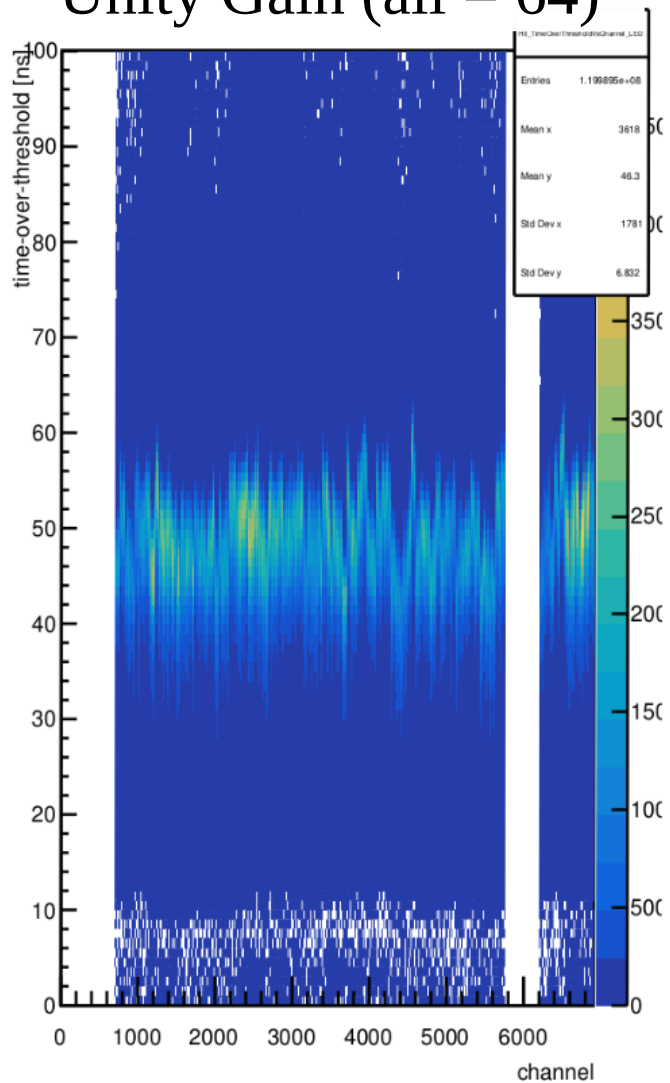
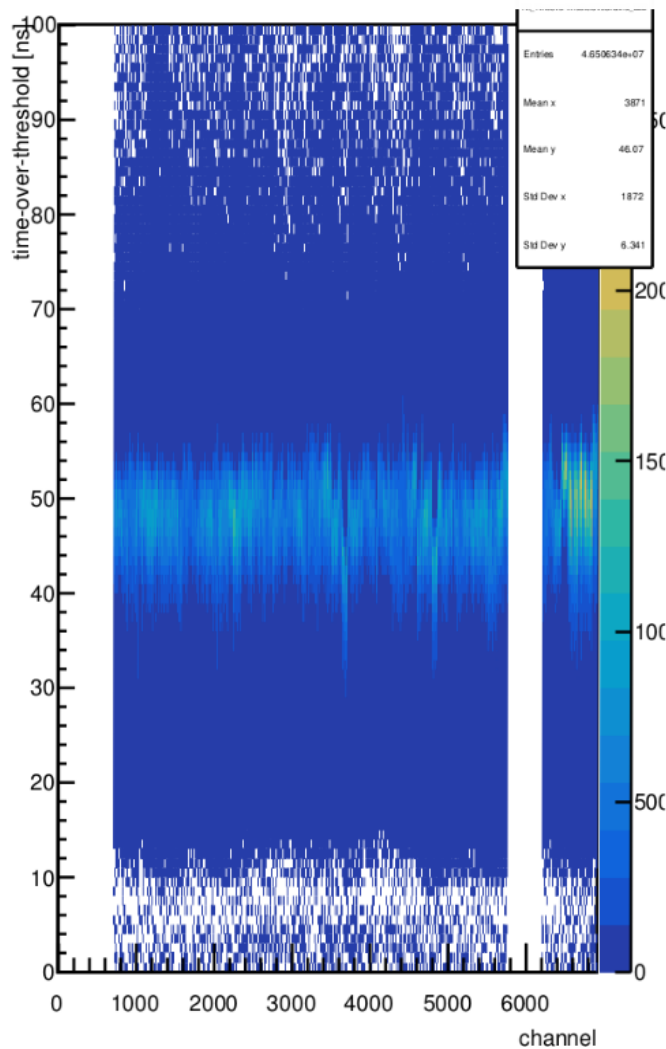


