Test Result for the bar-type Neutron Detector with a modified electronic set-up.

Lab Meeting

2013/07/12

Friday

Mulilo Benard

Modified electronic set-up

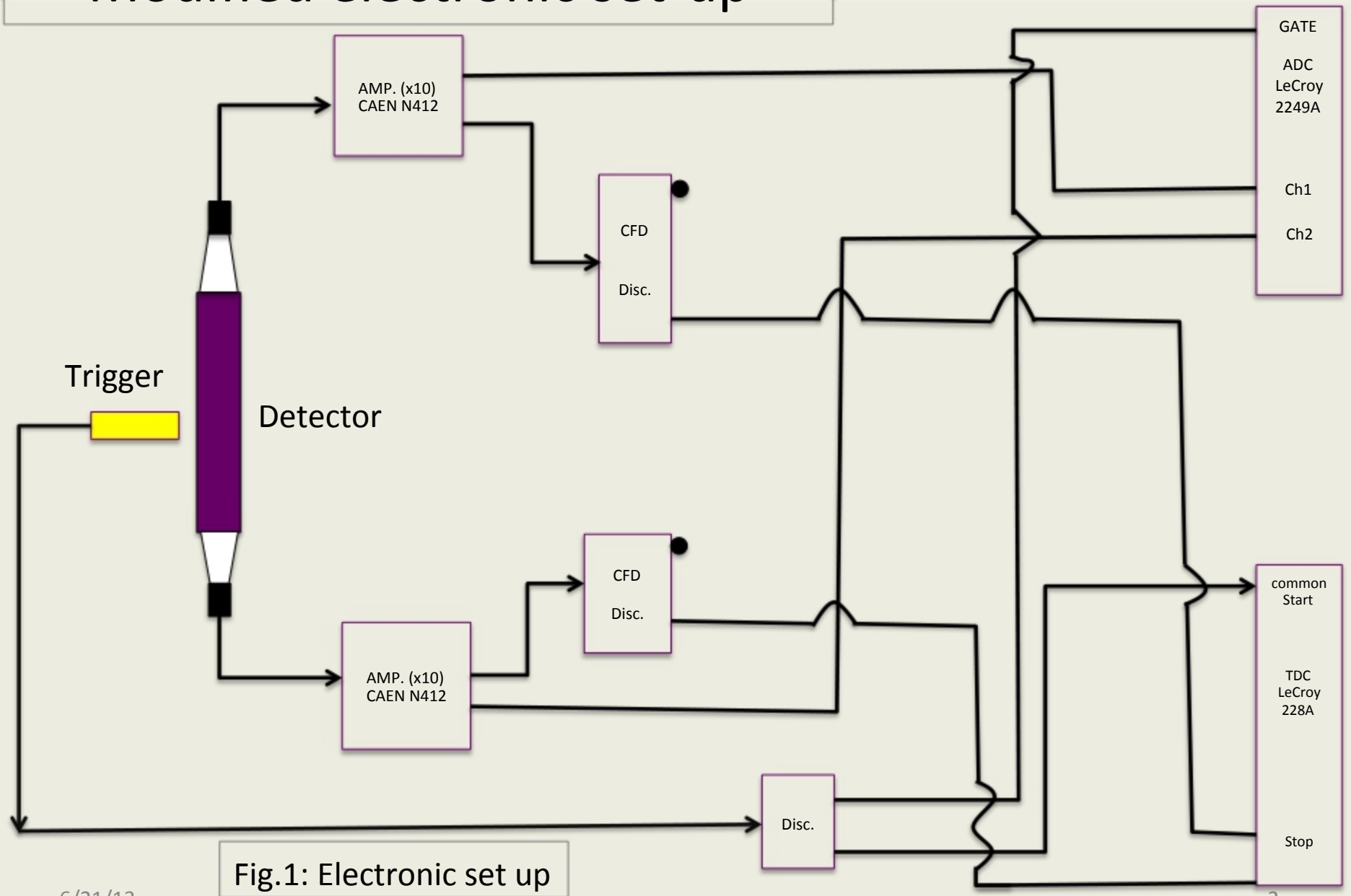


Fig.1: Electronic set up

