

20160926

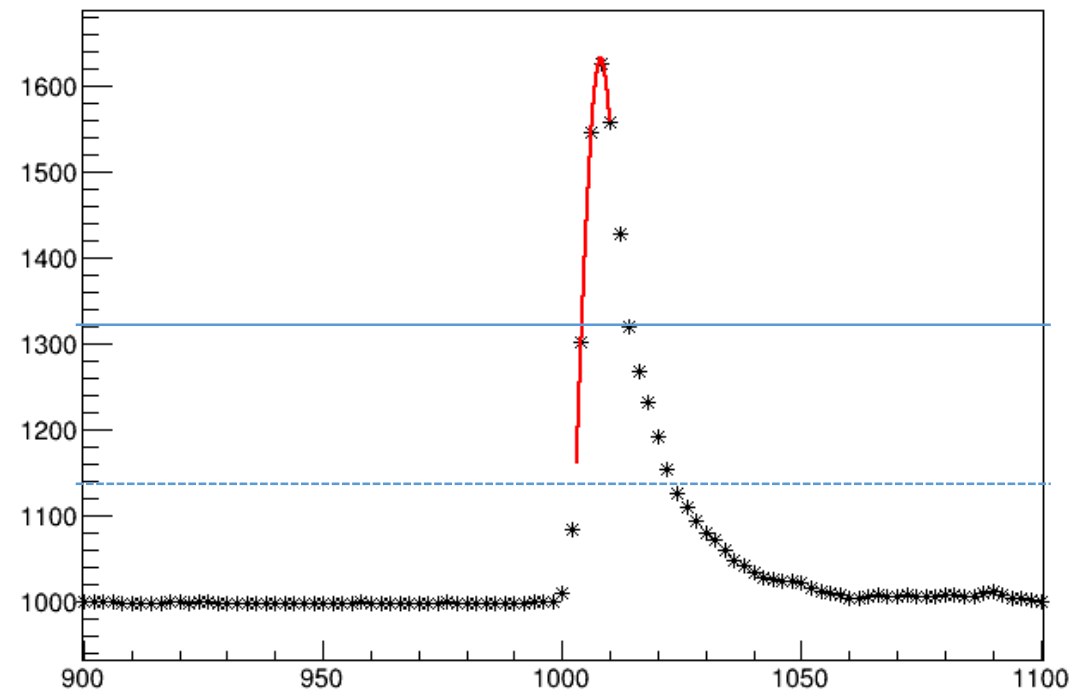
TOF counter test status

ahram lee

Time difference analysis

<How to find the rising time, t >

1. Inverse interpolation (10%)
2. Gaussian fit (50%)



Time difference analysis

<How to find the rising time, t >

1. Inverse interpolation (10%)
2. Gaussian fit (50%)

<How to define the difference>

1. $dt_b = t_0 - t_1$, $dt_t = t_2 - t_3$
2. $dtmean = (tmean_b) - (tmean_t)$
 $tmean_b = (t_0 + t_1)/2$
 $tmean_t = (t_2 + t_3)/3$
3. $dtfast = (tfast_b) - (tfast_t)$
 $tfast_b = \text{faster time btw } t_0 \sim t_1$
 $tfast_t = \text{faster time btw } t_2 \sim t_3$

Time difference analysis

- Fit Parameter

	Inverse interpolation		Gaussian fit	
	mean	sigma	mean	sigma
dt_b	15.66	0.2029	15.74	0.2595
dt_t	-1.794	0.2193	-1.733	0.2689
dtmean	7.718	0.1582	7.699	0.2659
dtfast	0.7901	0.1888	0.694	0.3019

Time difference analysis

- Fit Parameters : $(\text{resolution})/\sqrt{2}$

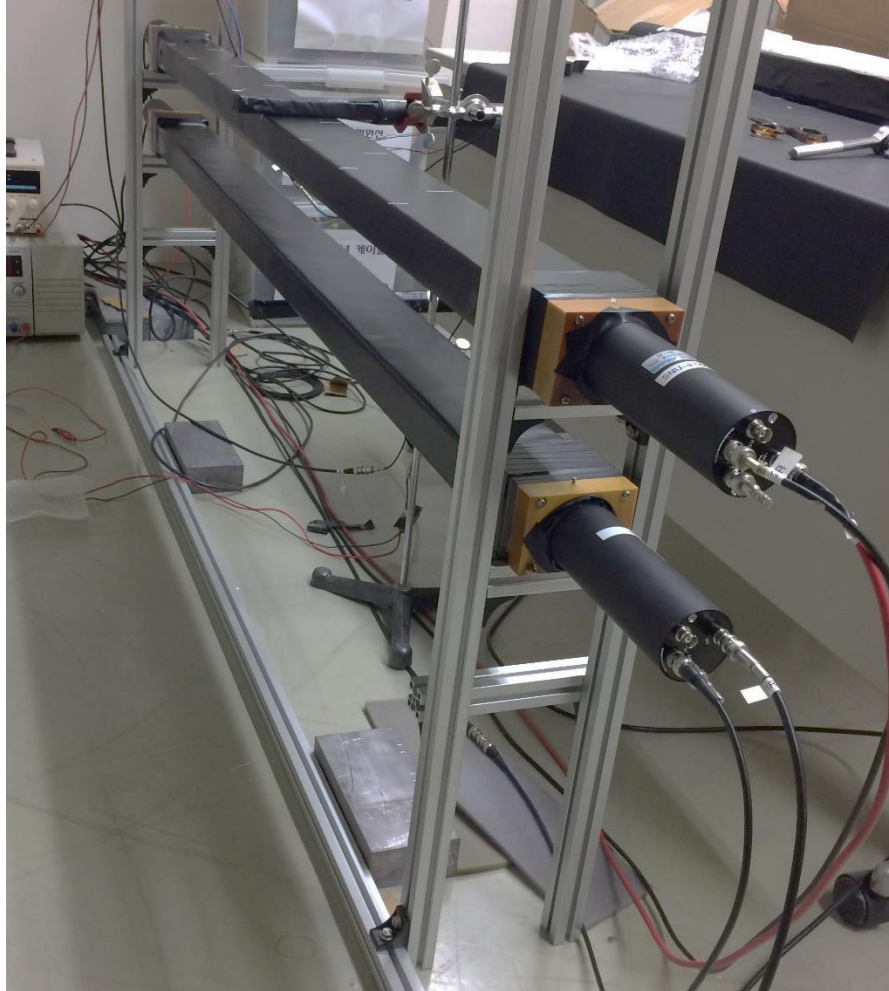
	Inverse interpolation		Gaussian fit	
	mean	sigma	mean	sigma
dt_b	15.66	0.1434	15.74	0.1835
dt_t	-1.794	0.1551	-1.733	0.1901
dtmean	7.718	0.1119	7.699	0.1880
dtfast	0.7901	0.1335	0.694	0.2135