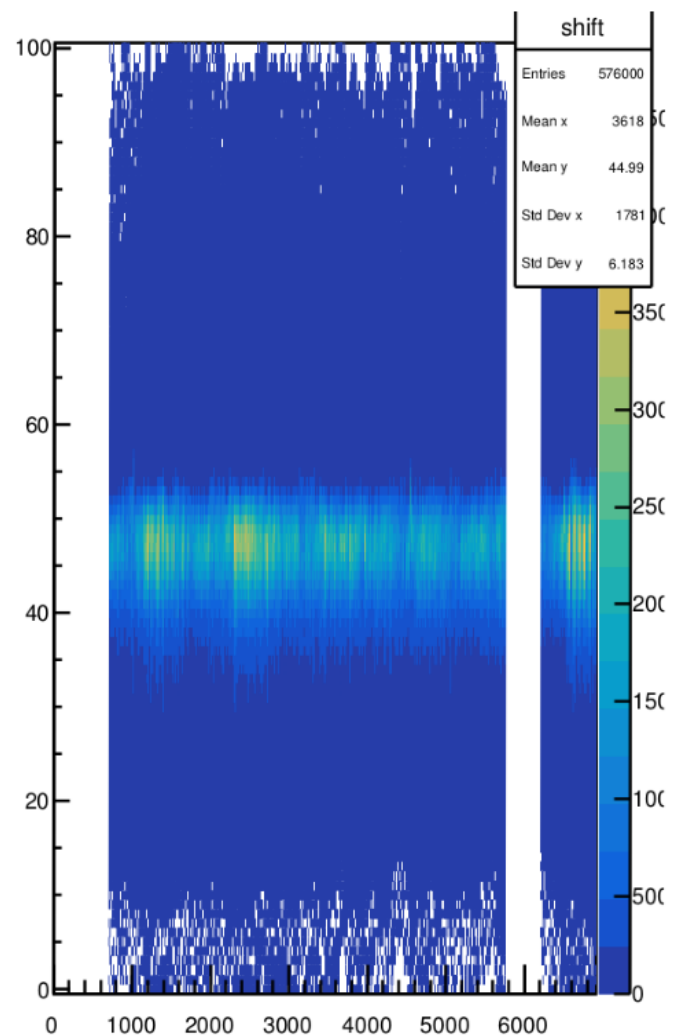
Unity Gain (all = 64)



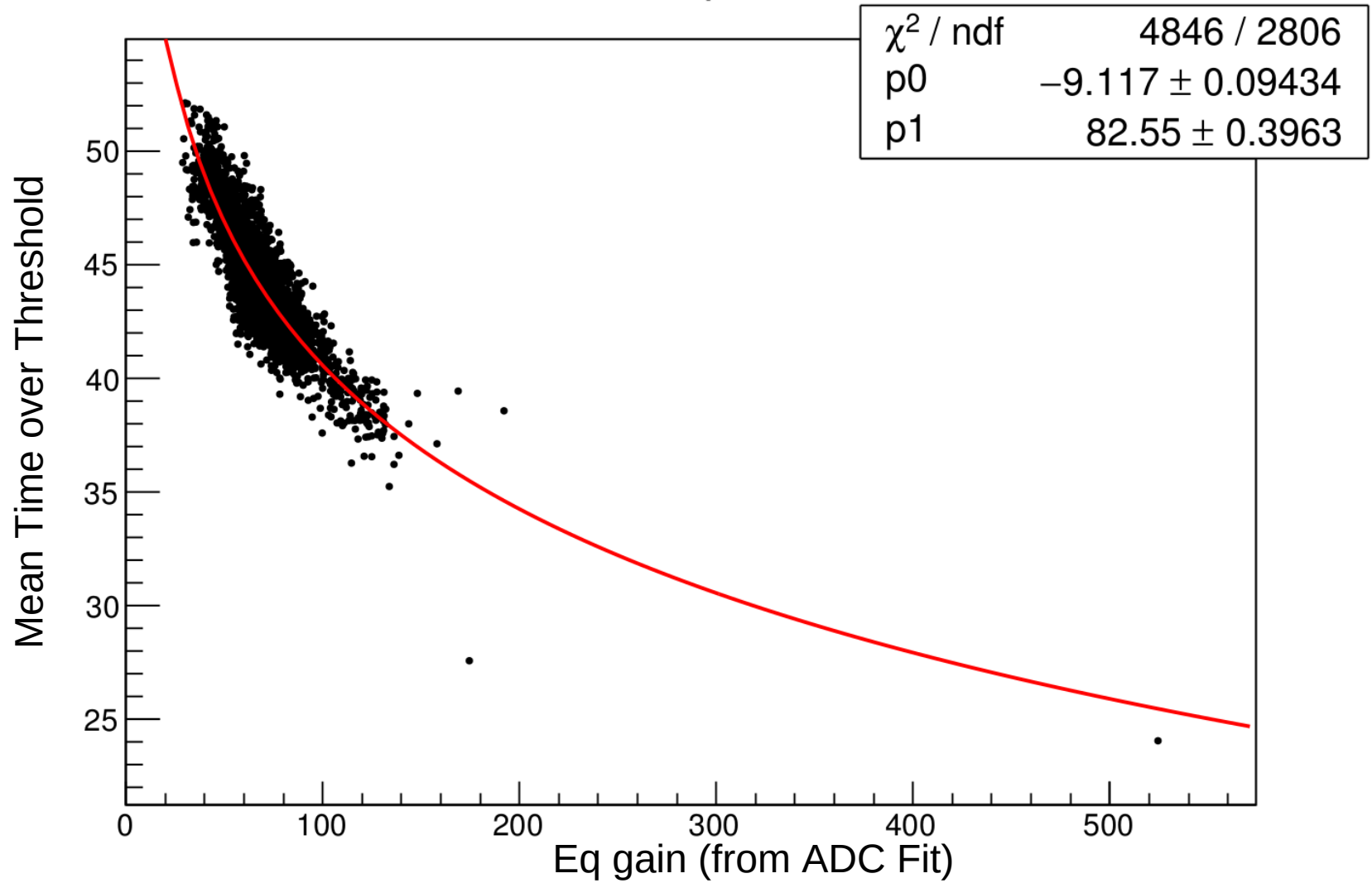
Eq Gain V1 (ADC Fit)



