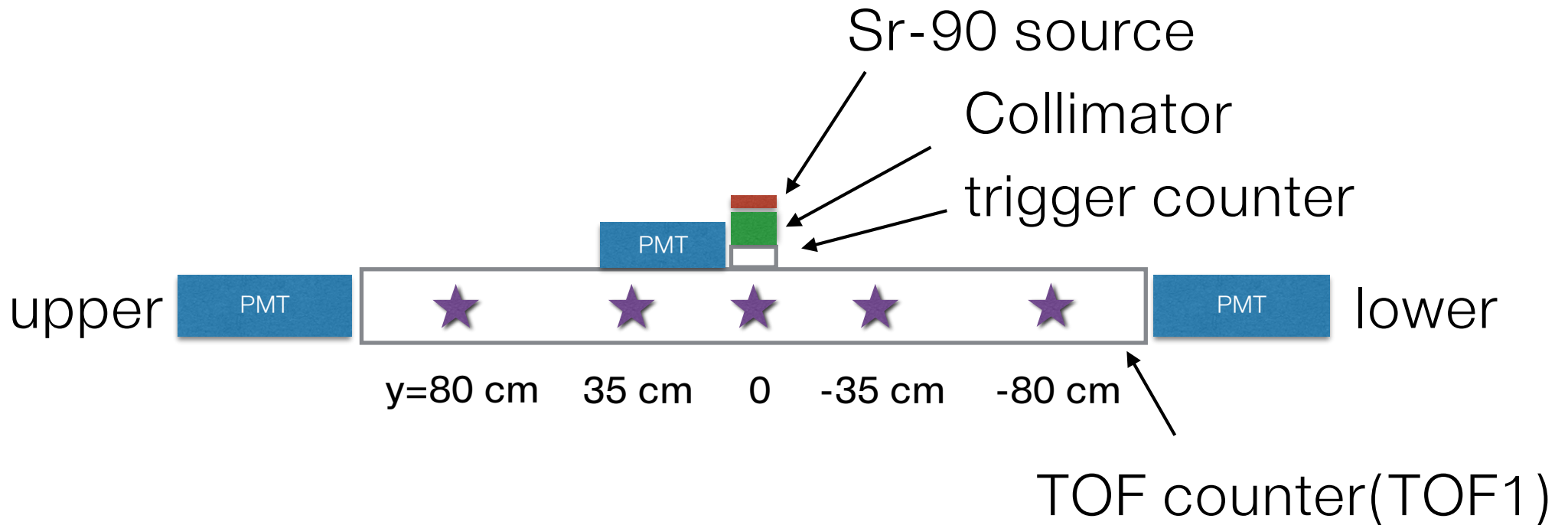


ToF Source Test

13 October 2014

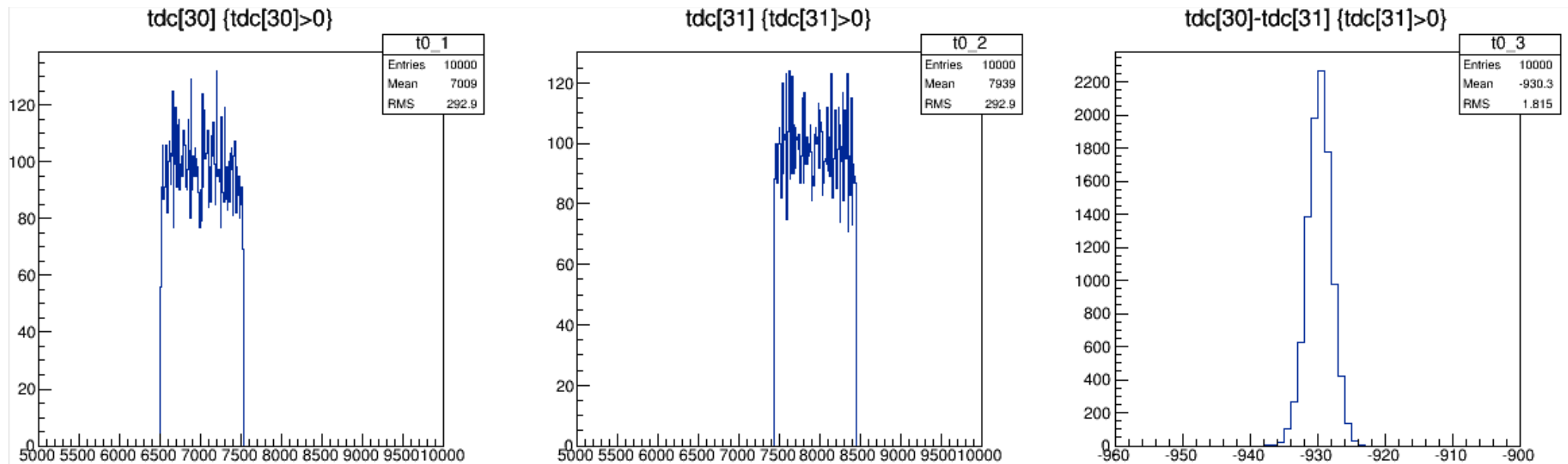
Shinhyung Kim

Configuration of ToF Source Test



- Collimator w/ 1 mm hole & 4 mm thickness
- Trigger Counter w/ 2 m thickness

- total : 10000 events
- ToF1U : 1850 events
- ToF1D : 1757 events



reference time

ADC[26], TDC[26] : Upper PMT

ADC[27], TDC[27] : Lower PMT

ADC[31], TDC[30] : Trigger Counter

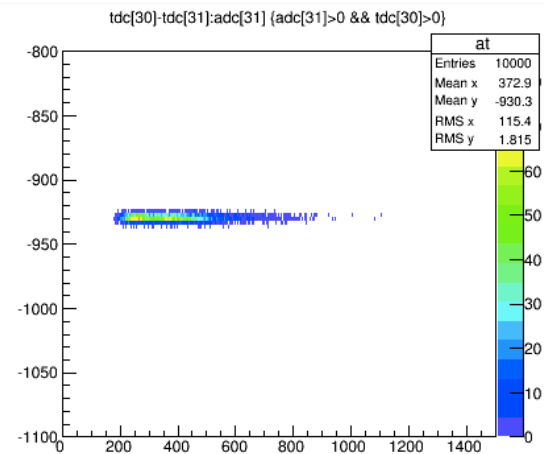
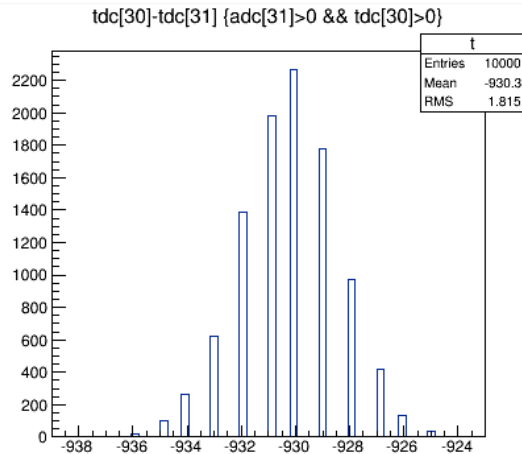
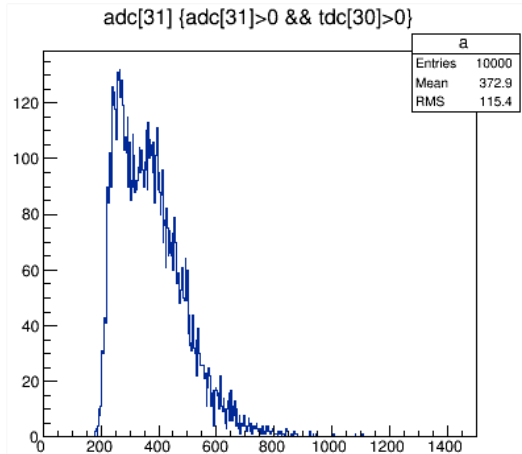
TDC[31] : TDC[30]이 veto와 coincidence module을 지나 gate를 만들게 되는 최종 신호

