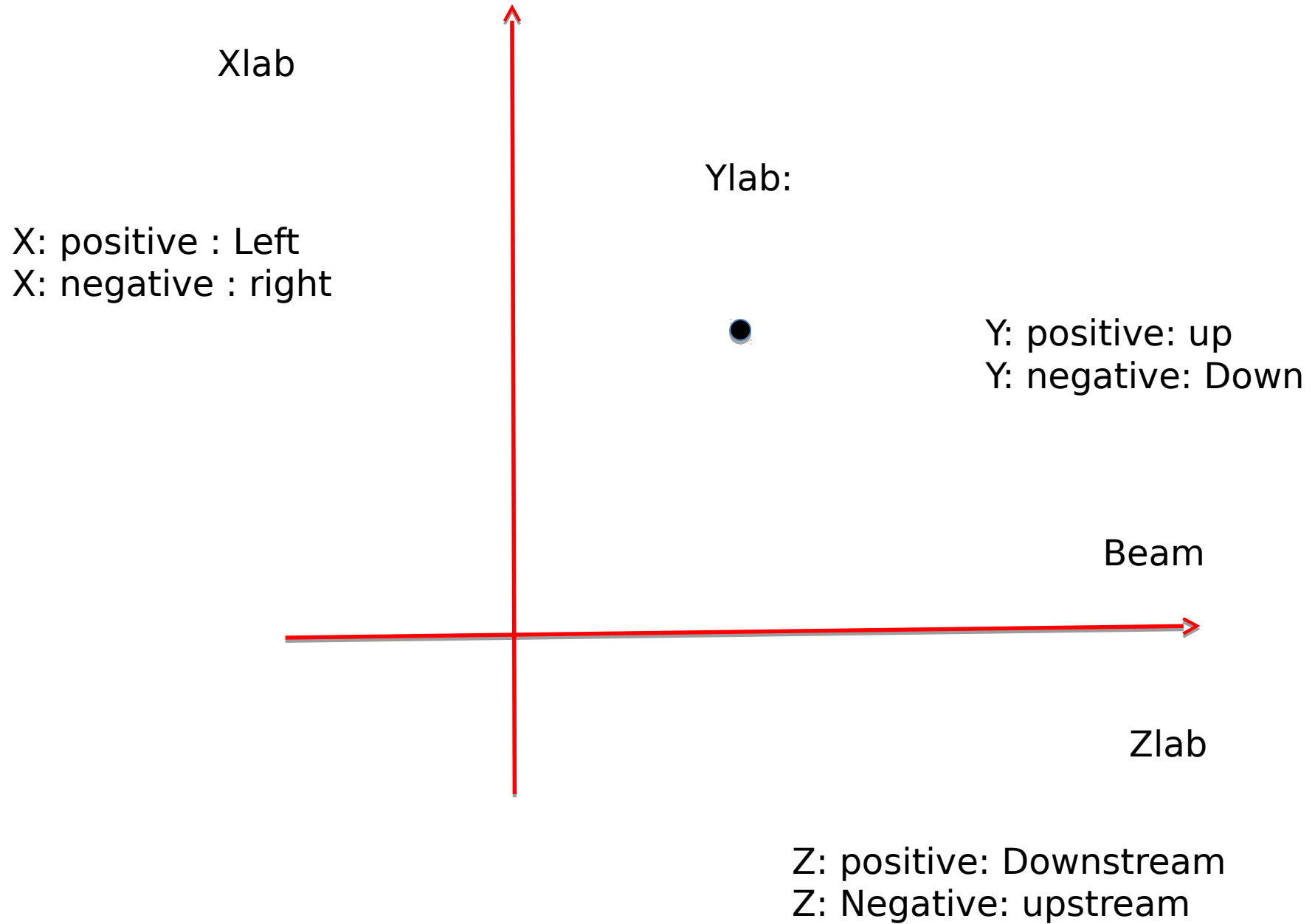


# Ar weekly meeting:

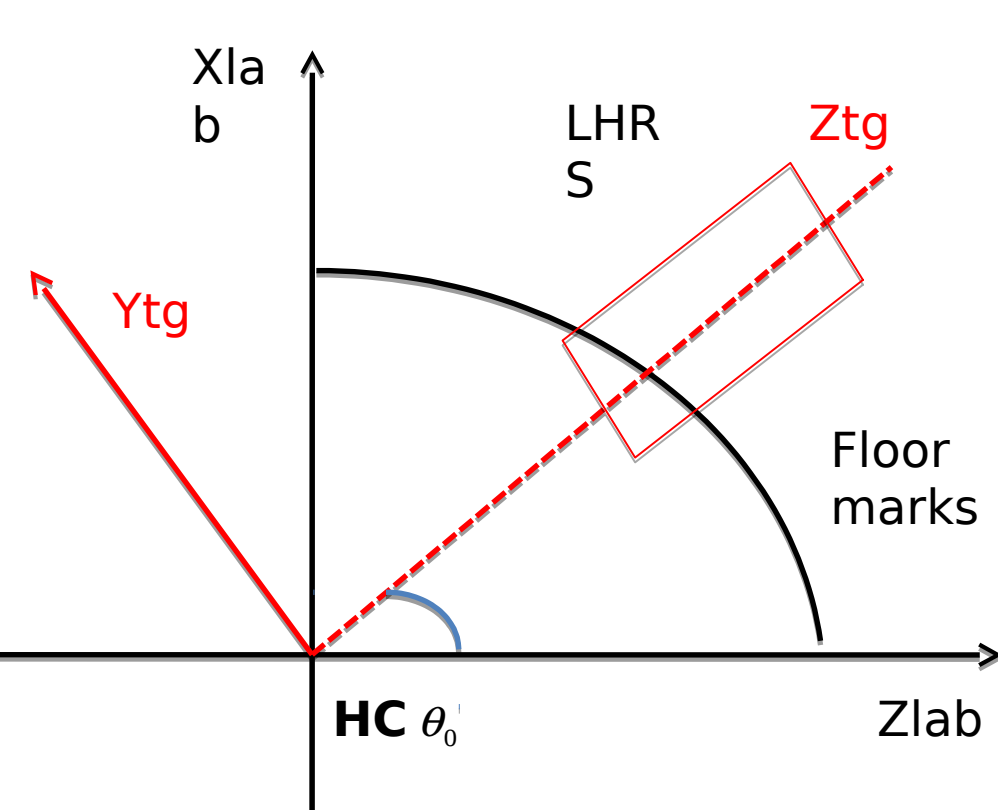
Dien Nguyen : 06/02/2017

- Using Servey and Data to check the offset remain in Optics matrix
- Reproduce the servey to correct the spectrometer offset ( to get the real angle of spectrometer)