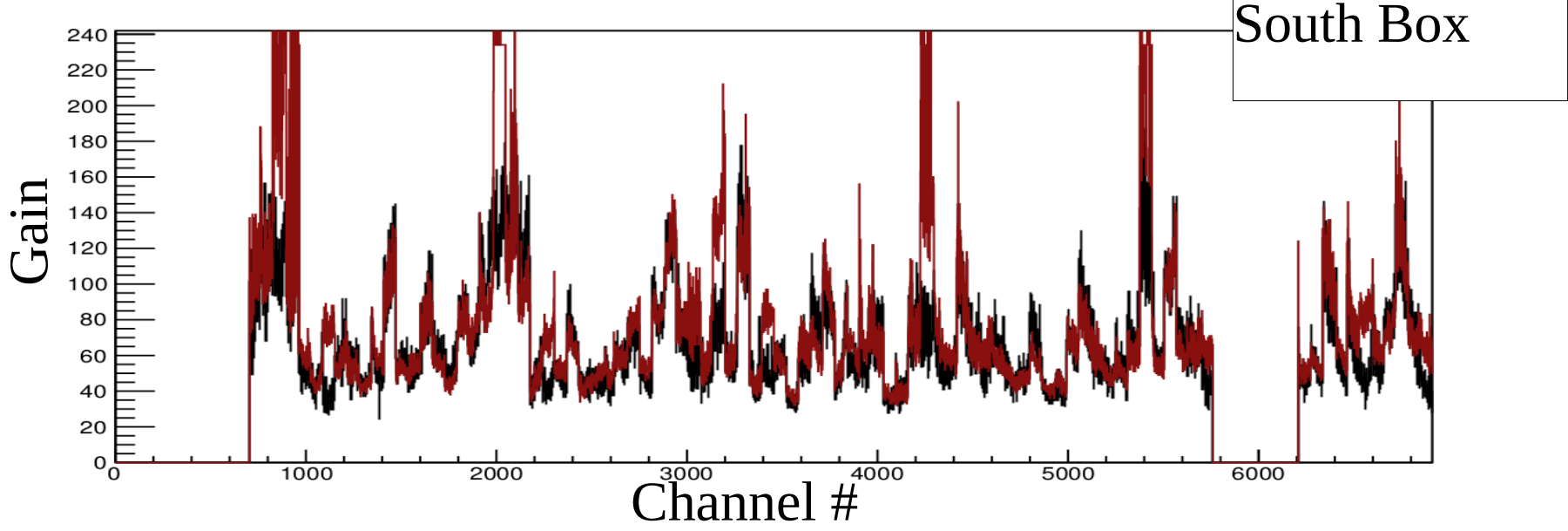
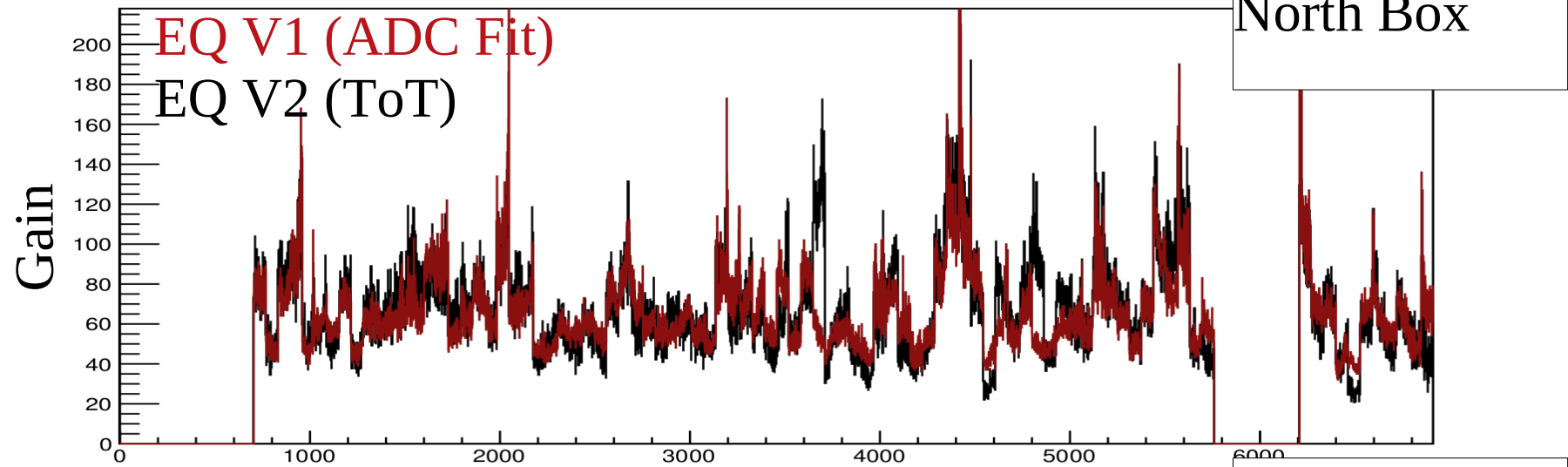
Manual Shift of ToT



