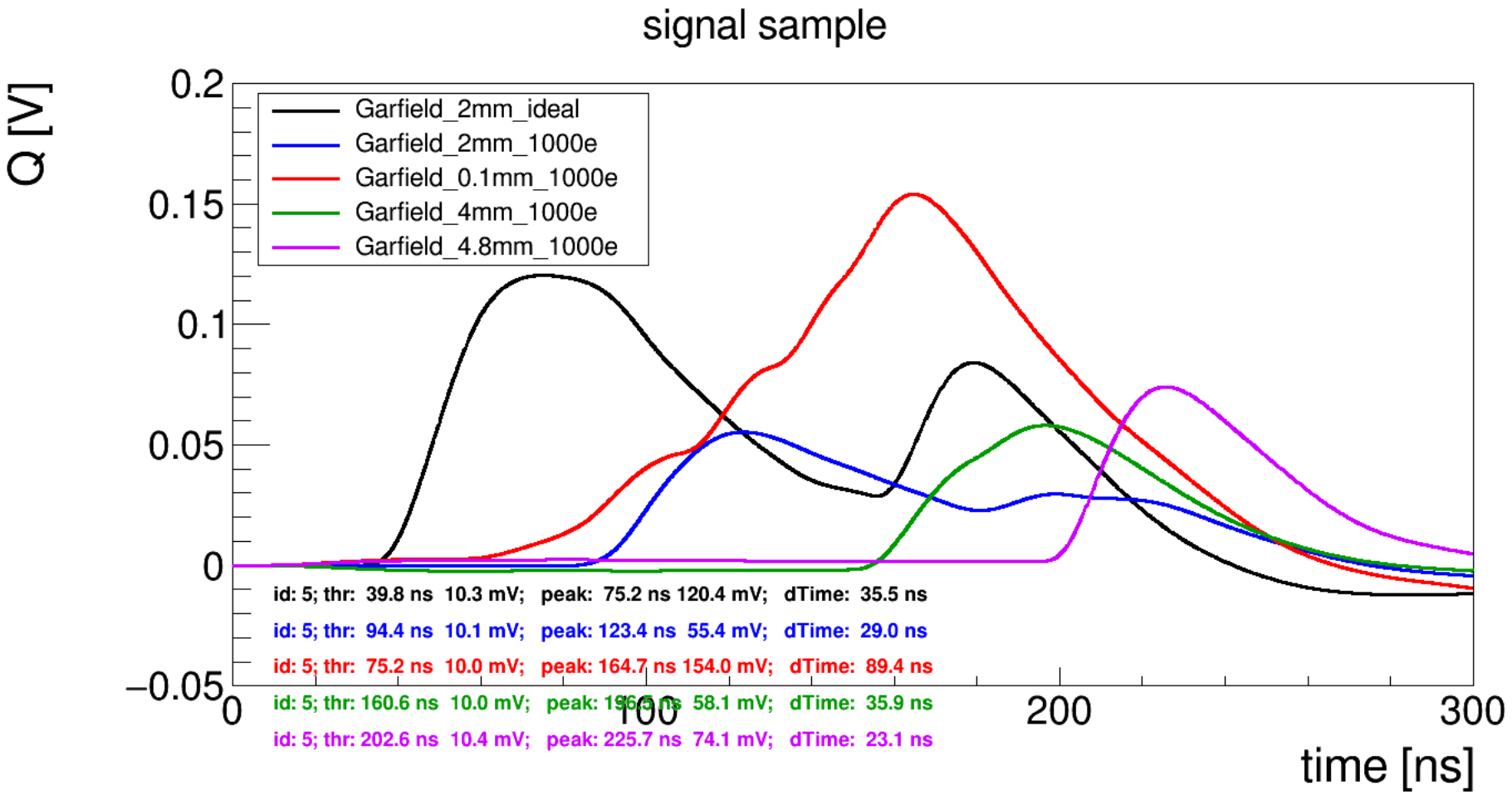
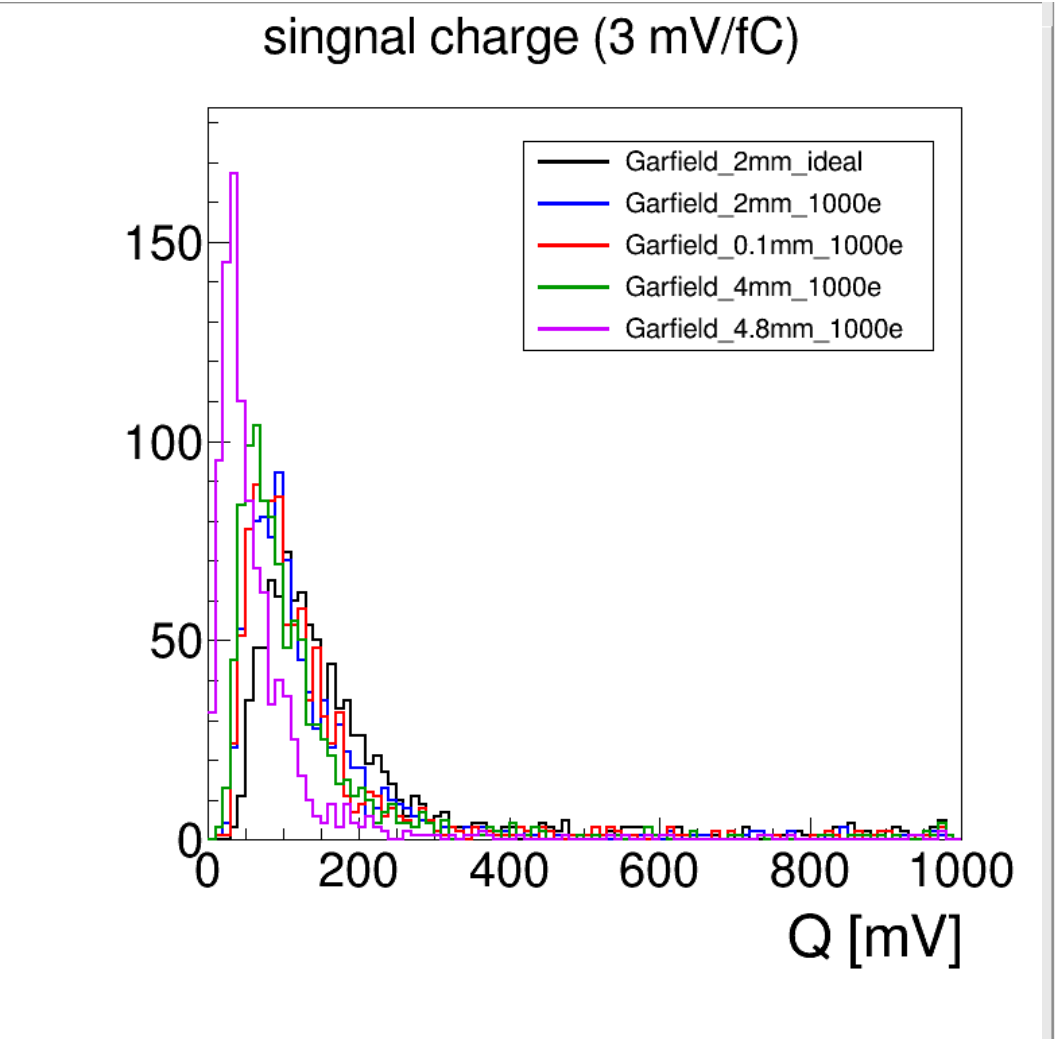
simulation studies : time between threshold and peak

