

# Analysis

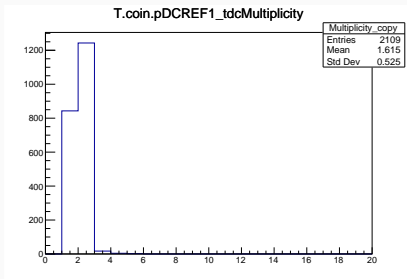
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Shuo Jia

Pre-trigger to all ADCs/TDCs in all detector Readout Controllers(ROCs)

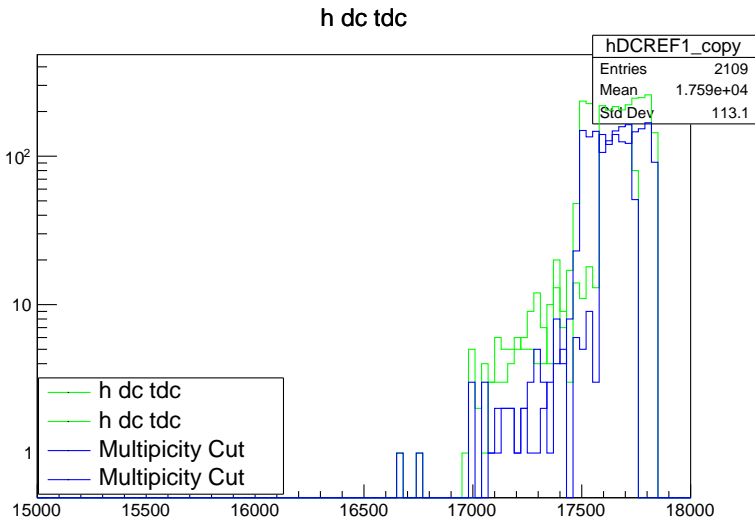
Reference time is subtracted from detector signal

Analyzer considers first hit after cut to be a good hit

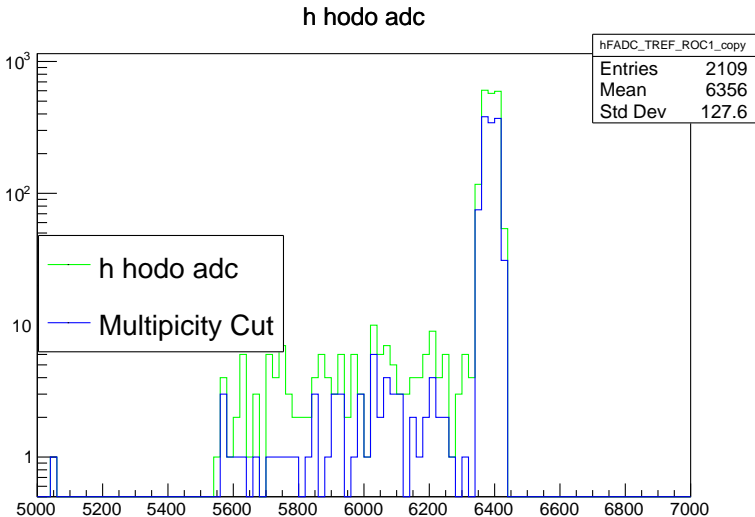


**Figure 1:** Multiplicity

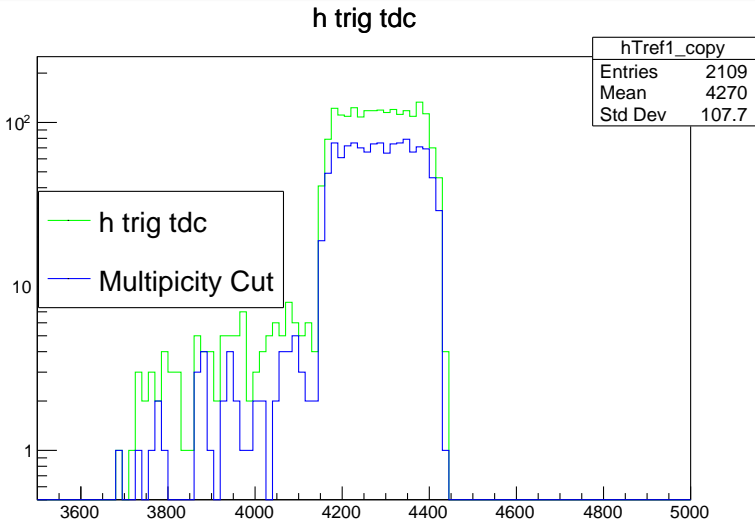
The multiplicity of a given variable refers to the total number of adc or tdc hits per event.