Time difference analysis

- Fit Parameters : $(\text{resolution})/\sqrt{2}$

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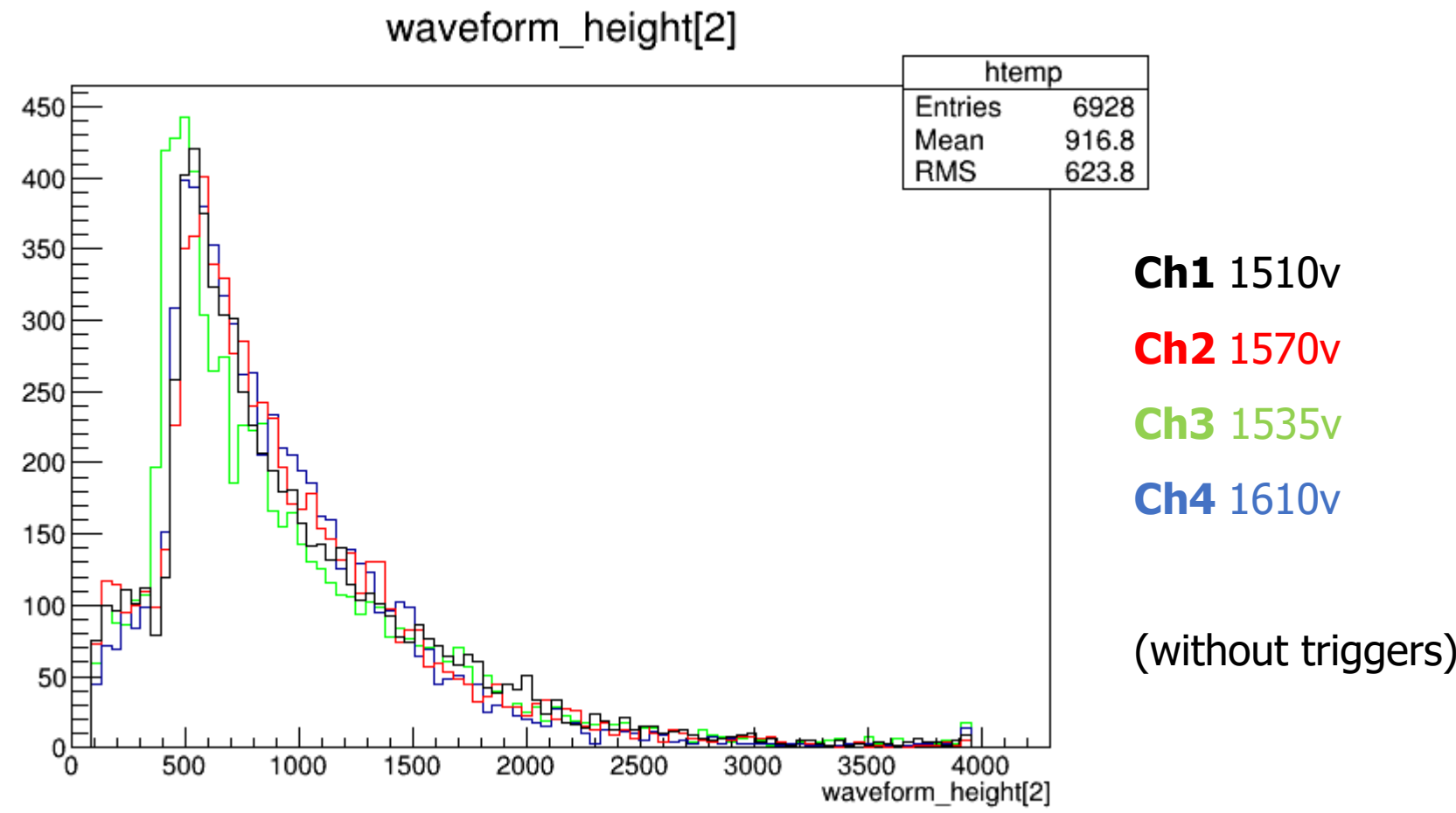
Plastic scintillator counter status



