Bane/Tri_offline/ped_scan/ped_table/graphs
- Script for generating batch jobs
  - /w/halla-scifs17exp/triton/Bane/Tri_offline/ped_scan/gen_jobs
  - The script "batch_ped_scan.C" loads a already compiled version of the pedestal fitting script and runs that "macro"
- Tri_offline is also a gitrepo, can be found at https://github.com/jbane11/Tri_offline
  - All of the pdfs and other plots are not added to the git repo
- If you are not using batch- USE IT!!!!
  - I ran a shell script to submit the pedestal fitting script for every run.
    - Submit time for first set of runs, 9:09 finished 99 jobs in 5 minutes.
    - This was quicker then the shell script to generate all(>2000) the jobs.