## CDet module commissioning DAQ preparation

Tortorici Francesco INFN & Catania University / JLab

#### Overview

- Some cabling (not much)
- Most of work on software:
  - Refactoring
  - Example of analysis: select direction of arrival of tracks
  - New tool: efficiency
  - Some small automation

### Example of analysis 1/2

Selection of (near) horizontal tracks. Here, ADC channel 6 requiring two ۲ nearby channels in both left and right to have "large" amplitudes



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a6 {a5>20 && a7>20 && a8>20 && a4>20}

#### Example of analysis 2/2

• Selection of (near) vertical tracks. Here, ADC channel 6 requiring adjacent channels in both left and right to have "small" amplitudes



#### Efficiency 1/5

• Let us start with an histogram an ADC channel



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### Efficiency 2/5

Now let us see the corresponding TDC histogram



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# Efficiency 3/5

Requiring TDC > 1000, ADC old spectrum becomes new spectrum



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# Efficiency 4/5

• For each channel, we can calculate the efficiency of the cut

Counts **AFTER** cut

Counts **BEFORE** cut



### A small automation tool

- We can loop over the channels, calculate and fit the efficiency and save the result in a log file, using just a command
- The first few lines of a sample file follow. The first two columns identify the slot and channel under consideration, the last two columns contain the result of efficiency fit
  - To be extended with the results from future tools
  - Useful as a start point to equalize the channels

```
#slot, chan, Athresholds[slot][chan], Awidths[slot][chan]
# NINO threshold -1.736 V, PMT HV -700 V
0 0 40 0
0 1 40 0
0 2 85.6277 13.7327
0 3 88.1606 10.7509
0 4 85.0534 11.4455
0 5 74.5427 12.4969
```

```
•••
```

## Summary and plan

- Most of work has been on software
- New tool: efficiency
  - Some analysis work can be done
- Plan for next week
  - More analysis tools!
  - Find an optimum for NINO threshold and PMTs HV