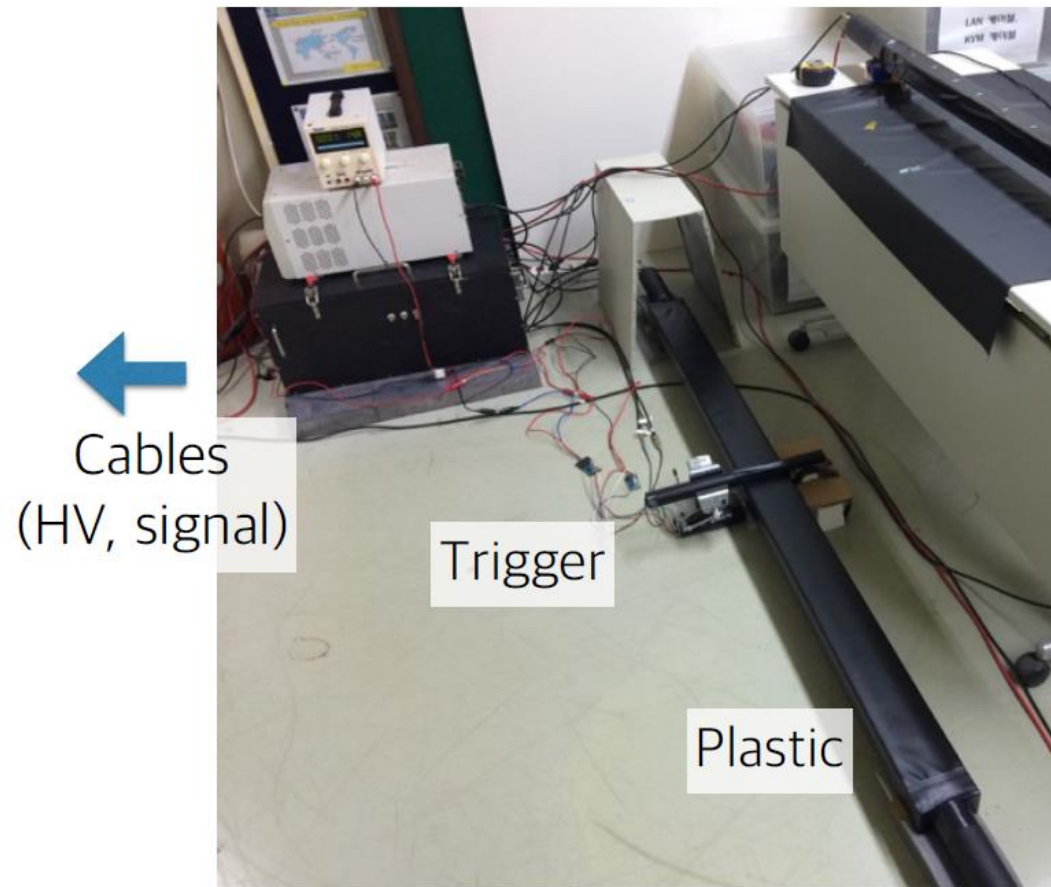


0728

Test of the Time of Flight(TOF) counter

Aram lee

From last meeting(0304),



Plastic

100cm → 170cm

Data taking

Oscilloscope(0.4ns) → FADC (2ns)

PWO trigger

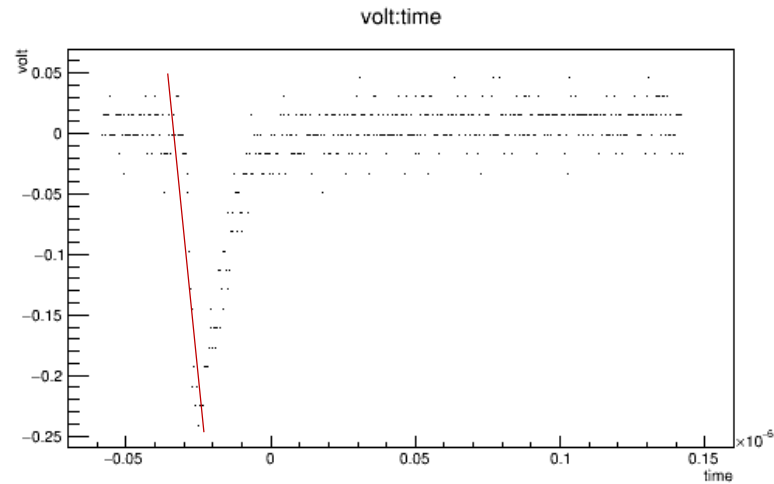
one → two

Δt analysis

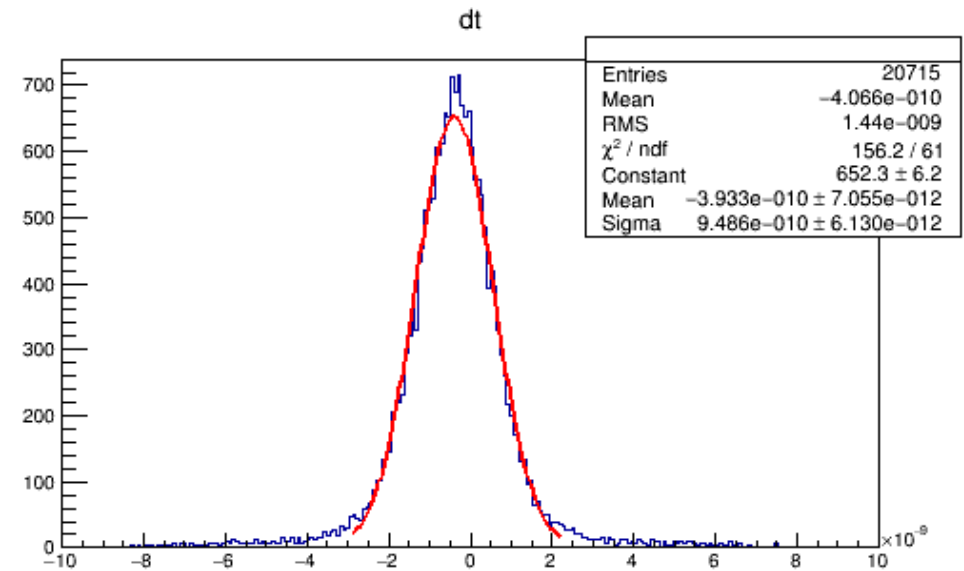
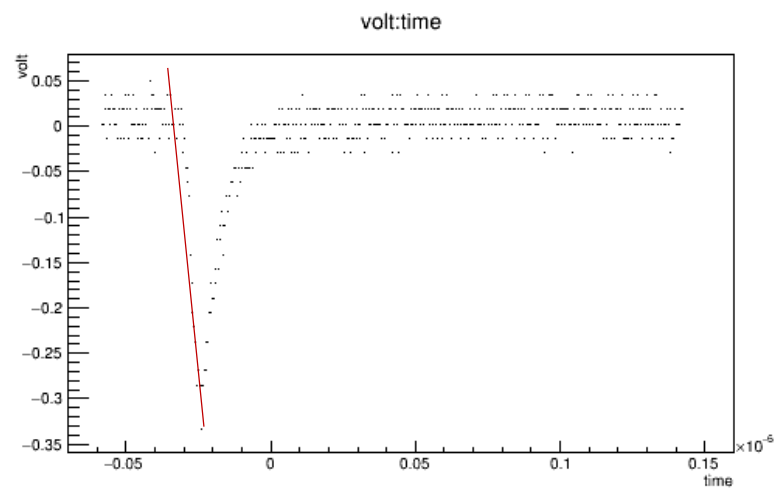
intercept → interpolation

From last meeting(0304),

< ch1 >



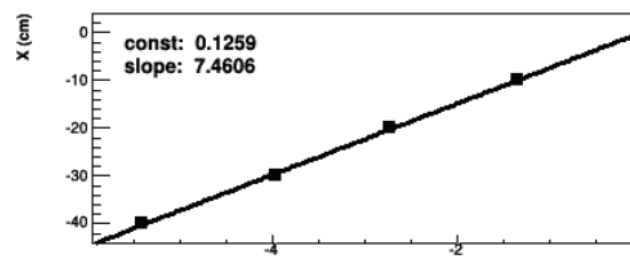
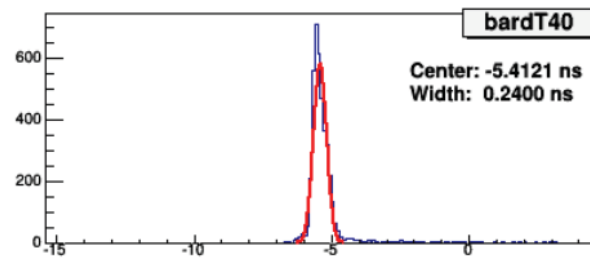
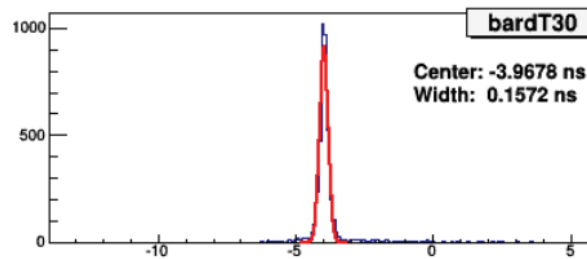
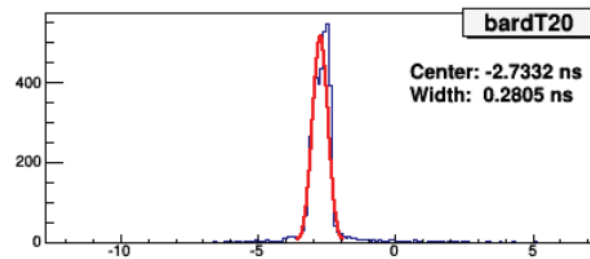
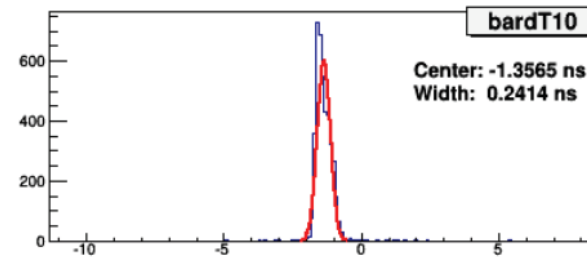
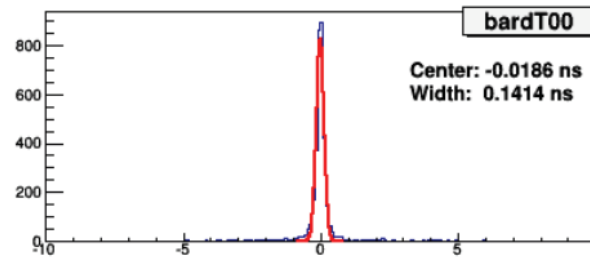
< ch2 >