**Figure 2:** HMS Drift Chamber TDC reference time cut



**Figure 3:** HMS hodoscope ADC reference time cut



**Figure 4:** HMS Trigger TDC reference time cut

p dc tdc 1

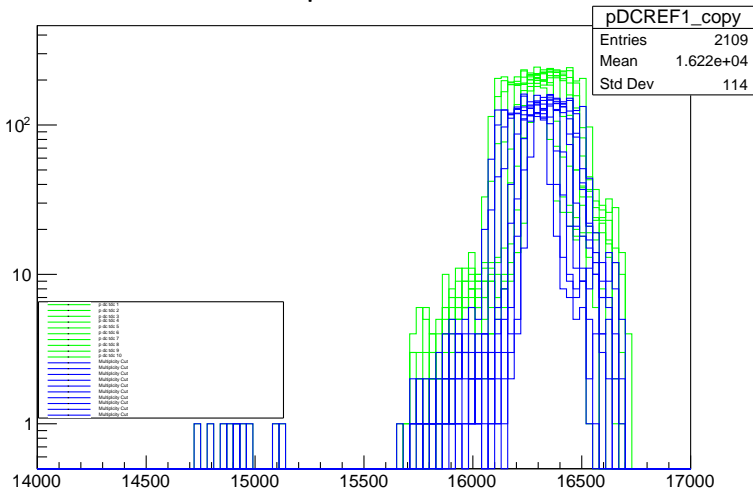
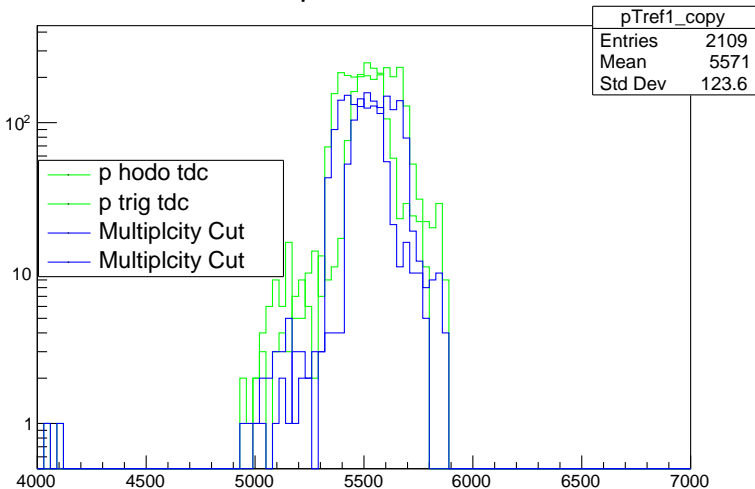


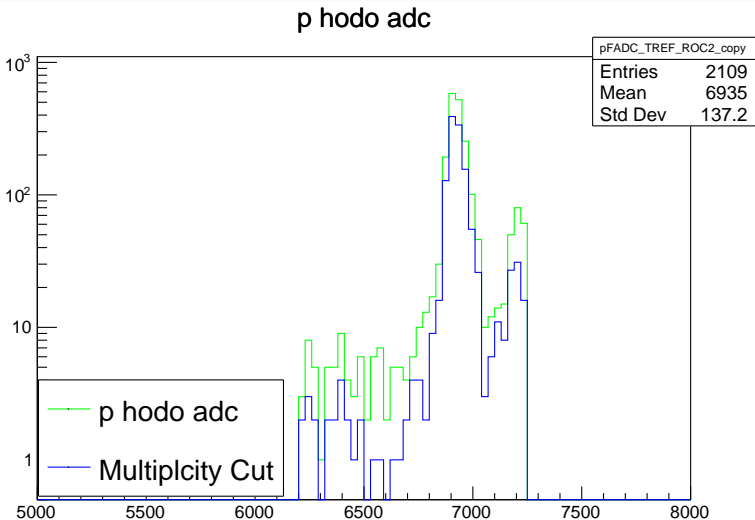
Figure 5: SHMS Drift Chamber TDC reference time cut

# p hodo tdc

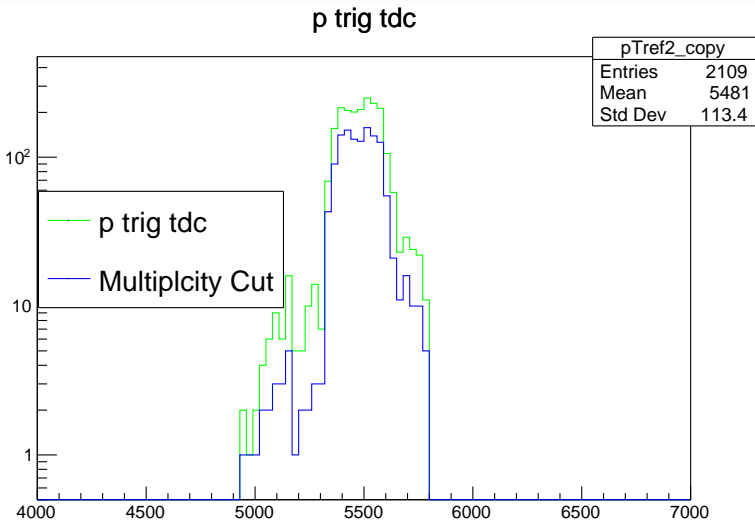


**Figure 6:** SHMS hodoscope TDC reference time cut





**Figure 7:** SHMS hodoscope ADC reference time cut



**Figure 8:** SHMS trigger TDC reference time cut

```
hdc_tdcrefcut=-16500.  
hhodo_tdcrefcut=-3400.  
hhodo_adcrefcut=-5000.  
hcer_adcrefcut=-5000.  
hcal_adcrefcut=-5000.
```

**Figure 9:** HMS refertime cut

```
;Run 6263,6359  
pdc_tdcrefcut=-15500.  
phodo_tdcrefcut=-4300.  
phodo_adcrefcut=-5500.  
pngcer_adcrefcut=-5500.  
phgcer_adcrefcut=-5500.  
paero_adcrefcut=-5500.  
pcal_adcrefcut=-5500.
```

**Figure 10:** SHMS refertime cut

## Detector time window cut

AdcTdcTime difference is defined as

$$\begin{aligned} TdcTime[ipmt] - AdcPulseTime[ipmt] &= Hodo, \\ HodoStartTime - AdcPulseTime[ipmt] &= CER, CAL, AERO \end{aligned} \quad (1)$$

HodoStartTime is the Hodoscope time projected at the focal plane, and the TdcTime, AdcPulseTime is the detector (TDC,ADC) pulse time for a given PMT in that detector.

Due to the finite detector resolutions, event has a finite width and gaussian in shape time

Did we finish this?