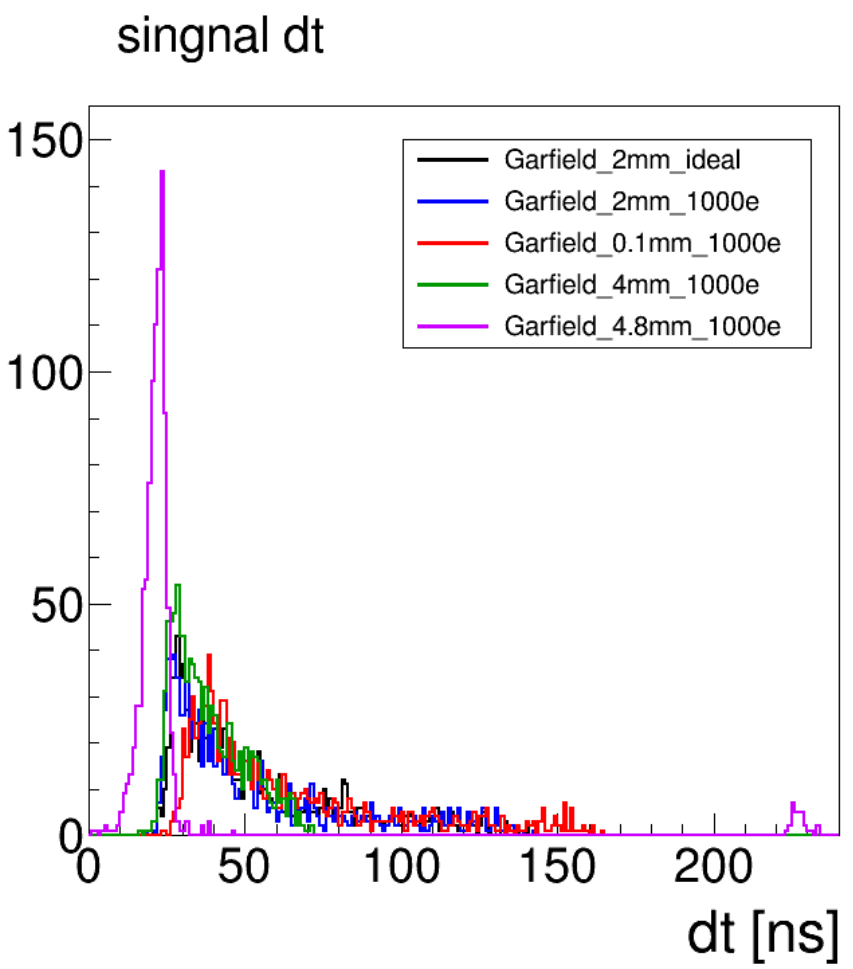
10.01.24 simulation data set:
`Ar_70_co2_30_1750V_B0_1atm_dWire30mkm_dTube10mm_2mm_muon_test_garf_bin2000_*.sig.csv`
from Sonya_Dosbol_2mm_Comparison.7z (2k signals) no noise
15.01.24 simulation data set:
`Ar_70_co2_30_1750V_B0_1atm_?_?mm_bin2000_*.sig.csv` from noField_SPD_1000e.7z 1k per point, 1000e noise