Determining gain to match shift in slide 1



eq_gain

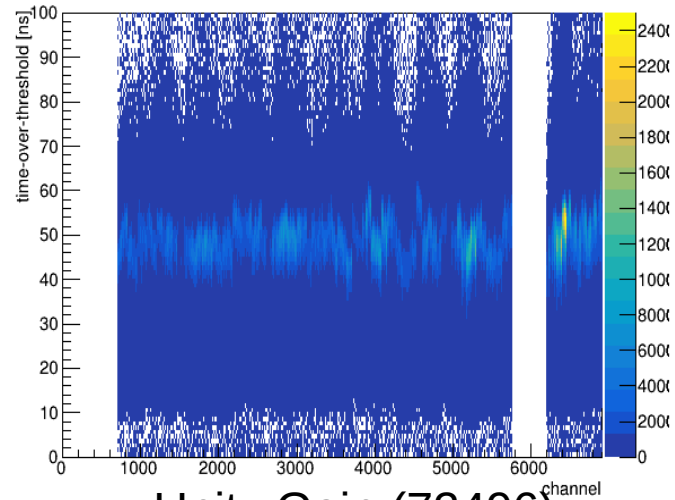


Equalized gain 1 vs 2

Run	HV	Threshold	Equalized_gain	Equal_version	Gain_Setting
72492	1000	100	1	equalizedVer1	0
72493	1000	50	1	equalizedVer1	0
72494	1000	200	1	equalizedVer1	0
72495	1000	100	1	equalizedVer2	0
72496	1000	100	0	0	64
72497	900	100	0	0	64
72498	1100	100	0	0	64
72499	1100	100	0	0	32
72500	900	100	0	0	32
72501	1000	100	0	0	32
72502	1000	100	0	0	150
72503	900	100	0	0	150
72504	1100	100	0	0	150
72505	1000	100	0	0	64
72506	1000	50	0	0	64
72507	1000	200	0	0	64

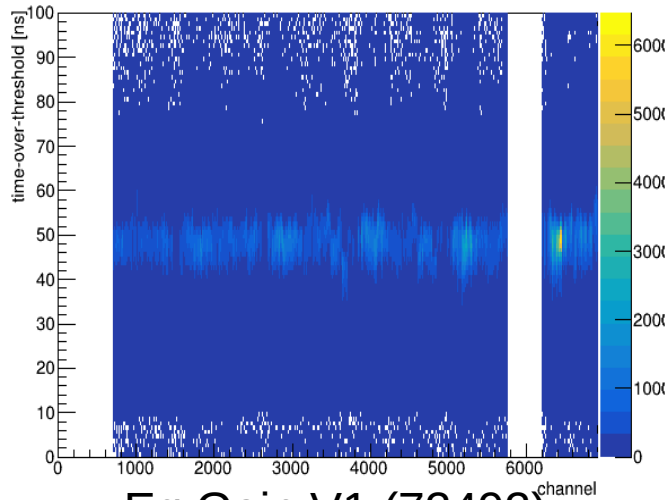
Compare

DIRCPmtHit time-over-threshold vs channel , NorthUpper box LED trigger



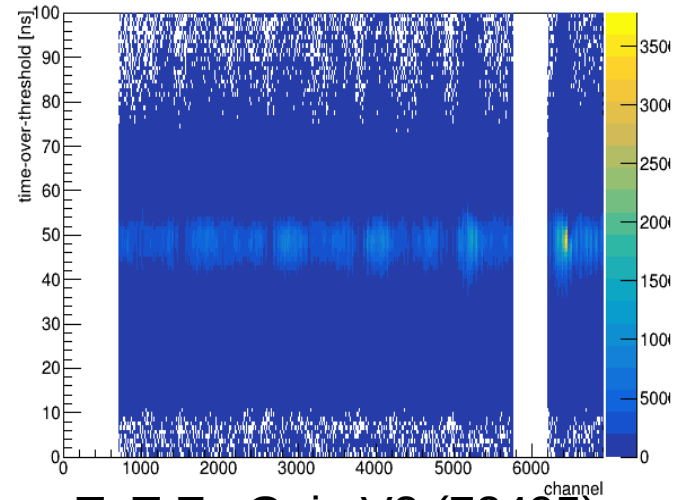
Unity Gain (72496)

DIRCPmtHit time-over-threshold vs channel , NorthUpper box LED trigger



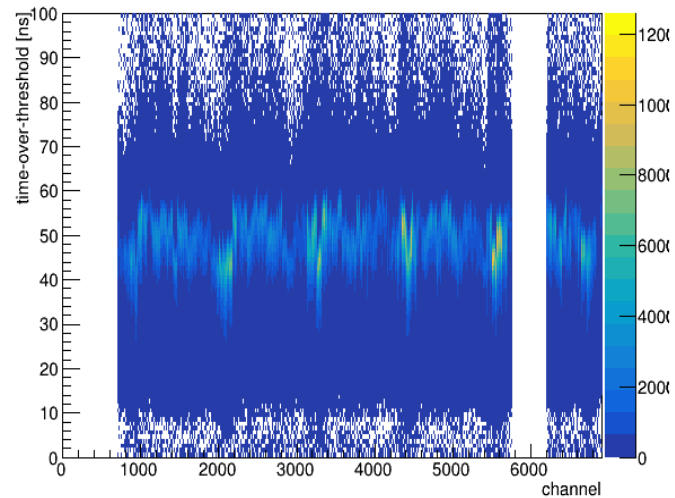
Eq Gain V1 (72492)

DIRCPmtHit time-over-threshold vs channel , NorthUpper box LED trigger

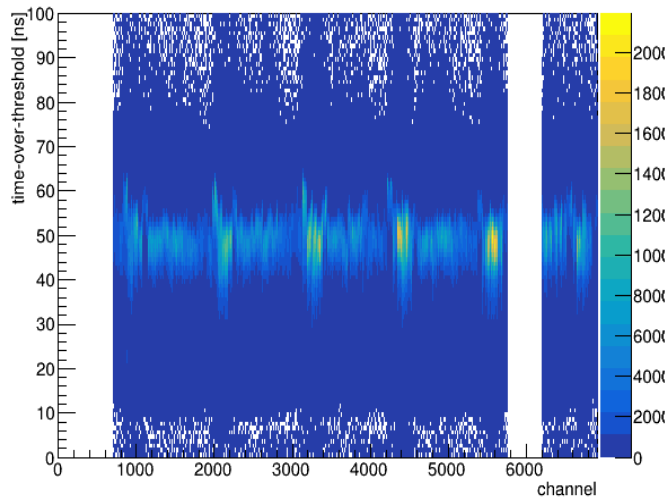


ToT Eq Gain V2 (72495)

