20171110
STATUS REPORT

Ahram lee

CERN data analysis

Data information

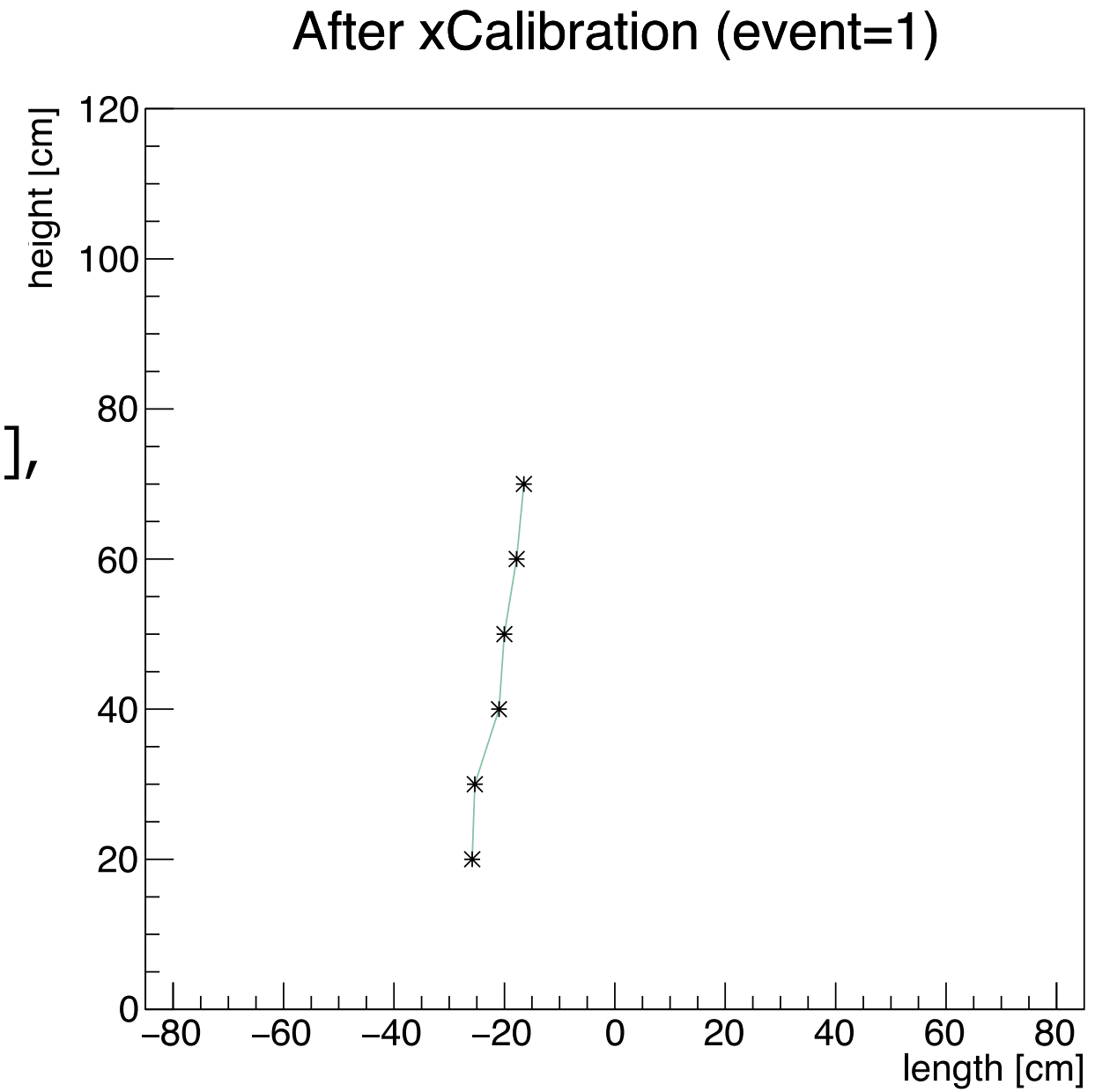
/dataRC_old/	#181	07-21 (3h)	11,528 entries	4bar trigger, th=200
	#202		19,632 entries	12bar trigger
/dataRC/	#48	08-17 ~ 08-18 (2d)	218,112 entries	6bar trigger, th=100
	#76	08-21 ~ 08-22 (2d)	177,860 entries	
	#120	08-25 ~ 08-29 (4d)	928,000 entries	
	#151	08-30 ~ 09-06 (7d)	1,502,436 entries	
	#170	bhokim(~10/2)	434,340 entries	
	#172	bhokim(10/2~)	204,244 entries	
	#174		518,896 entries	

CERN data analysis

2D trajectory reconstruction

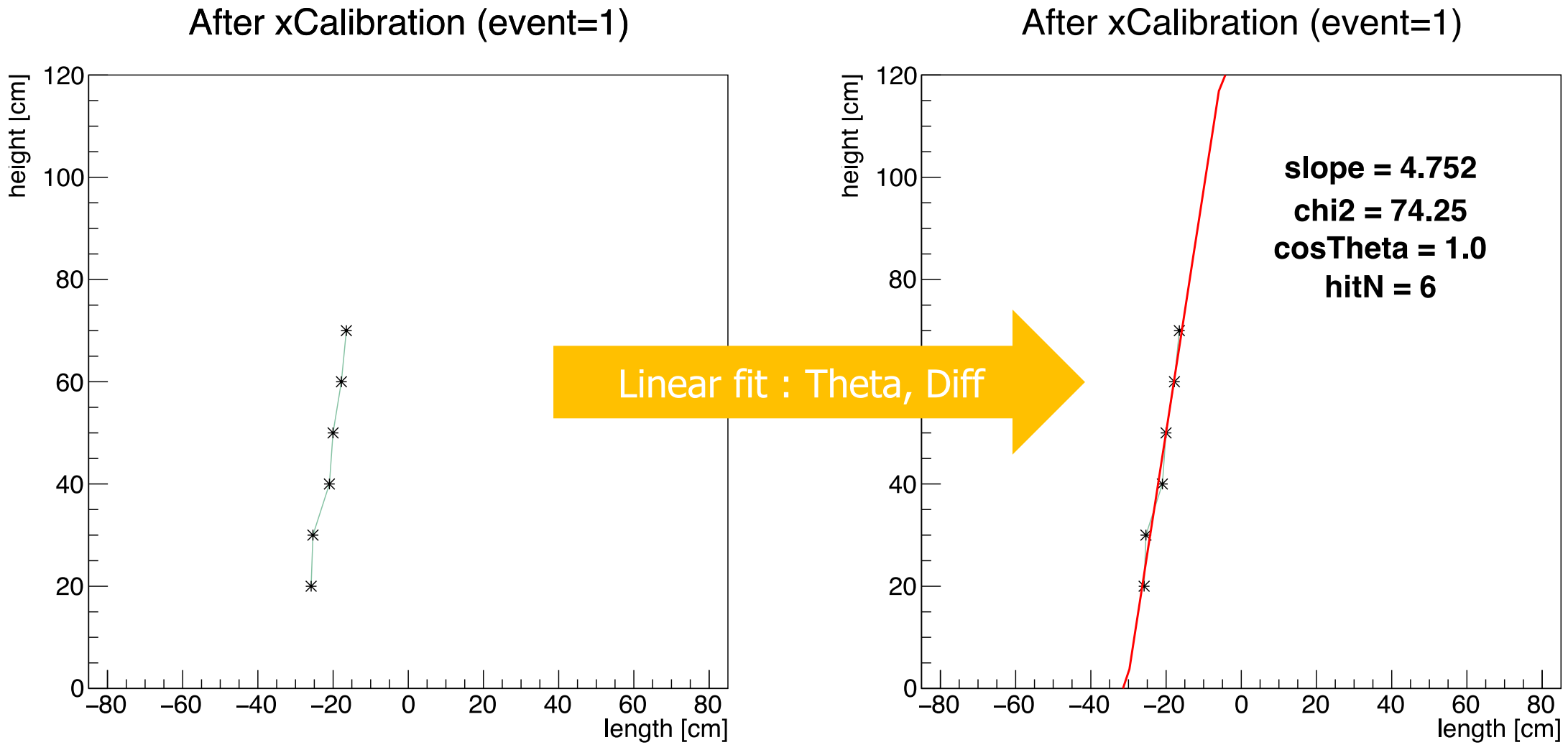
By conversion : dT[ns] → 170[cm]
Find hit positions of muon

If height of left/right signal > 100[ch],
represent a conversed dT position
and fit with the represented points.



