

# BPM signal ave vs filter & BPM noise study

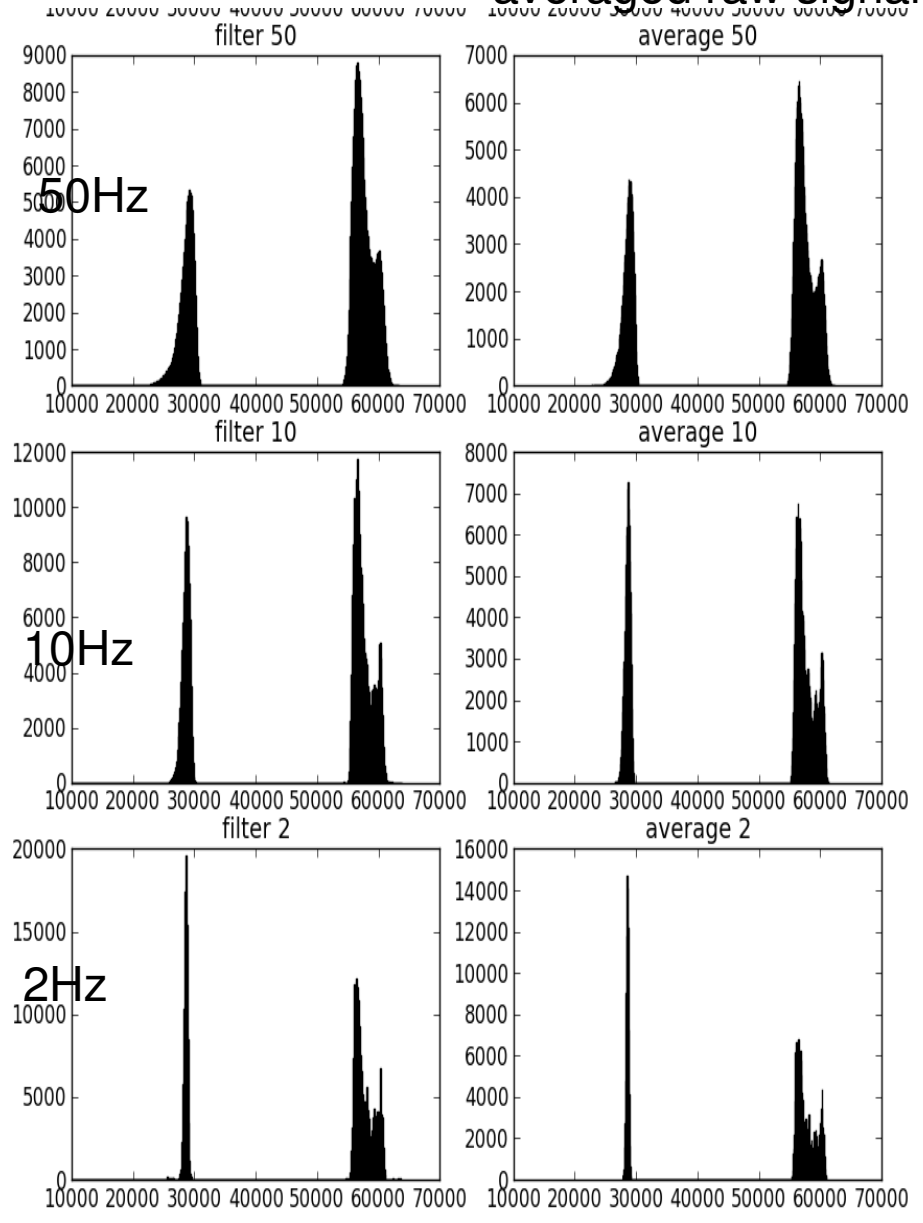
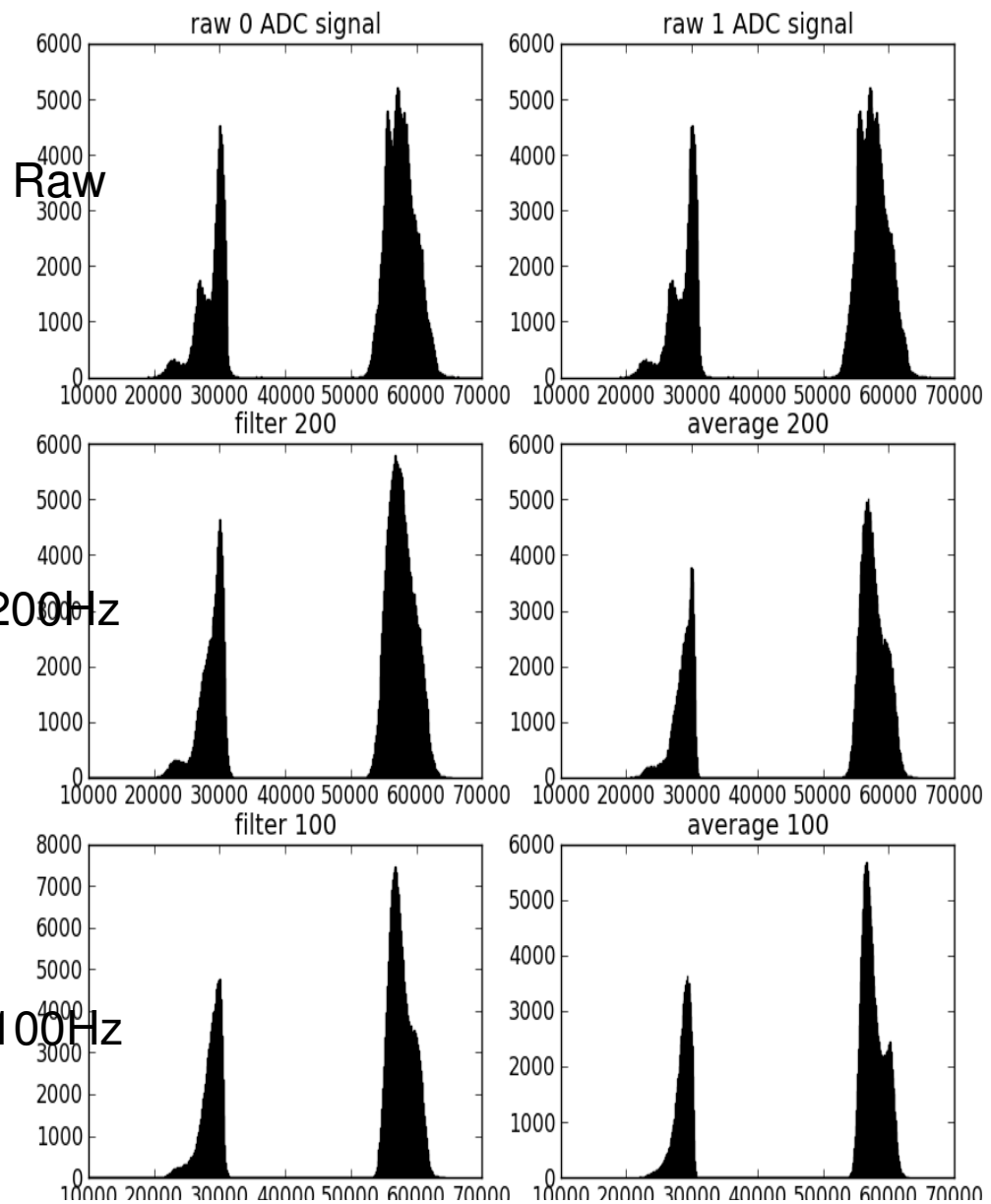
Pengjia Zhu  
7/3/2012