^{60}Co source experimental set-up

Fig. 2: 2 m-long neutron detector bar

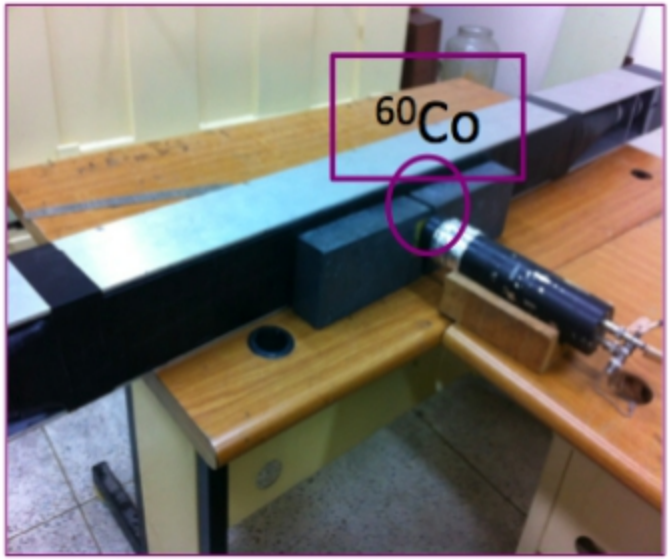


Fig. 3: Expt. set-up with ^{60}Co

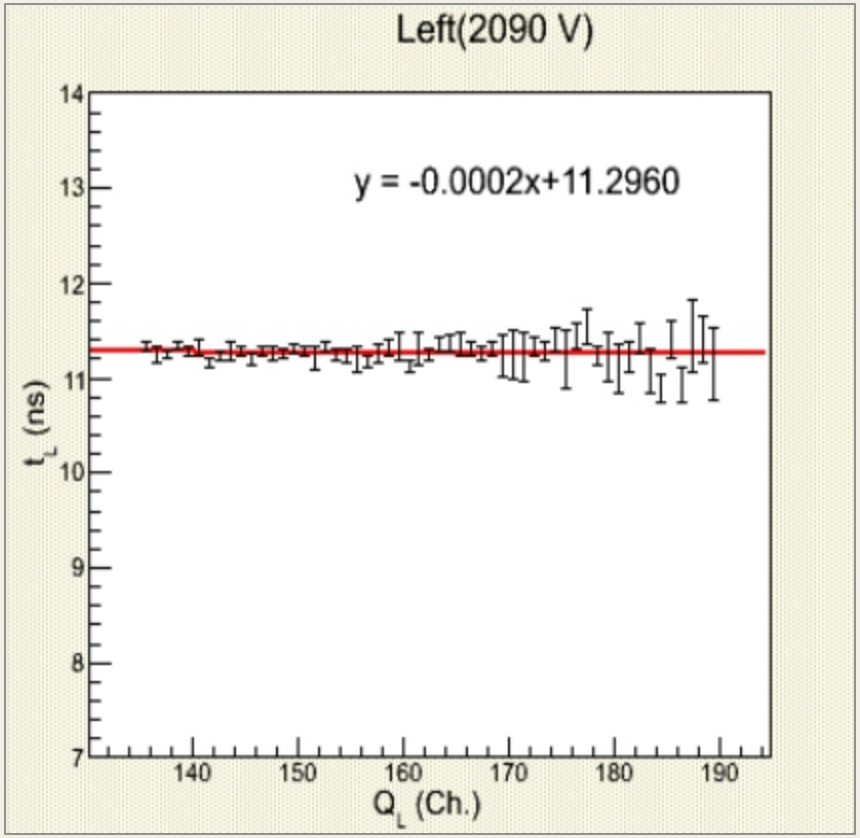
- Determine hit position using time difference of two signals.