CERN data analysis

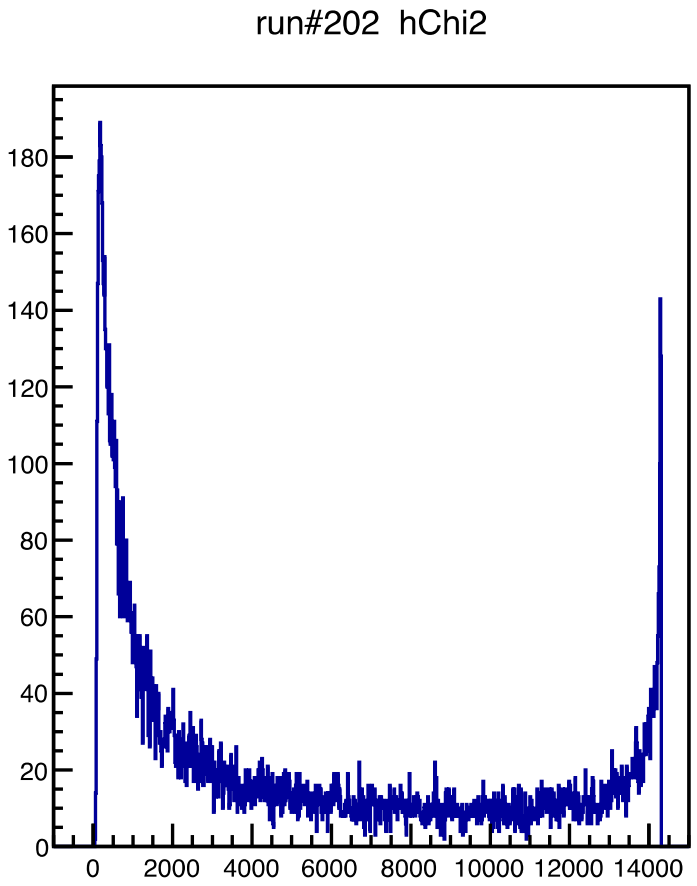
2D trajectory reconstruction

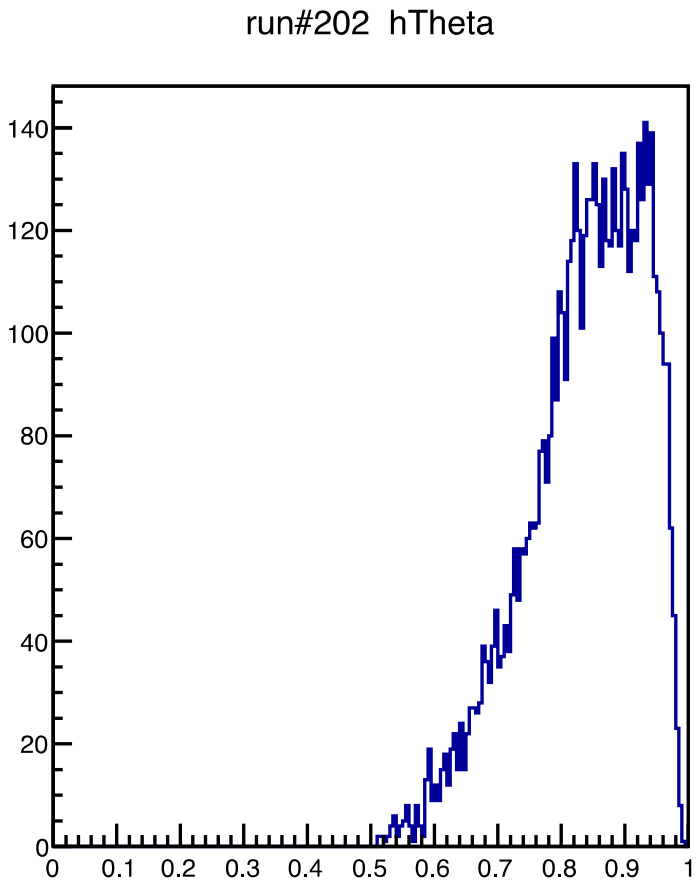


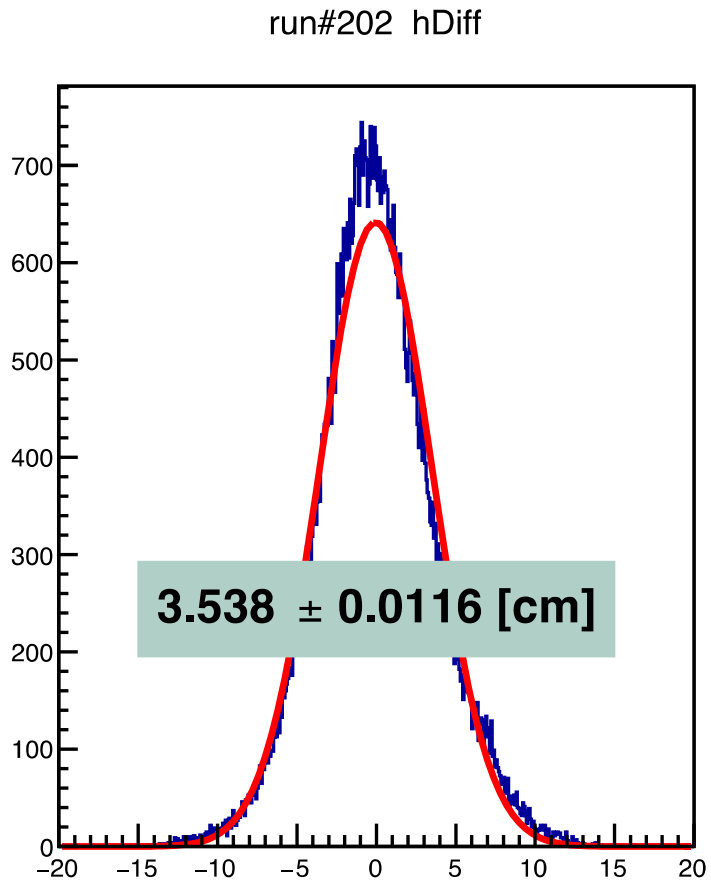
CERN data analysis

2D trajectory reconstruction

Histograms – chi2 < 1000 cut





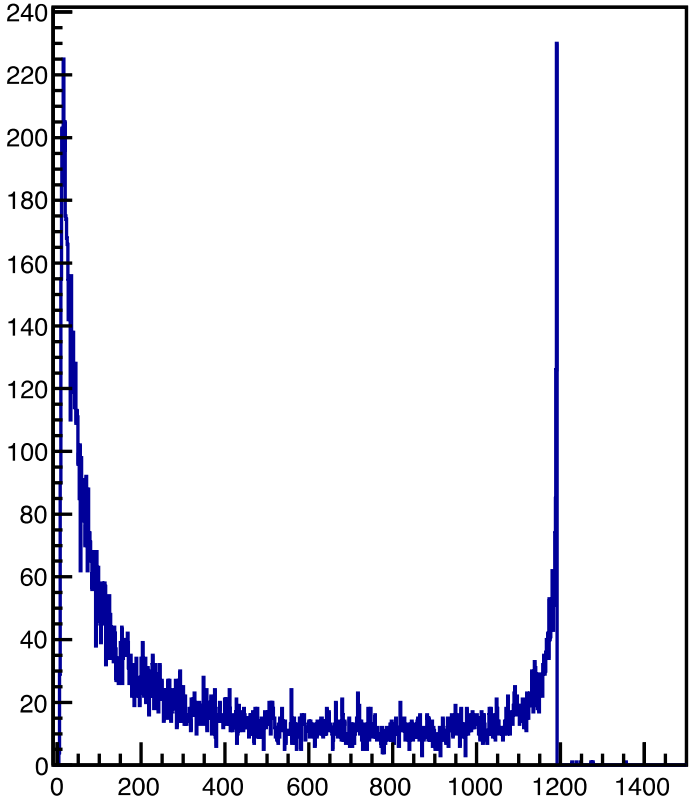


CERN data analysis

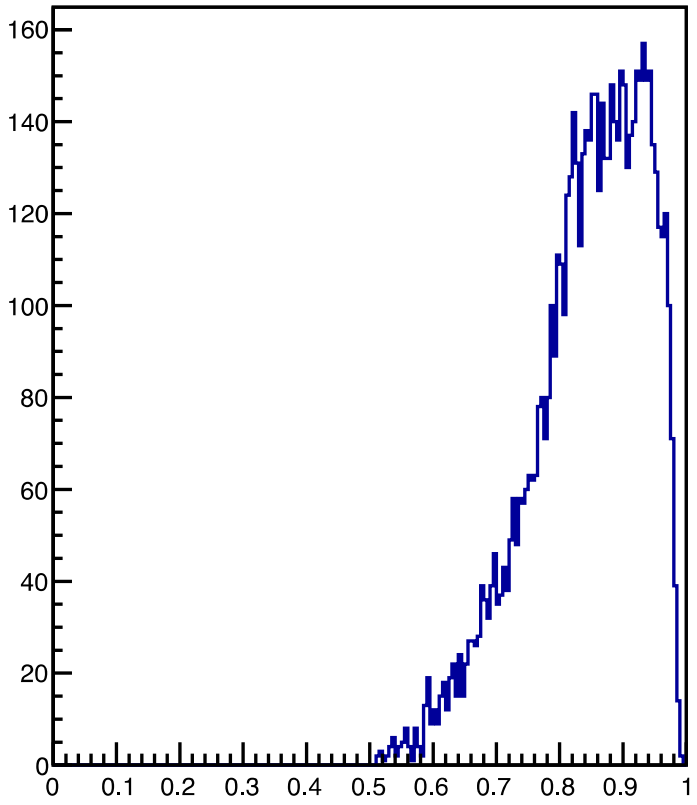
2D trajectory reconstruction

Histograms – chi2/hitN < 100 cut

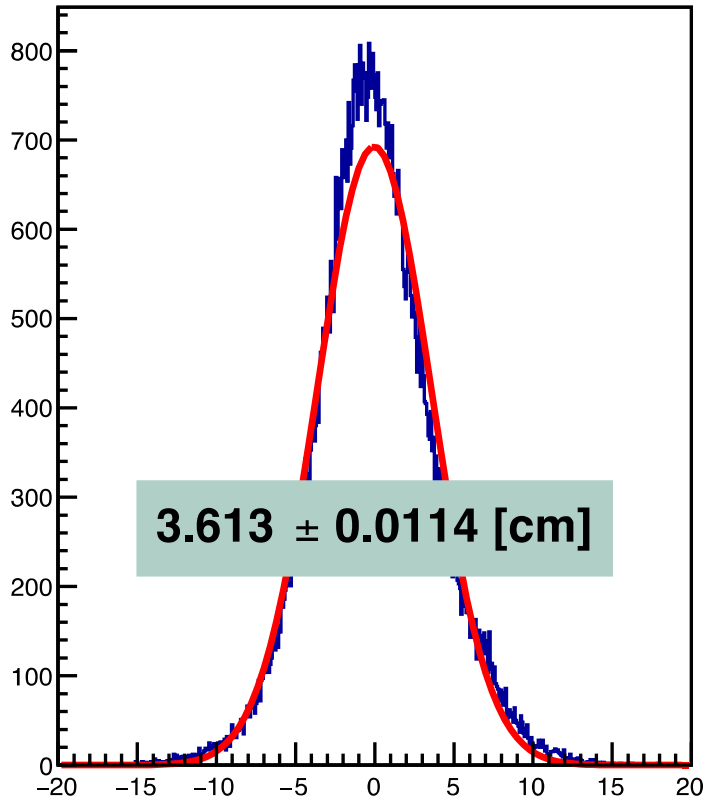
run#202 hChi2/hitN



run#202 hTheta