ADC

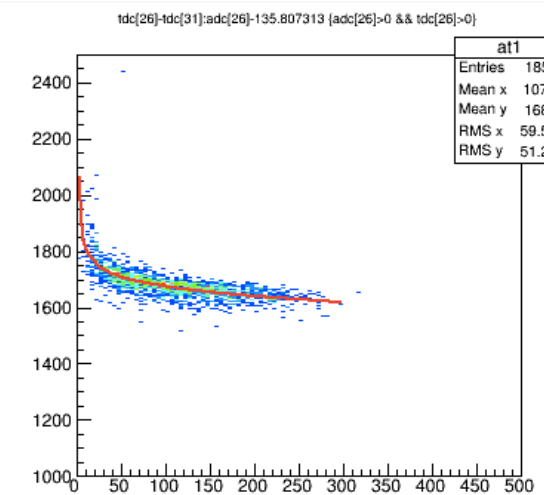
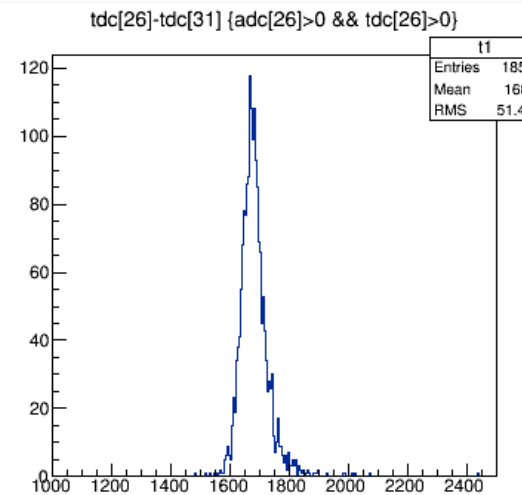
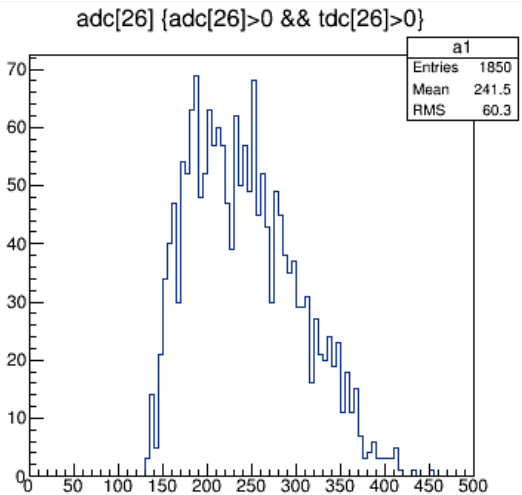
TDC

TDC vs. ADC

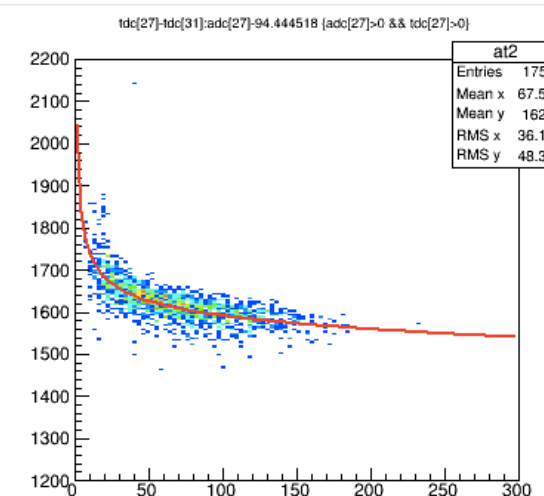
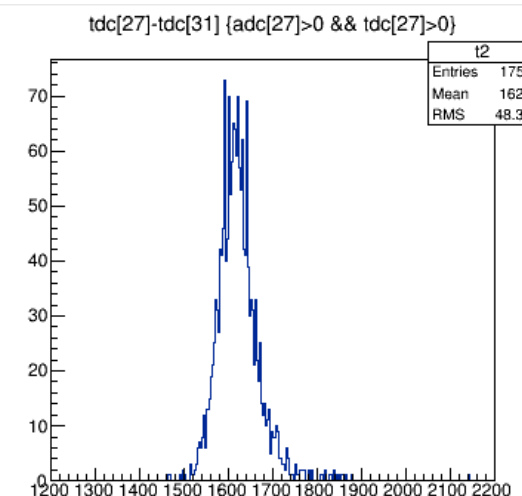
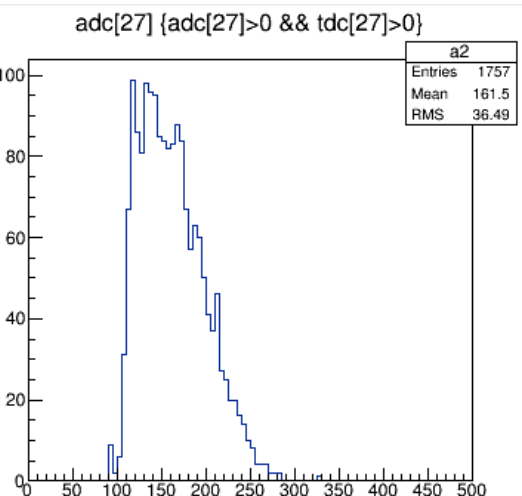
trigger