- Measurements carried out at 10 cm step from left.

Test result with ^{60}Co source

Ch1 (Left: 2090 V)

Ch2 (Right:2160 V)



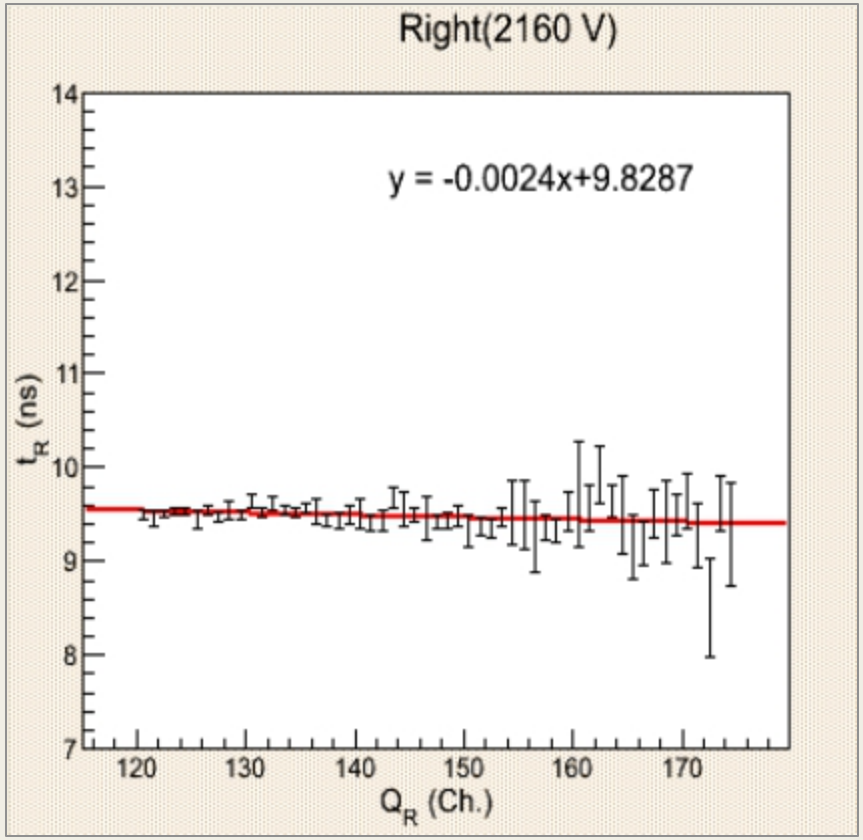
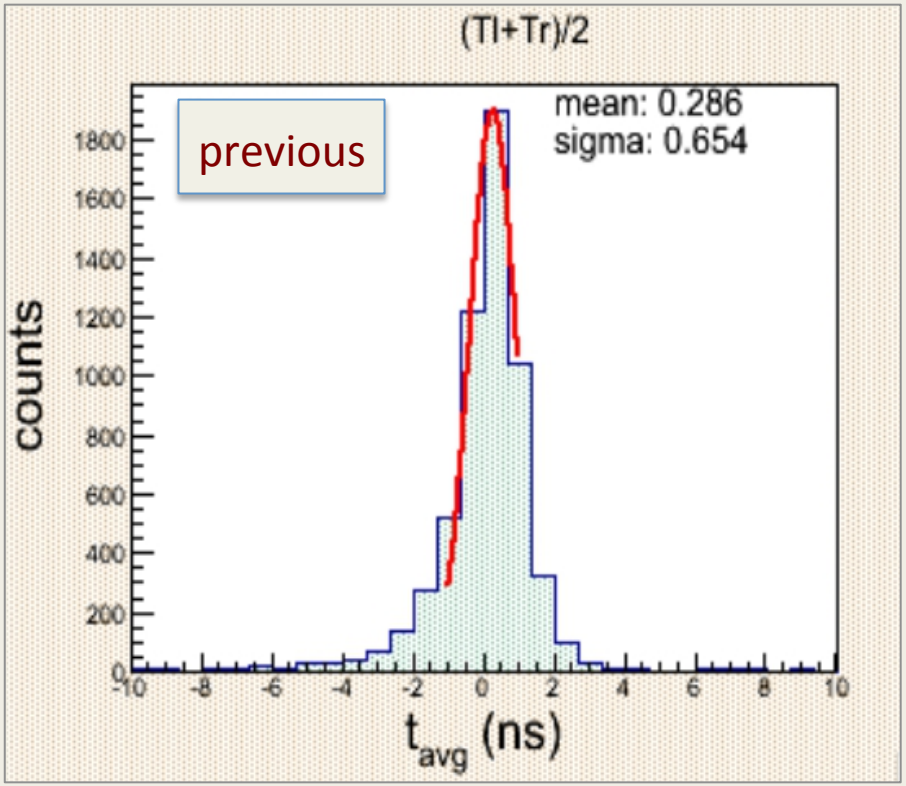