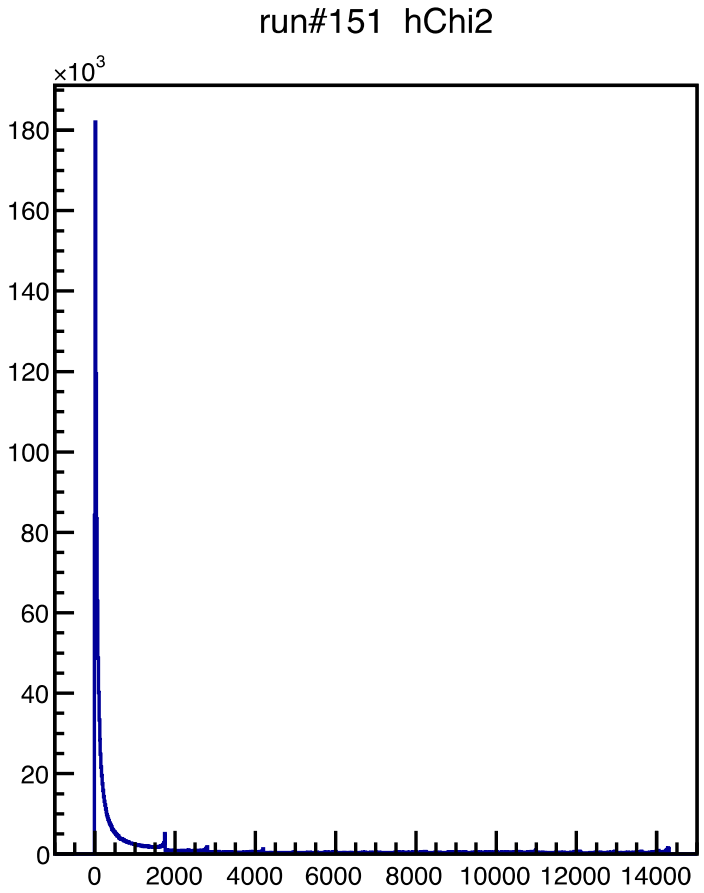
run#202 hDiff

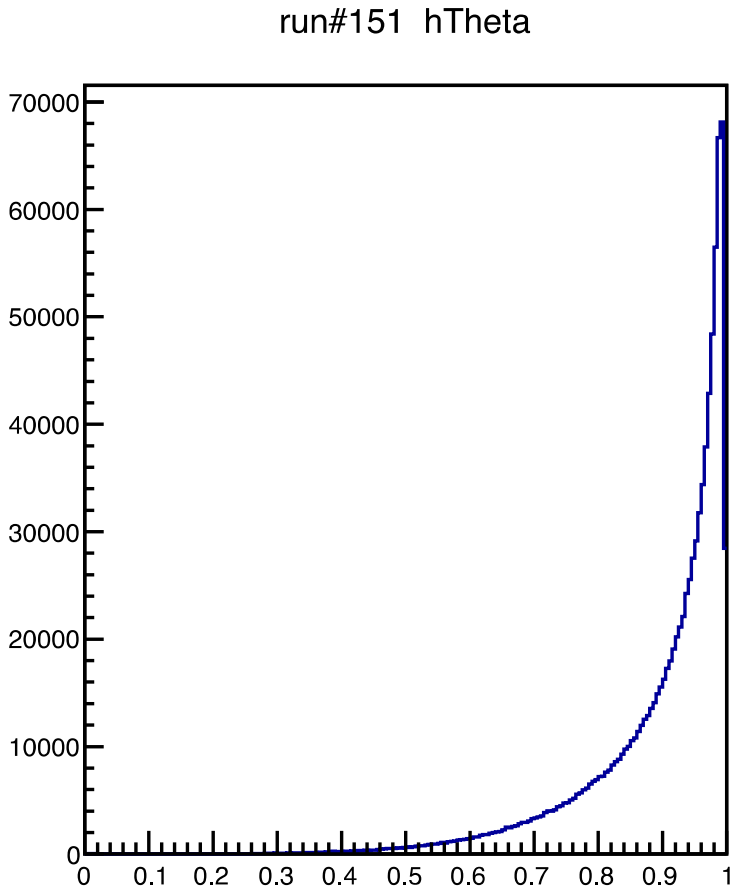


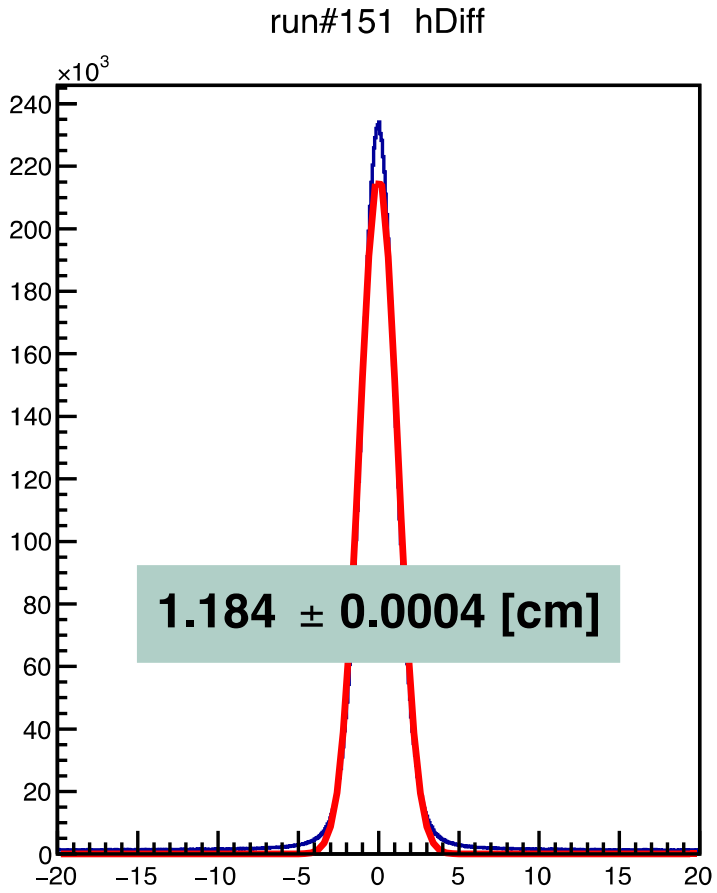
CERN data analysis

2D trajectory reconstruction

Histograms – chi2 < 1000 cut



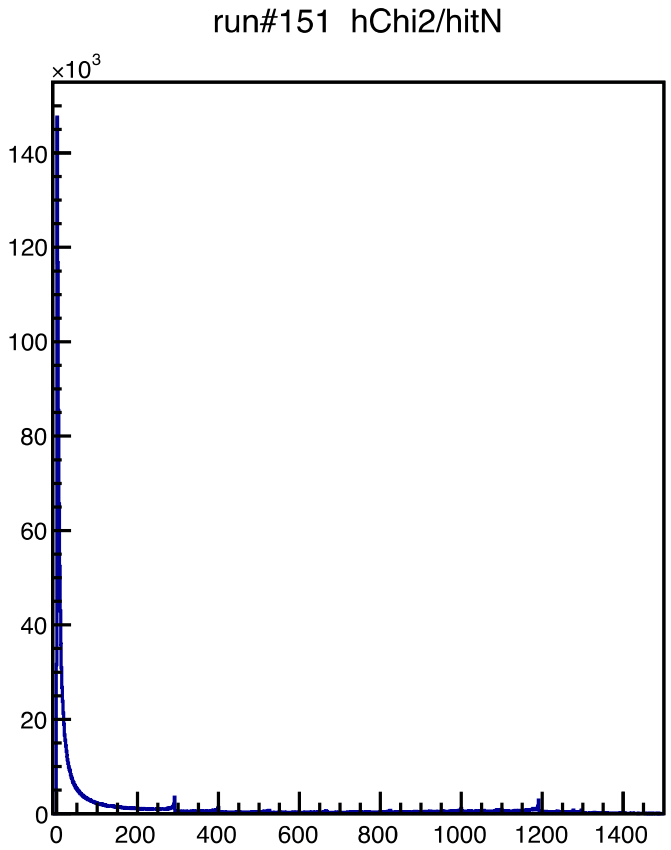


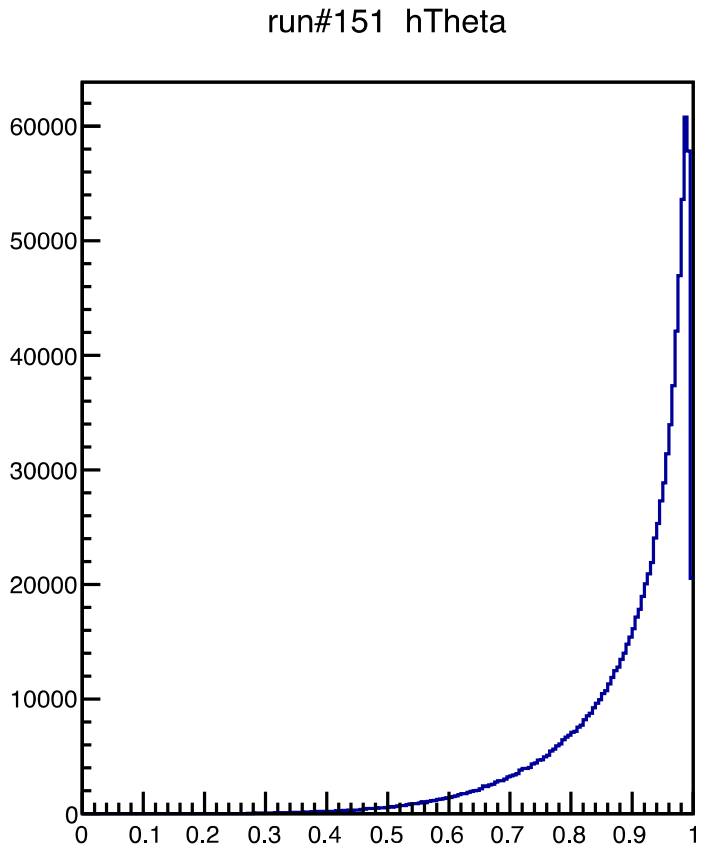


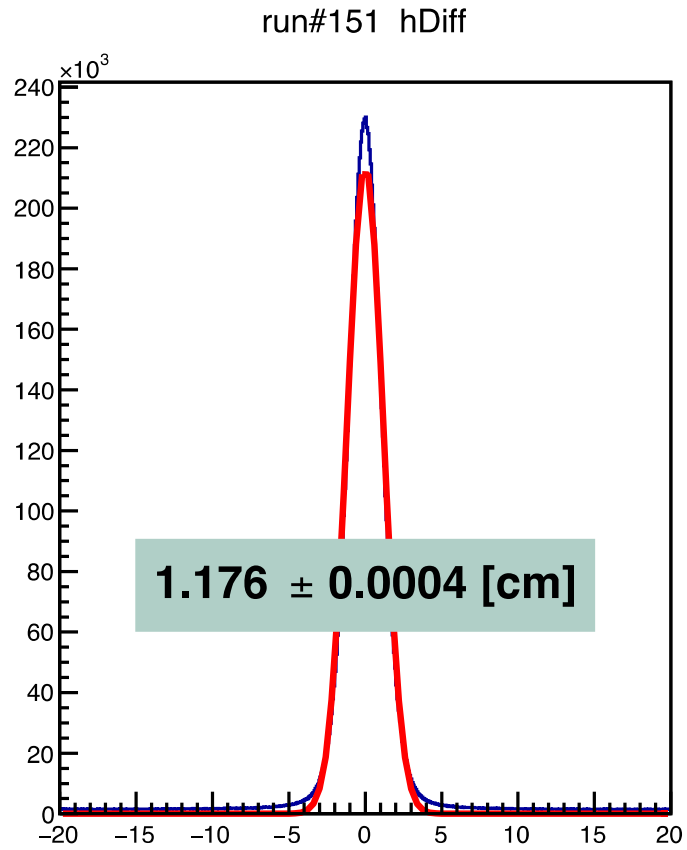
CERN data analysis

2D trajectory reconstruction

Histograms – chi2/hitN < 100 cut



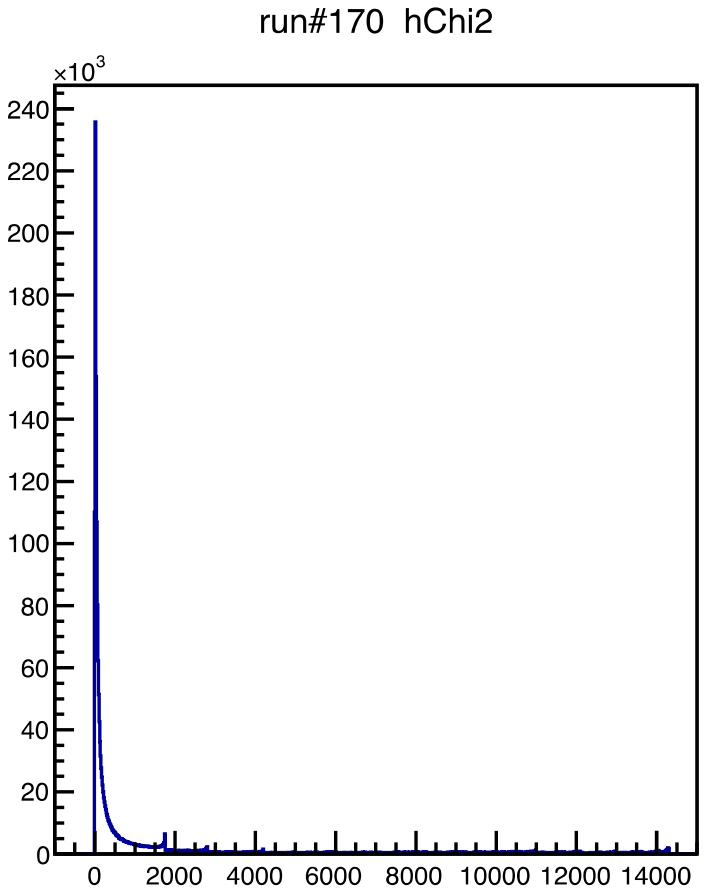


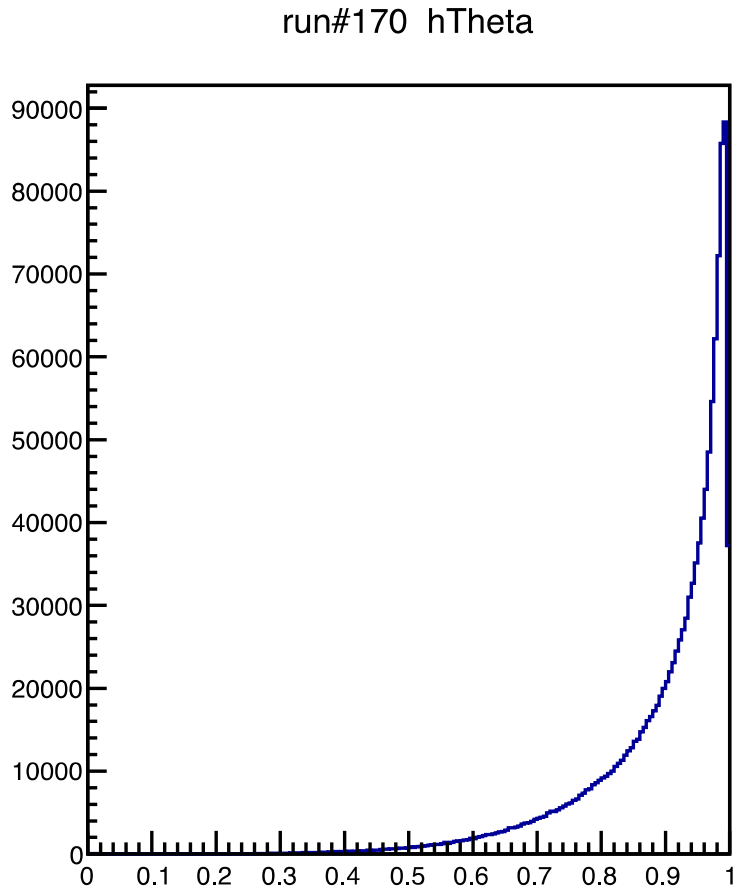