ToF1U

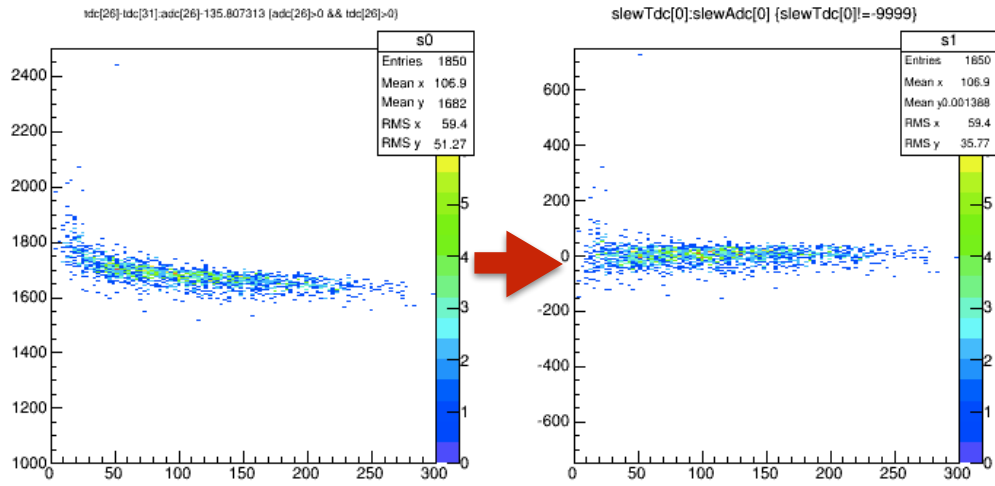


ToF1D

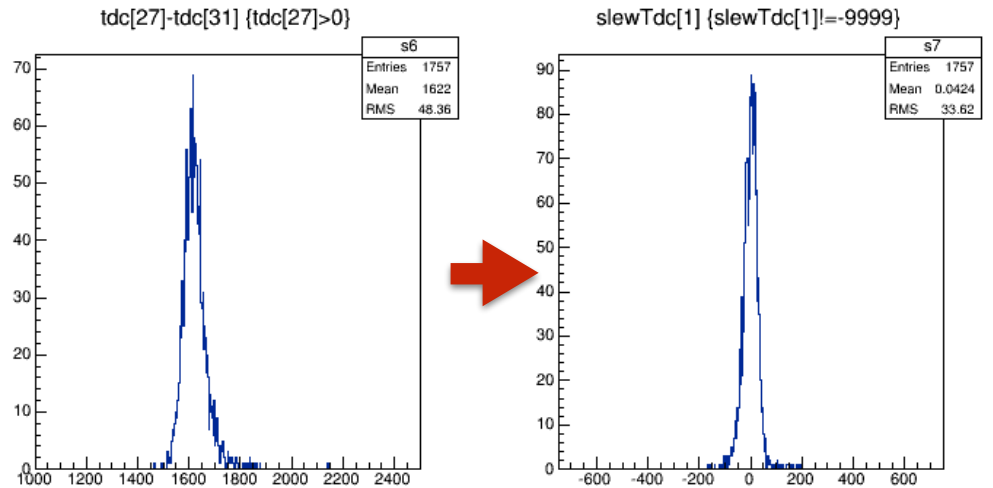
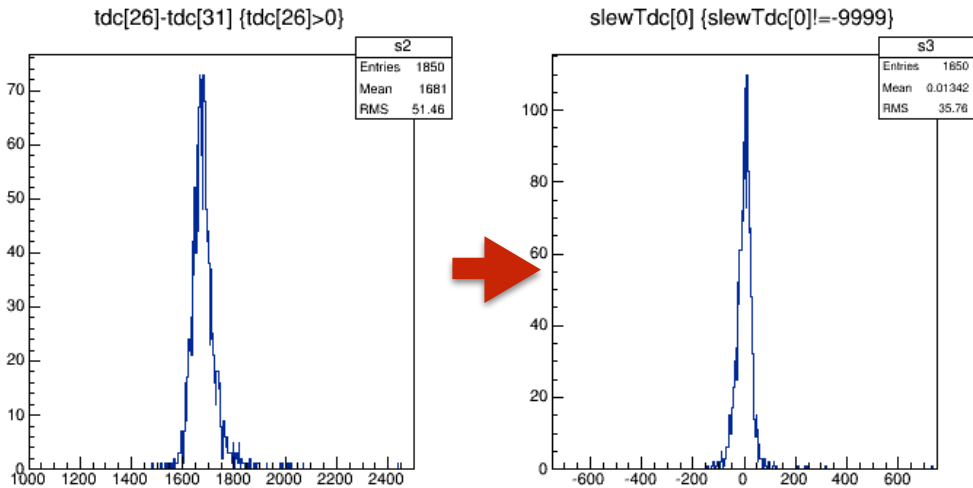
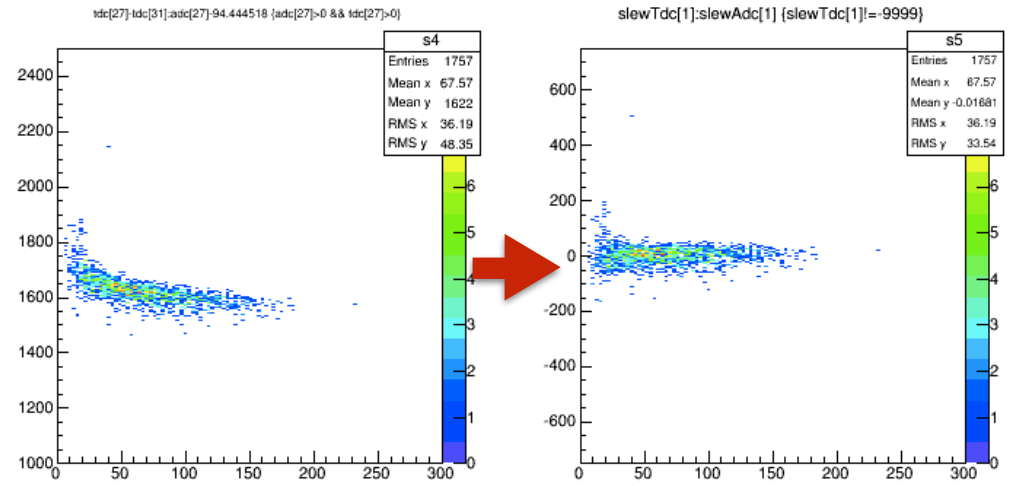


time walk correction

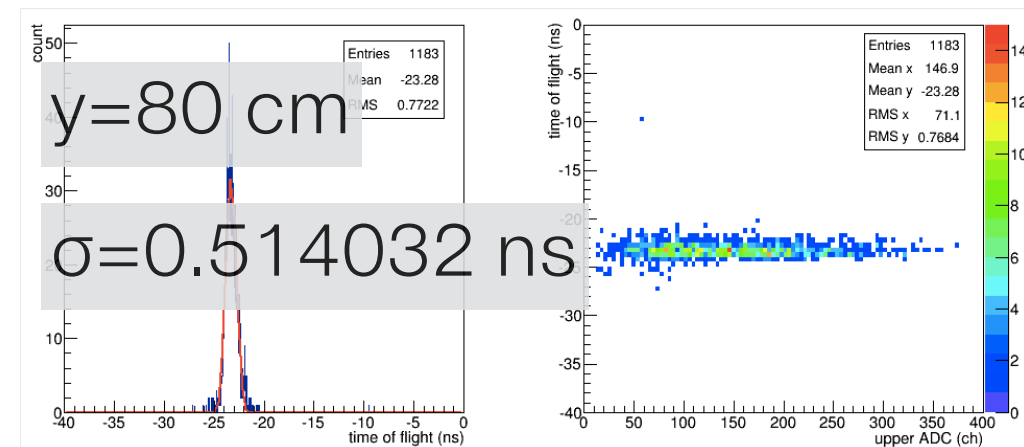
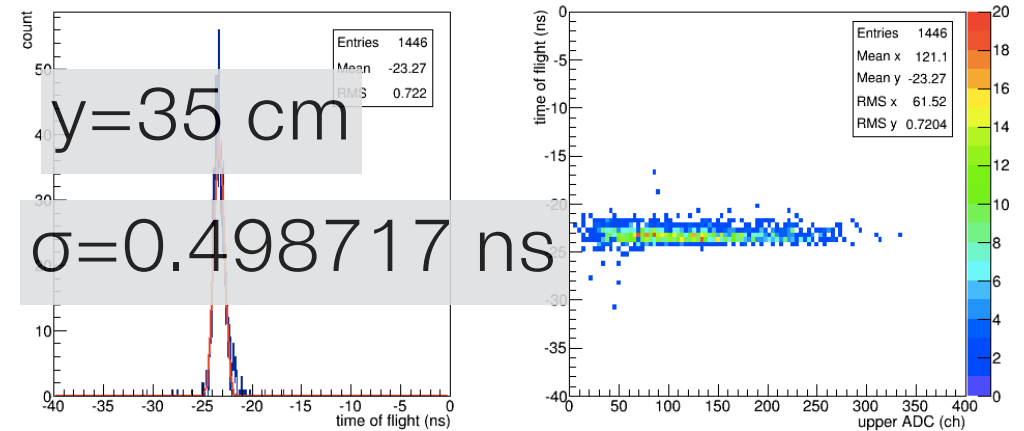
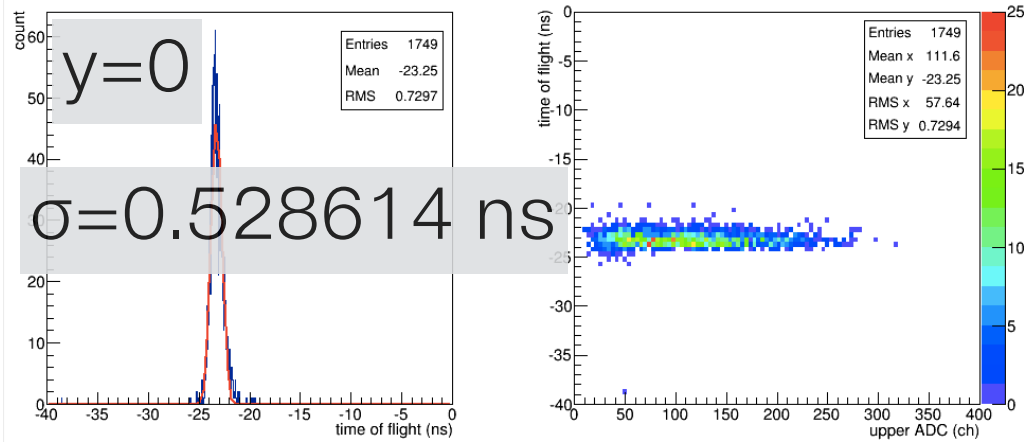
ToF1U