2 plastic bars + 2 PWO triggers
sustained by aluminum profiles and clamps

4 guides are installed
→ gain checked, again

Plastic scintillator counter status – gain check

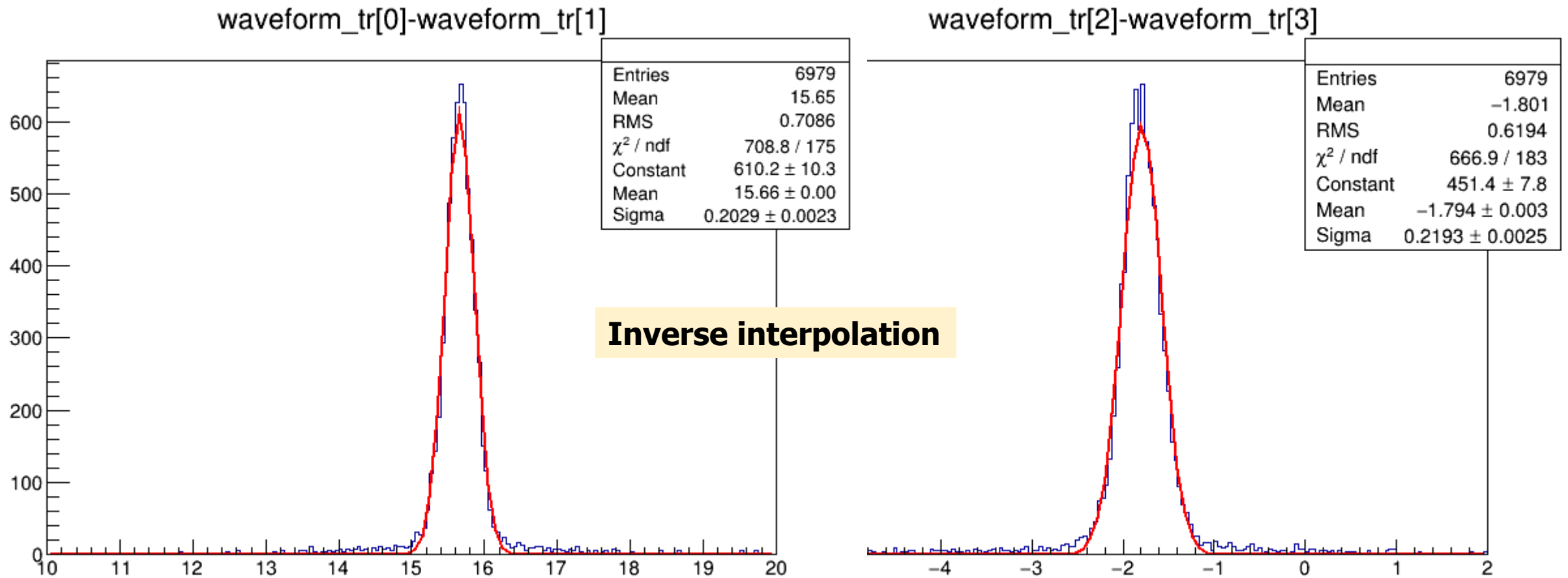


To do

1. From Friday, FADC data has been taken at center.
Data taking and analysis along the distance(3~4 points).
2. Using dynode, think how we can obtain low energy data.
should check the gain of dynode signal.
3. Calculate energy conversion constant using Landau distribution.
4. Understand the inverse interpolation and figure out the reason of the resolution difference with Gaussian fit analysis.

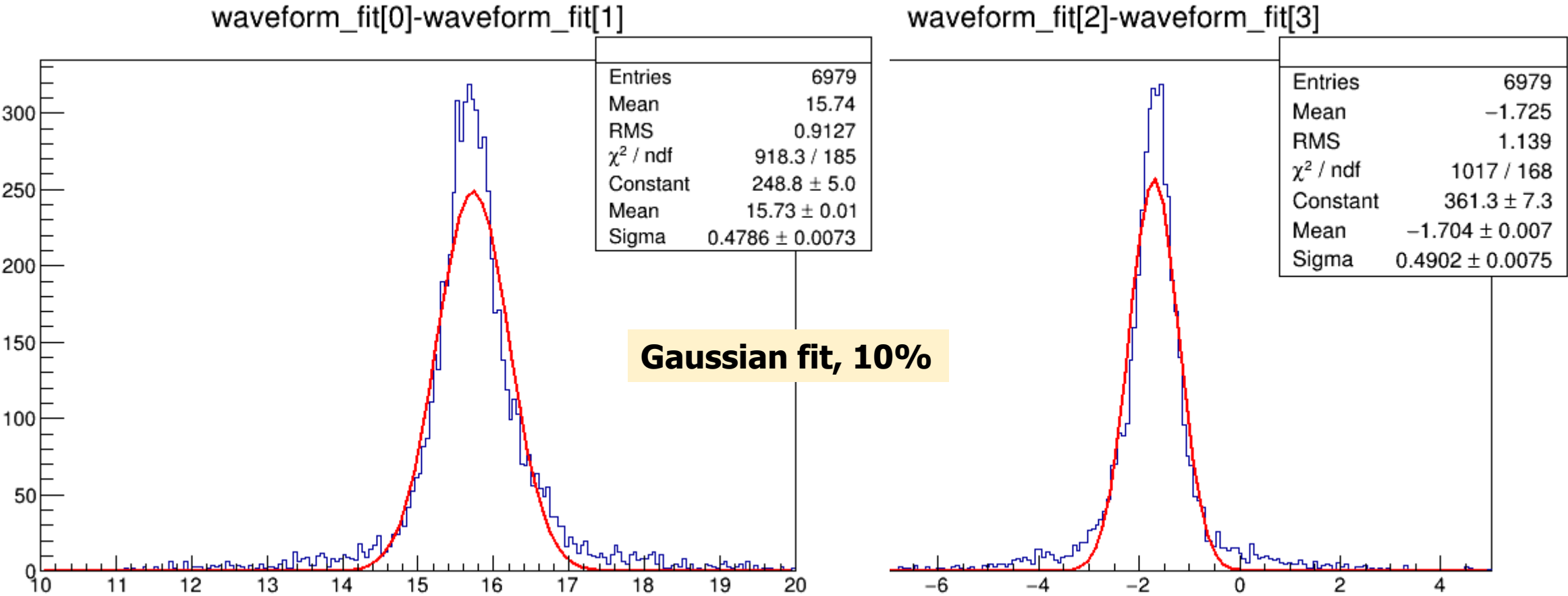
Back up – at center, 4 days, with terminators, without guides (160829_hv1800.root)