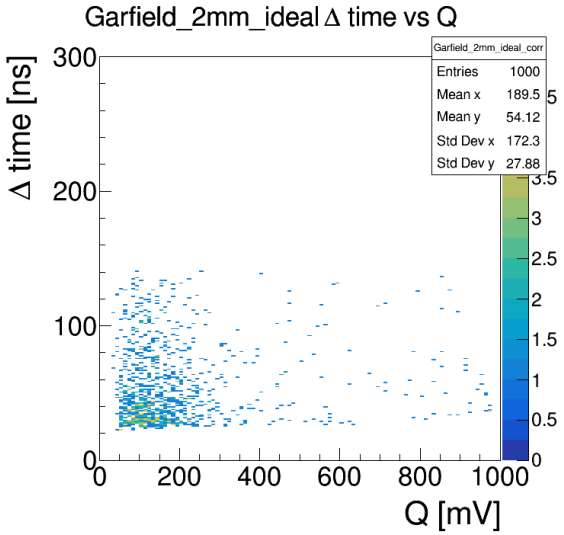
both diameter 1 cm, peaking time 25 ns, gain 3mV/fC

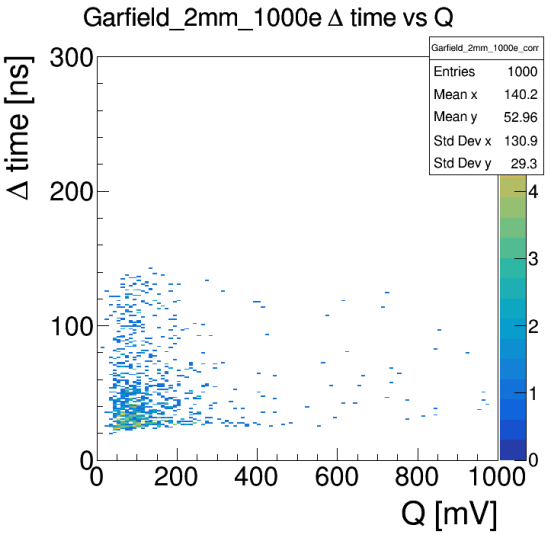

signal sample
Q [V]
0.2
0.15
0.1
0.05
0
−0.05
0
100
200
300
time [ns]
Garfield_2mm_ideal
Garfield_2mm_1000e
Garfield_0.1mm_1000e
Garfield_4mm_1000e
Garfield_4.8mm_1000e
id: 5; thr: 39.8 ns 10.3 mV; peak: 75.2 ns 120.4 mV; dTime: 35.5 ns
id: 5; thr: 94.4 ns 10.1 mV; peak: 123.4 ns 55.4 mV; dTime: 29.0 ns
id: 5; thr: 75.2 ns 10.0 mV; peak: 164.7 ns 154.0 mV; dTime: 89.4 ns
id: 5; thr: 160.6 ns 10.0 mV; peak: 196.5 ns 58.1 mV; dTime: 35.9 ns
id: 5; thr: 202.6 ns 10.4 mV; peak: 225.7 ns 74.1 mV; dTime: 23.1 ns