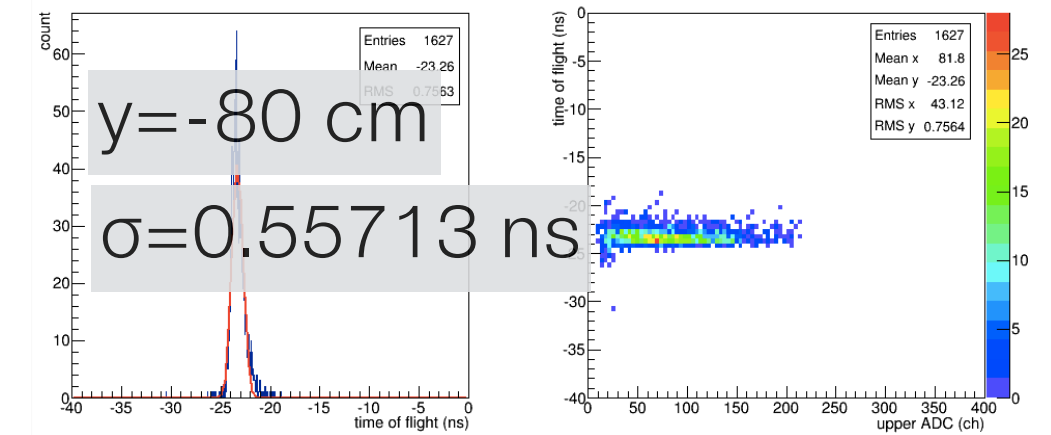
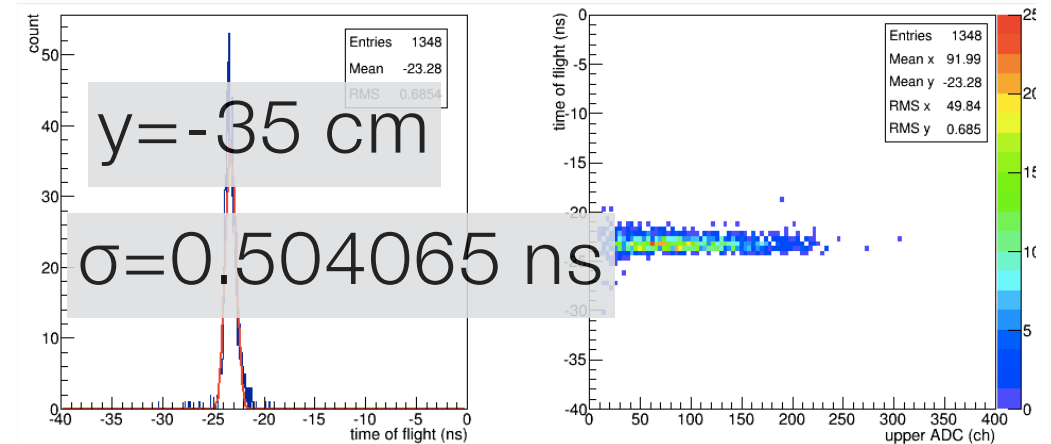
ToF1D