① dt_b & dt_t ; timing difference of left and right PMTs at top or bottom scintillators



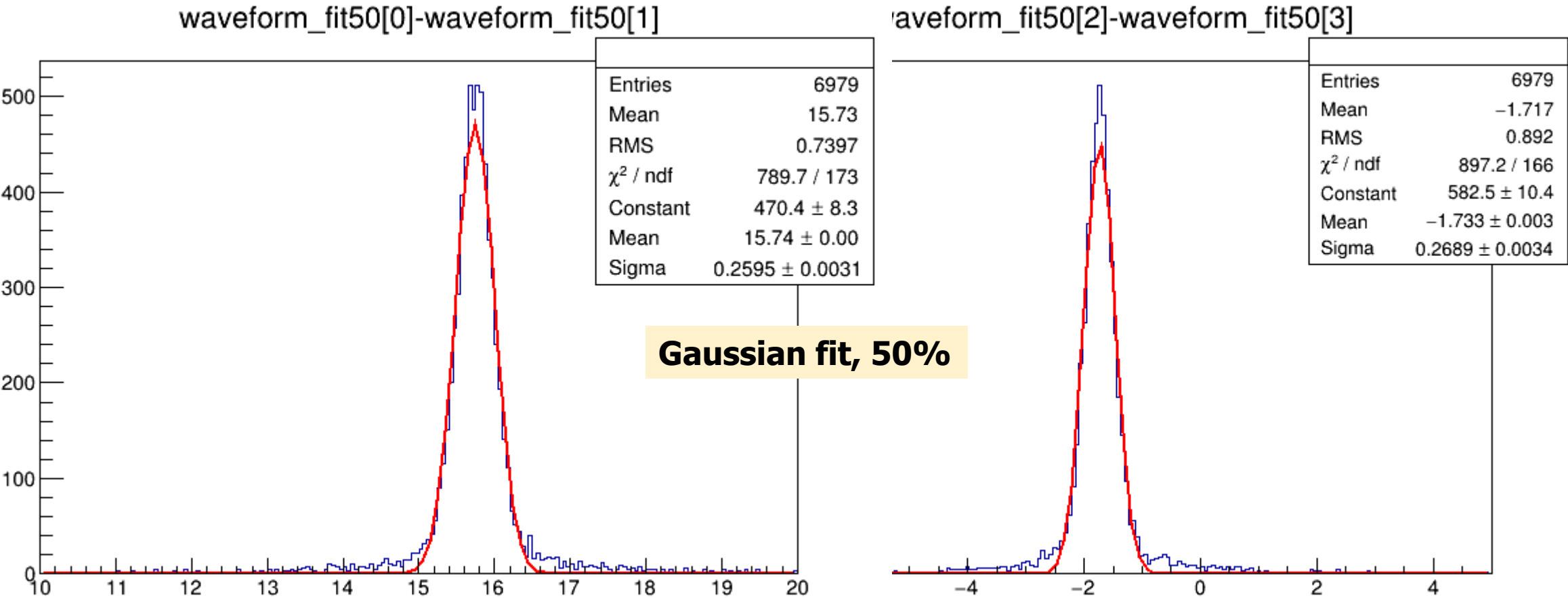
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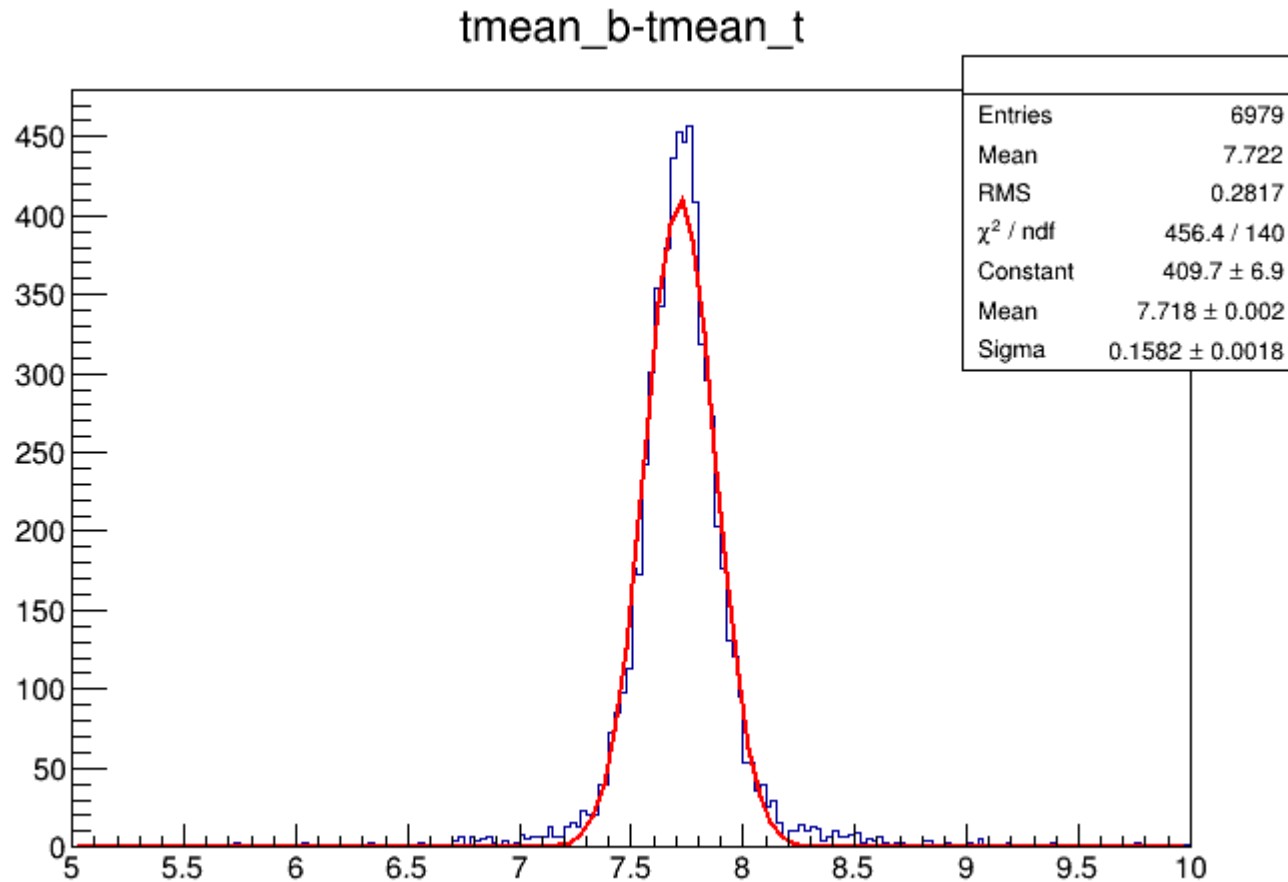