## 1.1 Hall Coordinators system: (HCS)



## 1.2 Target coordinators system for Both arms Ideal case

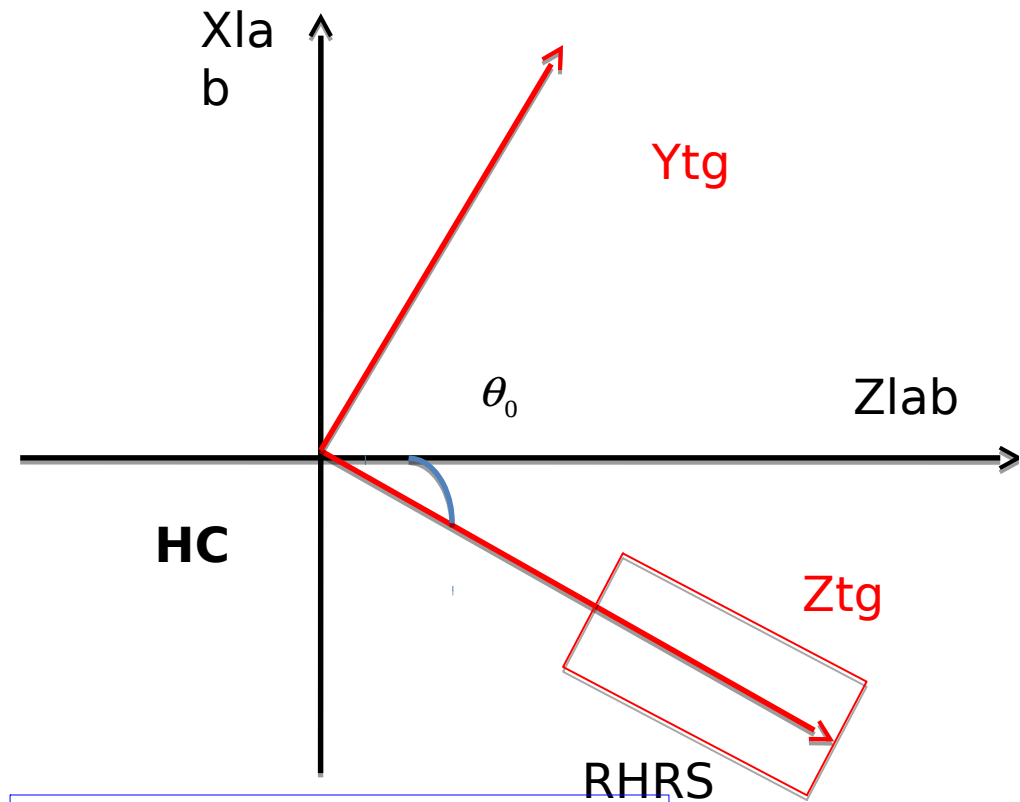


### **LHRS: Convention**

Ztg: positive: Downstream  
Ztg: negative : Upstream

Ytg: positive: Upstream  
Ytg: Negative:  
Downstream

Xtg: positive: pointing  
down



### **RHRS : Convention**

Ztg : positive:  
Downstream  
Ztg: negative: upstream

Ytg: positive:  
Downstream  
Ytg: negative: upstream

Xtg: positive: pointing  
down

# Misspoint study for checking Servey and Optics:

Step1: Study contribution of every offset to Ytg ( one at a time)

1. No physical offset only the offset built into reconstruction optics matrix element

First term :  $Y_{tg} = Y_{off}$

2. Spectrometer misspoint

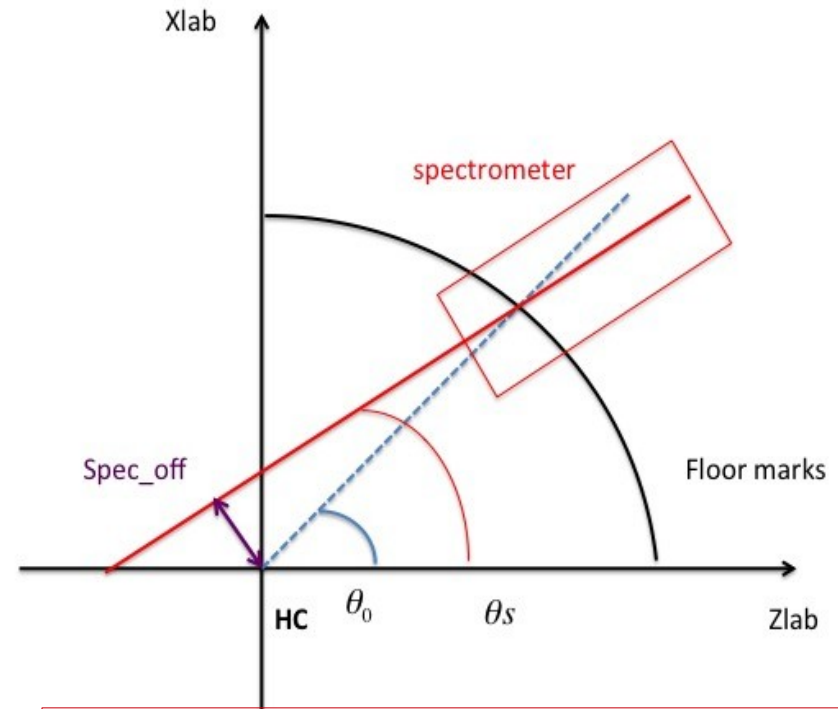
Convention:

Specoff: + Upstream  
- Downstream

Second term:  $Y_{tg} = -Specoff$



Apply for both specoff upstream and Downstream and true angle smaller or bigger the setting angle

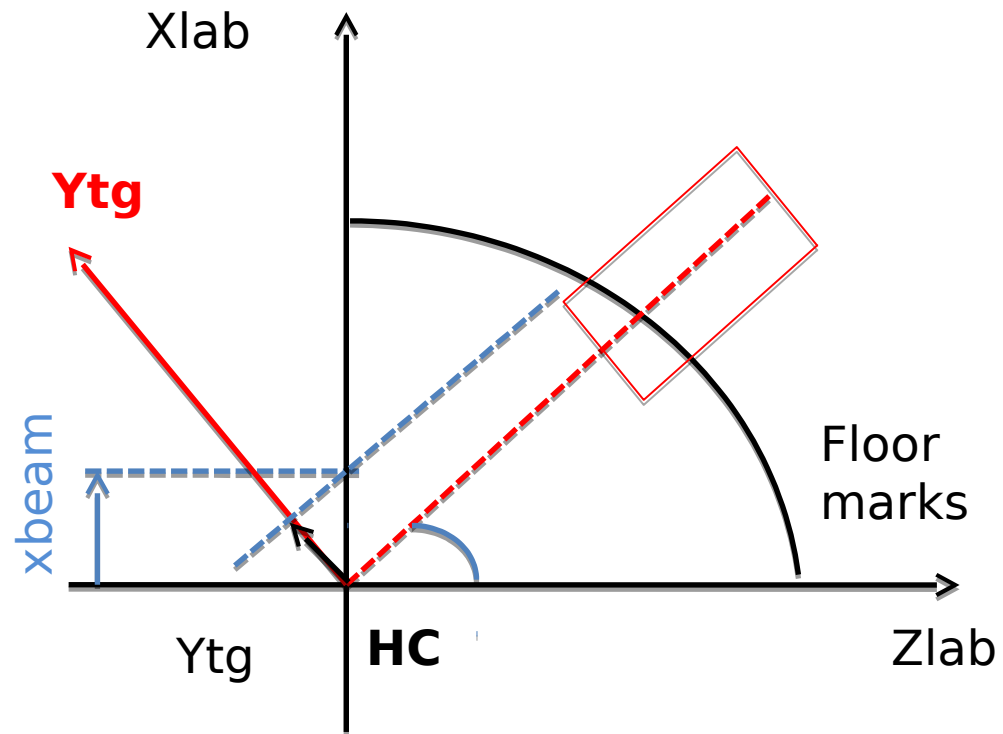


Angle:  $\theta_s = \theta_0 - \Delta \theta$

Where :  $\Delta \theta = Specoff / R$

R : 8.458 m

### 3. Beam offset:



Convention:

$X_{beam}$  : + left

$X_{beam}$ : - Right

$$\text{Third term : } Y_{tg} = x_{beam} * \cos(\theta_s)$$



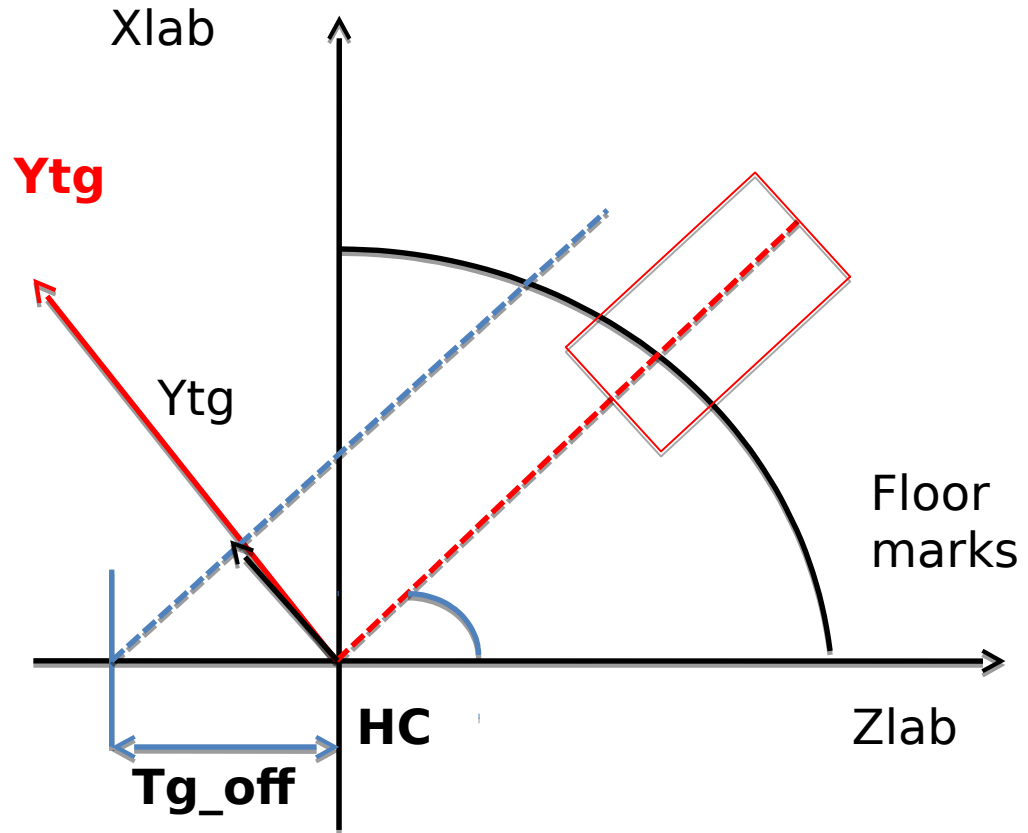
This applies for both  $x_{beam}$  left and right

#### 4. Target offset:

Convention:

tg\_off : + downstream

tg\_off: - upstream



$$\text{Fourth Term : } Y_{th} = -tg\_off * \sin(\theta_s)$$



This applies for both tg\_off upstream and downstream

Final corrected formula for misspoint study

$$Y_{tg} = -\text{Specoff} - Tg\_off * \sin(\theta_s) + x_{beam} * \cos(\theta_s) + Y\_off$$