Different from the former one.
Quite coarse resolution – maybe resulted from the incorrect fitting

From last meeting(0304),

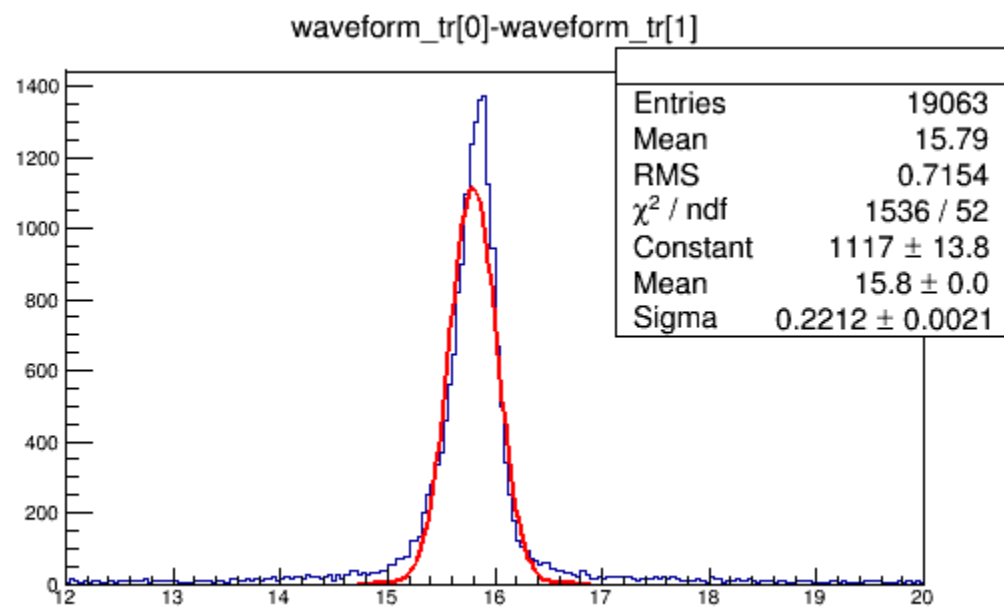
According to the result, analyzed by Dr. jw hwang,



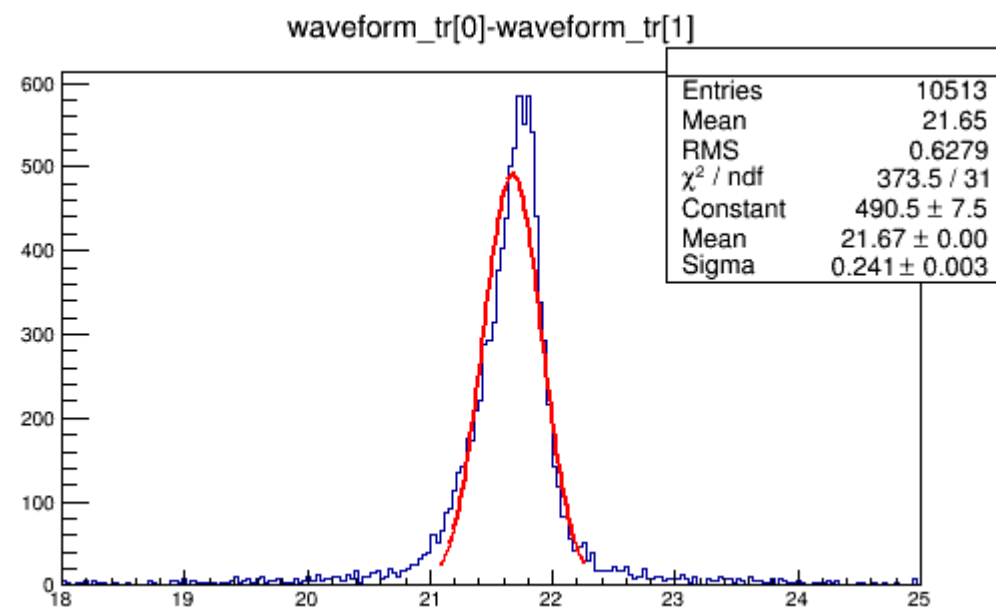
Δt reduced 0.1 ~ 0.2 ns
by the interpolation.

Analysis of the new FADC data
the oscilloscope data using the interpolation
the new oscilloscope data with two triggers