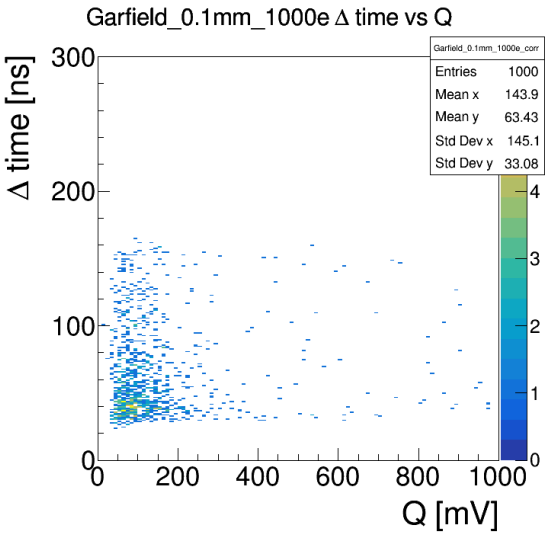
10 mV threshold

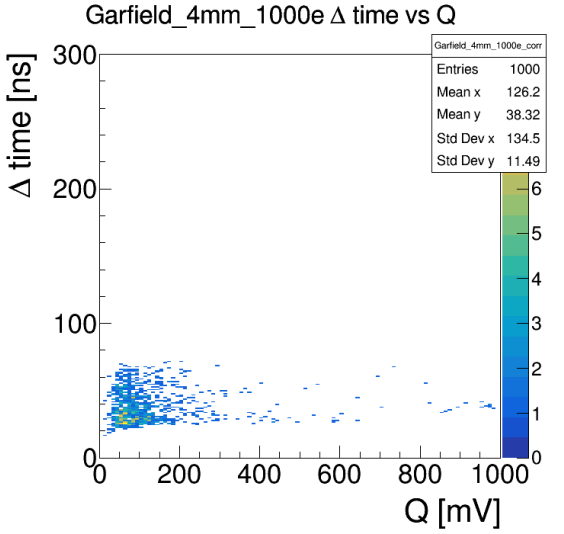


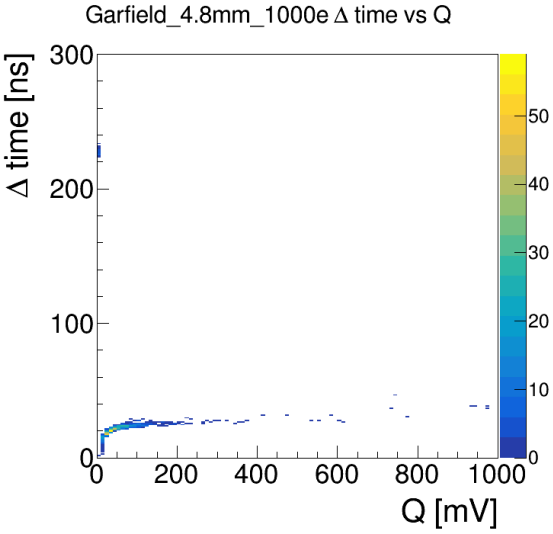


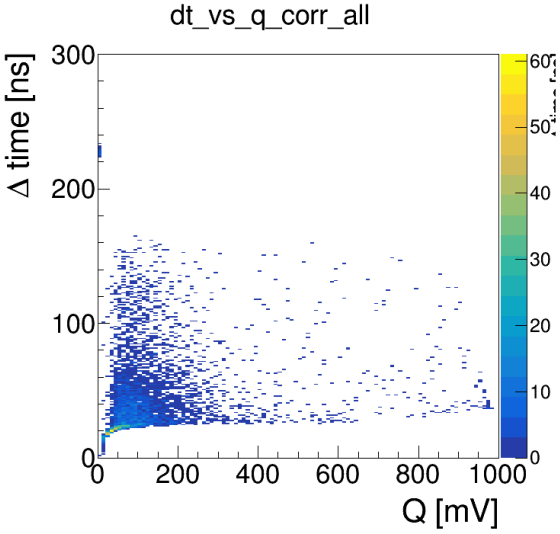

Garfield_2mm_ideal Δ time vs Q
Garfield_2mm_ideal_corr
Entries 1000
Mean x 189.5
Mean y 54.12
Std Dev x 172.3
Std Dev y 27.88
Δ time [ns]
Q [mV]


Garfield_2mm_1000e Δ time vs Q
Garfield_2mm_1000e_corr
Entries 1000
Mean x 140.2
Mean y 52.96
Std Dev x 130.9
Std Dev y 29.3
Δ time [ns]
Q [mV]