Step2: Using the survey to reproduce the result to check the optics

**Using The survey: A1775 ( 02/28/2017)**

Angle : 15.541

Specoff : 0.98 mm upstream

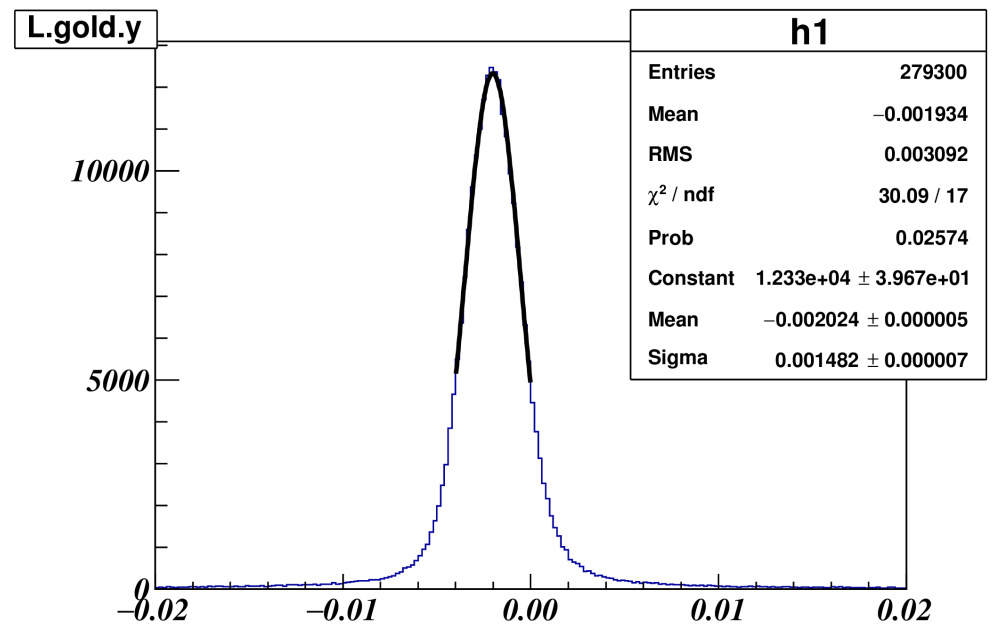
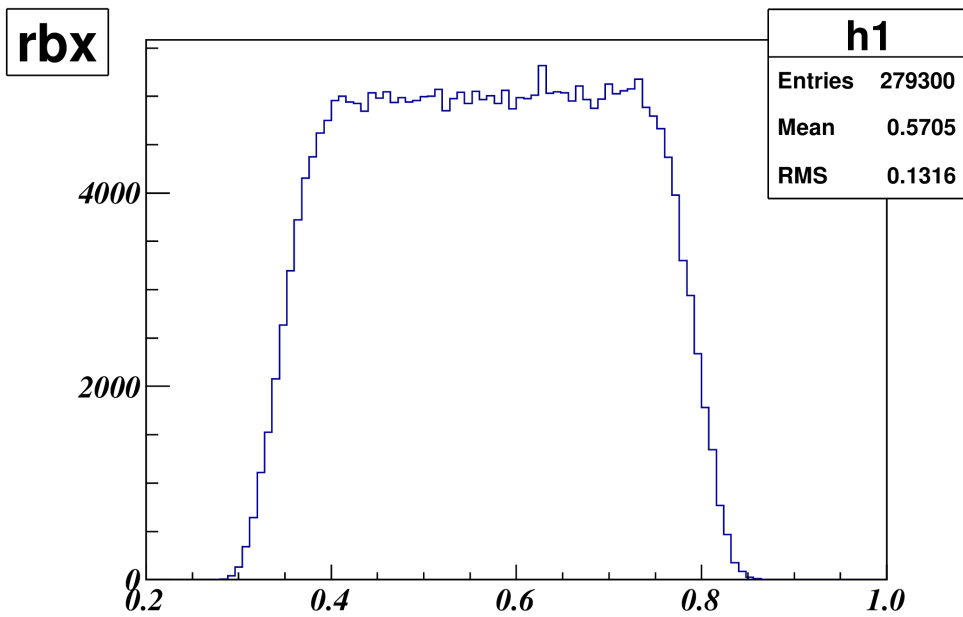
Asuming:  $Tg\_off = 0$  ( I dont have this information in detail)

Using data to Get the  $x_{beam}$  and  $Y_{tg}$  ( next page)

$X_{beam}$ : 0.57 mm

$Y_{tg} = - 2.024$  mm

But please look at  
next page



Run: 731

Put everything in formula:

$$Y_{\text{off}} (\text{from optics}) = \sim 1.6 \text{ mm}$$

- This looks like a big offset. But we can not sure about this yet:

1. We did not consider about tg\_off.

2. I did not check Xbeam carefully

3. This is just rough check need to check more detail for different angle to see how this offset look like