### Filtered raw signal

### averaged raw signal

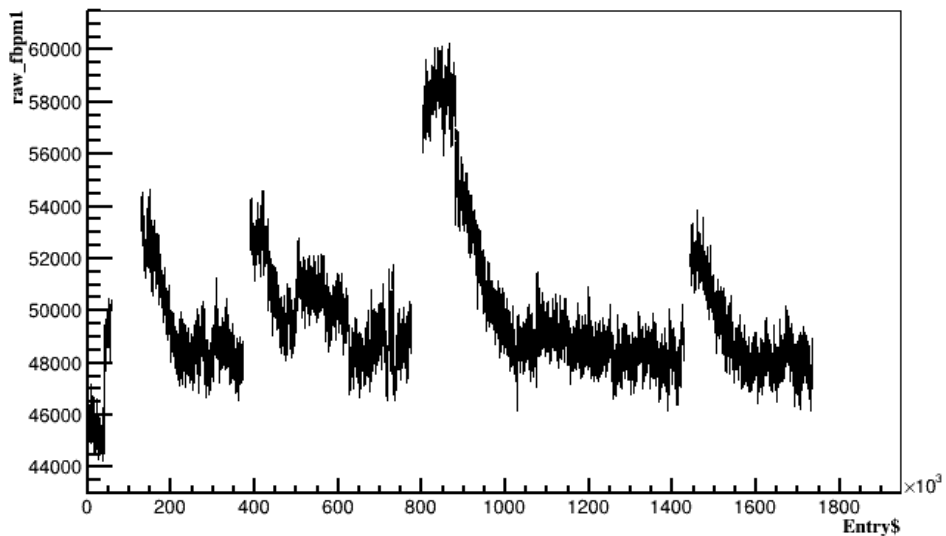
### Filtered raw signal

### averaged raw signal



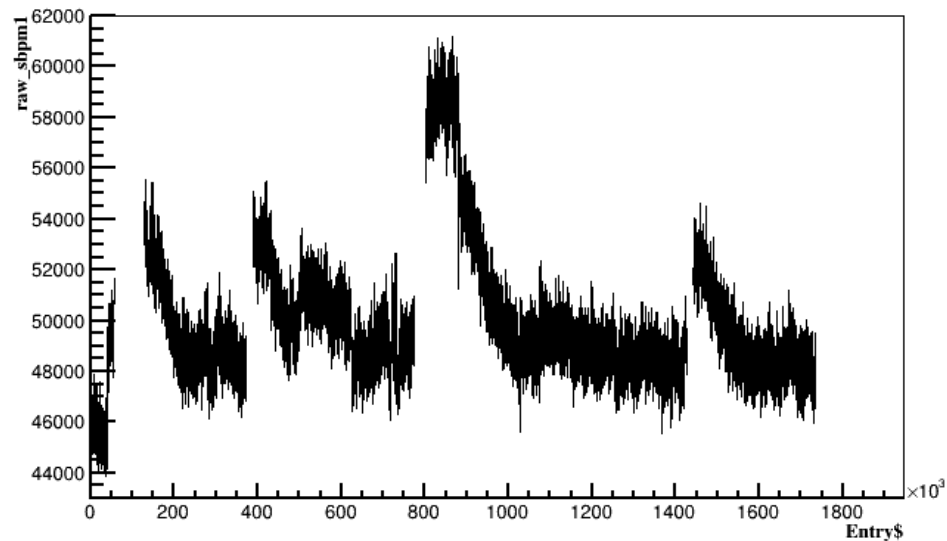
## 2Hz average

raw\_fbpm1:Entry\$ {raw\_bpmavail>0.5}

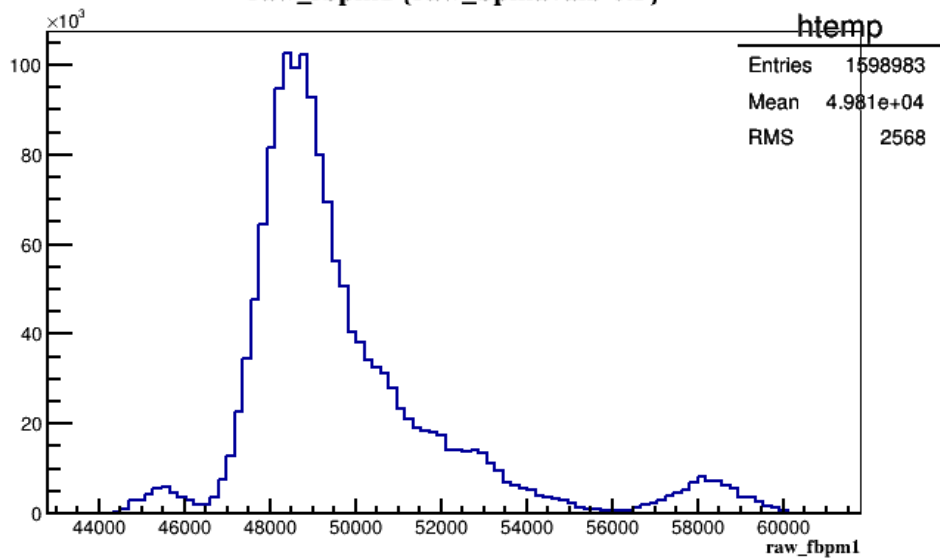


## 2Hz filter

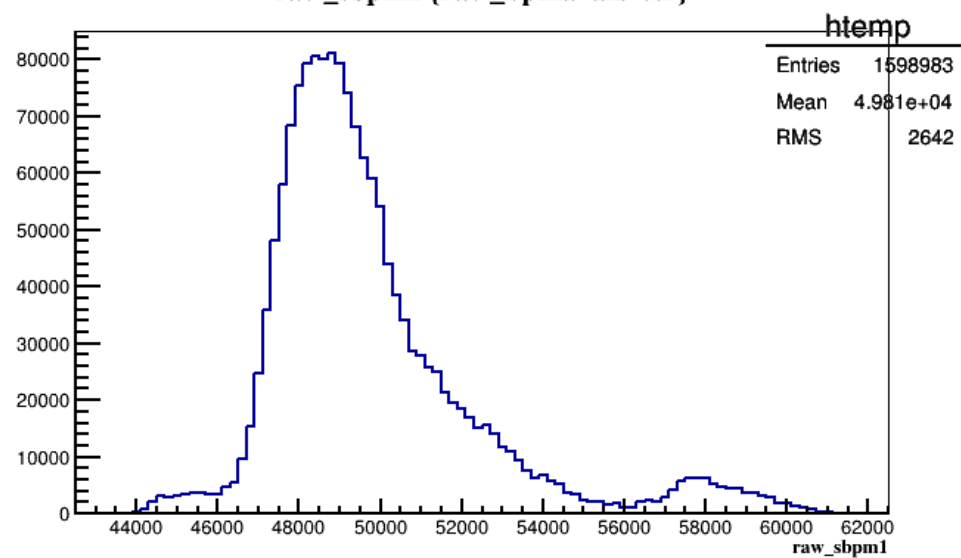
raw\_sbpm1:Entry\$ {raw\_bpmavail>0.5}



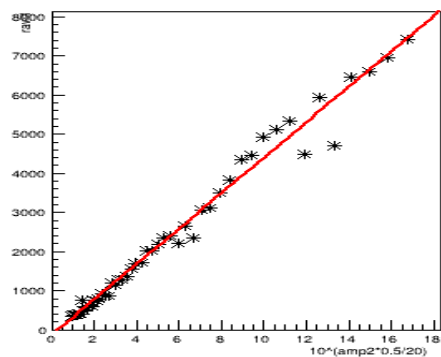
raw\_fbpm1 {raw\_bpmavail>0.5}



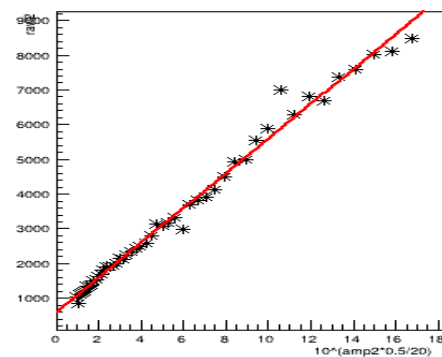