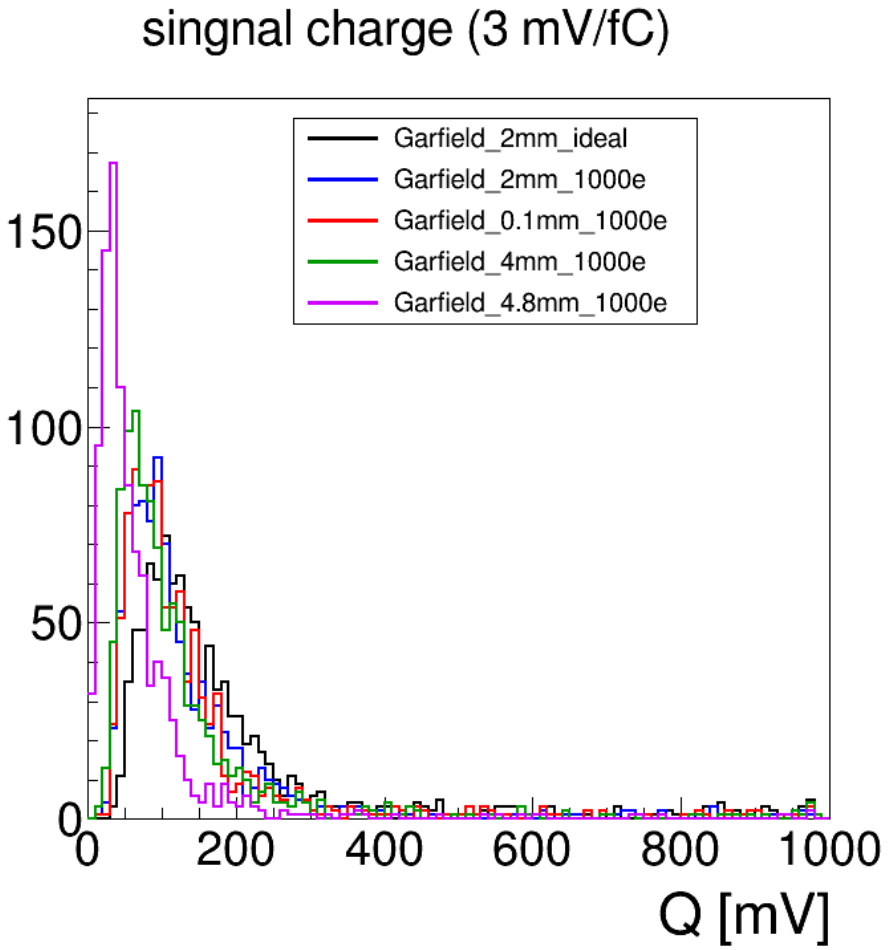

Garfield_0.1mm_1000e Δ time vs Q
Garfield_0.1mm_1000e_corr
Entries 1000
Mean x 143.9
Mean y 63.43
Std Dev x 145.1
Std Dev y 33.08
Δ time [ns]
Q [mV]

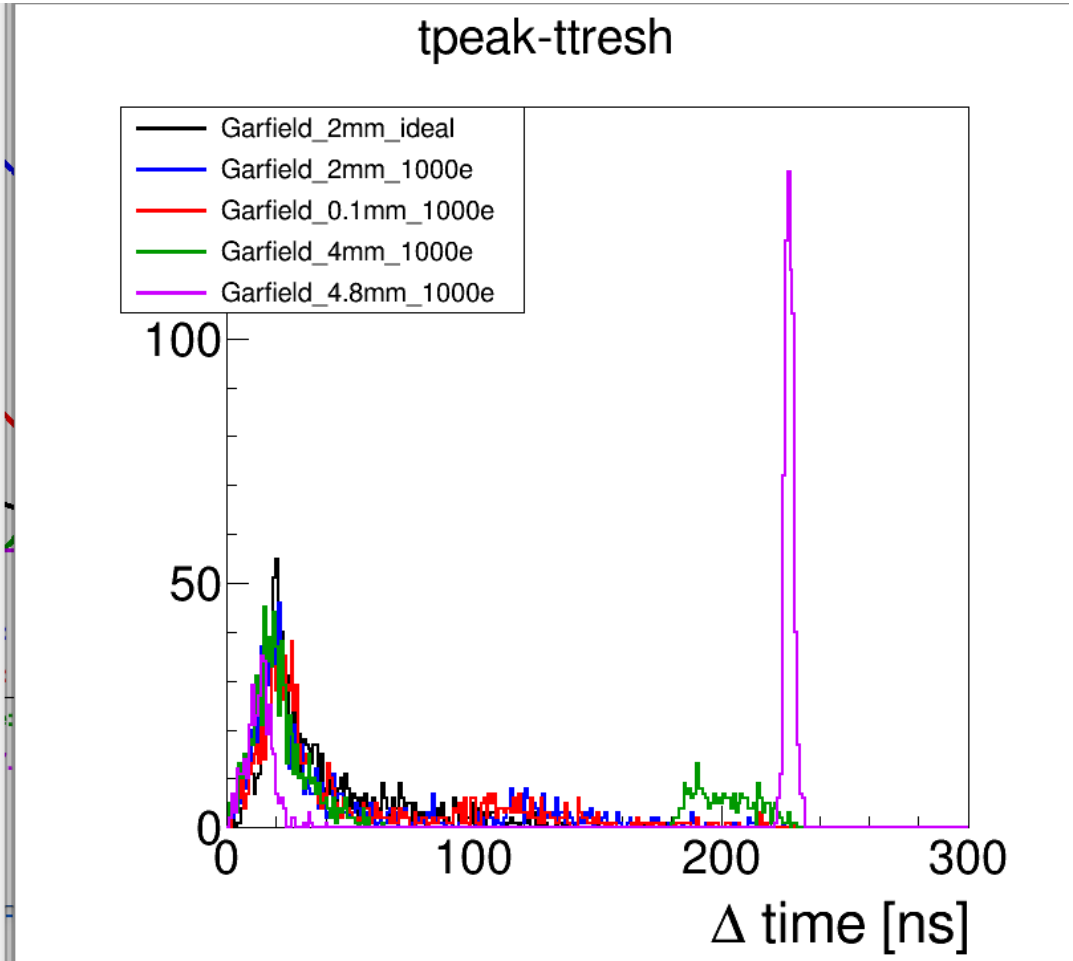

Garfield_4mm_1000e Δ time vs Q
Garfield_4mm_1000e_corr
Entries 1000
Mean x 126.2
Mean y 38.32
Std Dev x 134.5
Std Dev y 11.49
Δ time [ns]
Q [mV]