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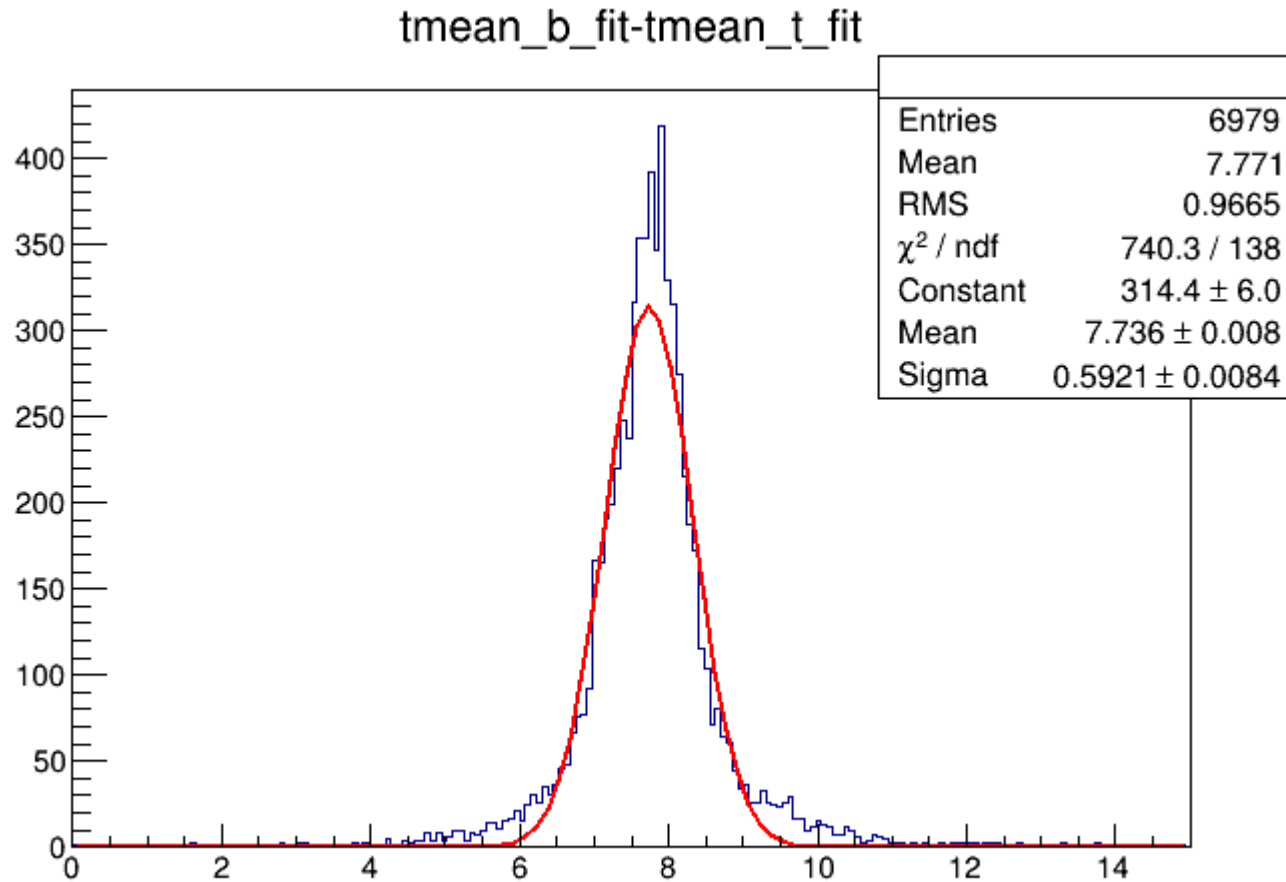
② dtmean ; (tmean_b) – (tmean_t), where tmean = (left time + right time)/2