raw\_sbpm1 {raw\_bpmavail>0.5}



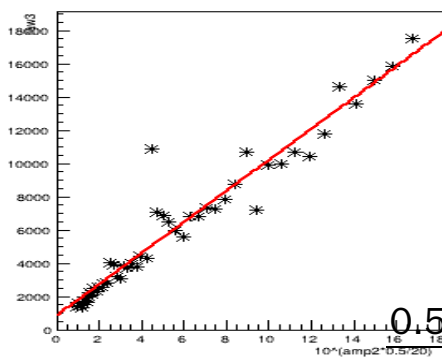
amp2 vs raw1



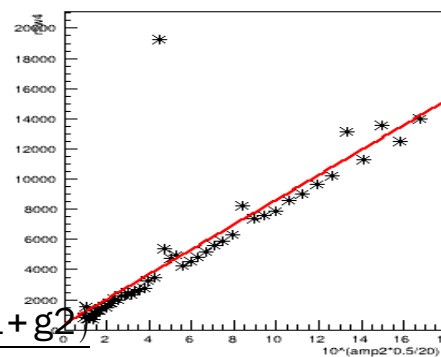
amp2 vs raw2



amp2 vs raw3



amp2 vs raw4



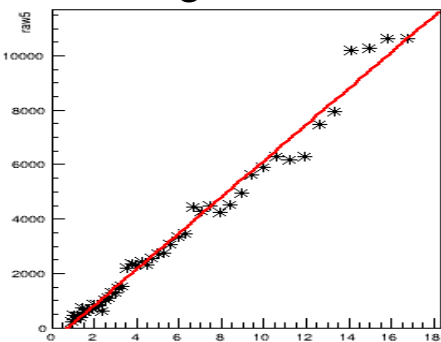
Raw signal

signal at ADC  $\propto 10$ 

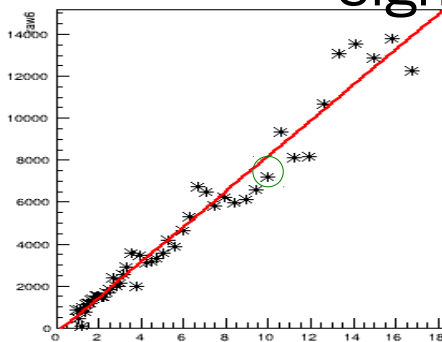
20

$$0.5 * (g1 + g2)$$

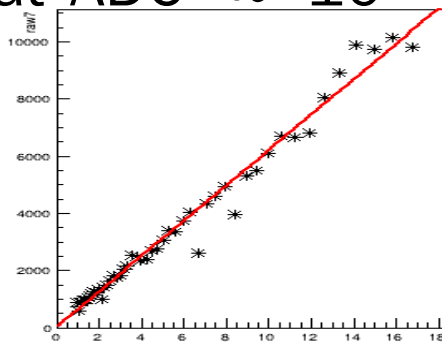
amp2 vs raw5



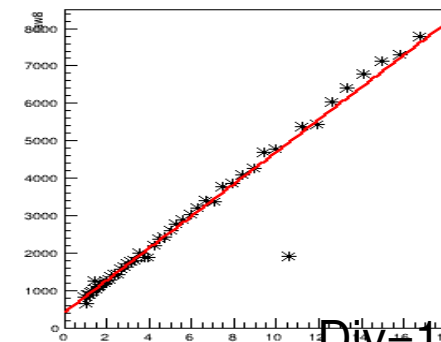
amp2 vs raw6



amp2 vs raw7