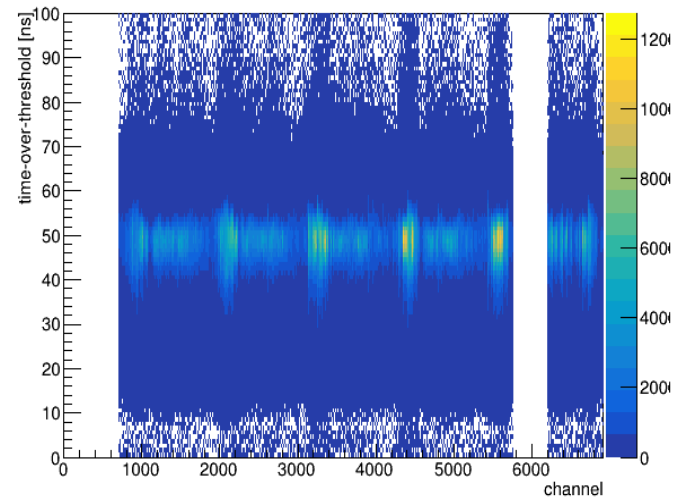
DIRCPmtHit time-over-threshold vs channel , SouthLower box LED trigger



DIRCPmtHit time-over-threshold vs channel , SouthLower box LED trigger

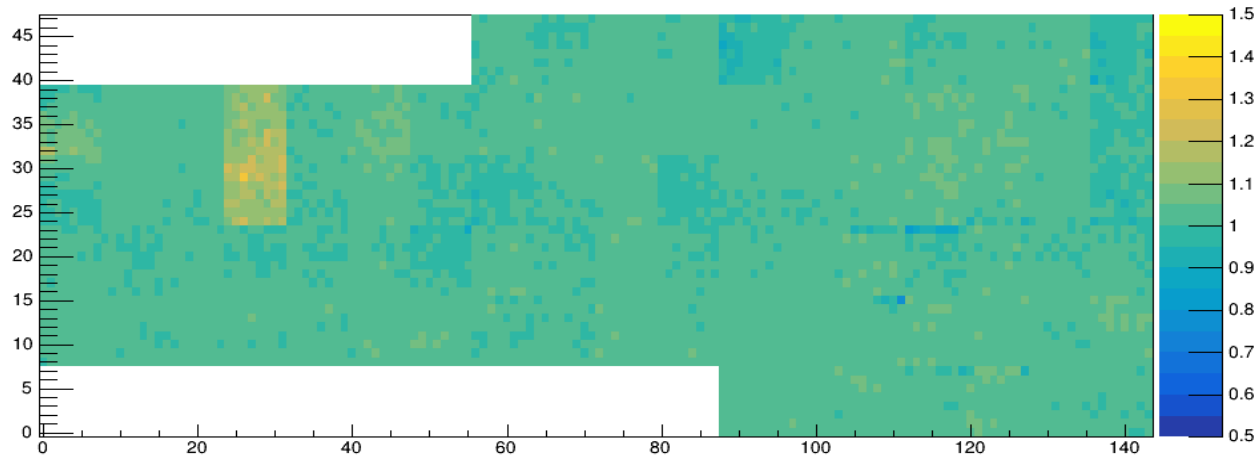


DIRCPmtHit time-over-threshold vs channel , SouthLower box LED trigger

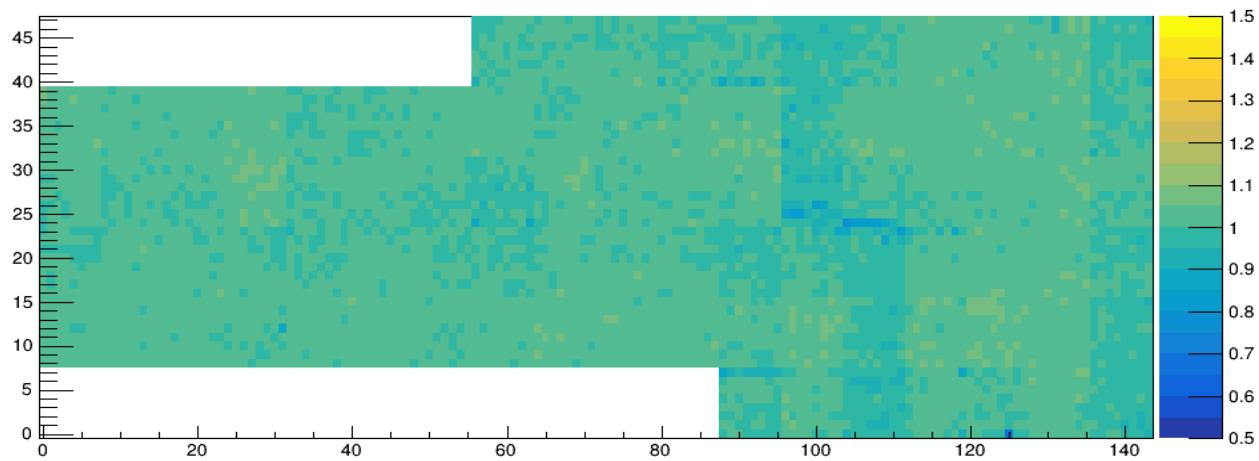


$$\text{Relative efficiency} = (\text{LED hits} / \text{LED trigger})_{\text{EQ V2}} / (\text{LED hits} / \text{LED trigger})_{\text{EQ V1}}$$