time of flight resolution



time of flight
= trigger - (tdc1U+tdc1D)/2

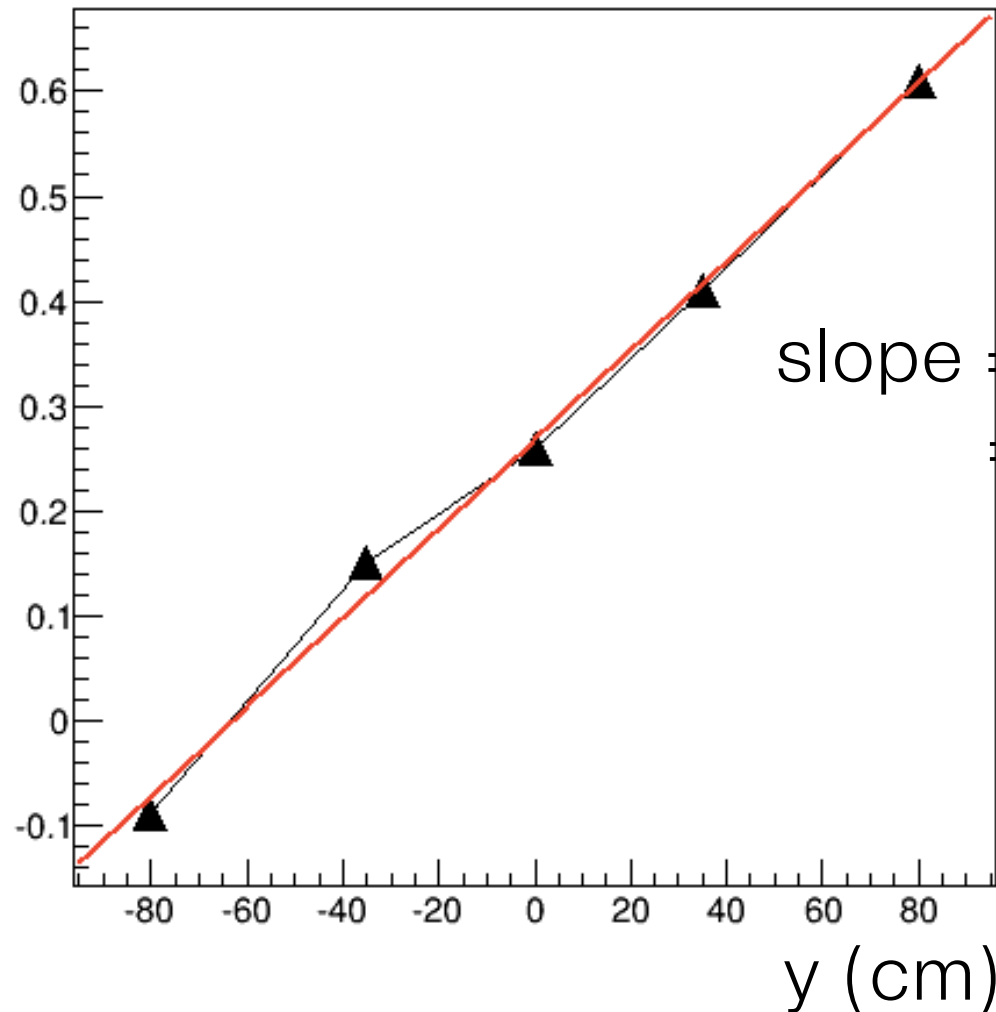


Attenuation length of ToF counter

$$\text{adc1U} = c1 * \exp(-(90-y)/\lambda)$$

$$\text{adc1D} = c2 * \exp(-(90+y)/\lambda)$$

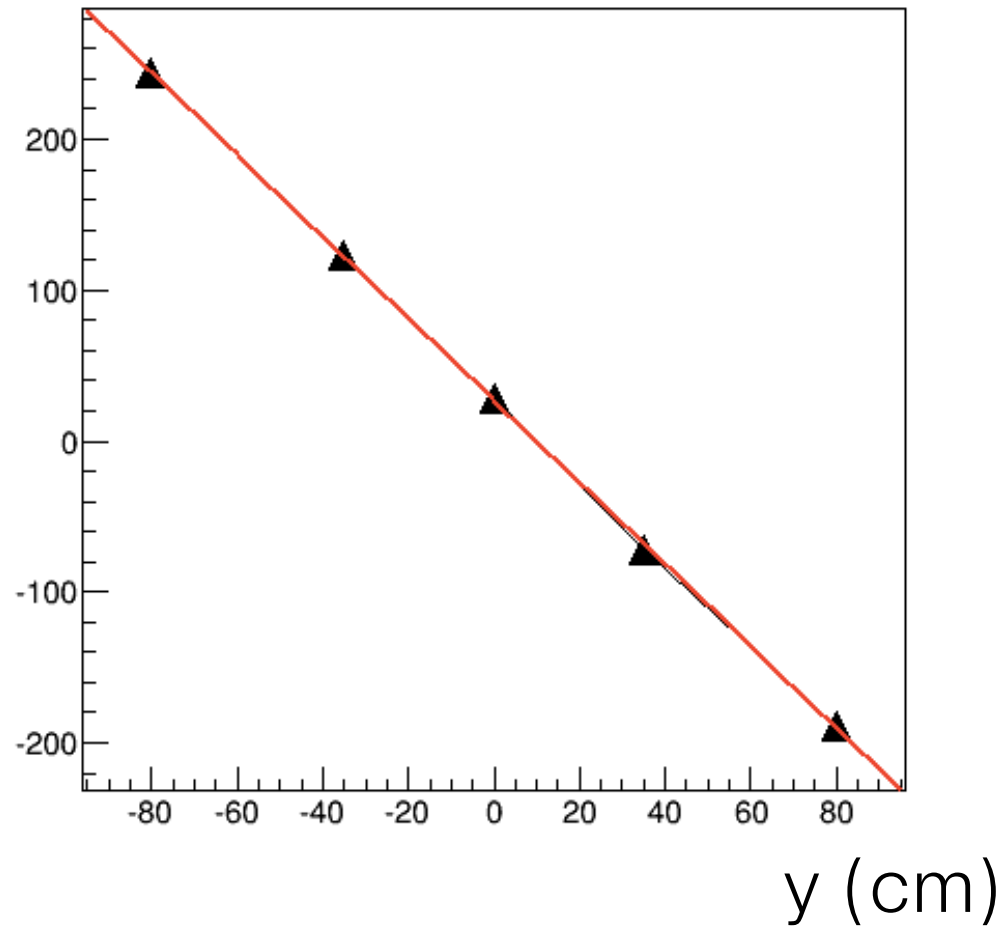
$$\log(\text{adc1U}/\text{adc1D})/2$$



slope = attenuation length
= 235.259 cm

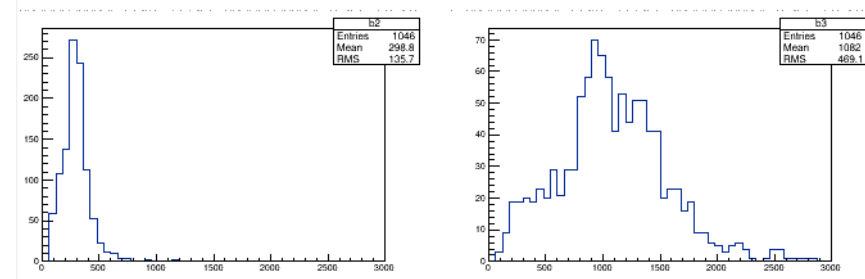
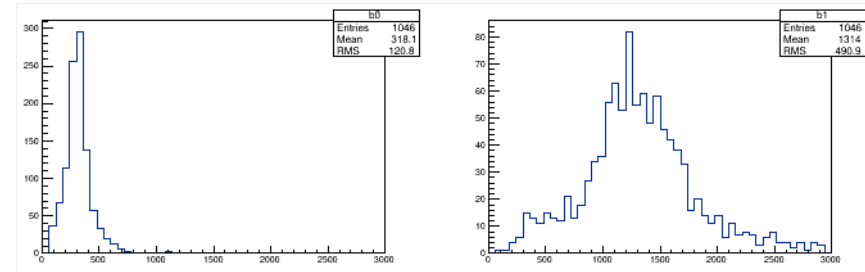
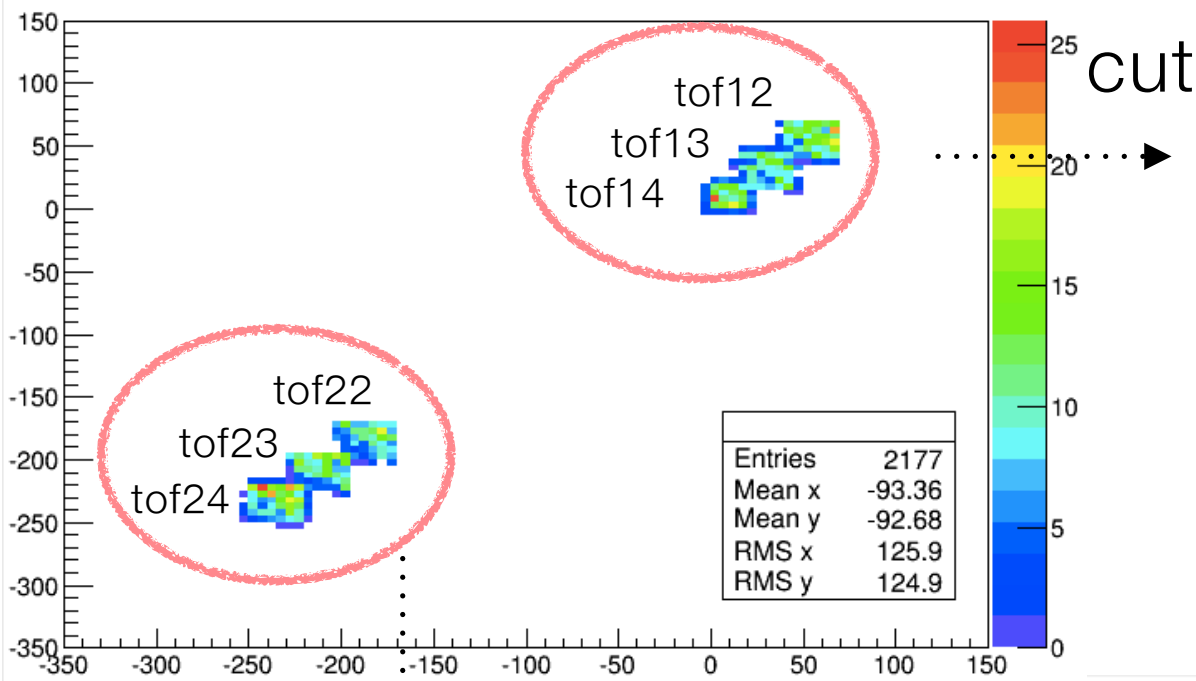
Position of ToF counter