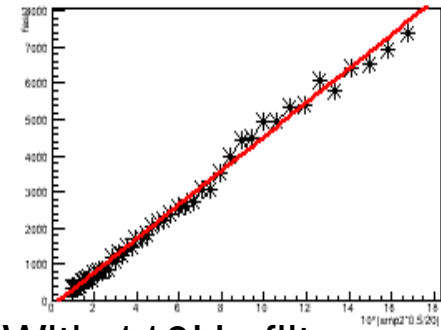


amp2 vs raw8

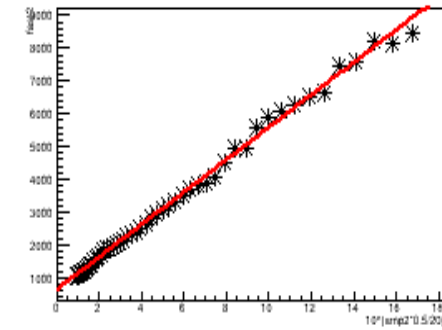


Div=1

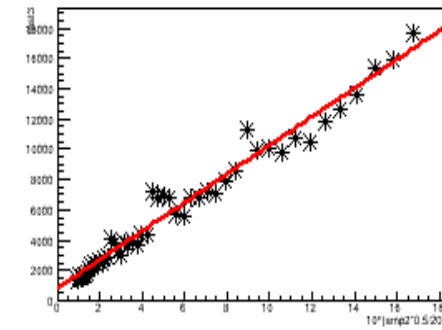
amp2 vs fast1



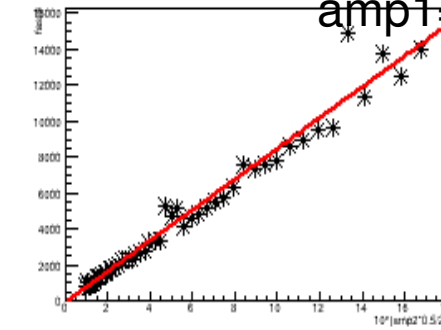
amp2 vs fast2



amp2 vs fast3



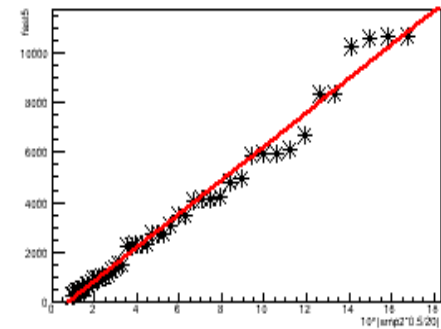
amp2 vs fast4



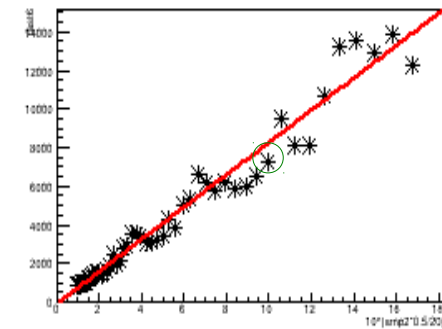
amp1=1

With 110Hz filter

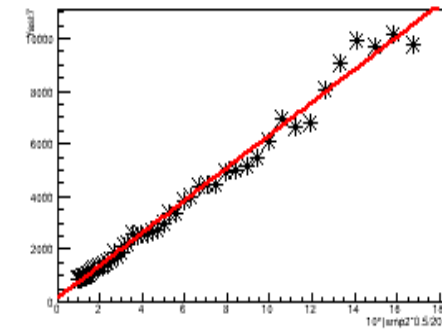
amp2 vs fast5



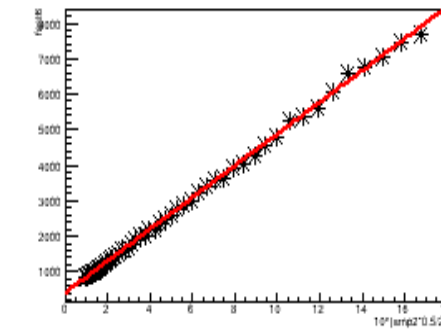
amp2 vs fast6

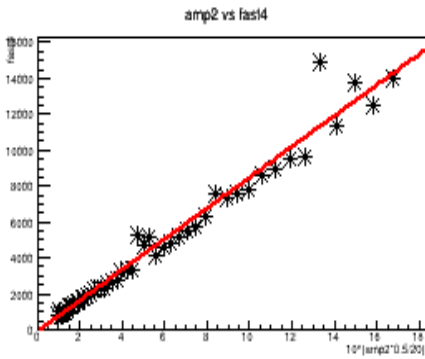