at center

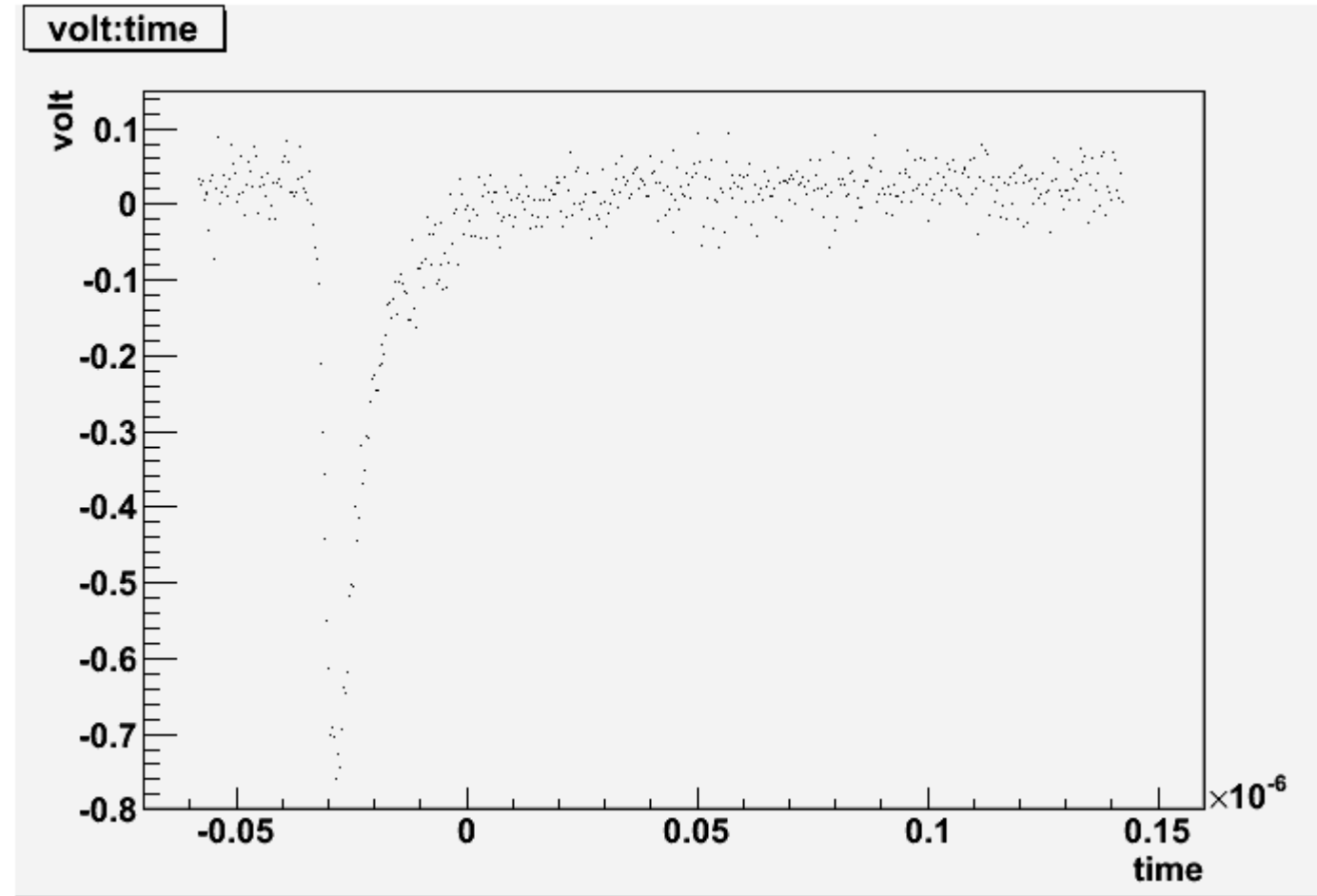


at 40cm



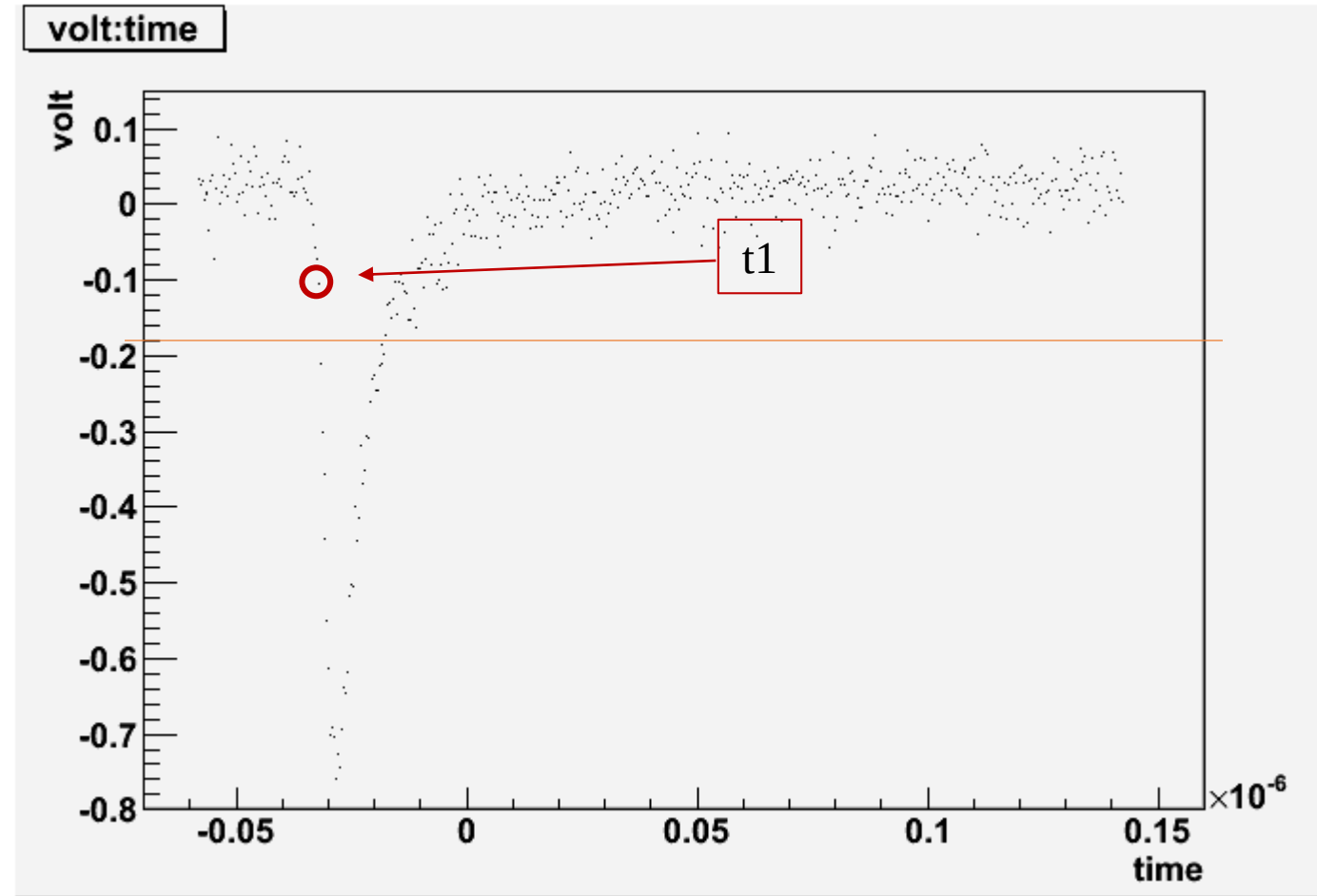
Oscilloscope, one trigger(PWO)

raw signal
(volt vs time)



Oscilloscope, one trigger(PWO)

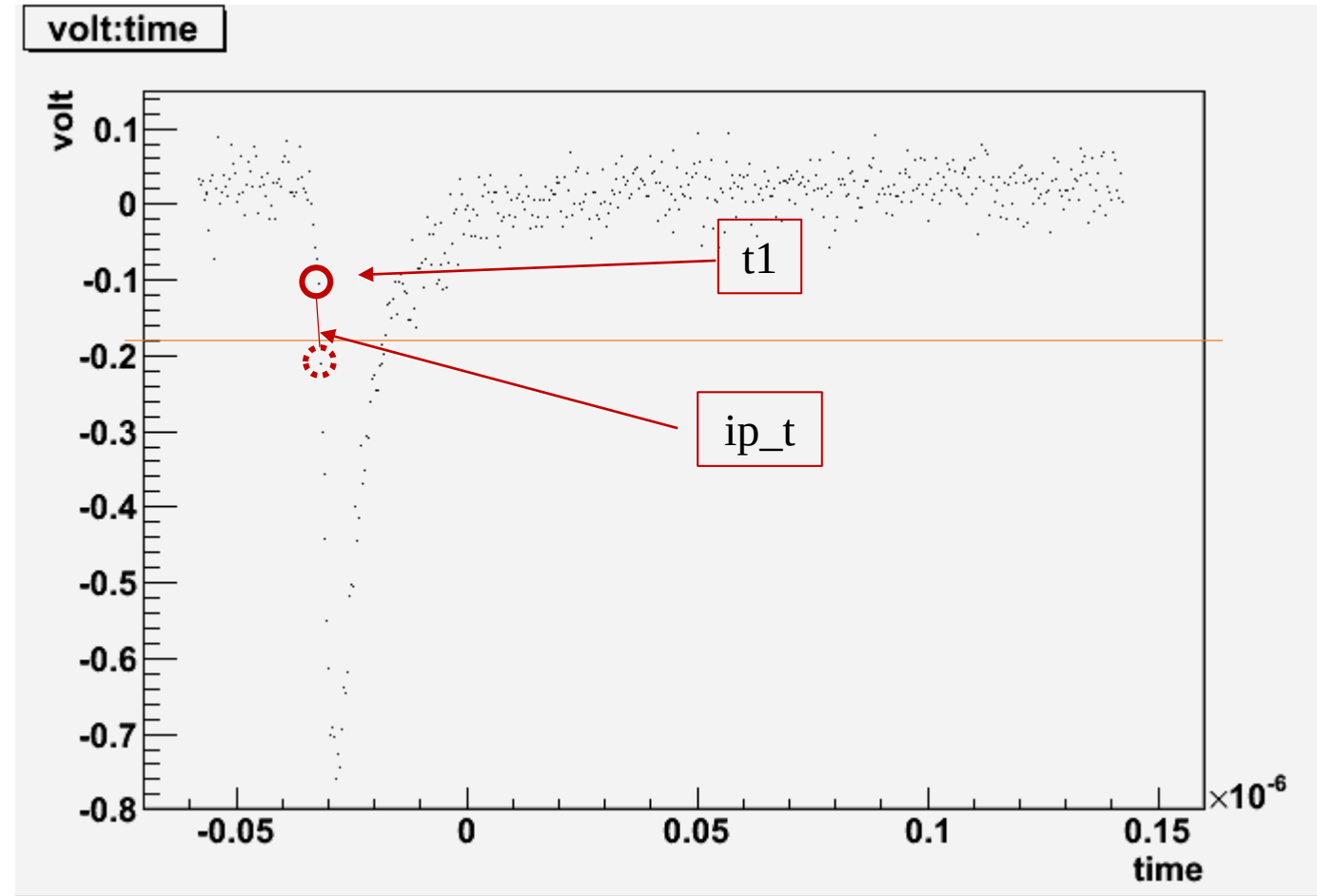
raw signal
(volt vs time)