$(\text{tdc1U}-\text{tdc1D})/2$ (ch)

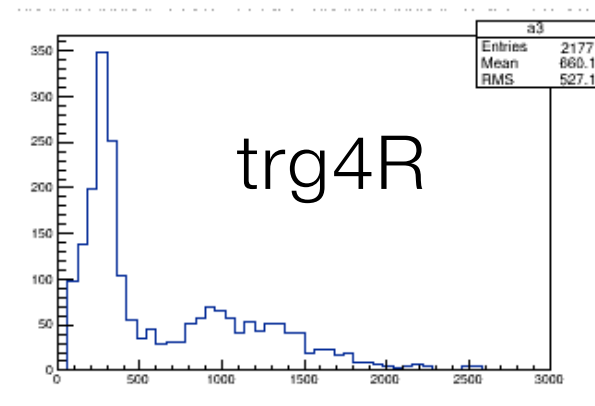
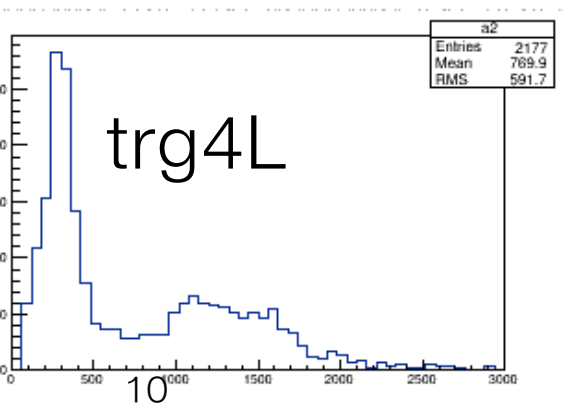
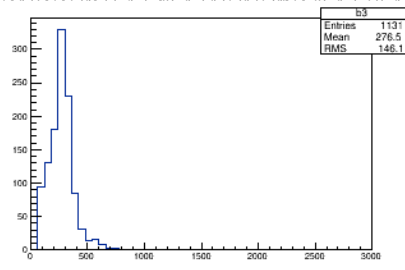
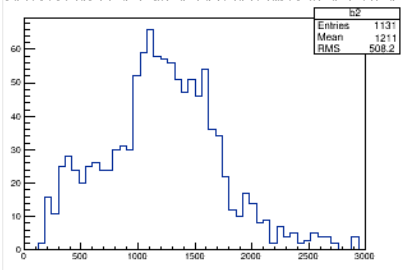
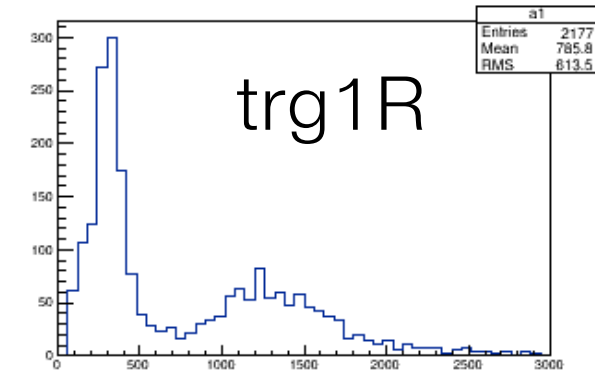
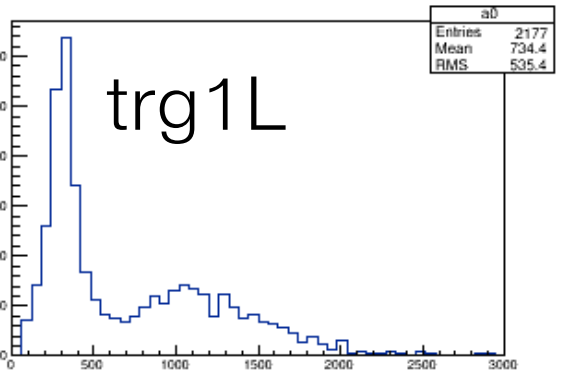
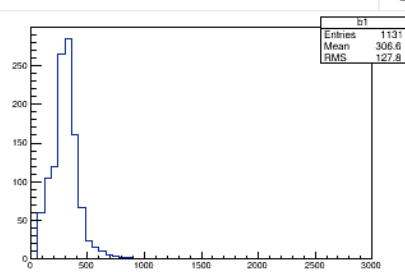
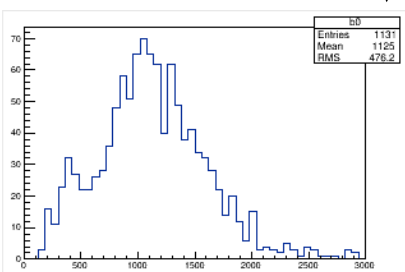


Plan

- source test for other ToF counters
- with the result of source test, analyze cosmic ray test.



* ADC distribution (ch)