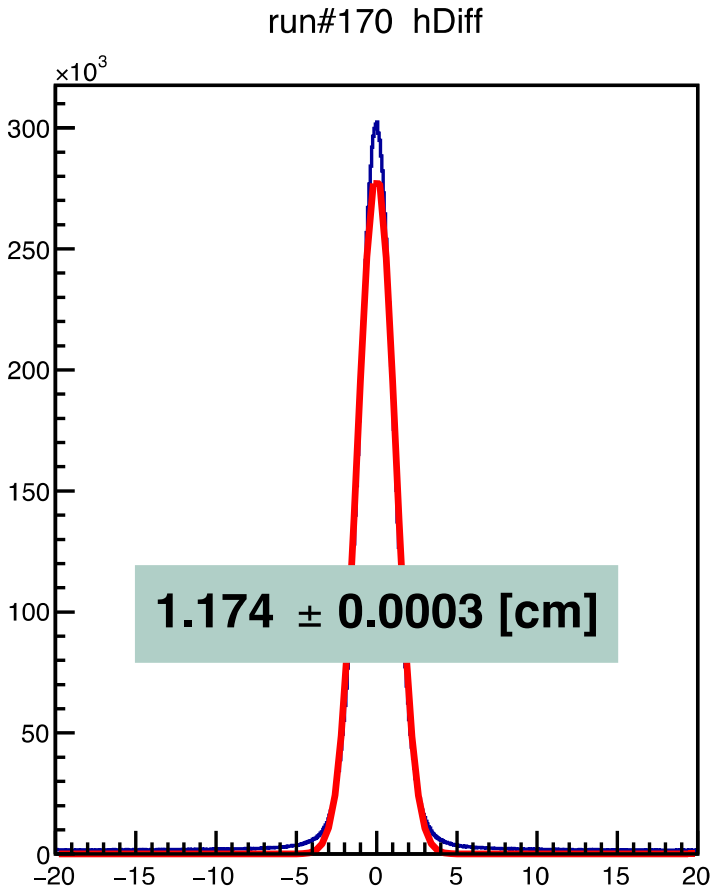
CERN data analysis

2D trajectory reconstruction

Histograms – chi2 < 1000 cut



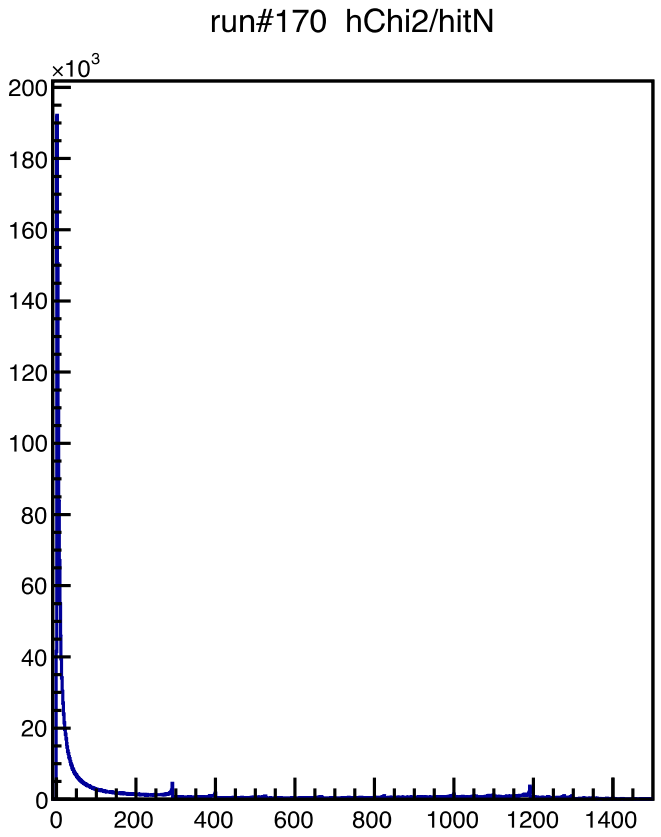


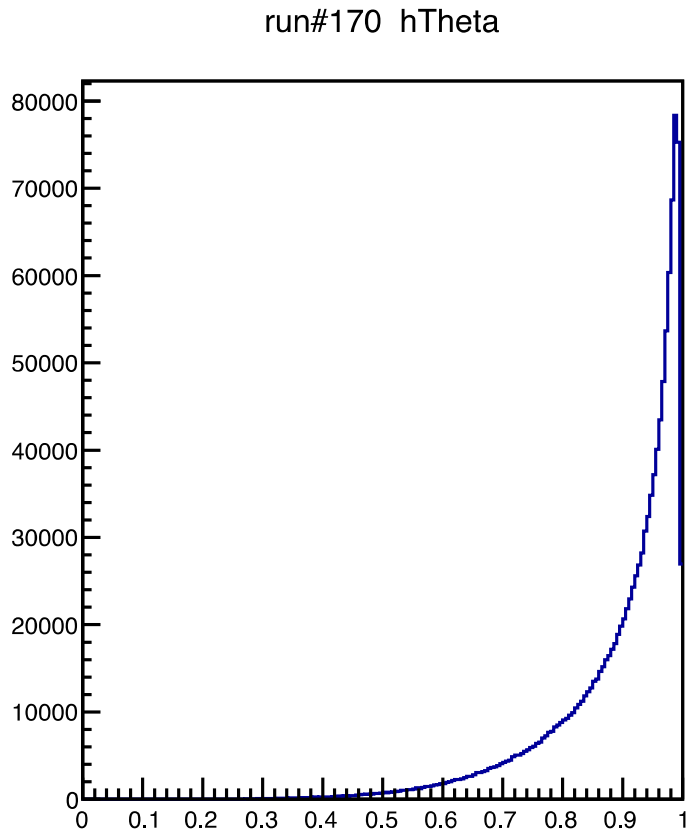


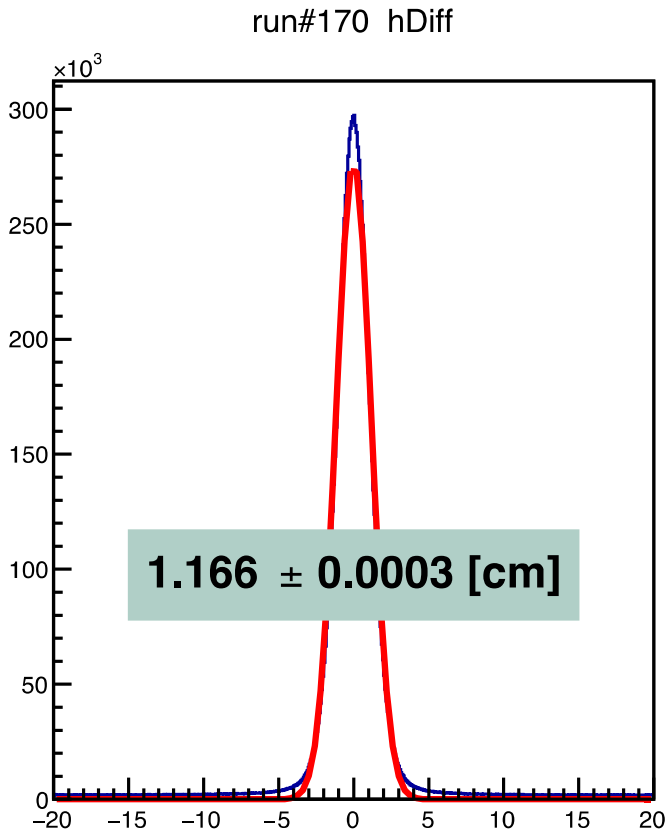
CERN data analysis

2D trajectory reconstruction

Histograms – chi2/hitN < 100 cut



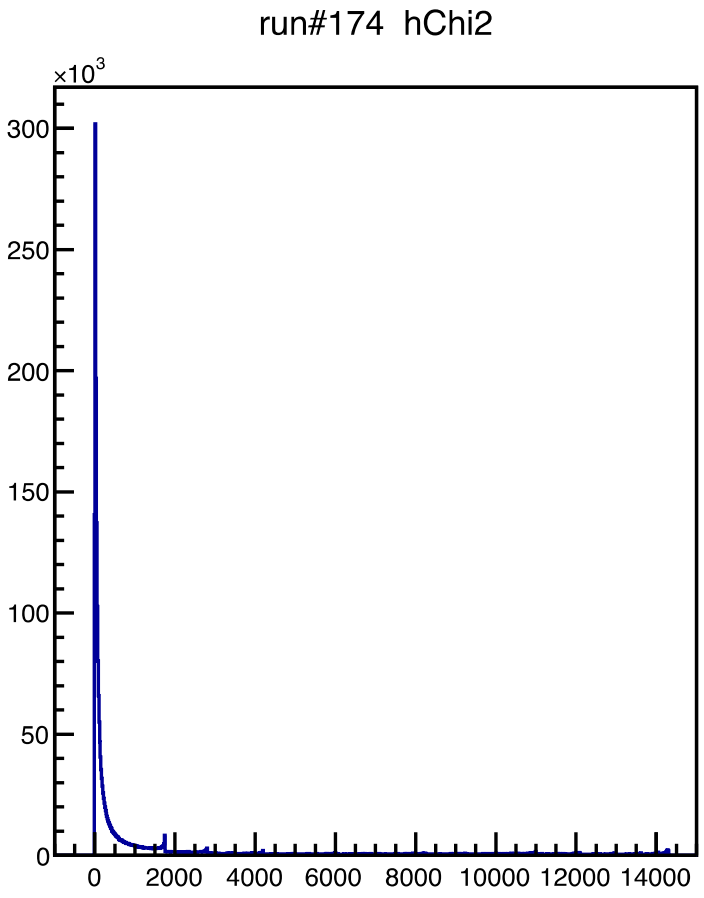


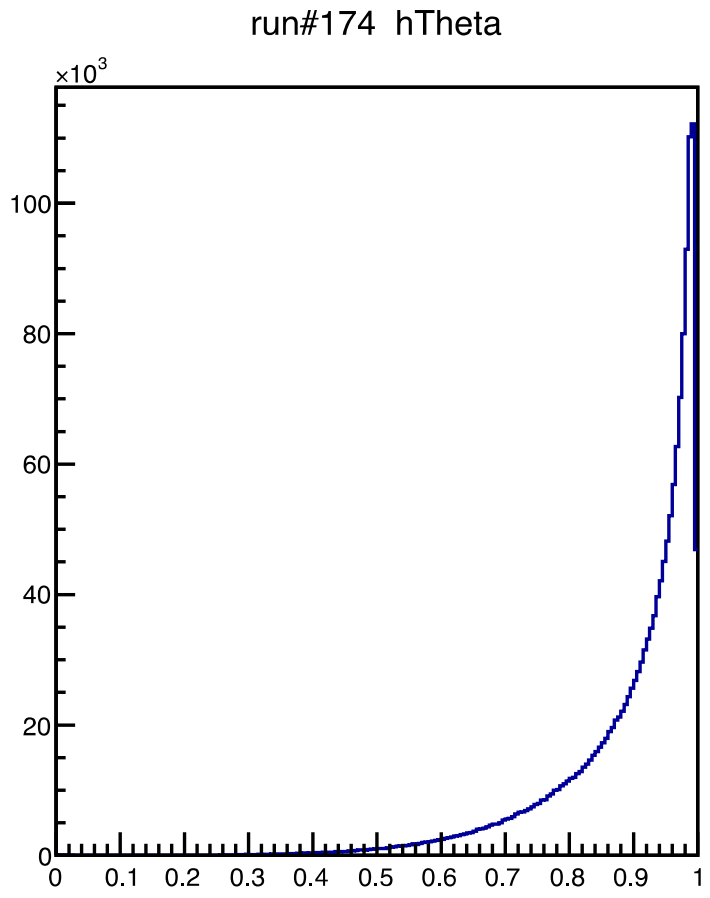


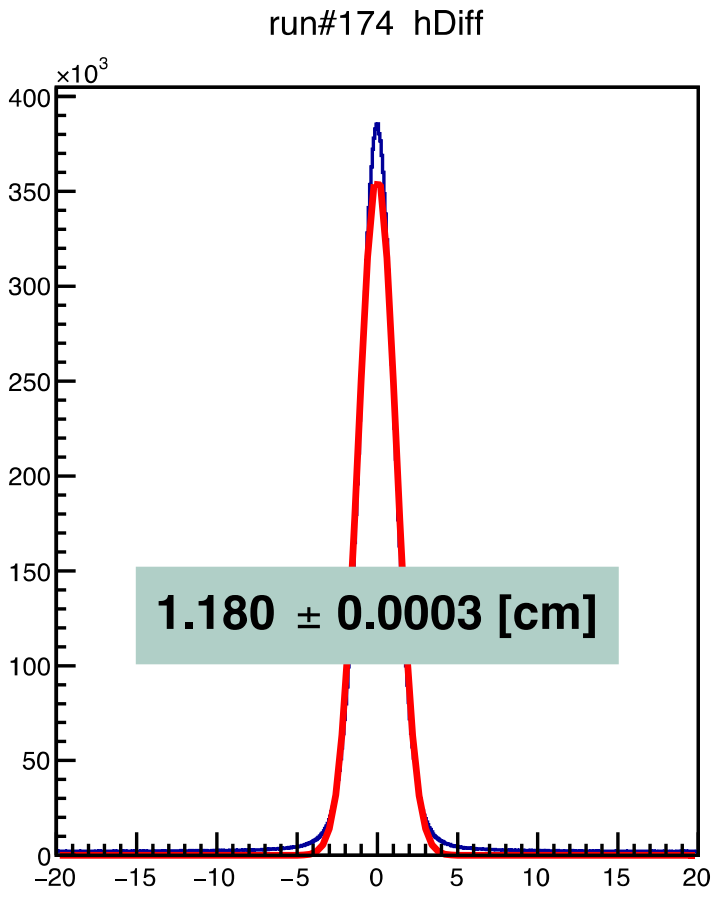
CERN data analysis