Fig. 4 : Correlations between time and charge values of two scintillator PMTs

Test result with ^{60}Co source

Time resolution



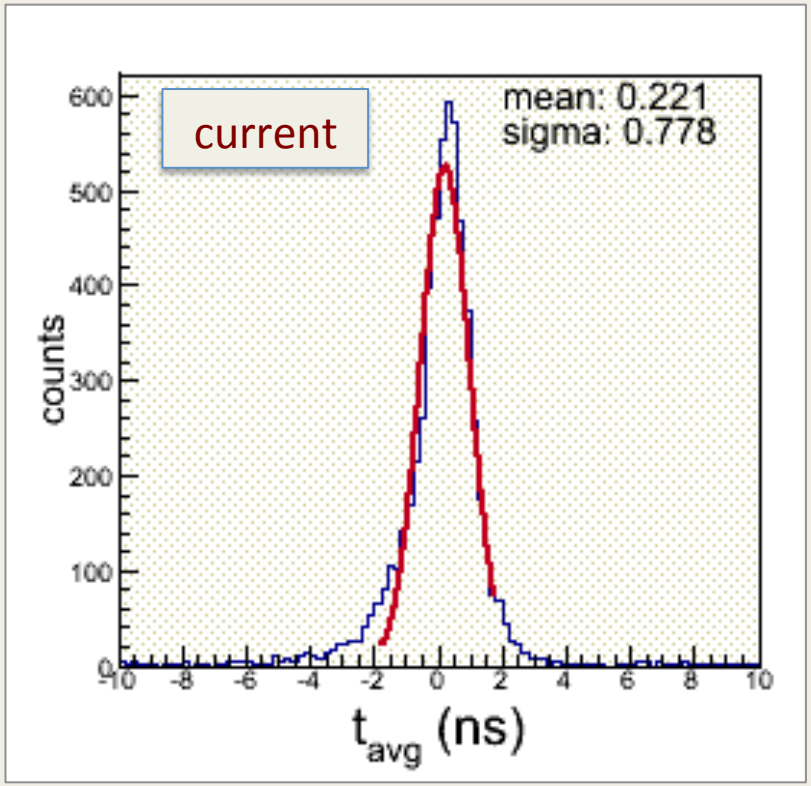
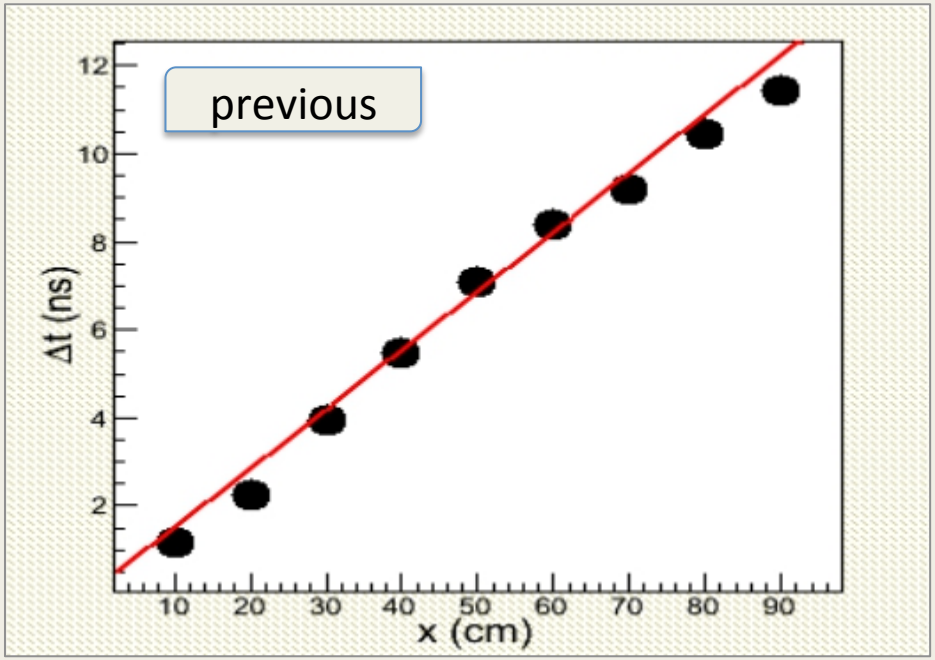