Inverse interpolation

Back up – at center, 4 days, with terminators, without guides (160829_hv1800.root)

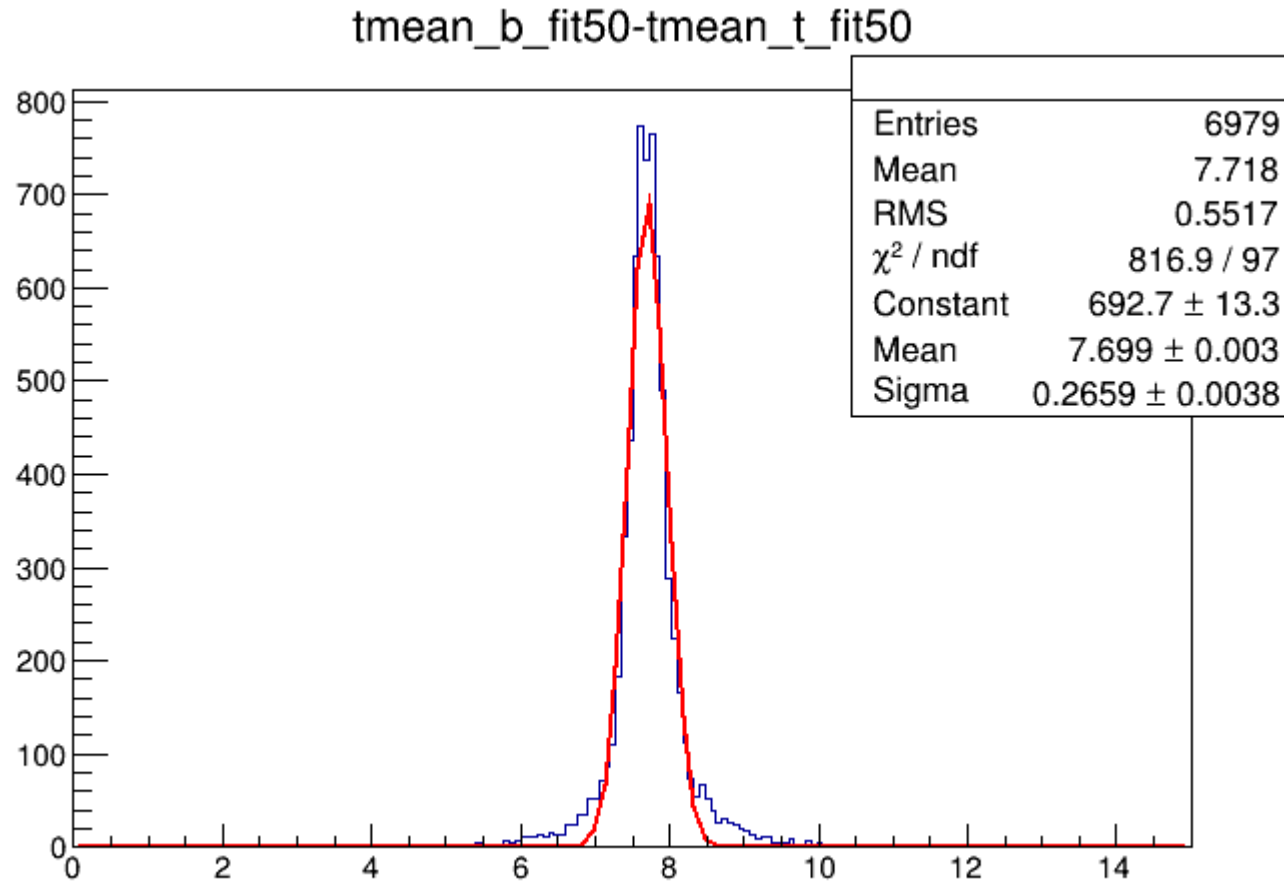
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Gaussian fit, 10%