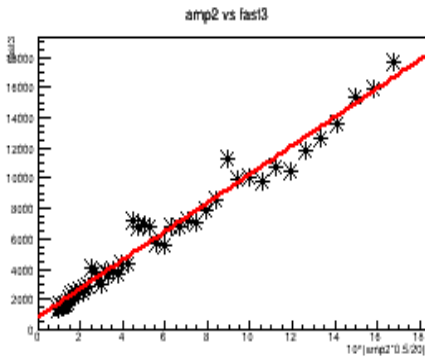
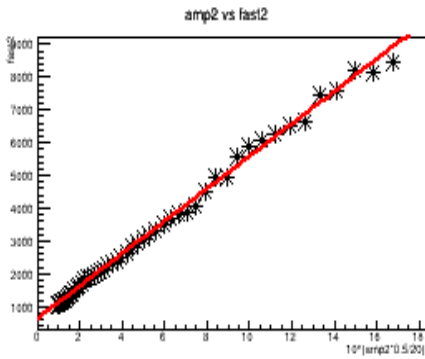
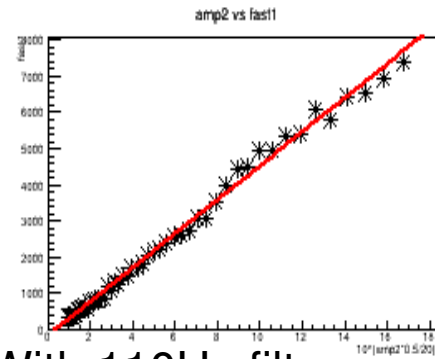


amp2 vs fast7

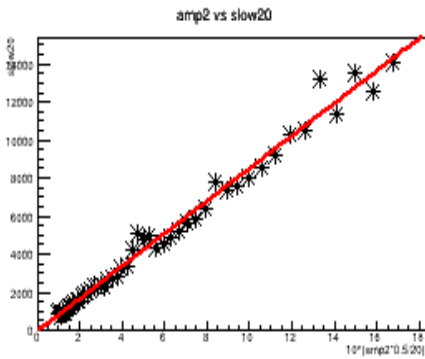
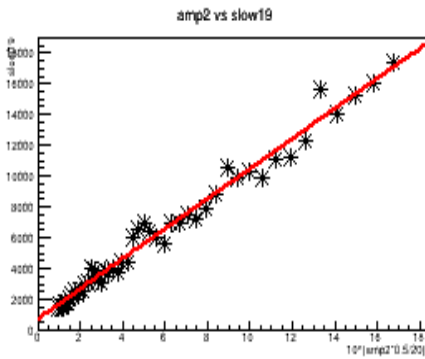
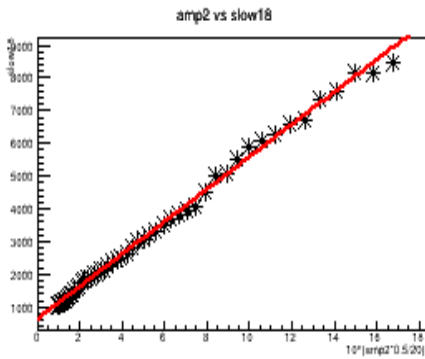
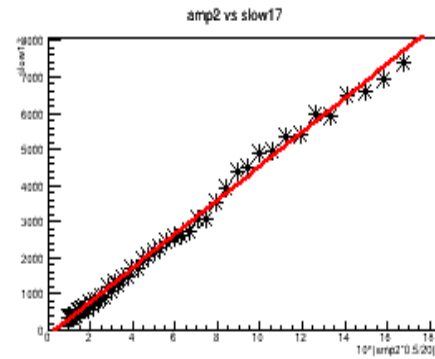
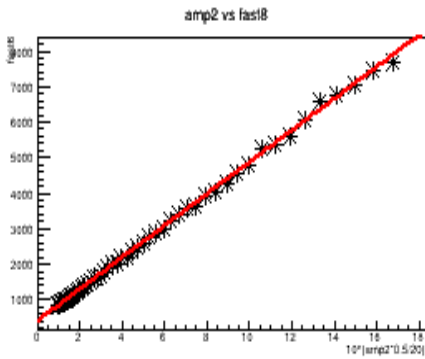
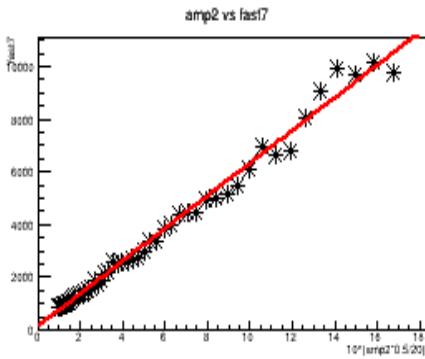
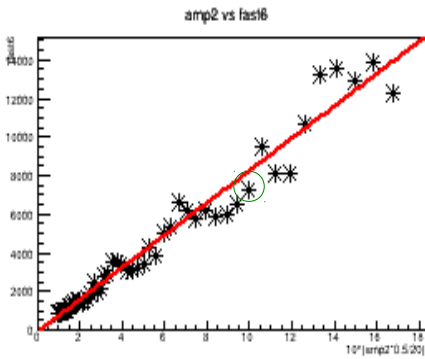
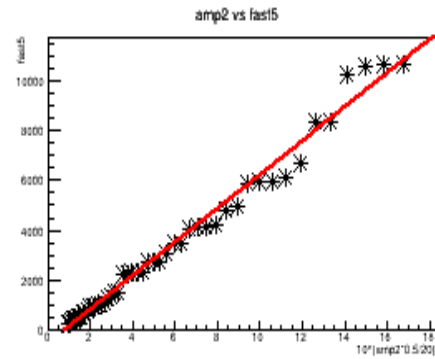


