

# BCM Calibration Procedure

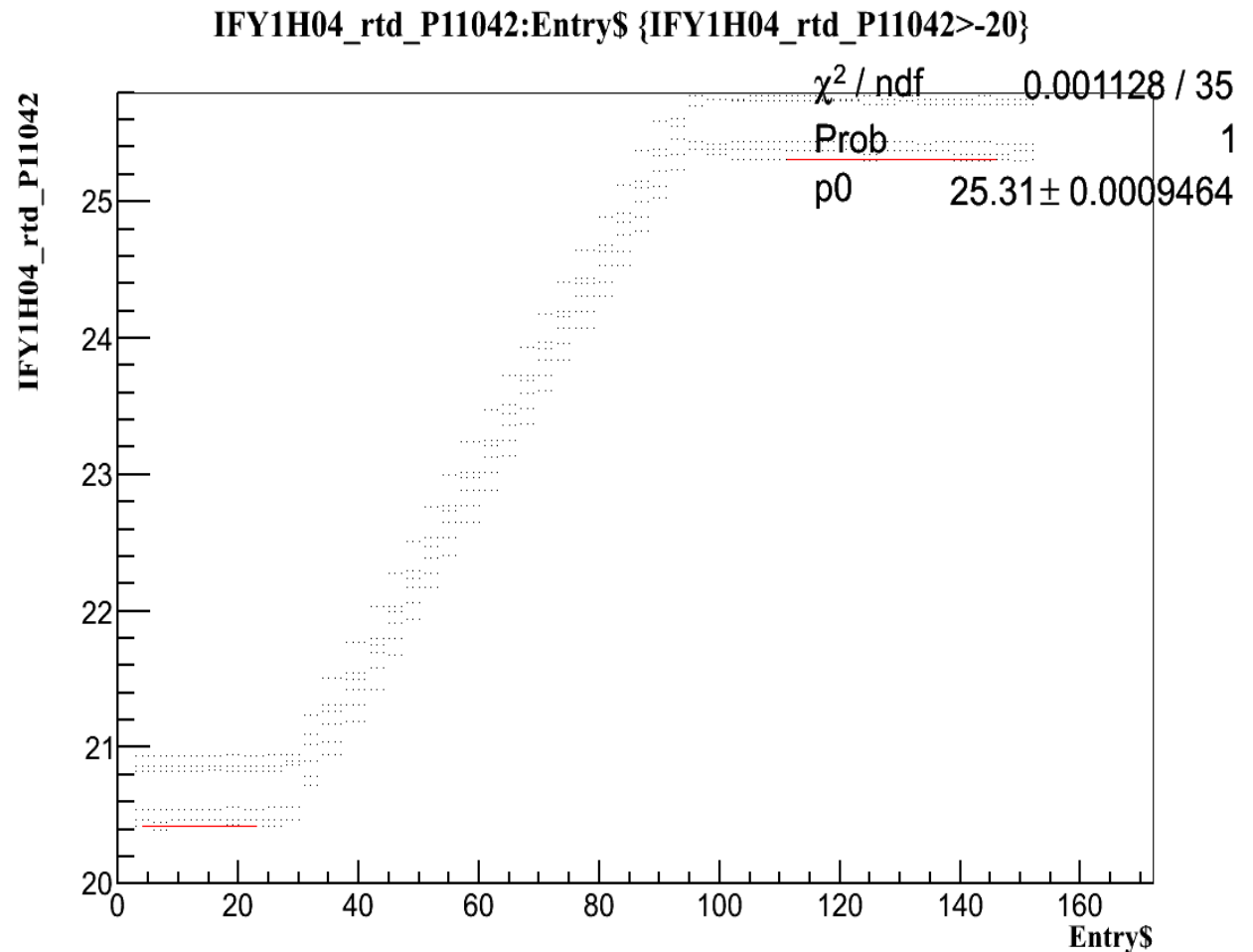
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# 1. Tungsten Calorimeter Temperature

1. get average temperature before and after beam
2. get temp rise for 6 RTDs and average them
3. heat capacity is 8568.6 J/K, given by Alexandre  
calculate total charge by using(C):  
$$\text{avetemp(K)} * 8568.6(\text{J/K}) / \text{energy(eV)}$$

6 RTD:

"IFY1H04\_rtd\_P11042",  
"IFY1H04\_rtd\_P11044",  
"IFY1H04\_rtd\_P11047",  
"IFY1H04\_rtd\_P11048",  
"IFY1H04\_rtd\_P11051",  
"IFY1H04\_rtd\_P11055"