2D trajectory reconstruction

Histograms – chi2 < 1000 cut



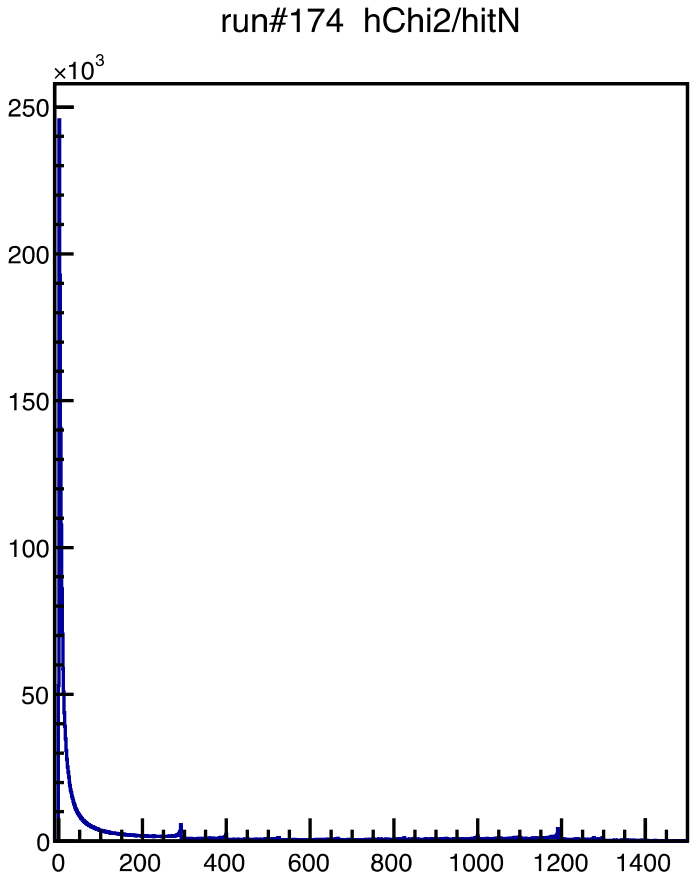


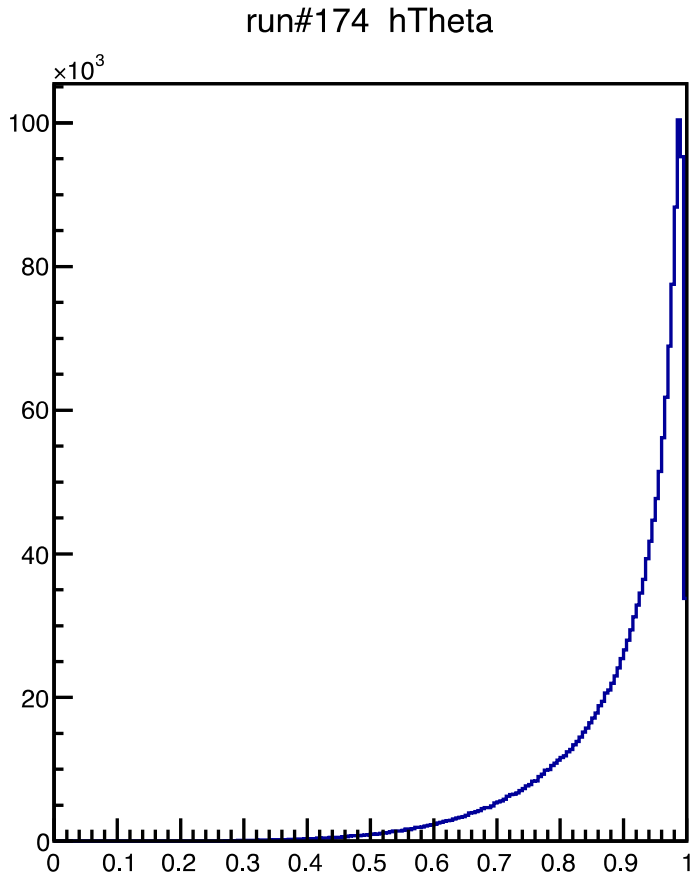


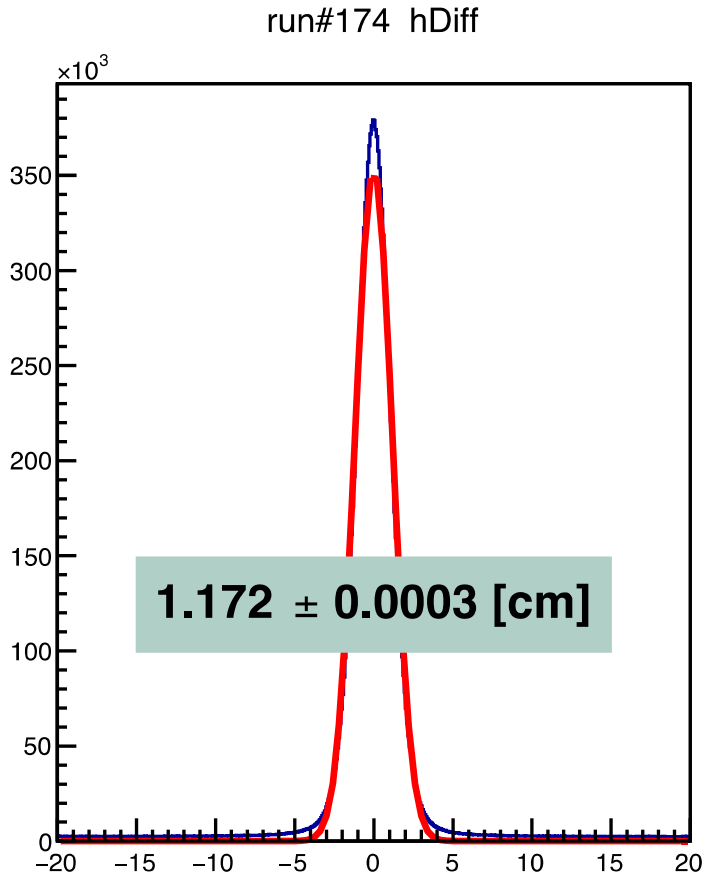
CERN data analysis

2D trajectory reconstruction

Histograms – chi2/hitN < 100 cut







CERN data analysis
Time resolution

Group three bars into a group.

In a group,
select the events that passing through within +-5cm from the position.
{-80,-70,-60,-50,…,0,…,50,60,70,80}

Fit a distribution obtained Tmean difference between two bars with Gaussian distribution