Back-up

before source attached

after source attached

side attached to TOF

the other side

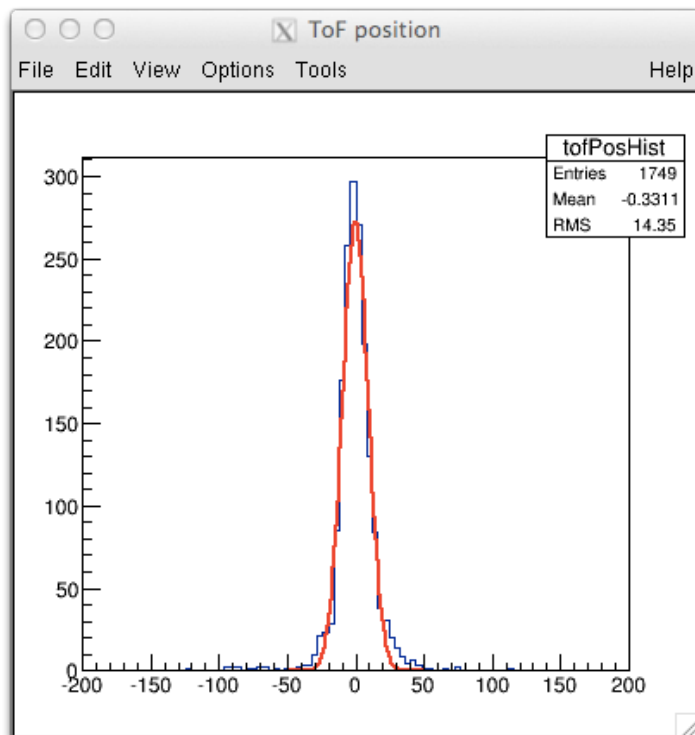


side attached to TOF

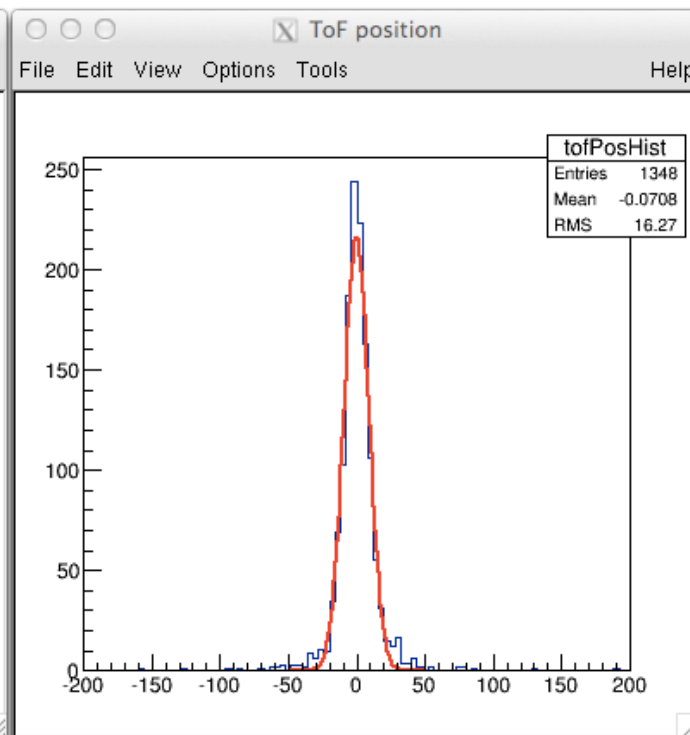
the other side



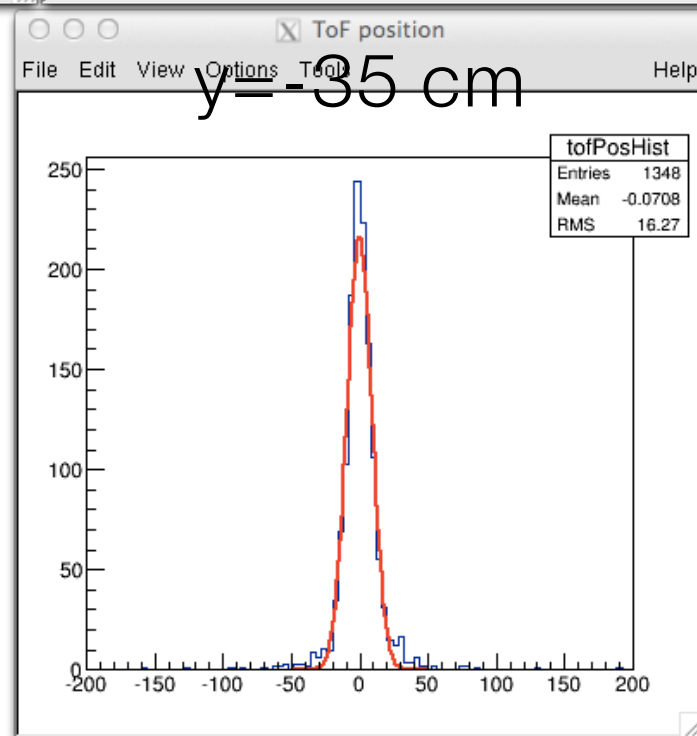
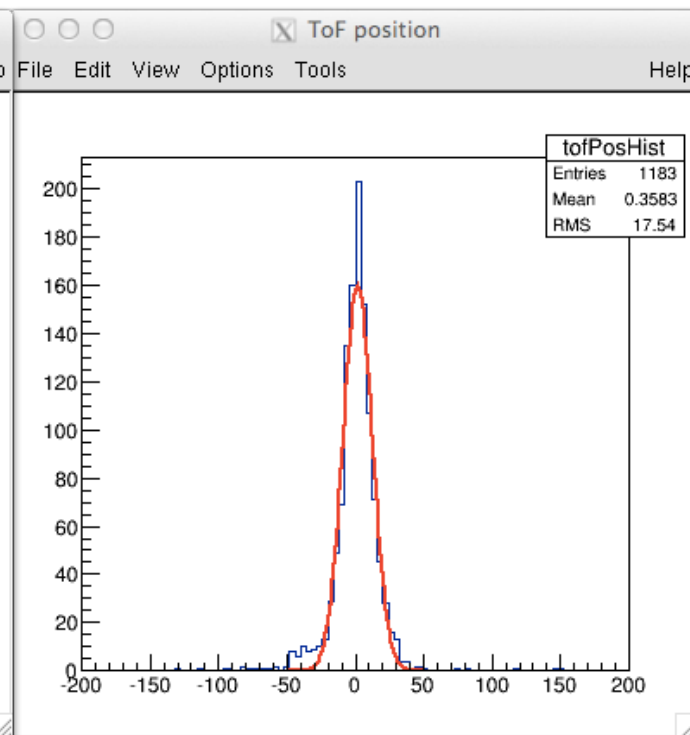
y=0