N_72495

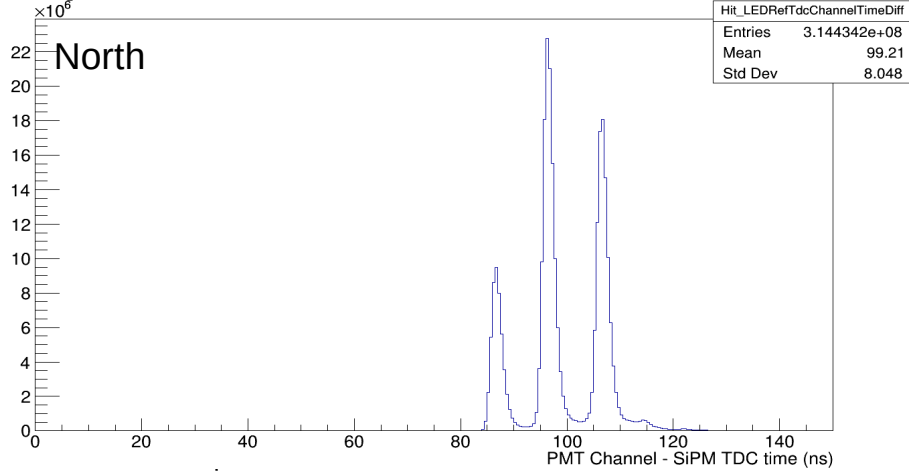


S_72495

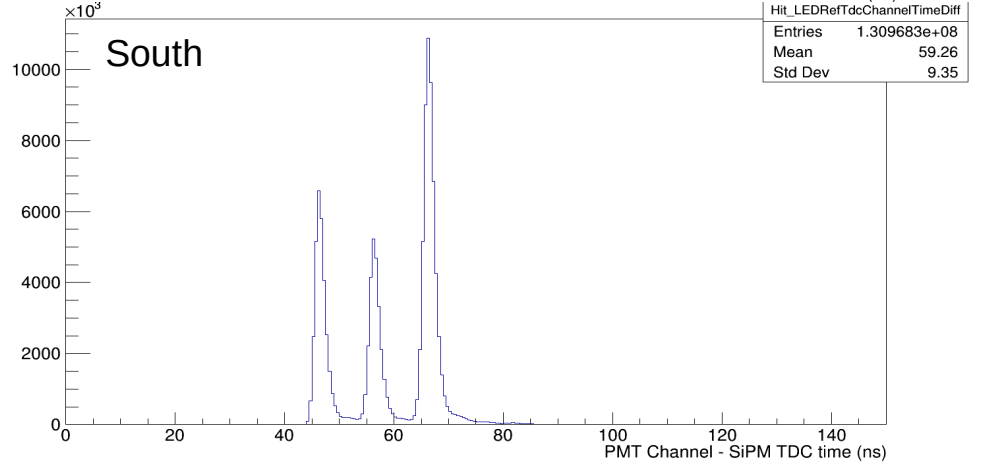
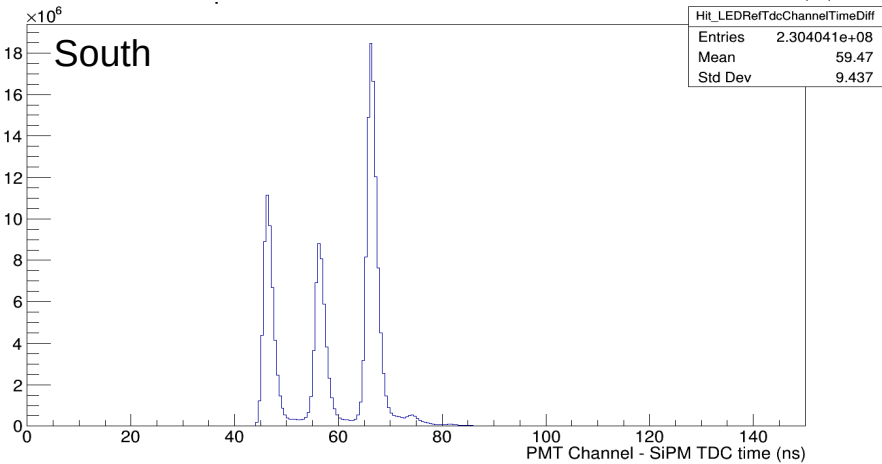
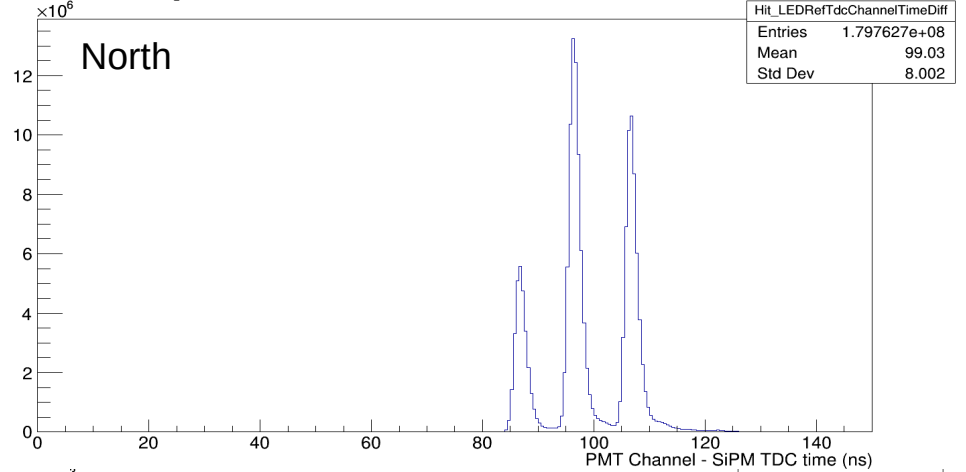