amp2 vs fast8

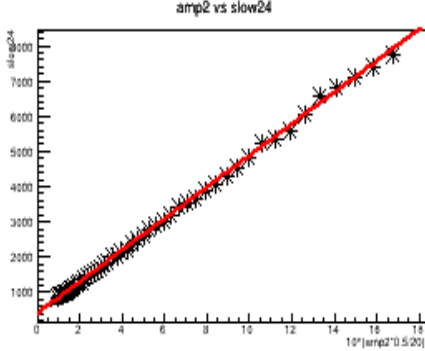
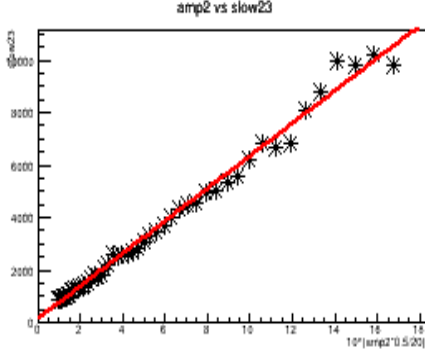
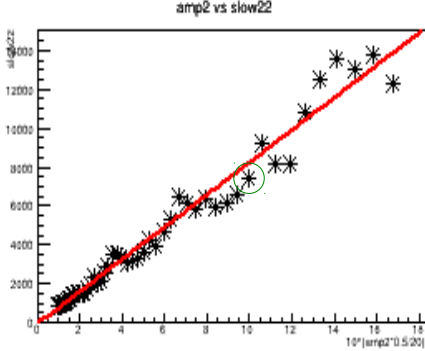
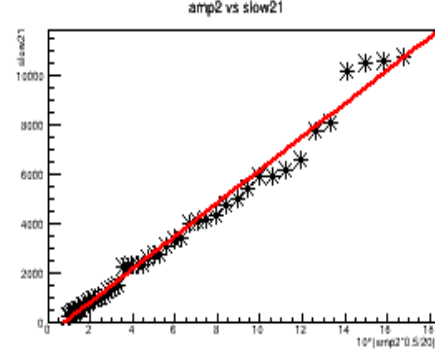


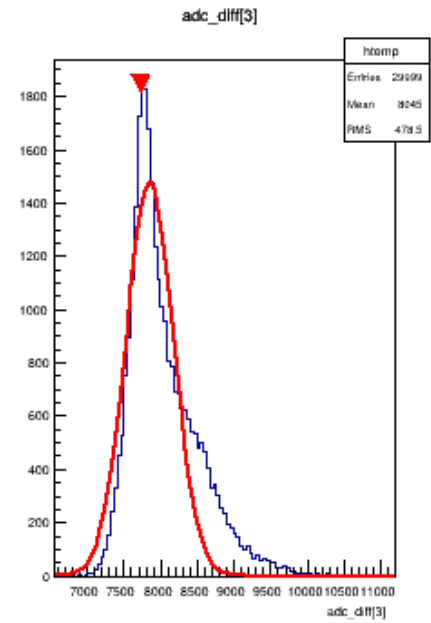
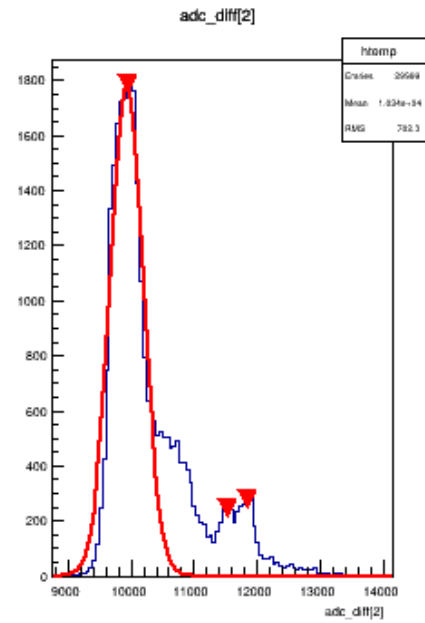
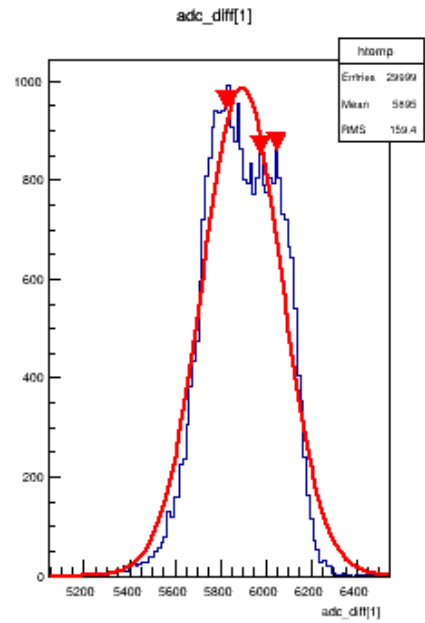
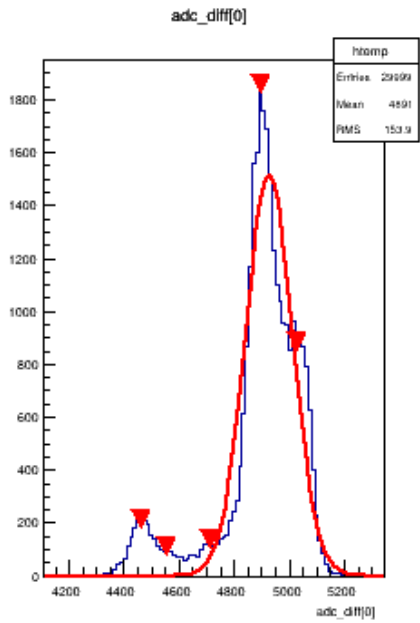