$$\mathrm{d}Tmean_{\alpha} = Tmean_1 - Tmean_2$$
$$\mathrm{d}Tmean_{\beta} = Tmean_2 - Tmean_3$$
$$\mathrm{d}Tmean_{\gamma} = Tmean_3 - Tmean_1$$

$$\sigma_{\alpha}^2 = \sigma_1^2 + \sigma_2^2$$
$$\sigma_{\beta}^2 = \sigma_2^2 + \sigma_3^2$$
$$\sigma_{\gamma}^2 = \sigma_3^2 + \sigma_1^2$$

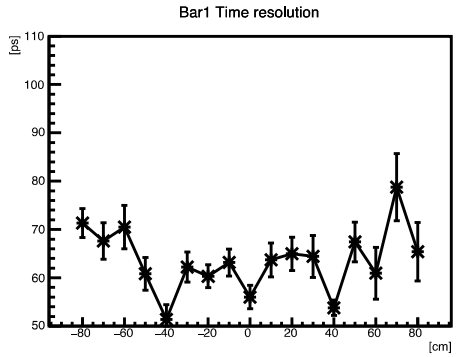
$$\rightarrow \sigma^2 = \sigma_{\alpha}^2 + \sigma_{\beta}^2 + \sigma_{\gamma}^2 = 2 * (\sigma_1^2 + \sigma_2^2 + \sigma_3^2)$$