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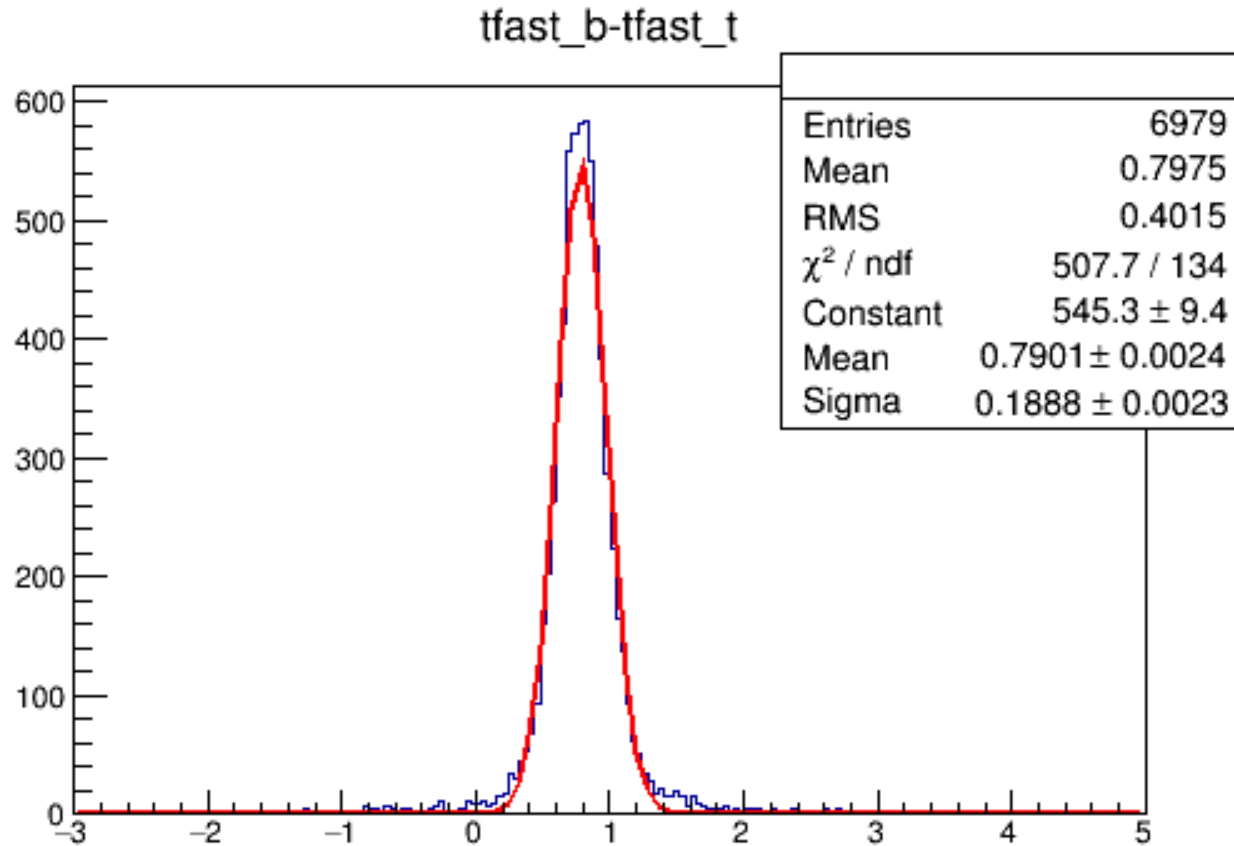
② dtmean ; (tmean_b) – (tmean_t), where tmean = (left time + right time)/2



Gaussian fit, 50%

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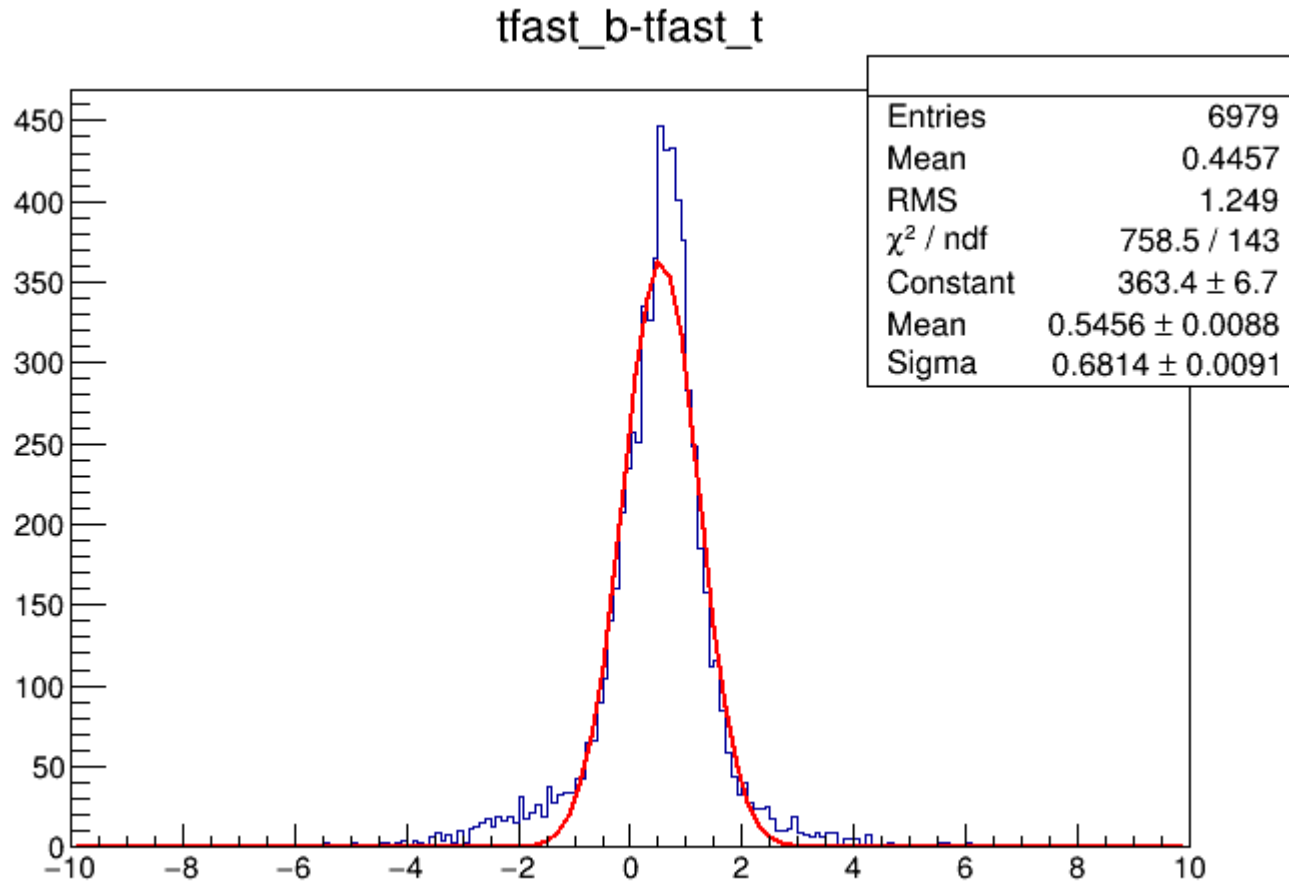
③ dtfast ; (tfast_b) – (tfast_t), where tfast = min(left time, right time)