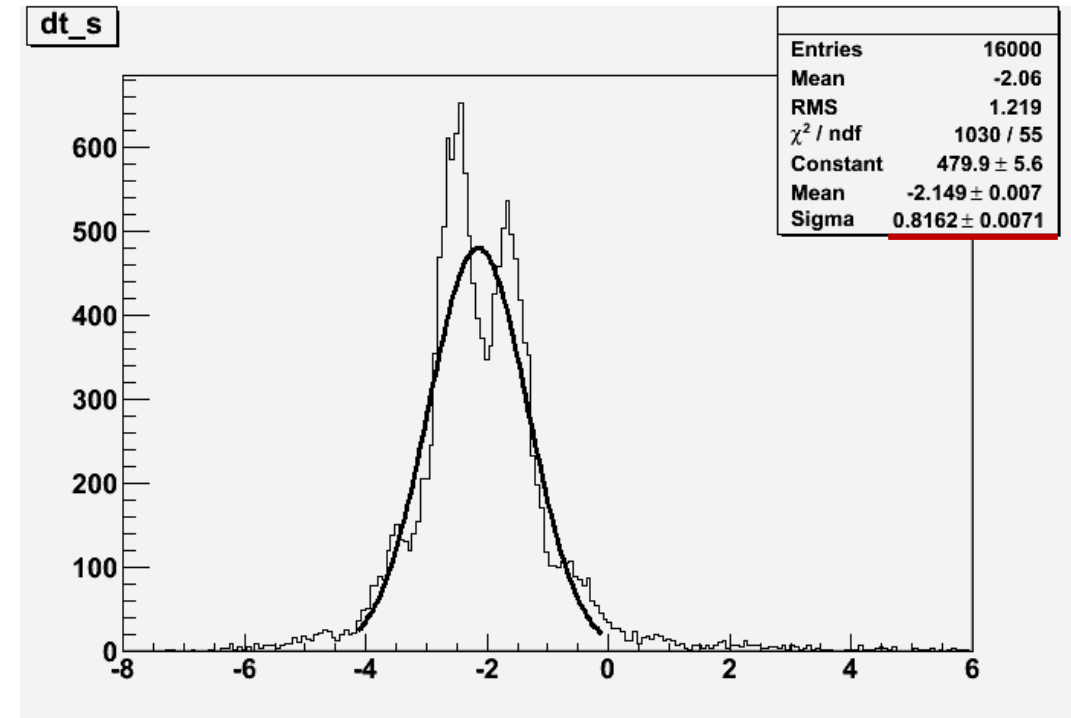
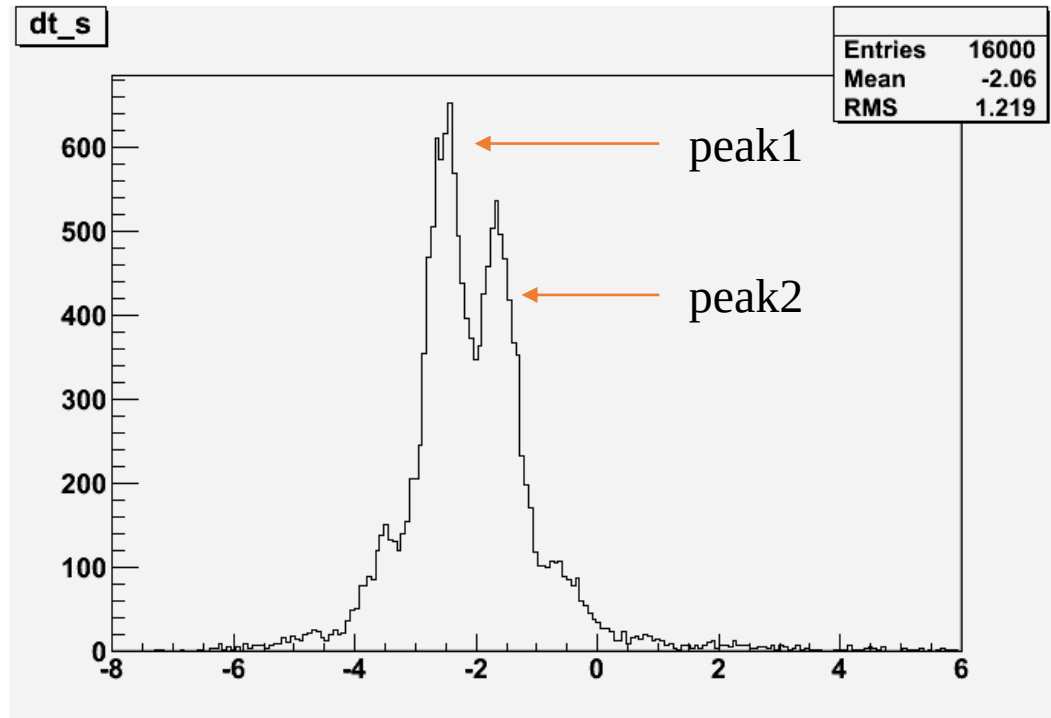
Oscilloscope, one trigger(PWO)

raw signal
(volt vs time)

$$t1 - ip_t = \text{delta}$$

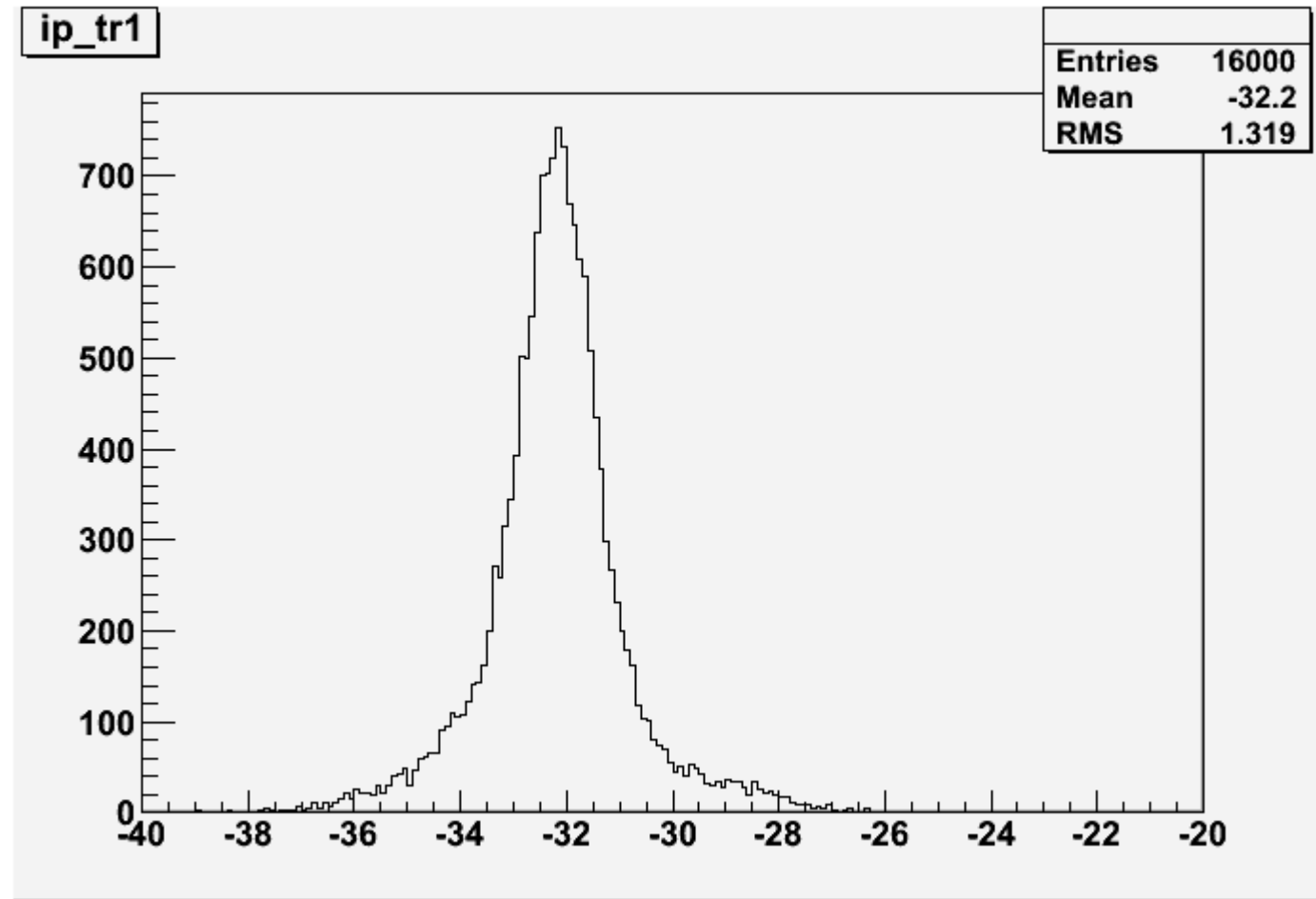


Oscilloscope, one trigger(PWO)



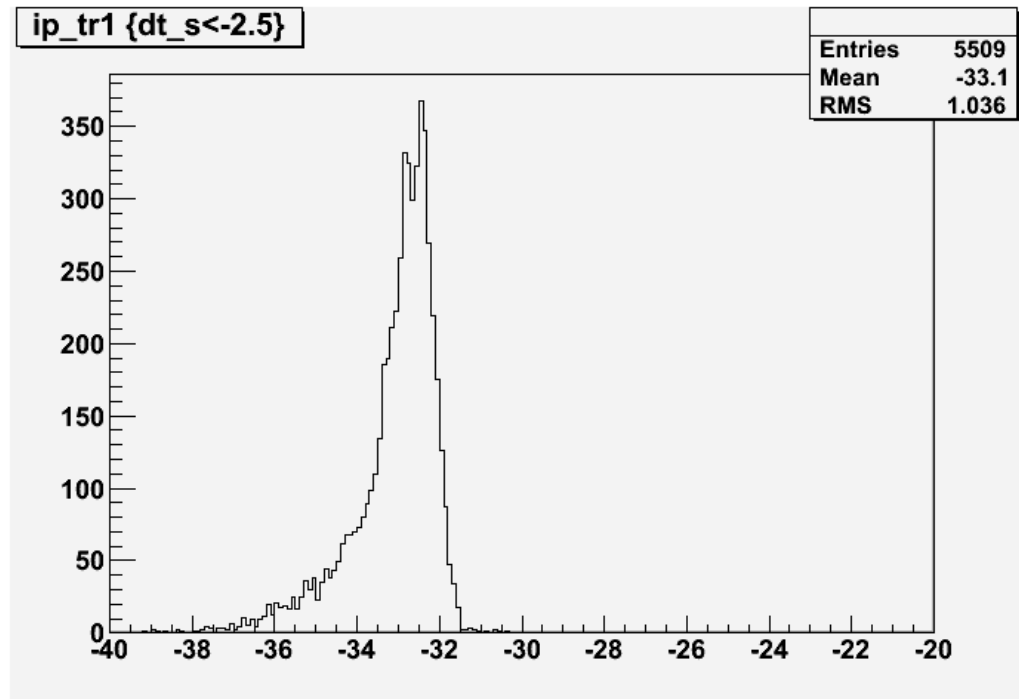
peak1 : $dt_s < -2.5 \text{ ns}$
peak2 : $dt_s > -2 \text{ ns}$

t1 hist.