With 110Hz filter

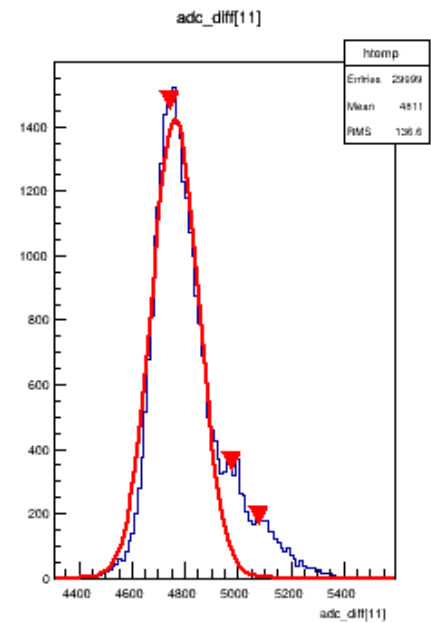
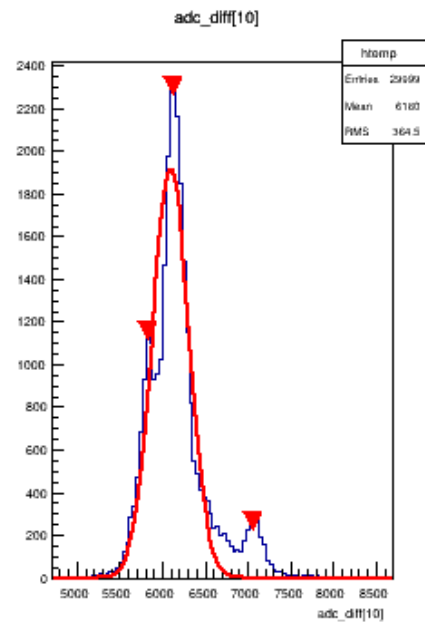
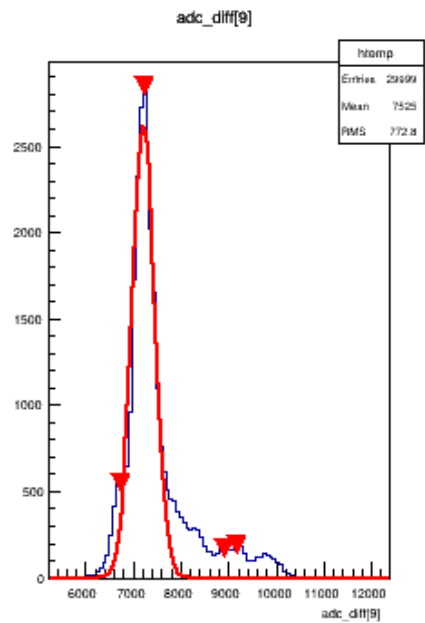
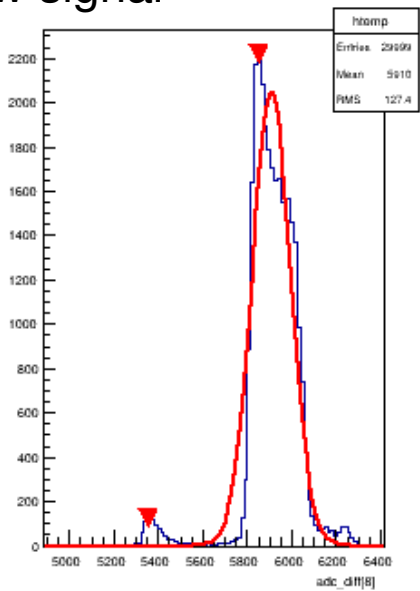