Fig. 5: Average time distributions of two scintillator PMTs after slewing effect was corrected.

Test result with 60Co radiation source

Time difference of scintillator PMTs



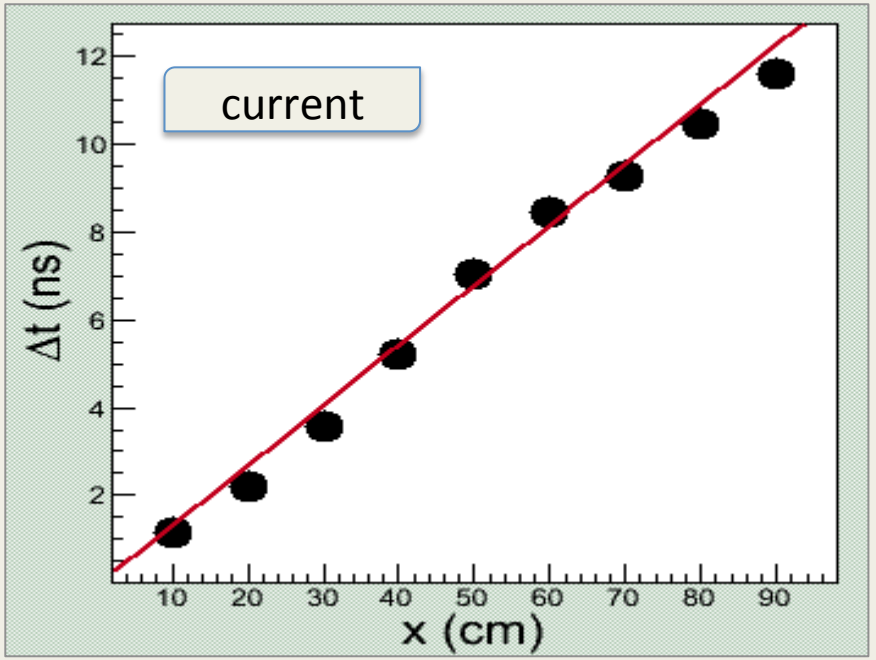


Fig.6: Time difference between two scintillator PMTs

	α (cm/ns)	β (cm)	σ_x (cm)
Previous CFD result	7.44±0.05	-1.25 ± 0.34	6.93
Current CFD result	7.29±0.04	0.47±0.32	7.62

Table 1: Fitting parameters for the linear functional form ($x = \alpha \Delta t + \beta$) in figure 6