Equalized v1 vs v2

Equalized v1 72492

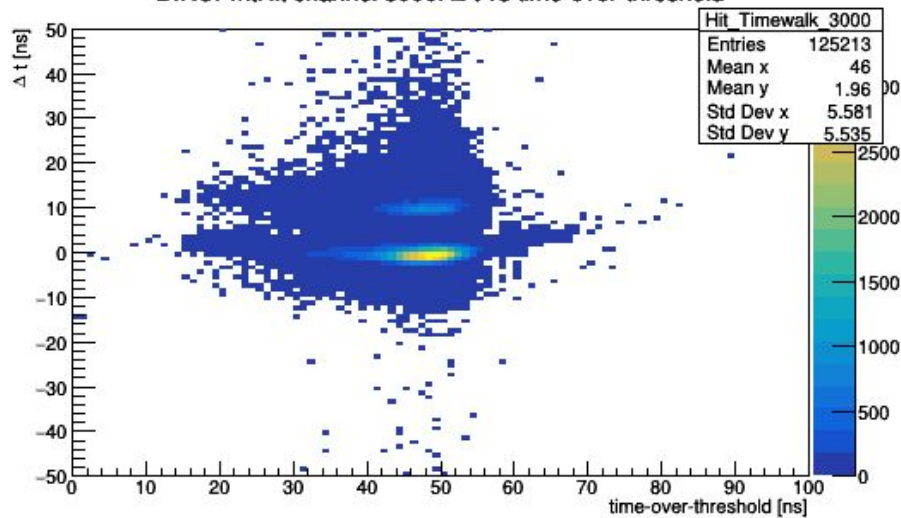


Equalized v2 72495

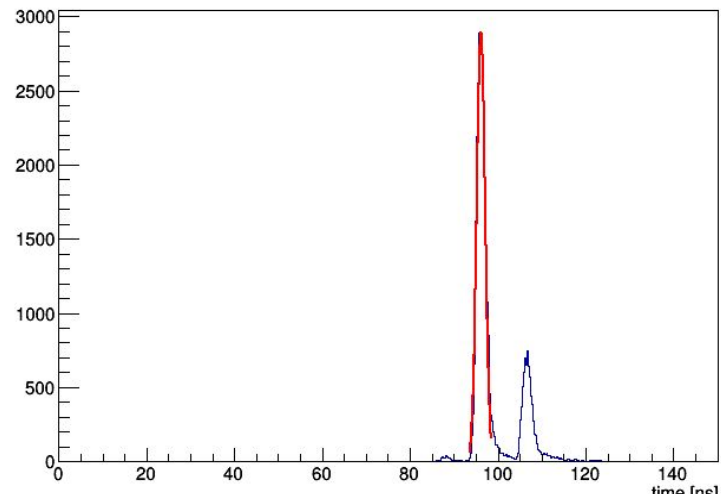
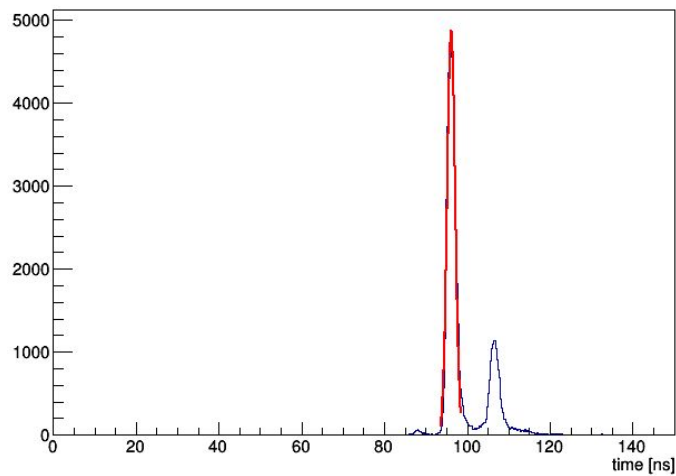
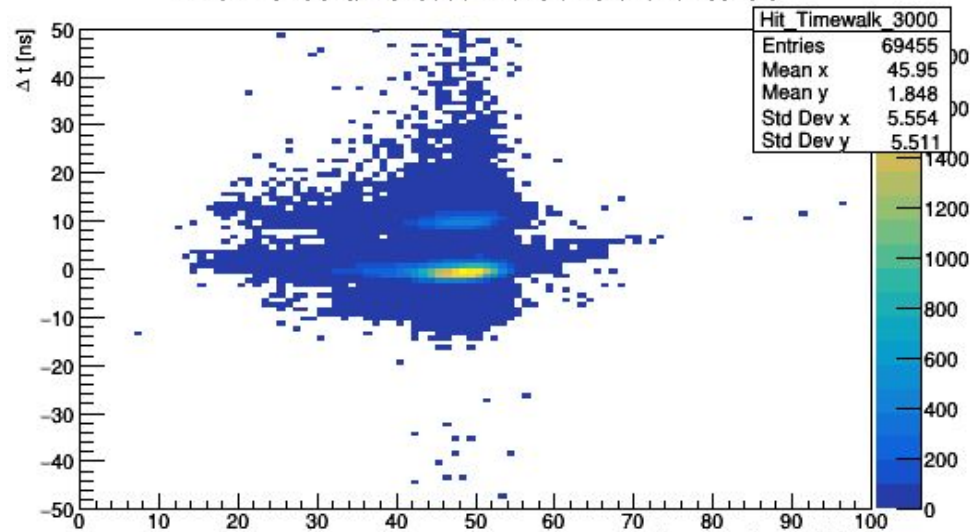


