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LIGHT SUM SQUARE

LIGHT SUM SQUARED

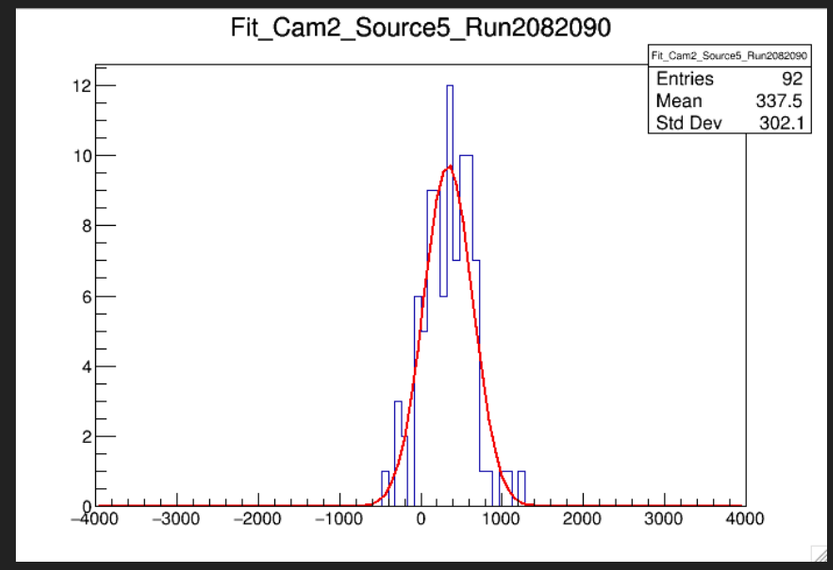
- I have written a version of the summing macro with an alternative method of event summing (discussed in more detail later)
- I have been processing each run from the data taking session with each super bias frame bookending the run chronologically -> I will now be able to start comparison and optimisations of the cuts for each of these working towards the goal of having our final plots

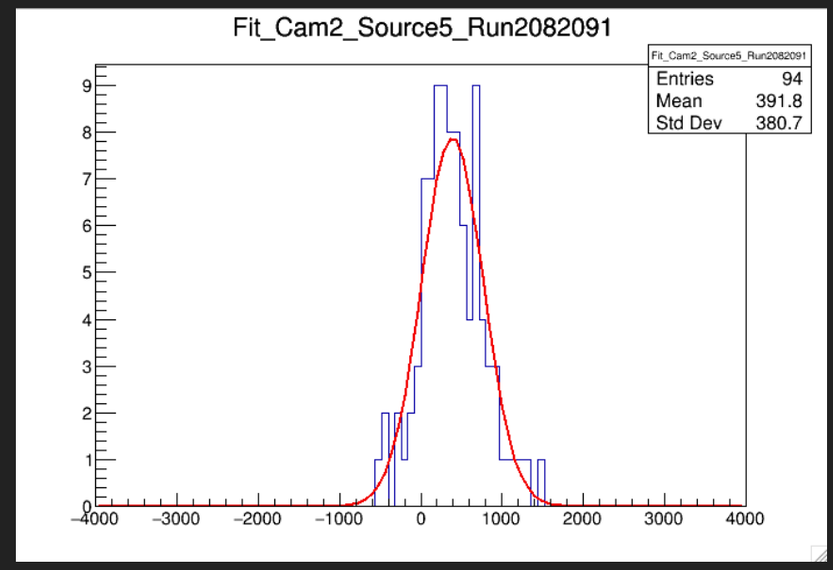
METHOD 1 [CURRENT]

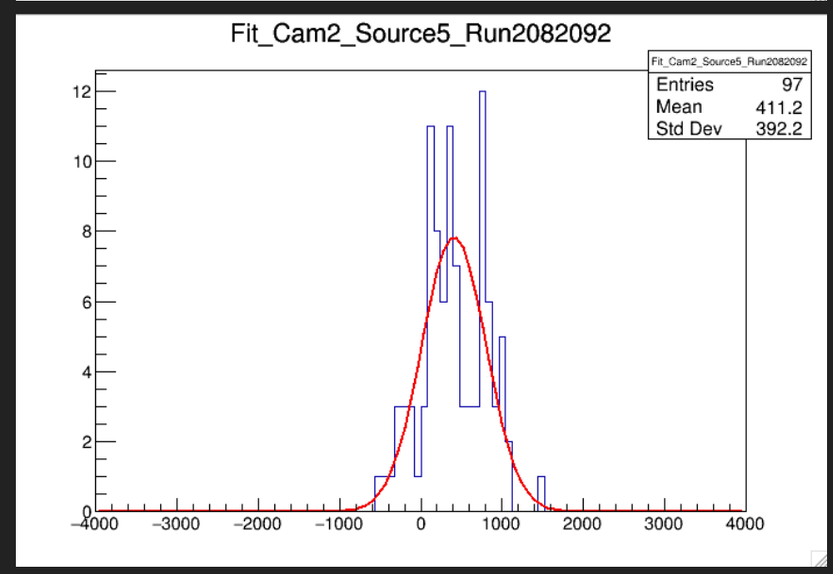
1. Apply image corrections and run LSS analysis on each super bias background subtracted event
2. Fit events within a single run to producing a single data point with errors per run [Method: fitting a Gaussian and taking the mean and error on mean]
3. Take the weighted mean and error of the single run data points that have identical voltage settings

$$\sigma^2(\hat{\mu}) = \frac{1}{\sum 1/\sigma_i^2} \qquad \sigma^2(\hat{\mu}) = \frac{1}{\sum 1/\sigma_i^2}$$

- Taking a weighted mean makes sense iff we are assuming that each run taken at the same voltage configuration is randomly simplifying from the same distribution and there is no additional source of uncertainly going from run to run -> if so we may as well just fit all the similar runs at the same time
- I could compare the weighted error method (in 3.) for a weighted error on the mean to see if the assumption made above is correct







METHOD 2

1. Apply image corrections and run LSS analysis on each super bias background subtracted event
2. Fit all events of runs that have identical voltage setting at the same time and taking the mean and error on the mean to produce aa single data point with an error

- Over the weekend I have written a version of my summing macro to implement method 2
- Additionally Chi²/NDF is now saved for each fit to allow easy comparison of super bias frames and cuts