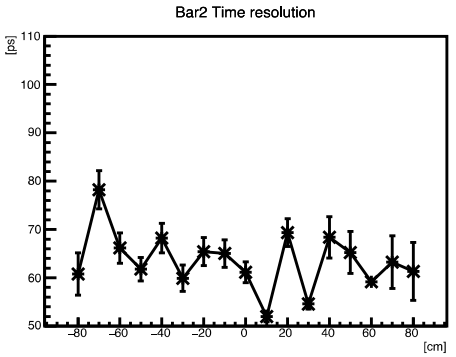
$$\therefore \begin{cases} \sigma_1^2 = \dfrac{\sigma^2}{2} - \sigma_{\beta}^2 \\ \sigma_2^2 = \dfrac{\sigma^2}{2} - \sigma_{\gamma}^2 \\ \sigma_3^2 = \dfrac{\sigma^2}{2} - \sigma_{\alpha}^2 \end{cases}$$

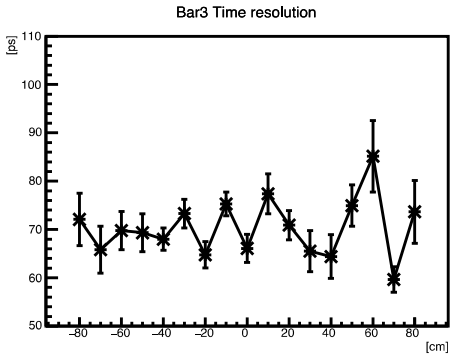
CERN data analysis

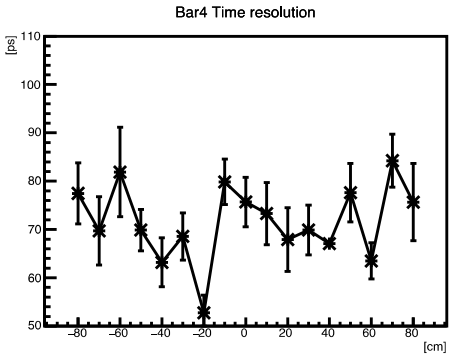
(Time resolution) vs (position)

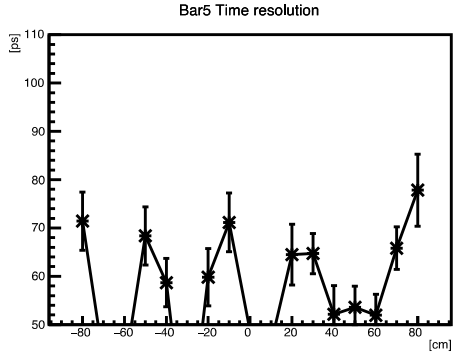
With old#202

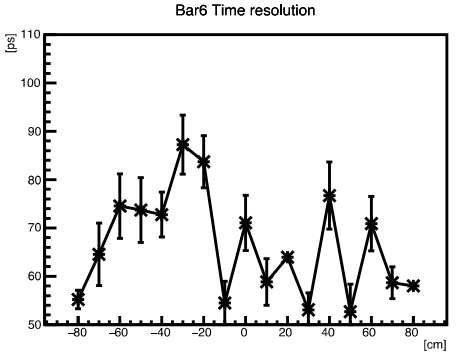


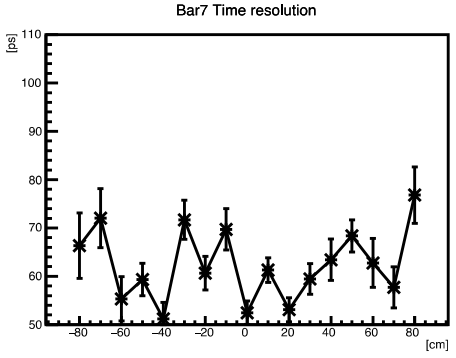


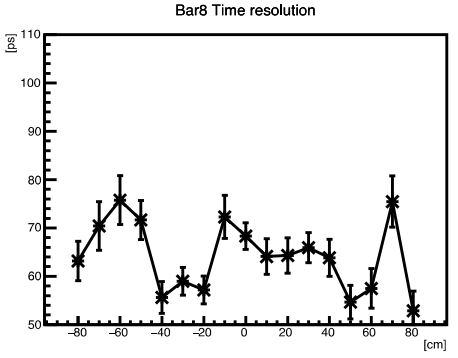


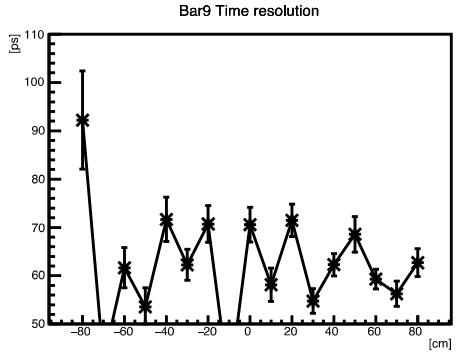


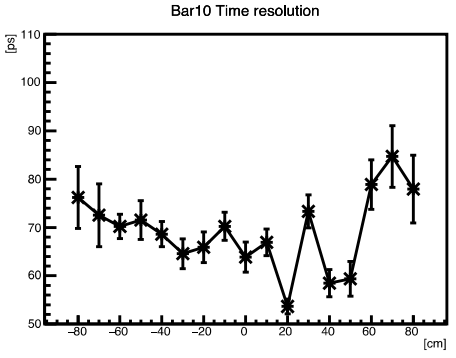


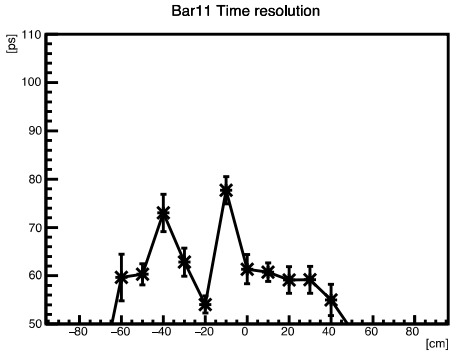


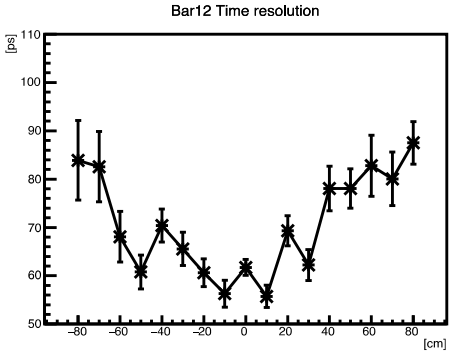








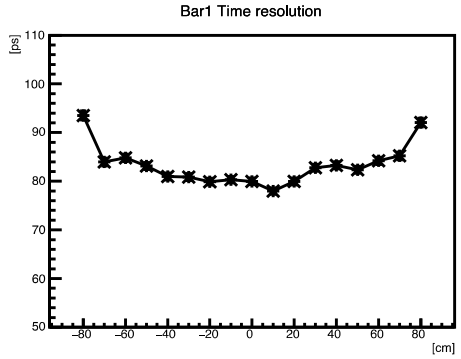


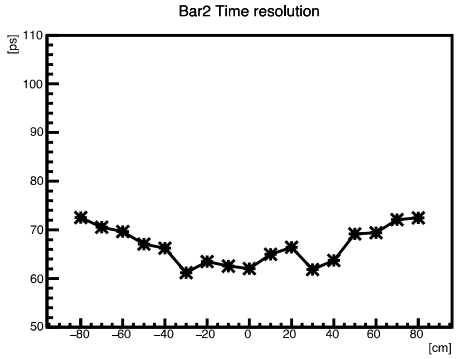


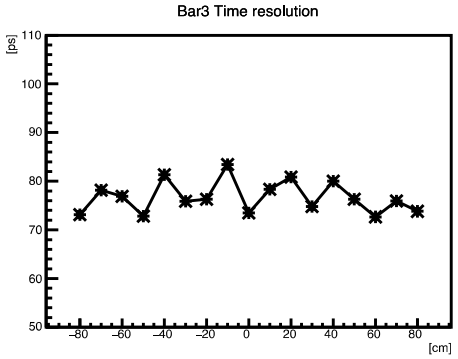
CERN data analysis

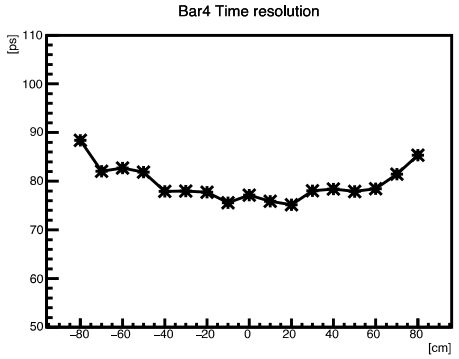
(Time resolution) vs (position)