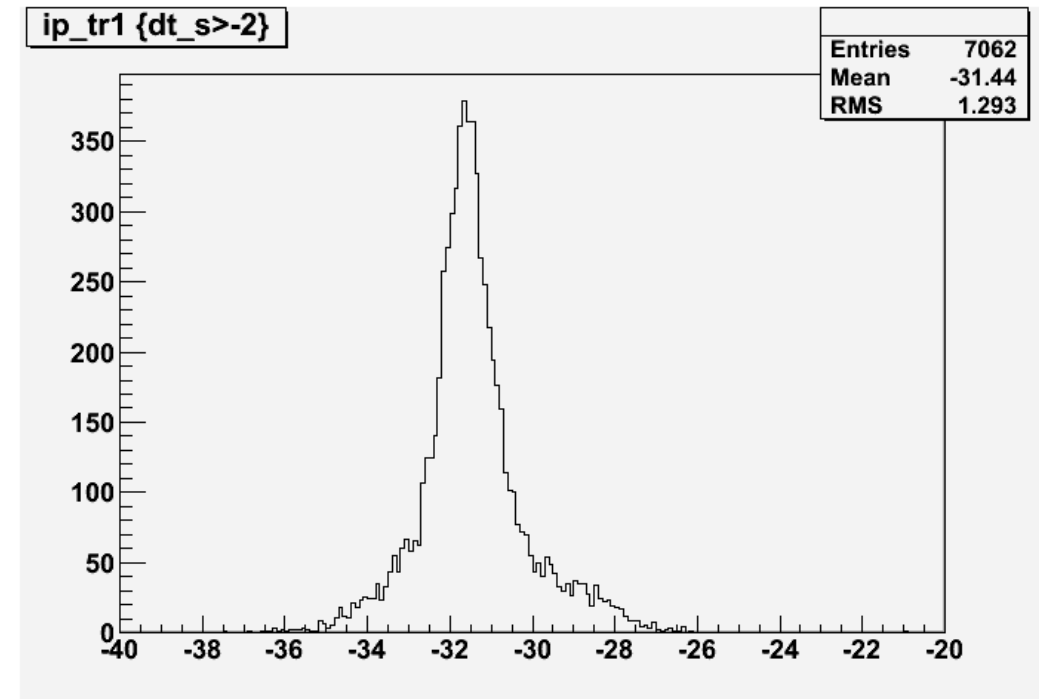


Oscilloscope, one trigger(PWO)

t1 hist.

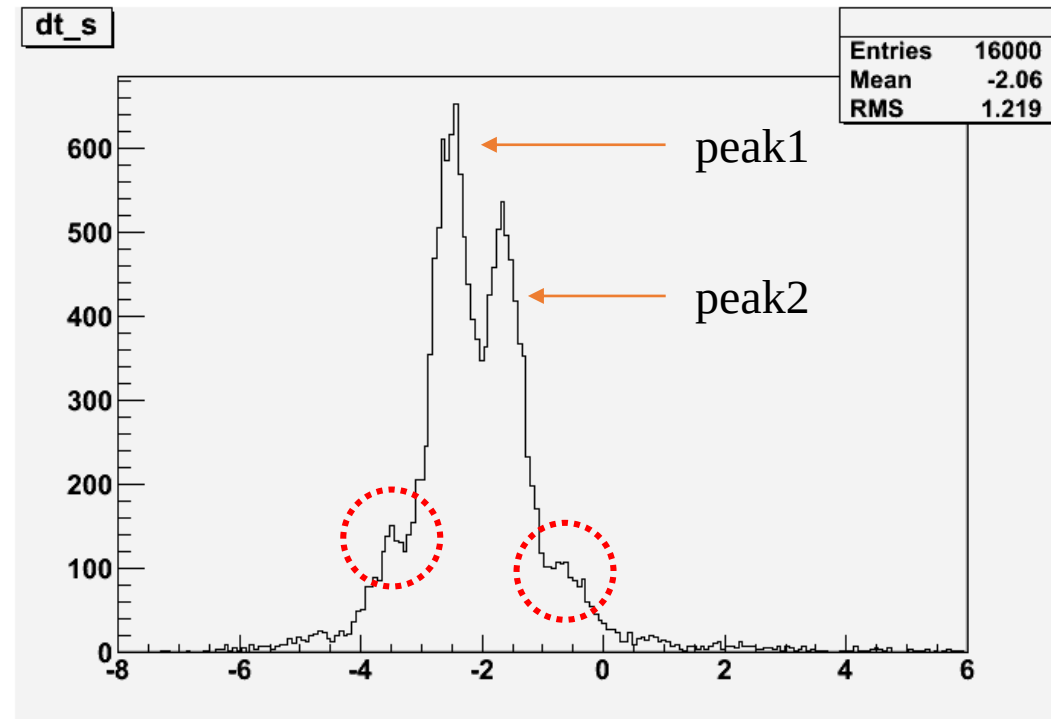


peak1



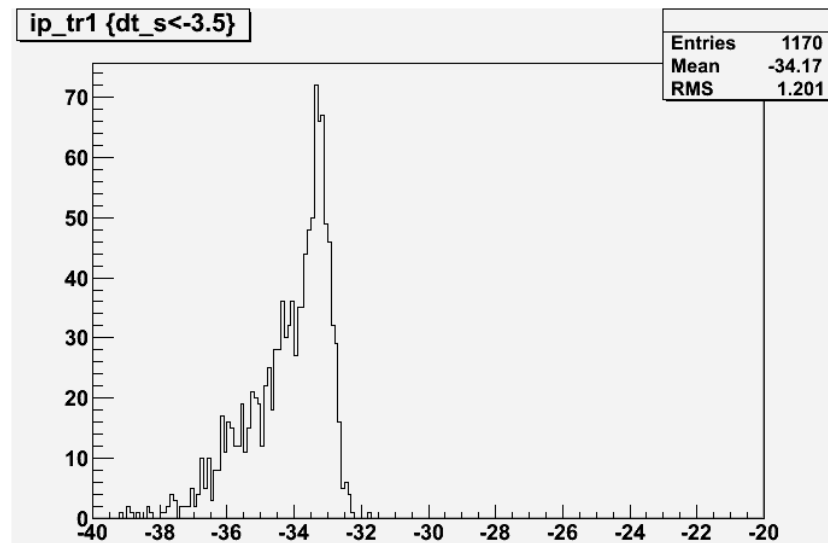
peak2

Oscilloscope, one trigger(PWO)

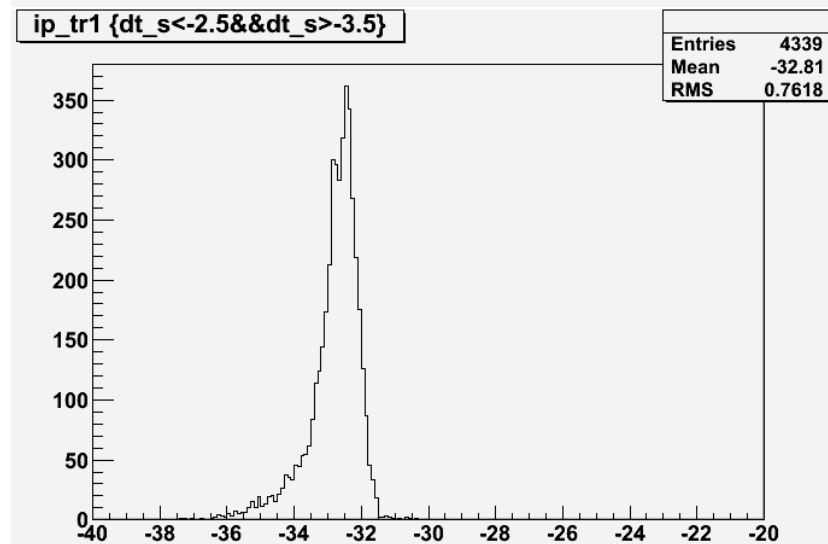


Oscilloscope, one trigger(PWO)