Single pixel 3000

DIRCPmtHit channel 3000: Δt vs time-over-threshold

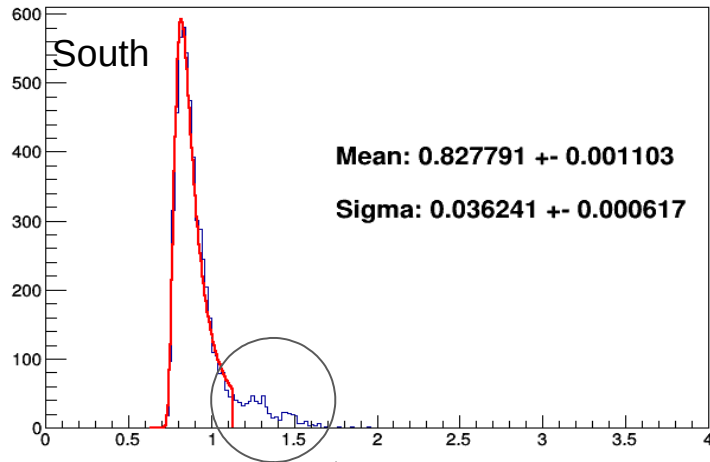
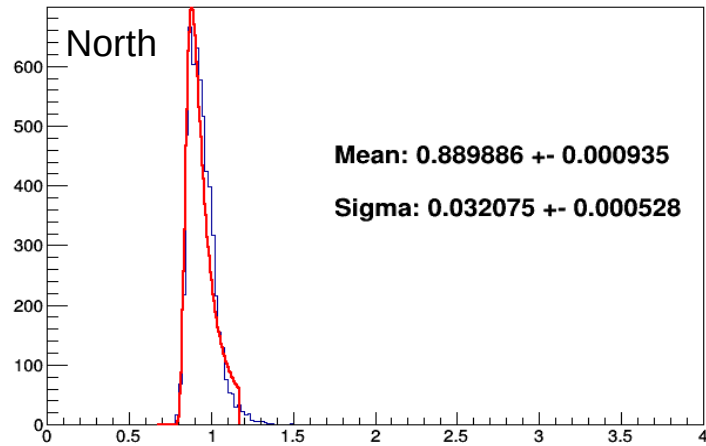


DIRCPmtHit channel 3000: Δt vs time-over-threshold

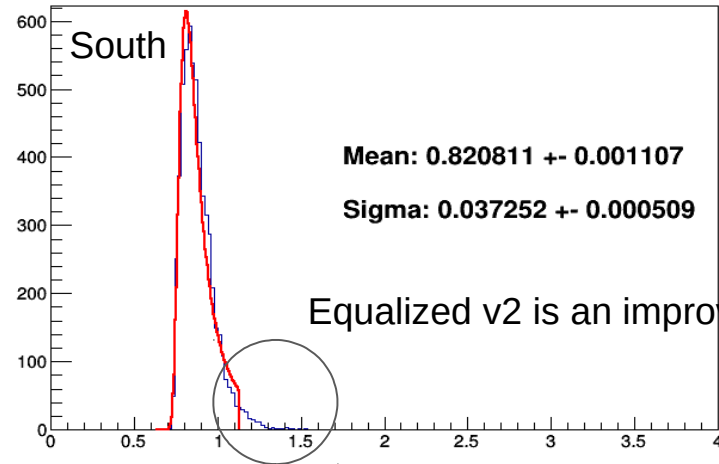
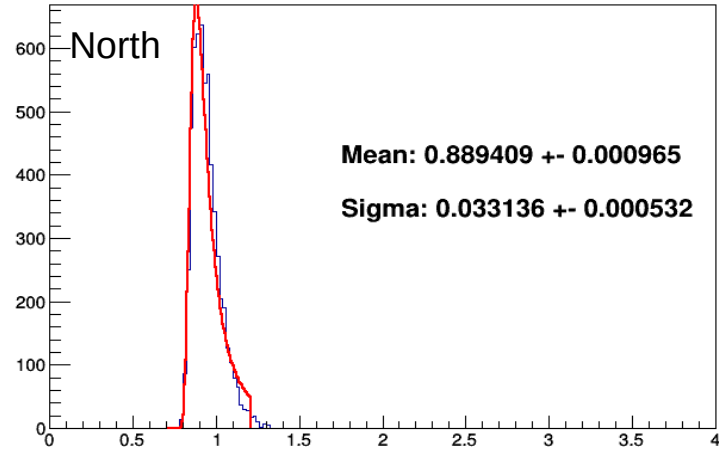


Overall resolution over all channels

Equalized v1 72492



Equalized v2 72495



Conclusion

- Equalized gain V2 is as good as Equalized gain V1
 - No dramatic change in efficiency
 - Compensates for the swapped electronics stack in the NB
 - Allows hardware changes to be made without having to go back to the laser bench test, and provides a check of the gain as determined by fitting the ADC spectrum.
- Equalized gain V2 is data ready based on the timing resolution
- Propose to collect production data with the new gains to compare Cherenkov photon yield