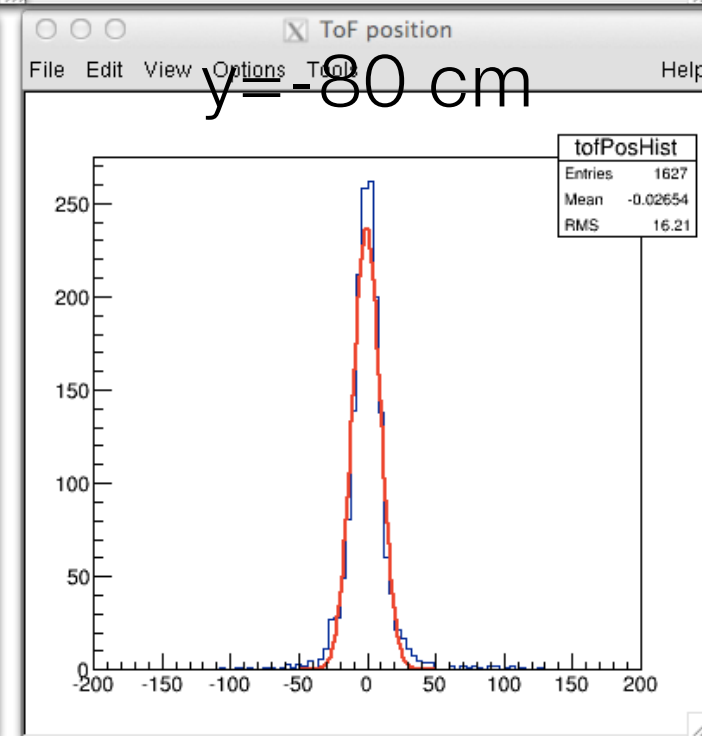
y=35 cm



y=80 cm



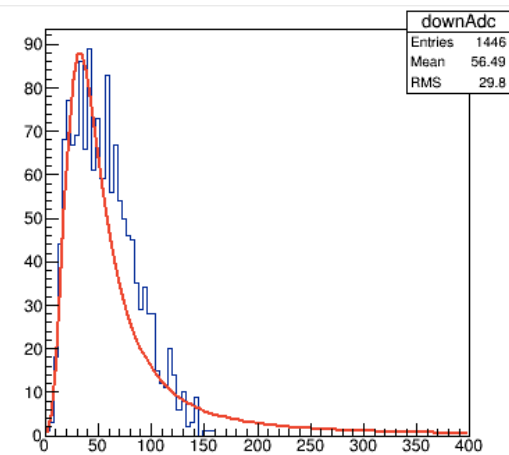
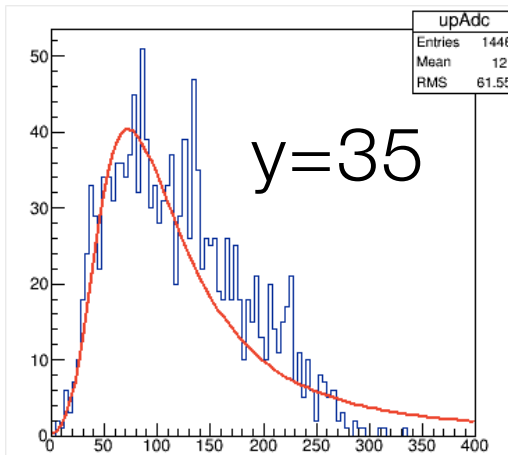
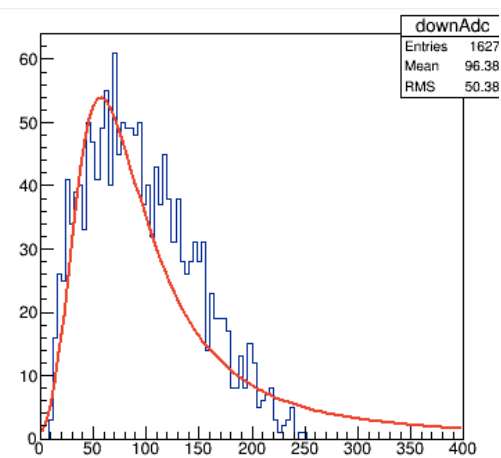
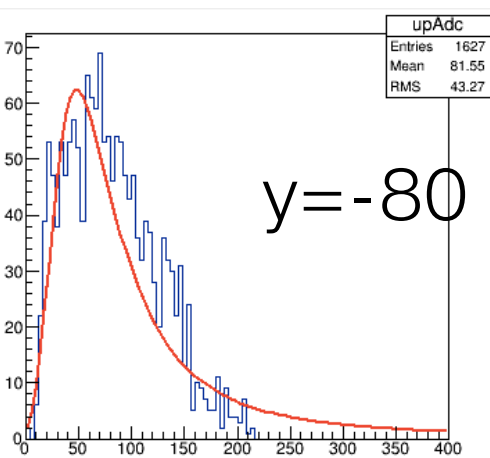
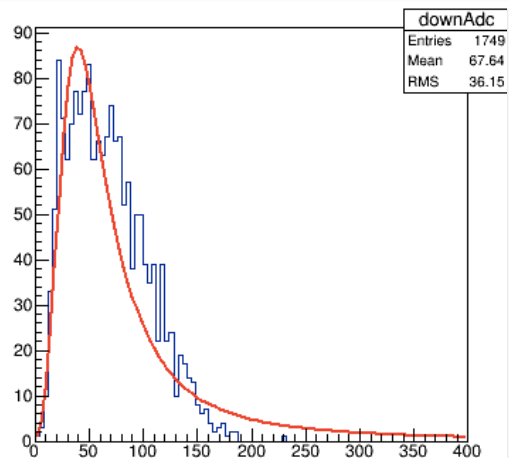
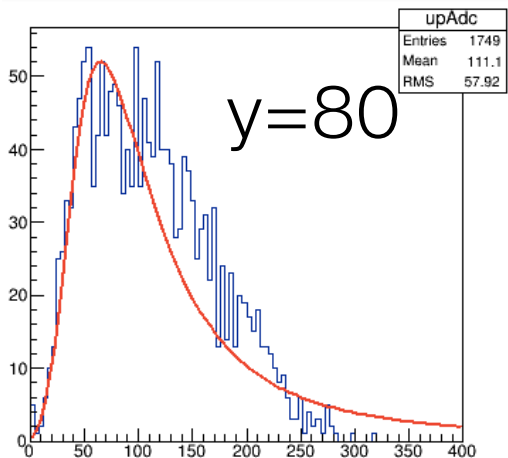
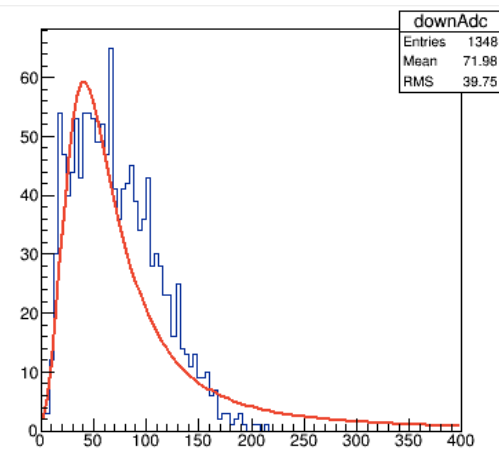
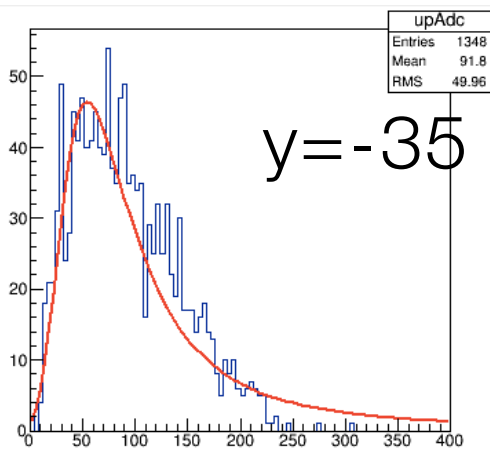
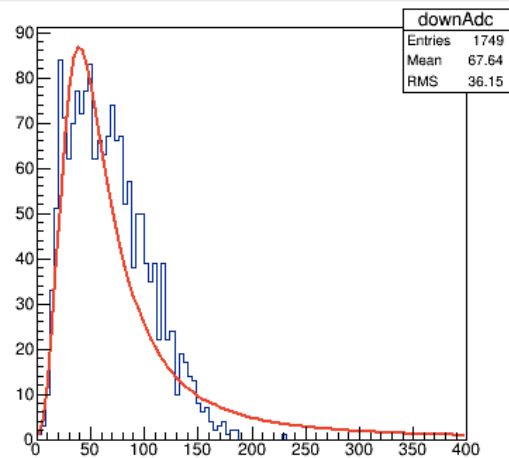
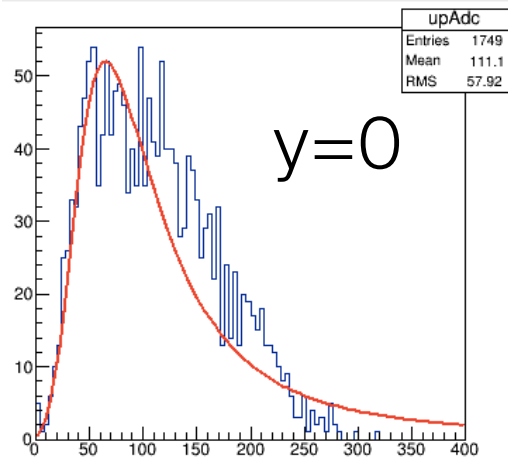
y=-35 cm



y=-80 cm

$(\text{tdc1U} - \text{tdc1D}) / 2$
(ch)

adc1U & adc1D



- Collimator w/ 1 mm hole & 4 mm thickness
- Trigger Counter w/ 2 m thickness