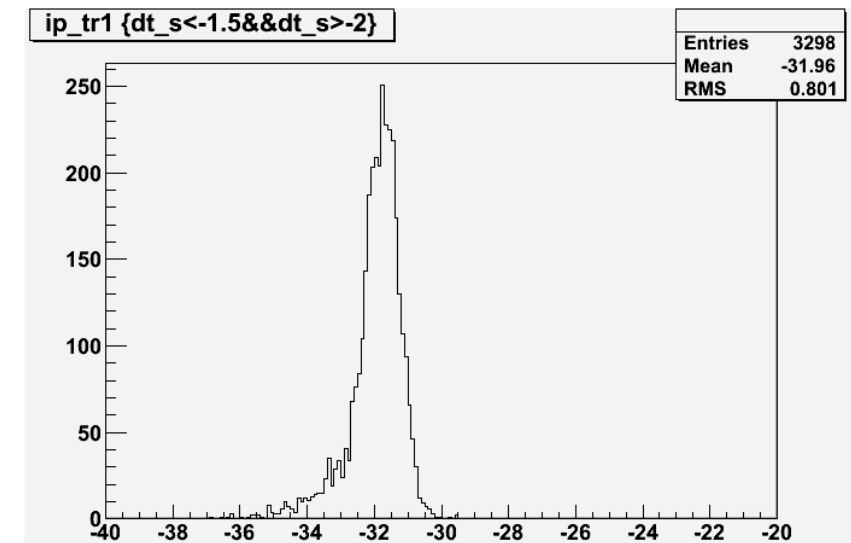
①



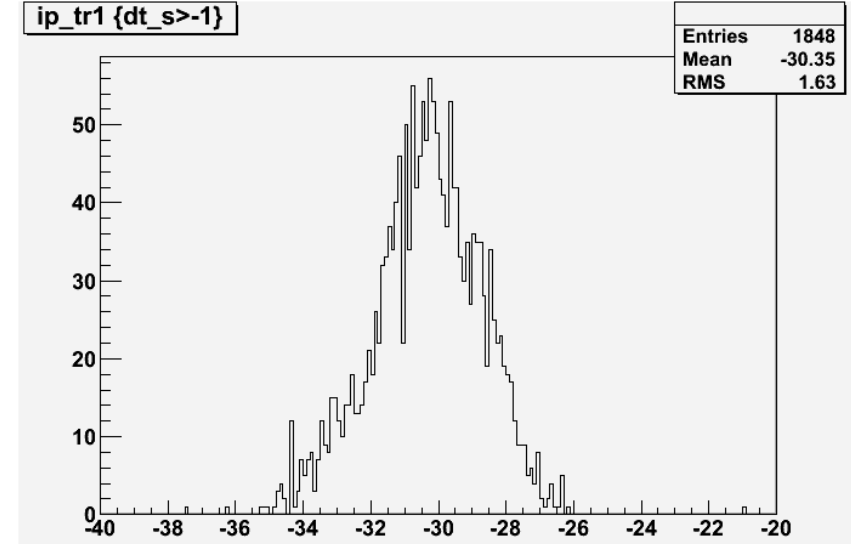
②



③

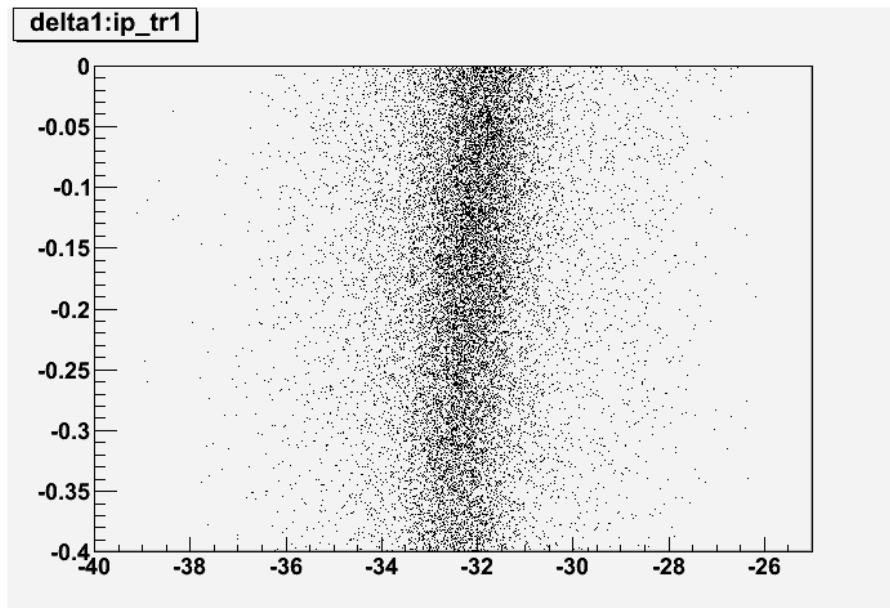


④

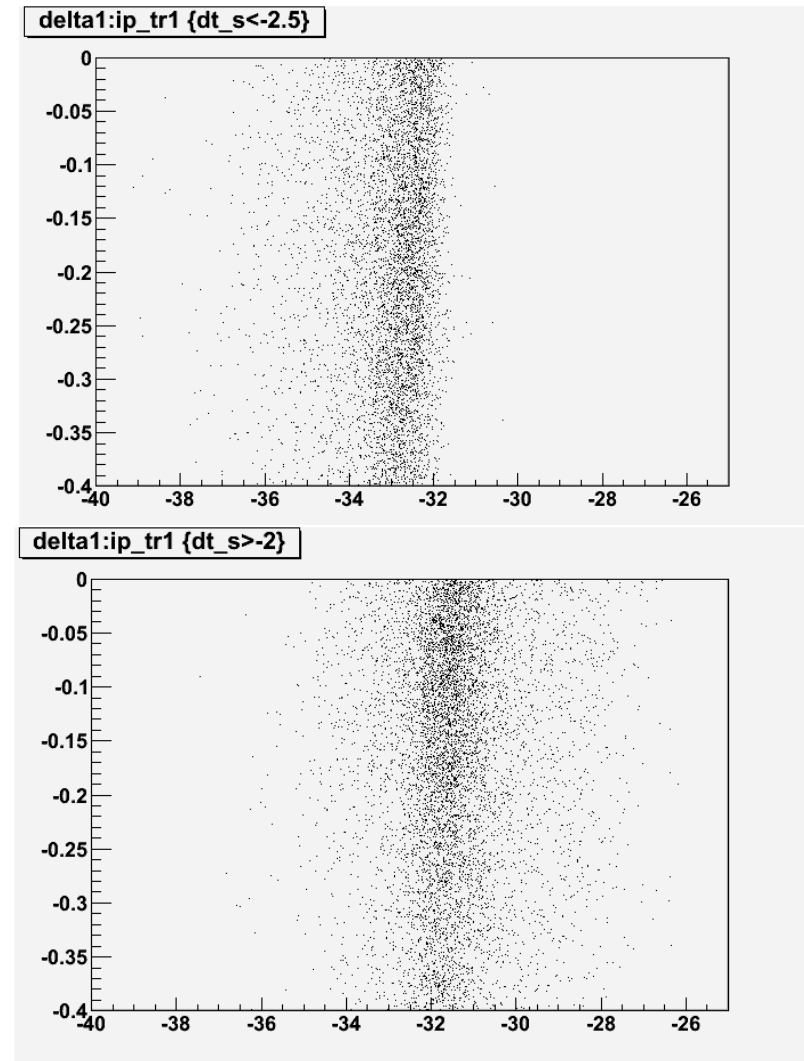


Oscilloscope, one trigger(PWO)

delta – t1 hist.

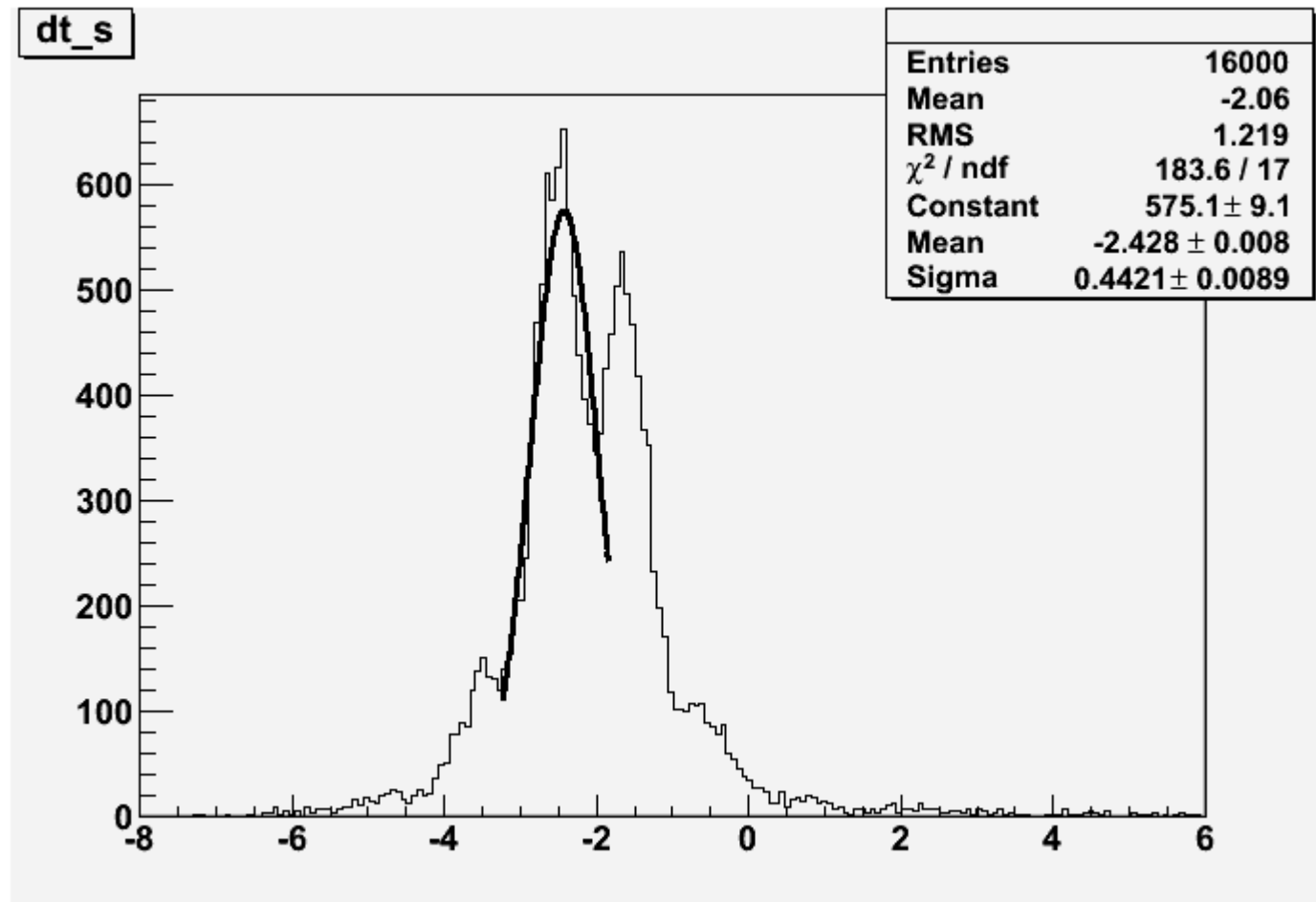


peak1



peak2

Oscilloscope, one trigger(PWO)