Inverse interpolation

Back up – at center, 4 days, with terminators, without guides (160829_hv1800.root)

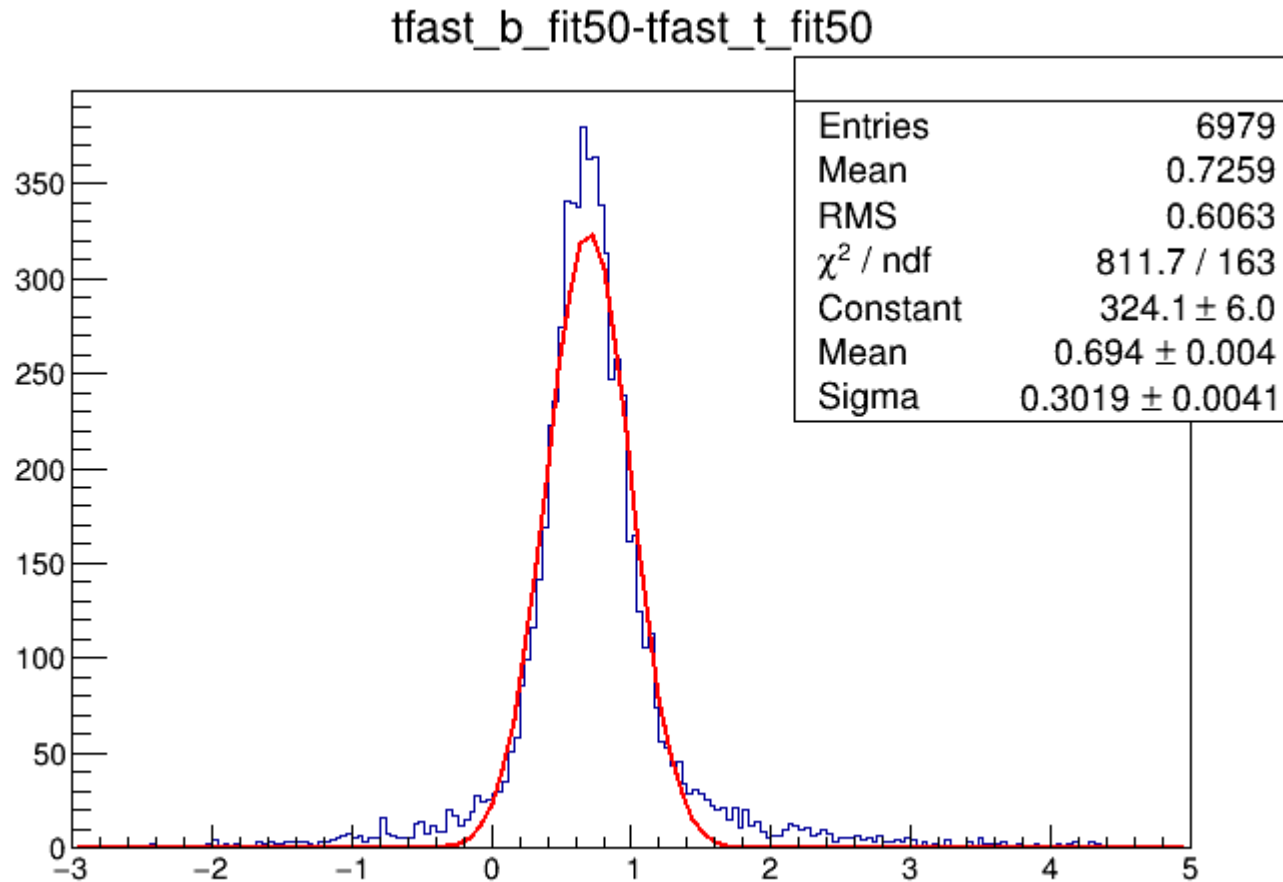
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