With 2Hz filter

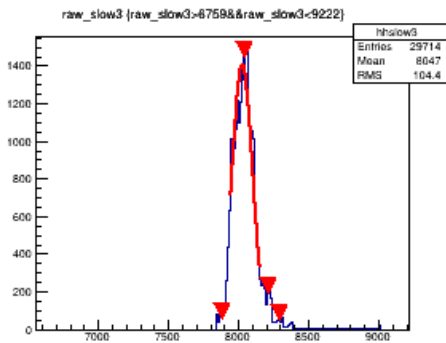
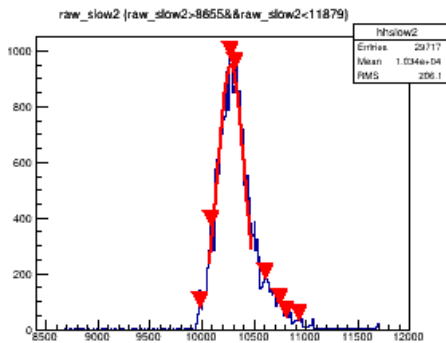
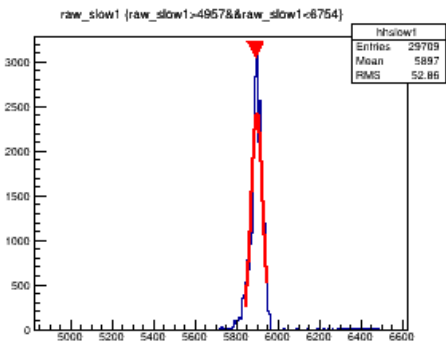
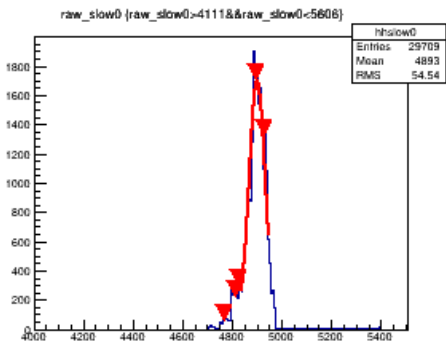
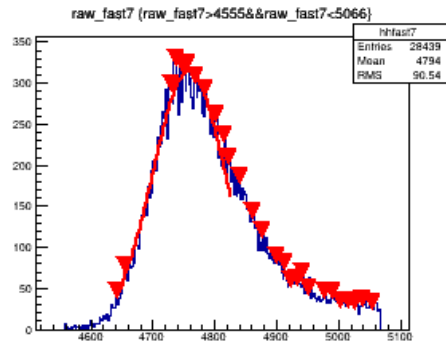
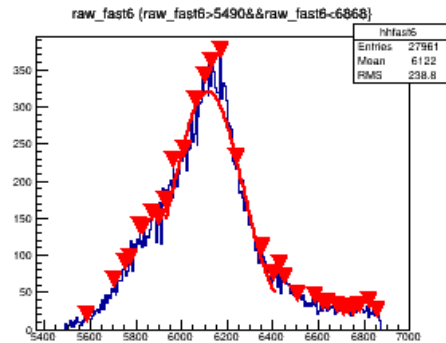
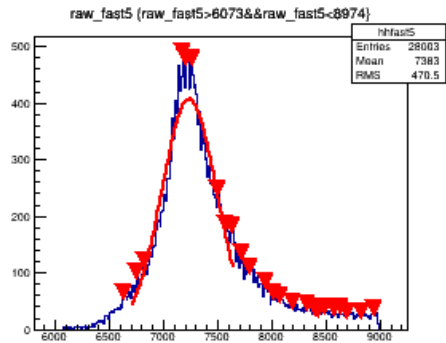
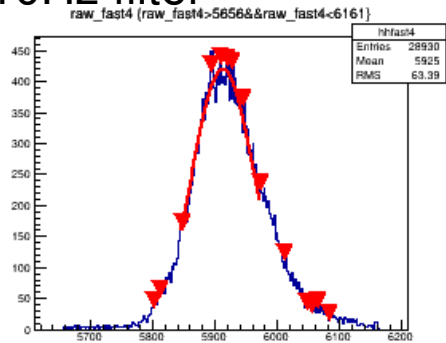
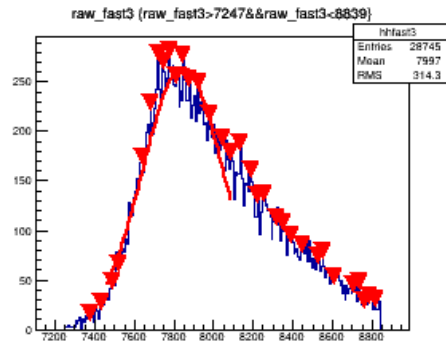
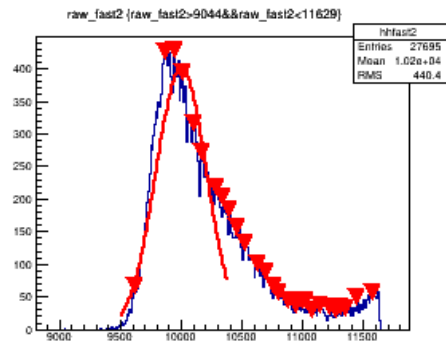
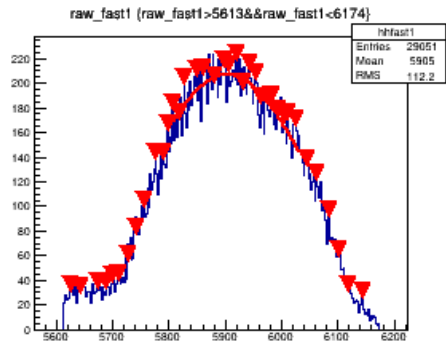
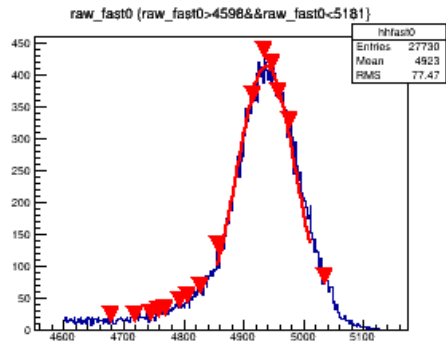




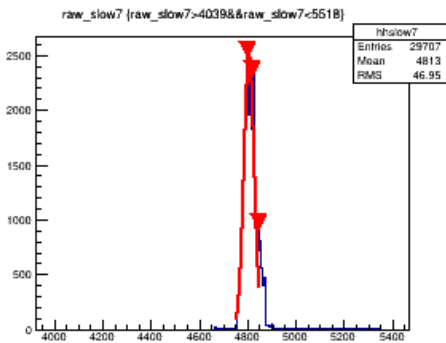
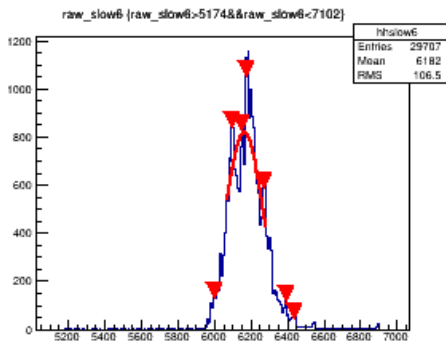
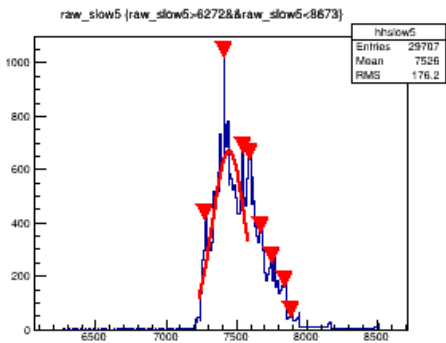
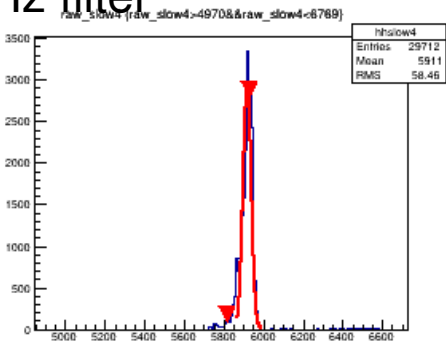
## Raw signal adc\_diff[a]



# 110Hz filter



# 2Hz filter



bpm job remain

Mix raster related code back to beampackage

**Find a method to let current effect minimum**

Carefully calibrate bpm for all periods

Calibrate fast raster and slow raster

Technote & wikipage