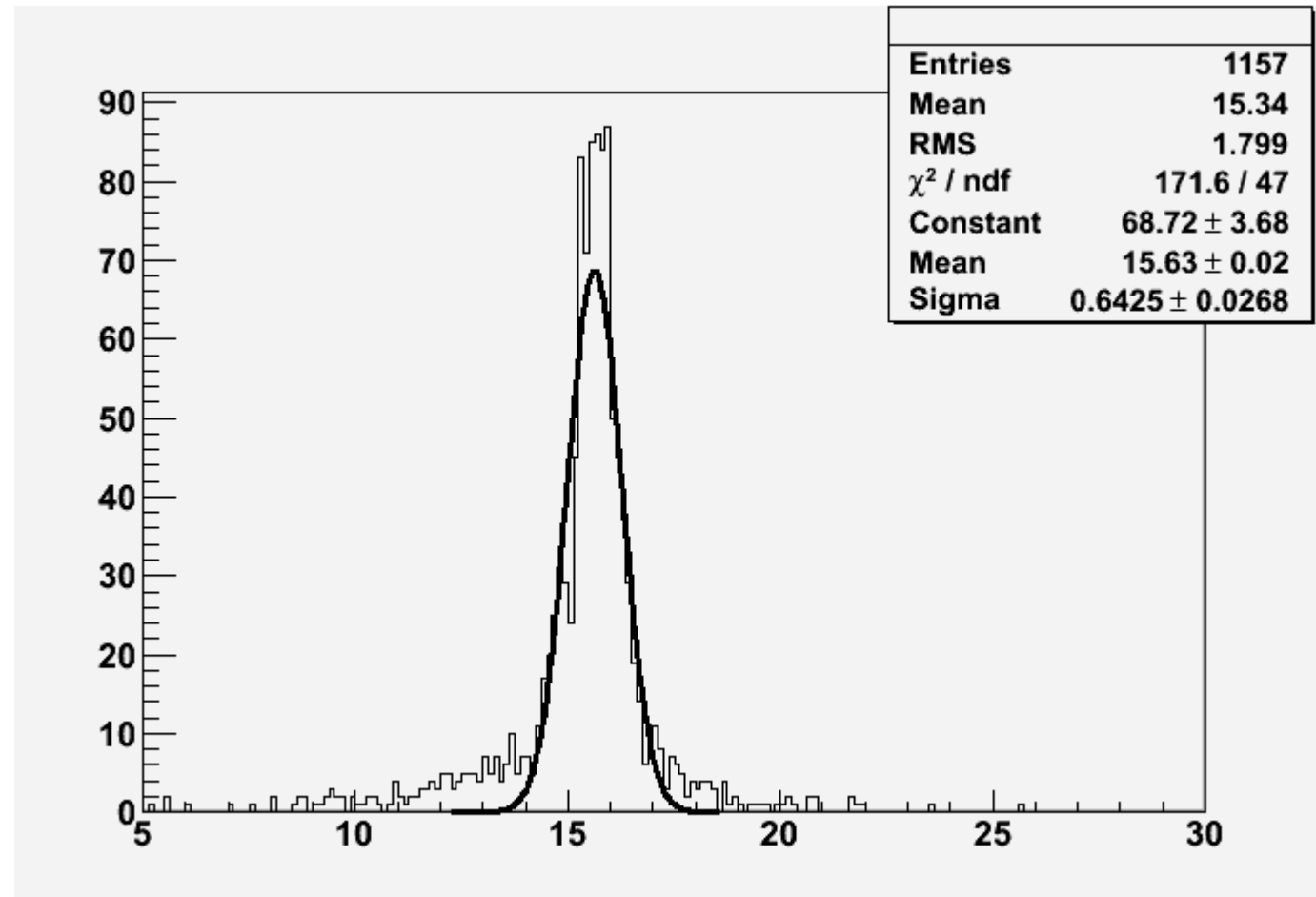


still worse than FADC

of triggers ?

noise ?

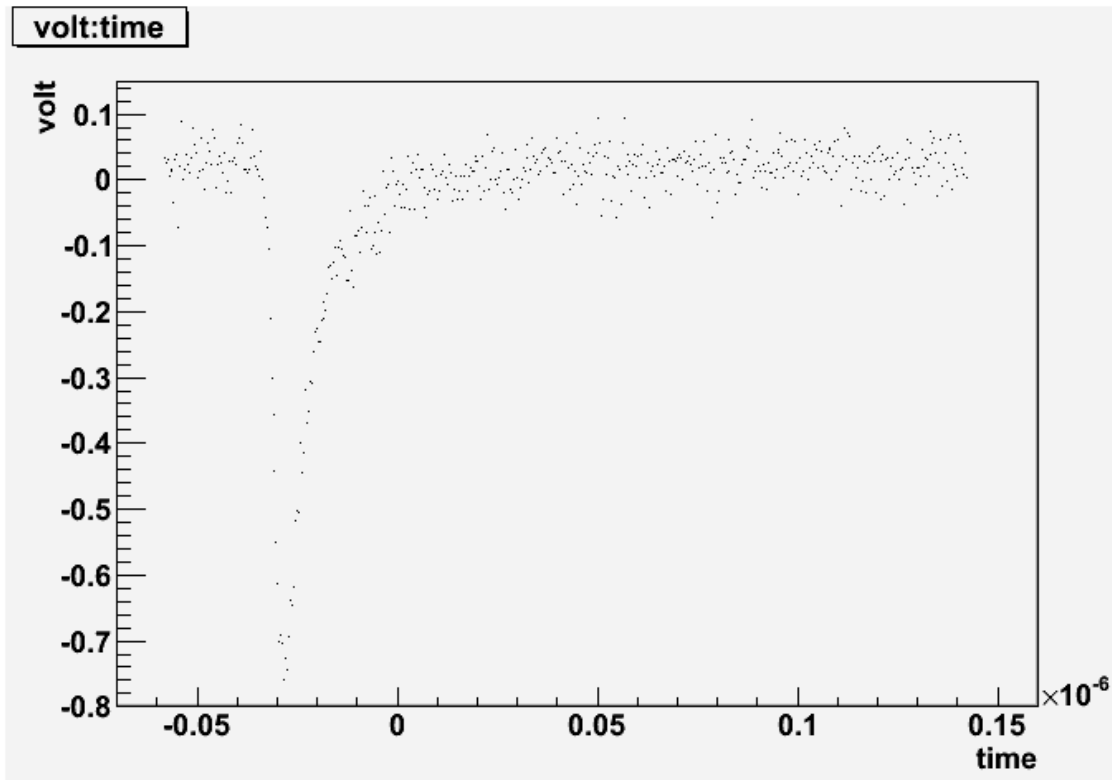
Oscilloscope, two triggers(PWO)