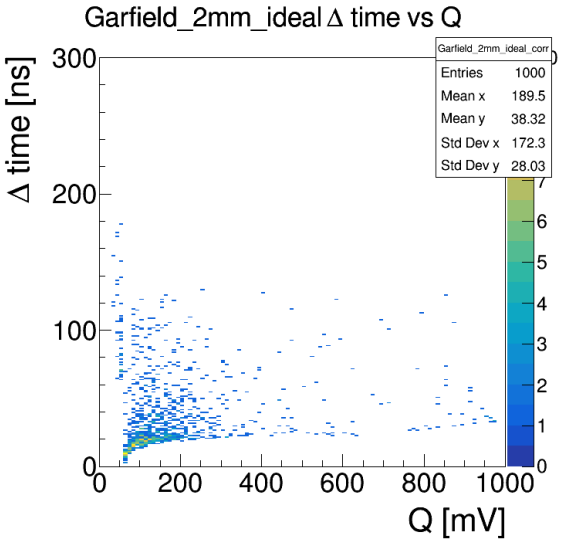

Garfield_4.8mm_1000e Δ time vs Q
Δ time [ns]
Q [mV]

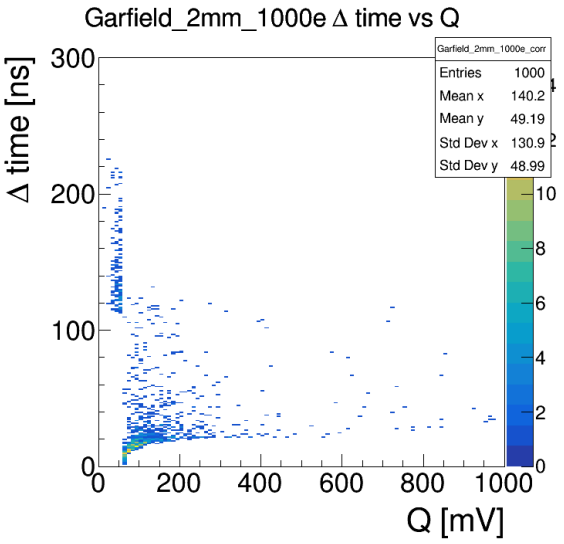

dt_vs_q_corr_all
Δ time [ns]
Q [mV]