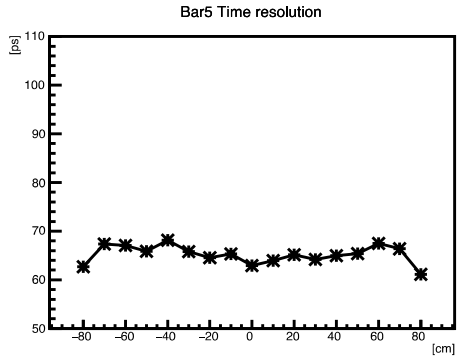
With #151

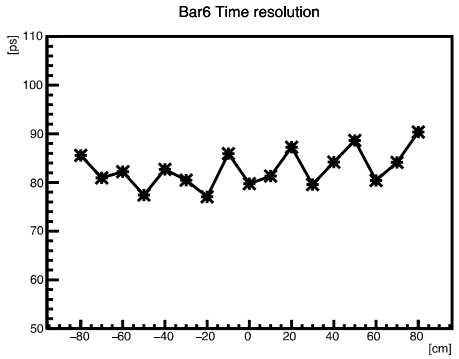


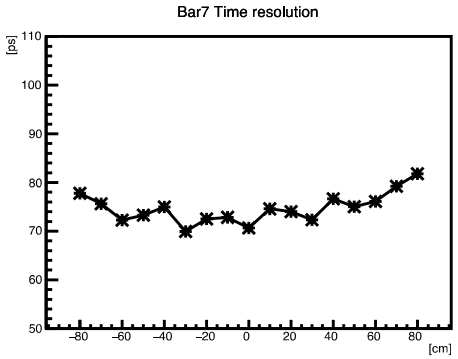


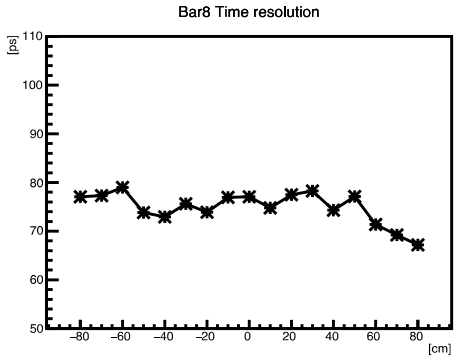


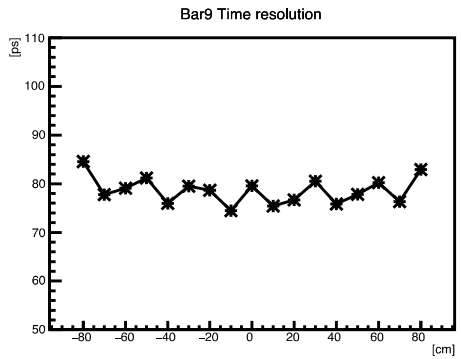


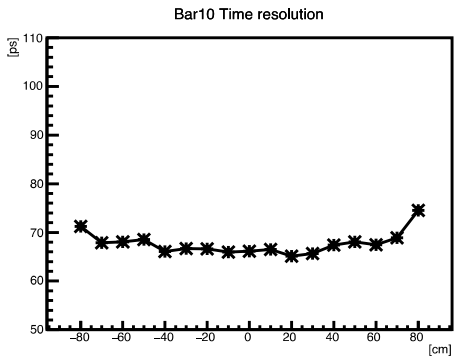


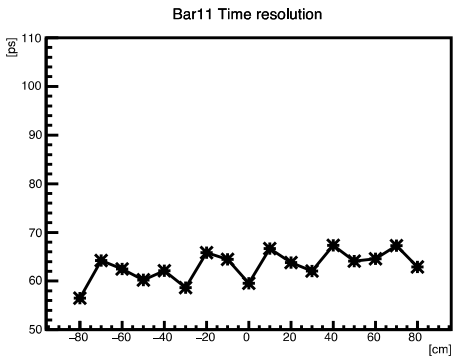


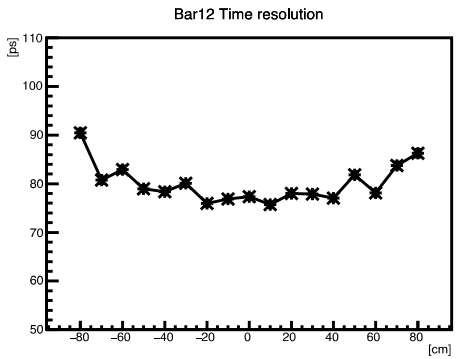








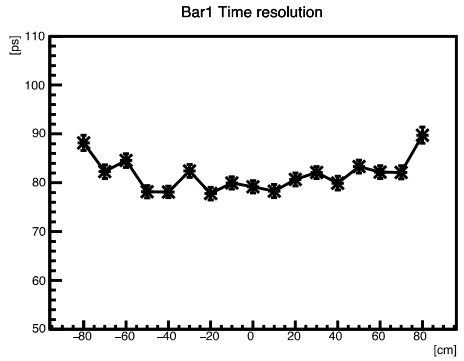


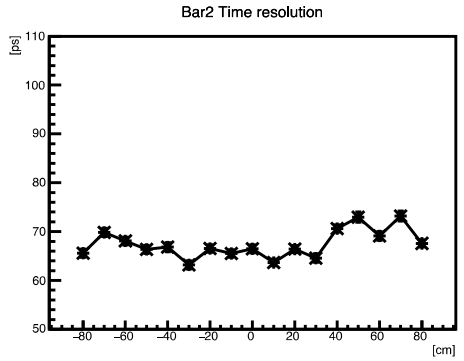


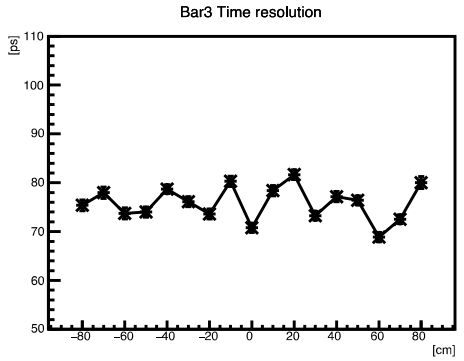
CERN data analysis

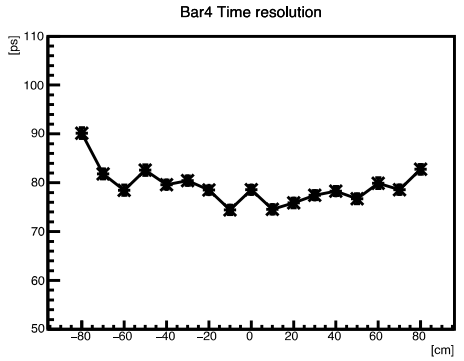
(Time resolution) vs (position)

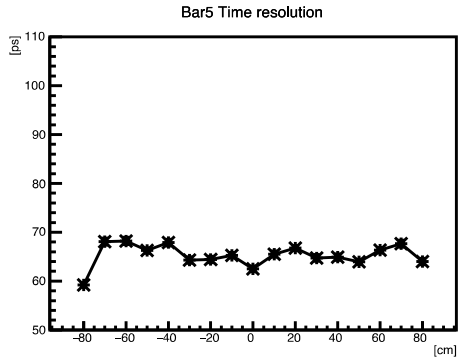
With #170

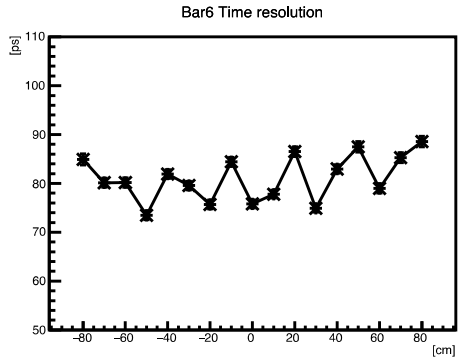


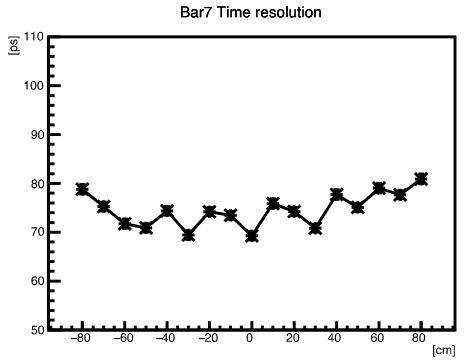


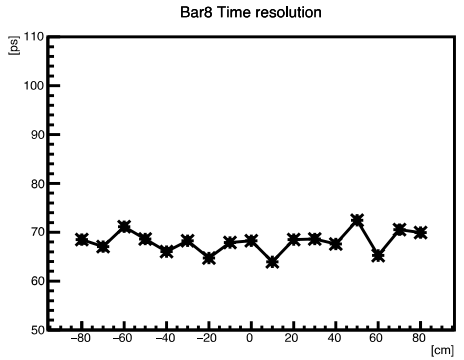


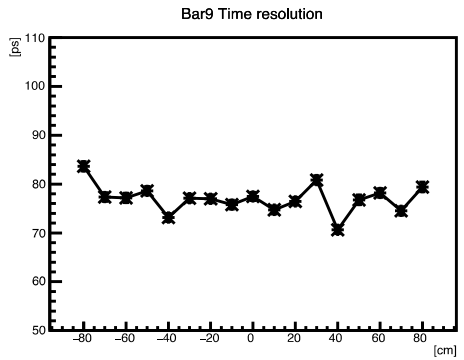


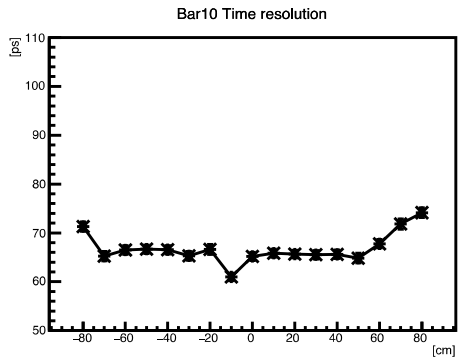


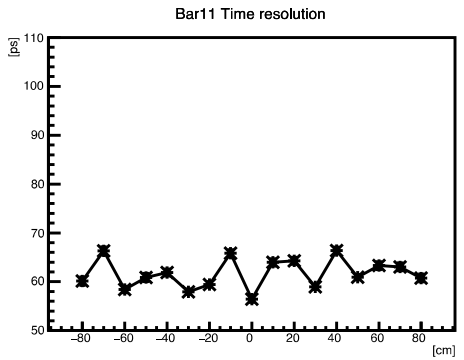


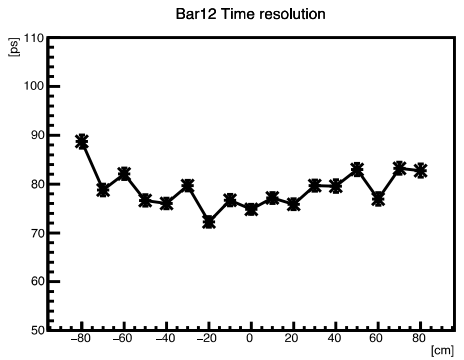












CERN data analysis

(Time resolution) vs (position)

With #174