Noise comparison between Oscilloscope and FADC

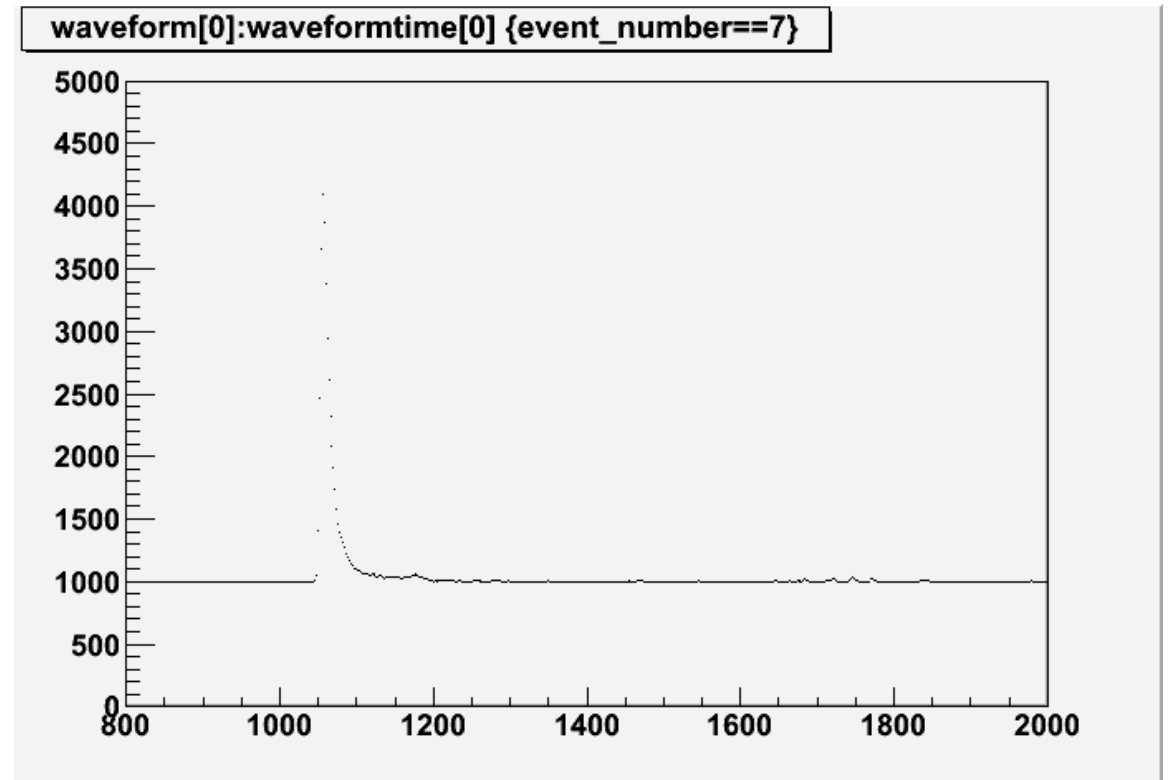
Oscilloscope

baseline = avg. value before peakentry - 50



FADC

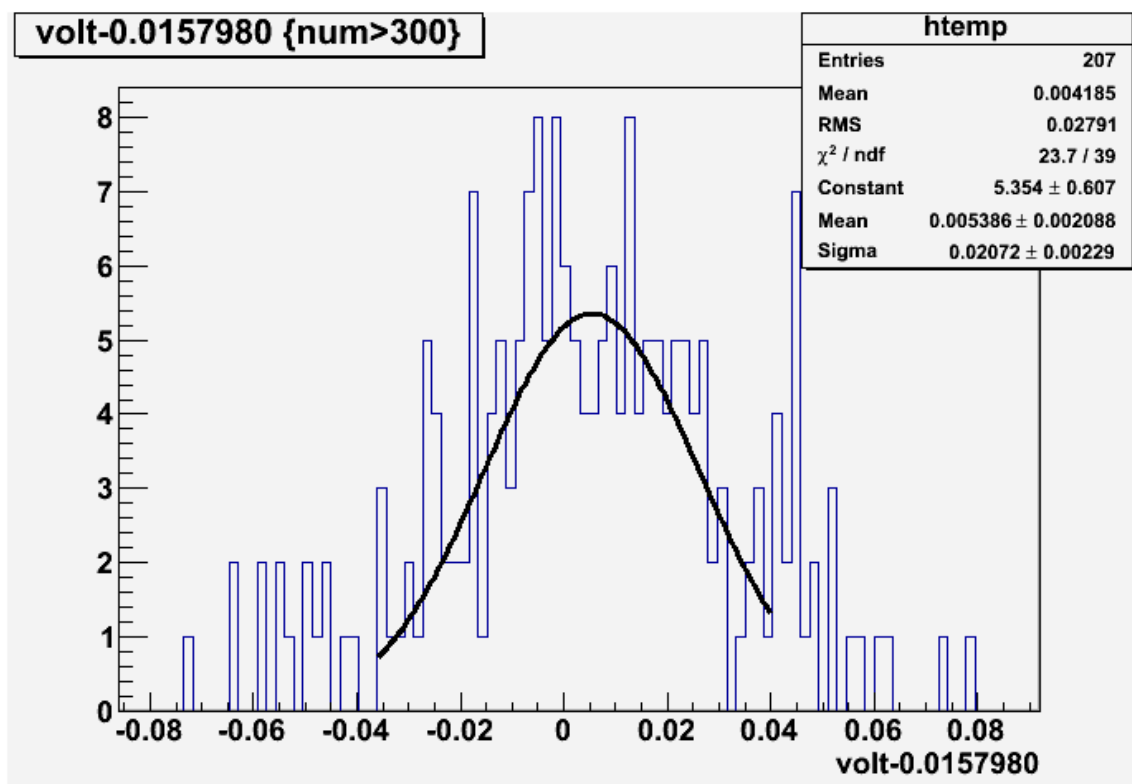
baseline = avg. value before peakentry - 25



Noise comparison between Oscilloscope and FADC

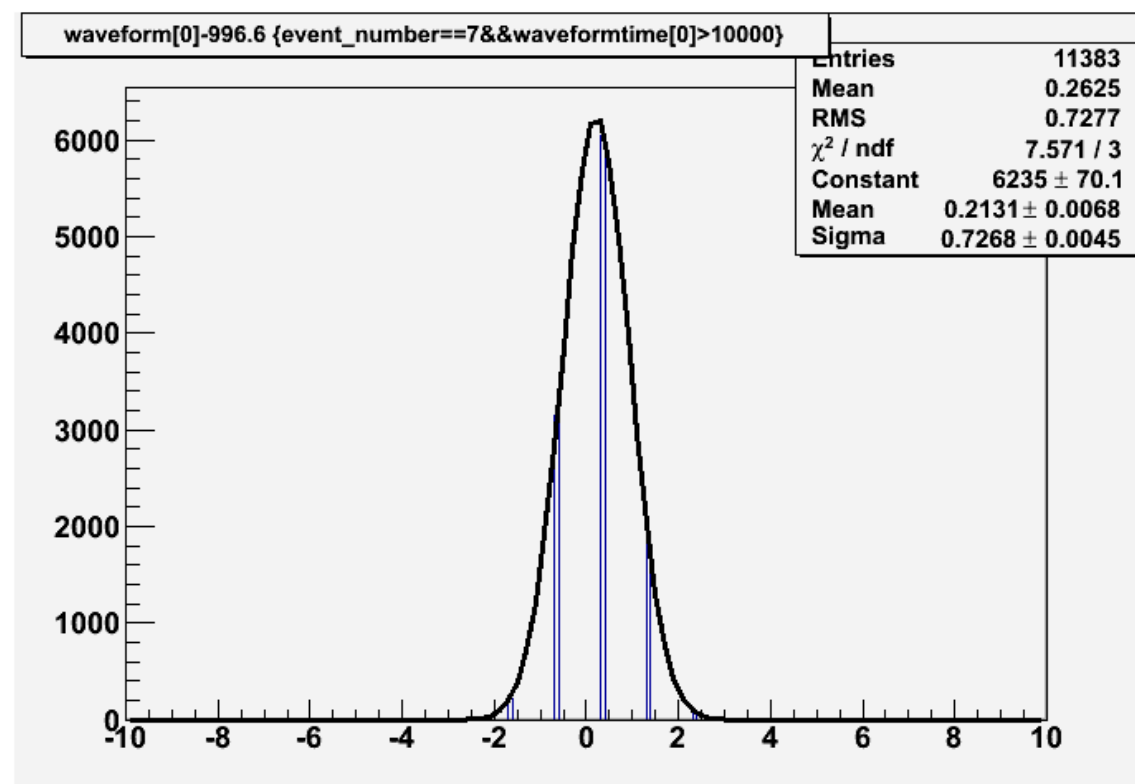
Oscilloscope

hist. of volt – baseline [200 from edge]



FADC

hist. of volt – baseline [time>10000]



Conclusion

Find out why the oscilloscope data have the worse resolutions.

⇒ because of noise difference

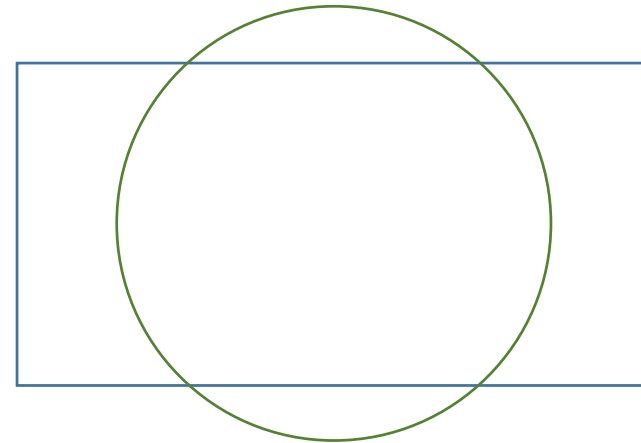
Need to find another to prove the interpolation for Δt analysis, not comparing with oscilloscope.

⇒ fitting

To do

Two plastic scintillators test

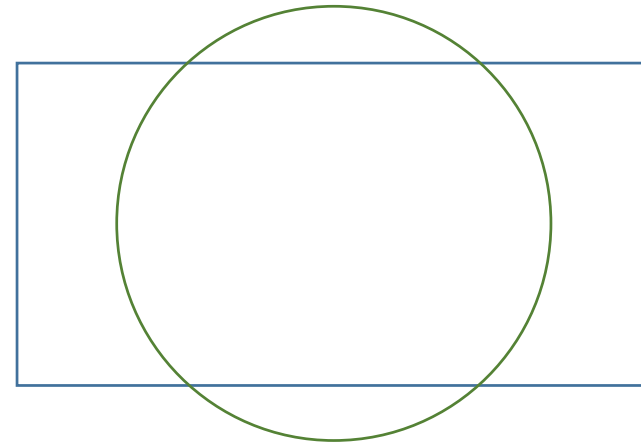
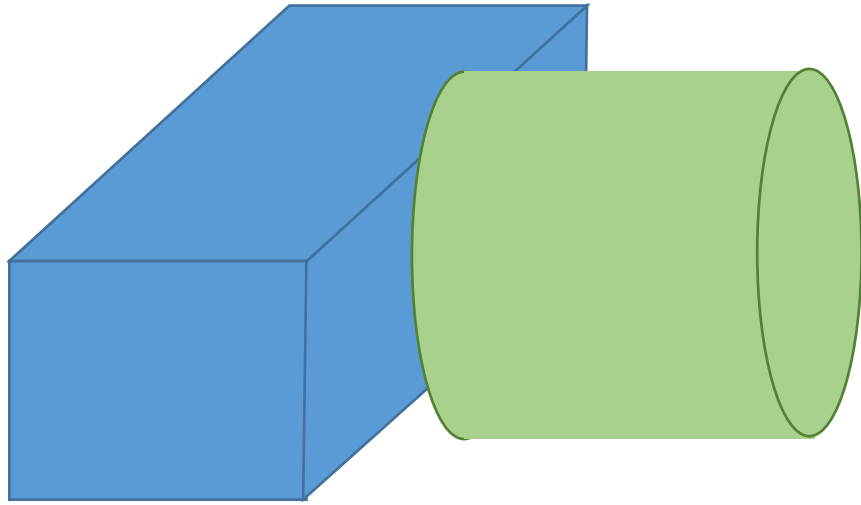
A case design



width : 10cm
height : 5cm

diameter = 6cm

A case design



width : 10cm
height : 5cm

diameter = 6cm

A case design