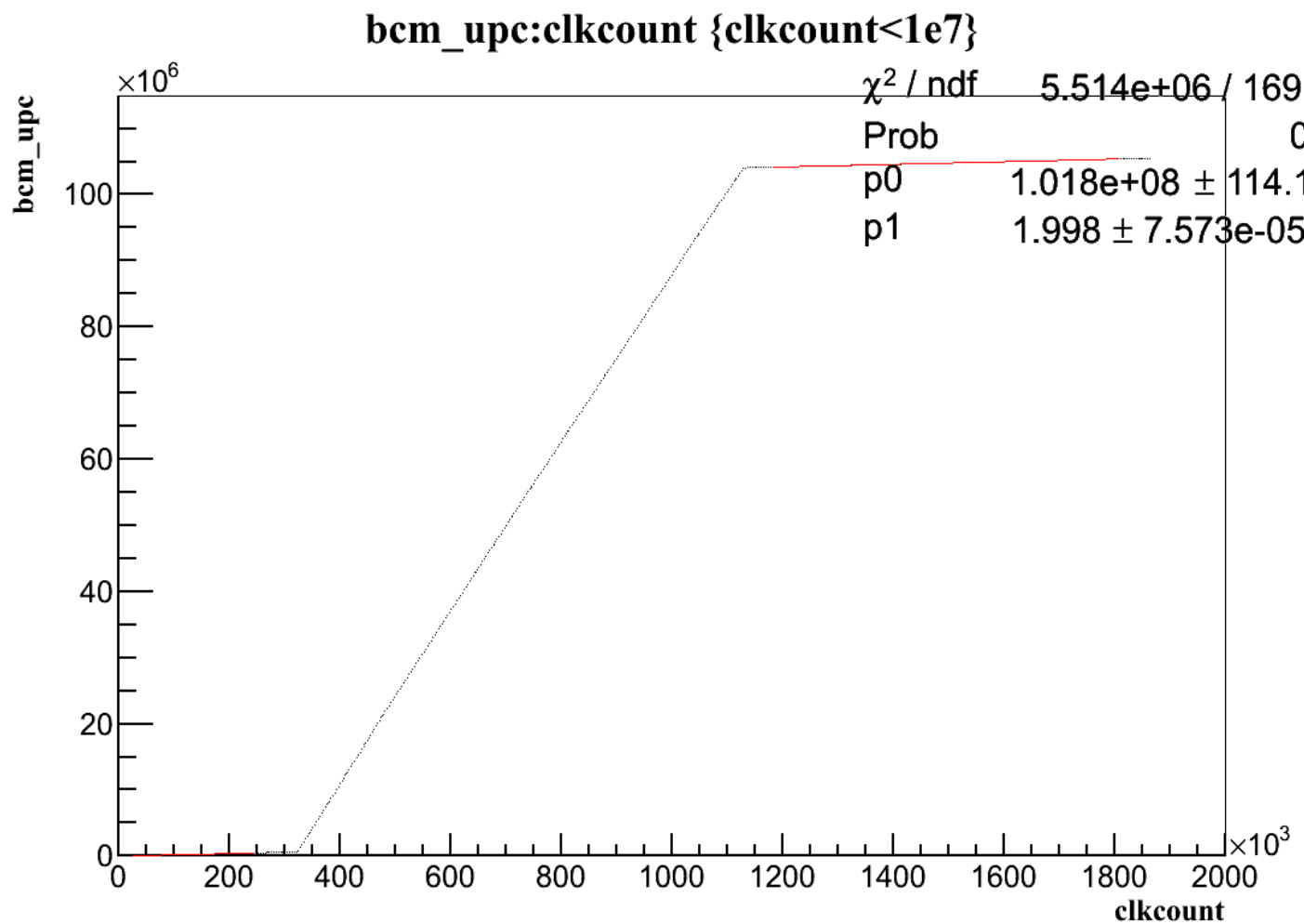


## 2.SIS3800 scaler calibration

- 1.pol1 fit before and after beam
- 2.get slope pedestal(ped) from one of fit(no beam)
- 3.choose 2 points,1 before,1 after,calculate count rise,and pedestal count rise
- 4.total count=count rise-pedestal count rise
- 5.slope=charge/total count

Charge=  
 $\text{slope} * (\Delta A - \text{ped} * \Delta \text{clockcount})$

Current=  
 $\text{slope} * (\text{rate} - \text{ped} * \text{clockrate})$



## 2.SIS3801 scaler calibration

--two method

Virtual scaler:

- 1.same procedure as sis3800,  
Total count of plus and minus virtual scaler

Scaler ring buffer:

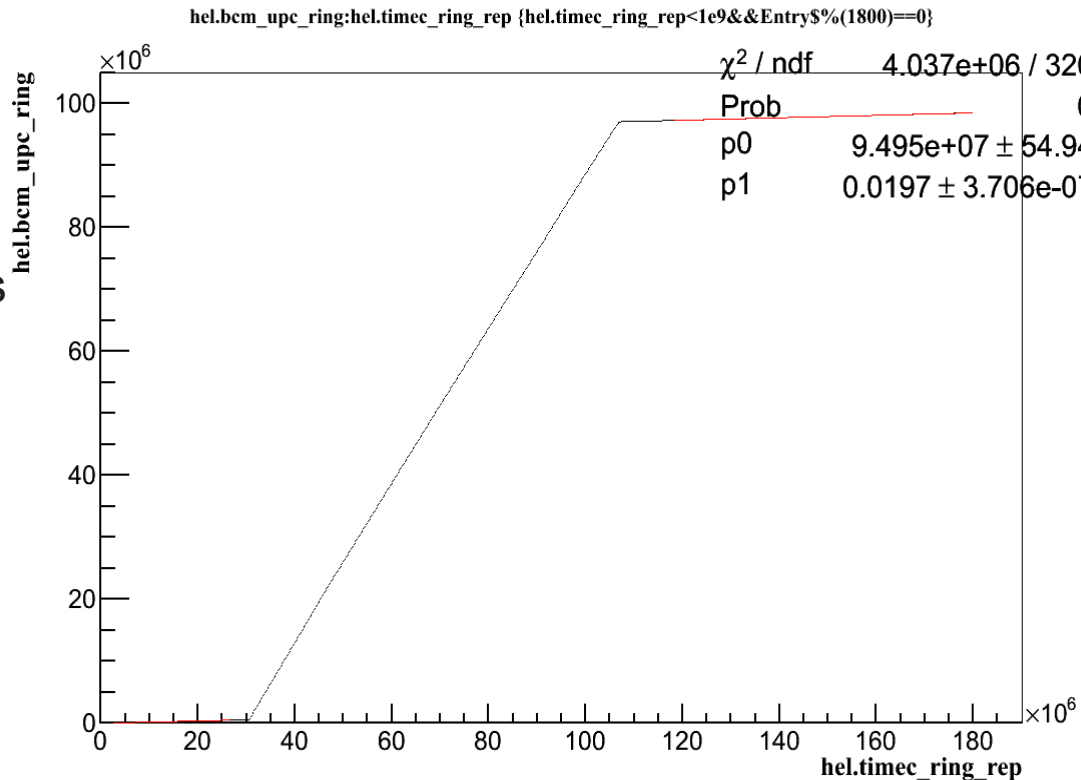
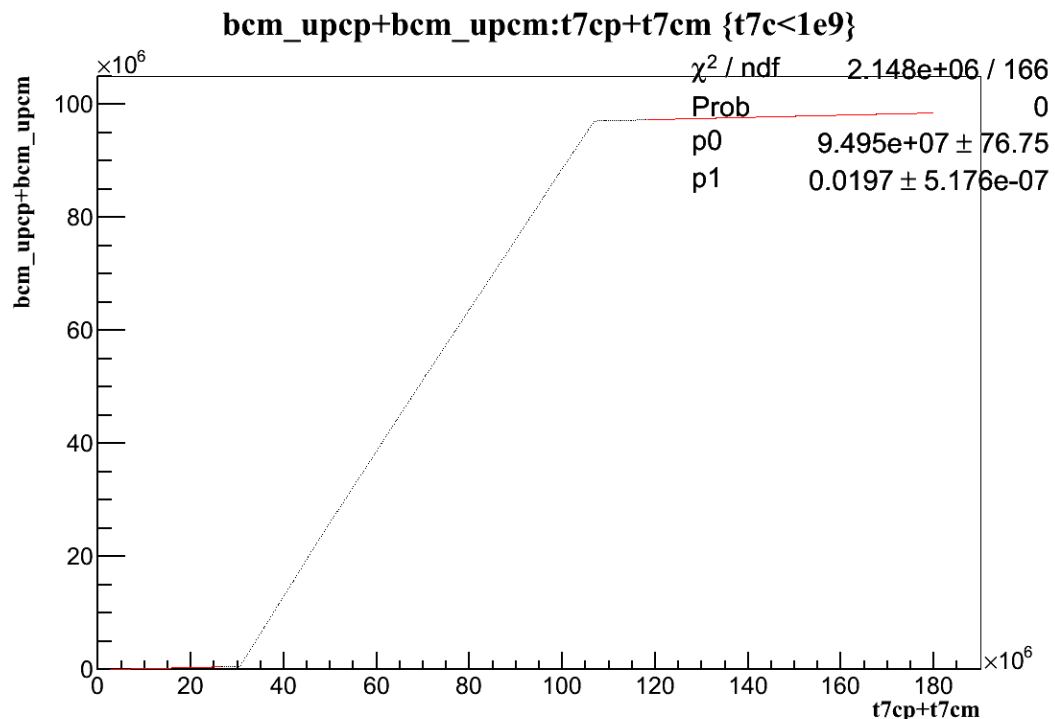
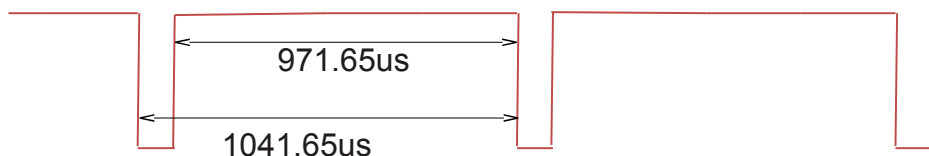
- 1.check if data lost by using helicity predictor
- 2.replay and accumulate the ringbuffer value
- 3.same procedure as sis3800,  
Ring count vs Ring time count