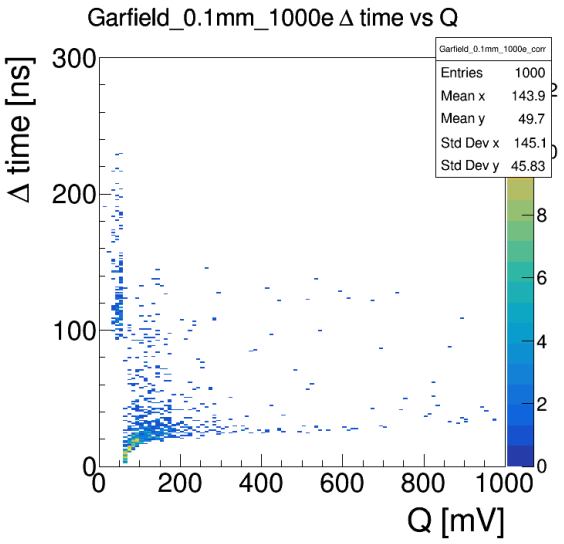
60 mV threshold

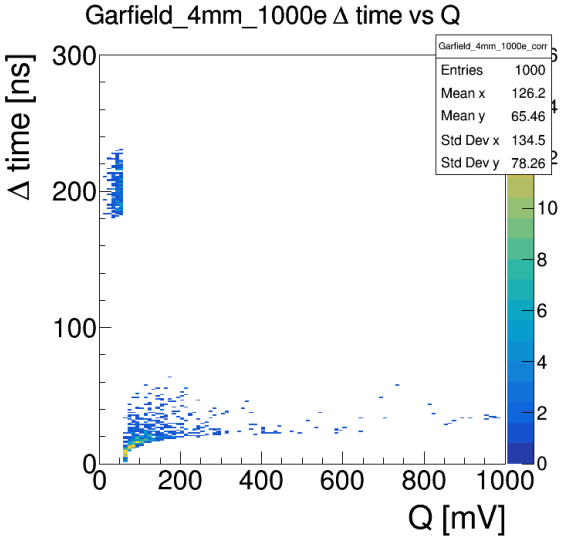


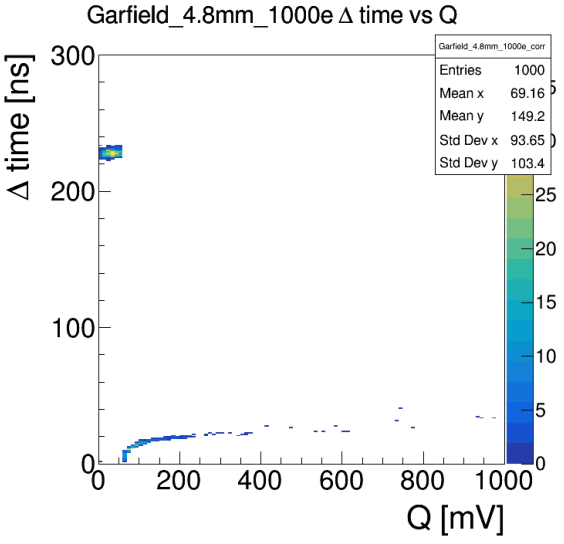


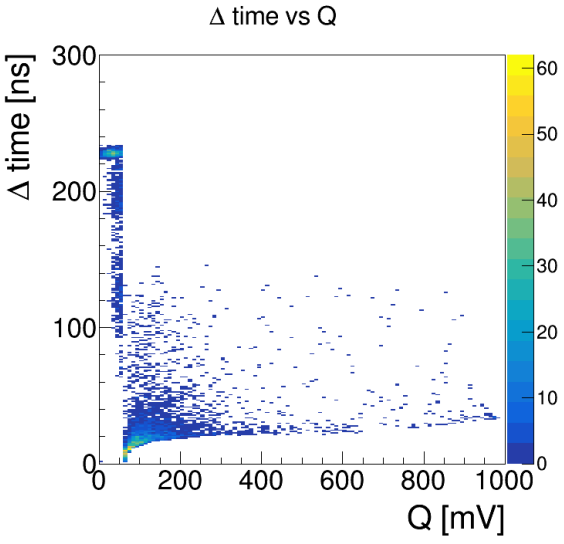

Garfield_2mm_ideal Δ time vs Q
Garfield_2mm_ideal_corr
Entries 1000
Mean x 189.5
Mean y 38.32
Std Dev x 172.3
Std Dev y 28.03
Δ time [ns]
Q [mV]


Garfield_2mm_1000e Δ time vs Q
Garfield_2mm_1000e_corr
Entries 1000
Mean x 140.2
Mean y 49.19
Std Dev x 130.9
Std Dev y 48.99
Δ time [ns]
Q [mV]


Garfield_0.1mm_1000e Δ time vs Q
Garfield_0.1mm_1000e_corr
Entries 1000
Mean x 143.9
Mean y 49.7
Std Dev x 145.1
Std Dev y 45.83
Δ time [ns]
Q [mV]


Garfield_4mm_1000e Δ time vs Q
Garfield_4mm_1000e_corr
Entries 1000
Mean x 126.2
Mean y 65.46
Std Dev x 134.5
Std Dev y 78.26
Δ time [ns]
Q [mV]


Garfield_4.8mm_1000e Δ time vs Q
Garfield_4.8mm_1000e_corr
Entries 1000
Mean x 69.16
Mean y 149.2
Std Dev x 93.65
Std Dev y 103.4
Δ time [ns]
Q [mV]


Δ time vs Q
Δ time [ns]
Q [mV]