Charge=

$$\text{slope} * (\Delta A - \text{ped} * \Delta \text{clockcount})$$

Current=

$$\text{slope} * (\text{rate} - \text{ped} * 103.7\text{k/s} * 971.65\text{us}) / 1041.65\text{us}$$

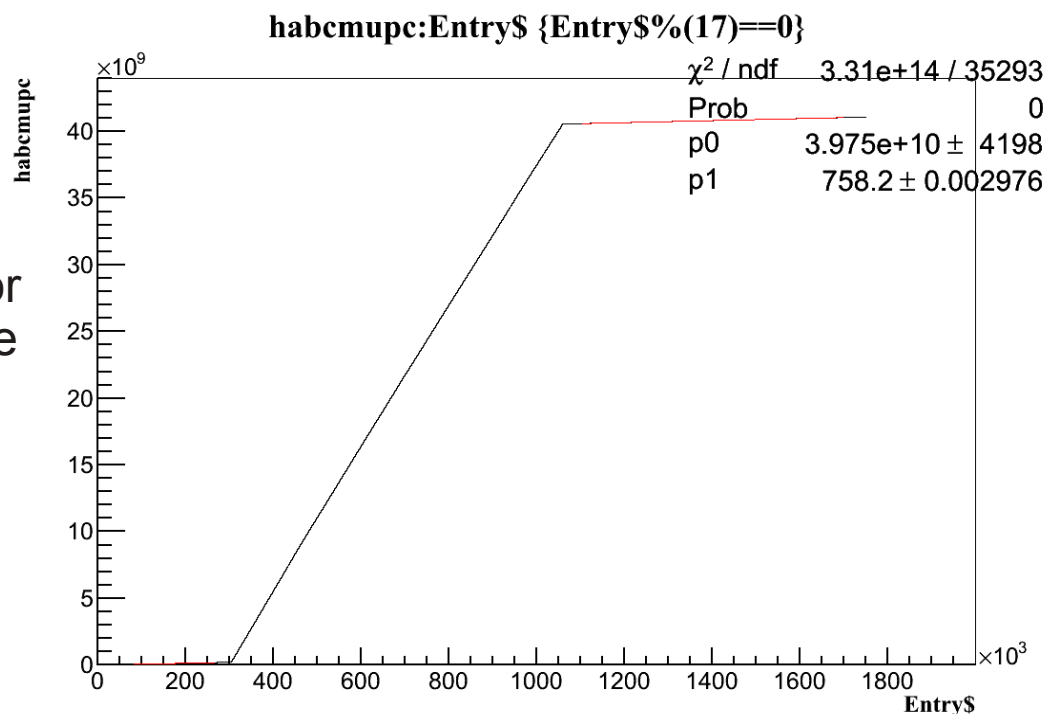


### 3.Happex calibration

- 1.check if data lost by using helicity predictor
- 2.replay and accumulate the ringbuffer value
- 3.same procedure as sis3800

Happex value:entry

Happex crate triggered by helicity



Charge=

$$\text{slope} * 875 \text{us} * (\Delta A - \text{ped} * \Delta \text{Entry})$$

Current=

$$\text{slope} * (\text{rate} - \text{ped}) * 875 \text{us} / 1041.65 \text{us}$$

