Time Calibration Updates

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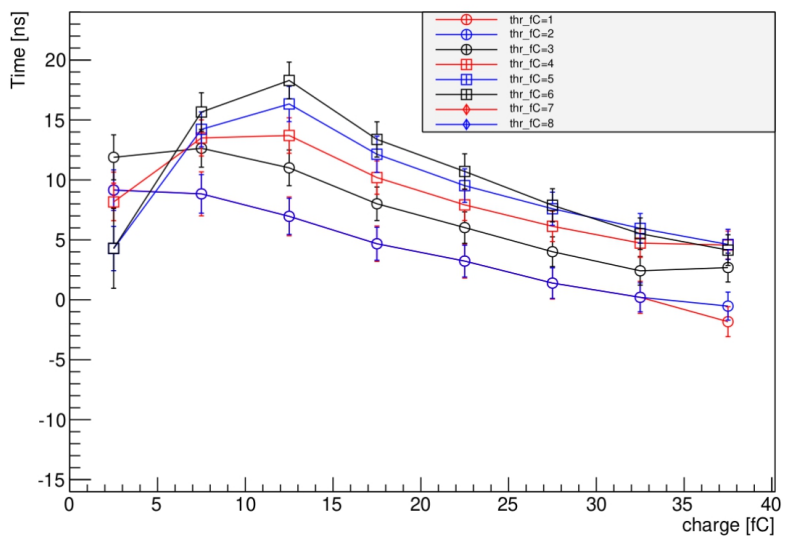
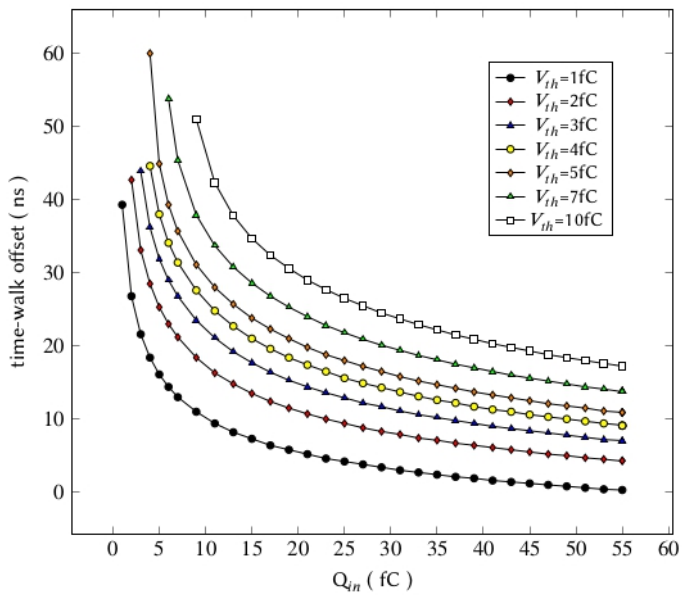
Motivation

- Time walk: low Q region disagreement between data and simulation
- Remove noise at low Q with CgemLineFit

experimental data



simulation data

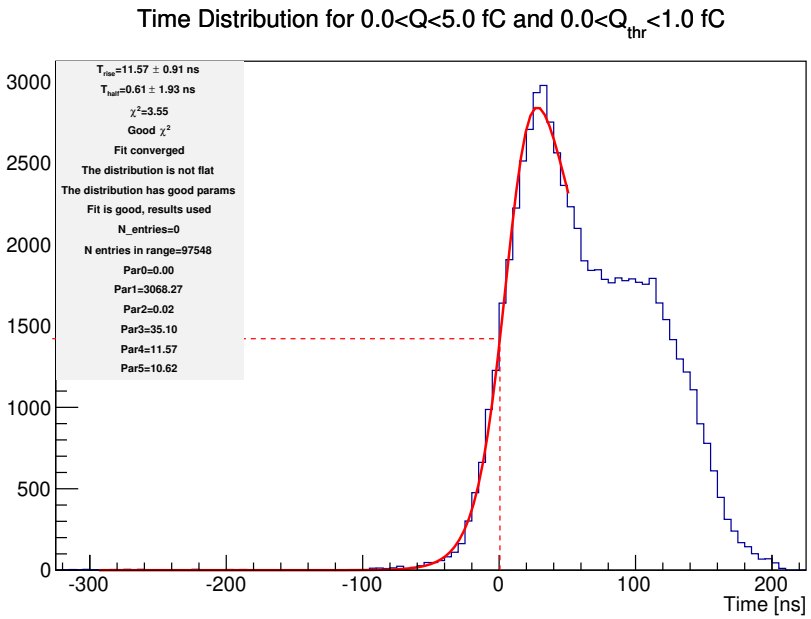


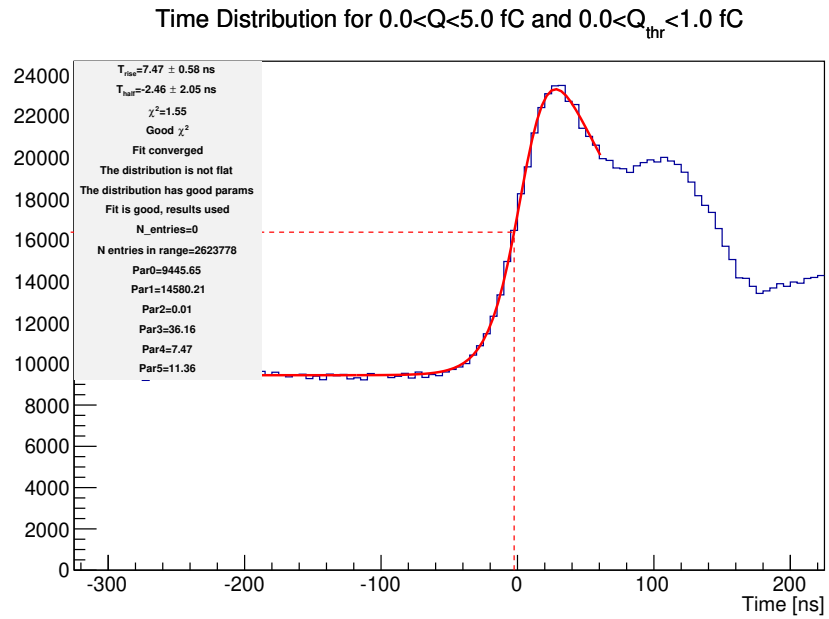
Testing Time Calibrations with CgemLineFit

- Only use hits selected by straight line fit
- Main issue: increases memory and run time substantially
- Solution: limiting number of clusters per sheet
- Use 3 as nominal, 1 for debugging
- Only use run 17 data here - highest purity

Cluster/Sheet	% Events	Total Time Needed (minutes)
5	53.31%	90.1
4	51.17%	60.2
3	46.65%	35.2
2	37.96%	17.6
1	15.33%	6.4
No fit	-	3.7

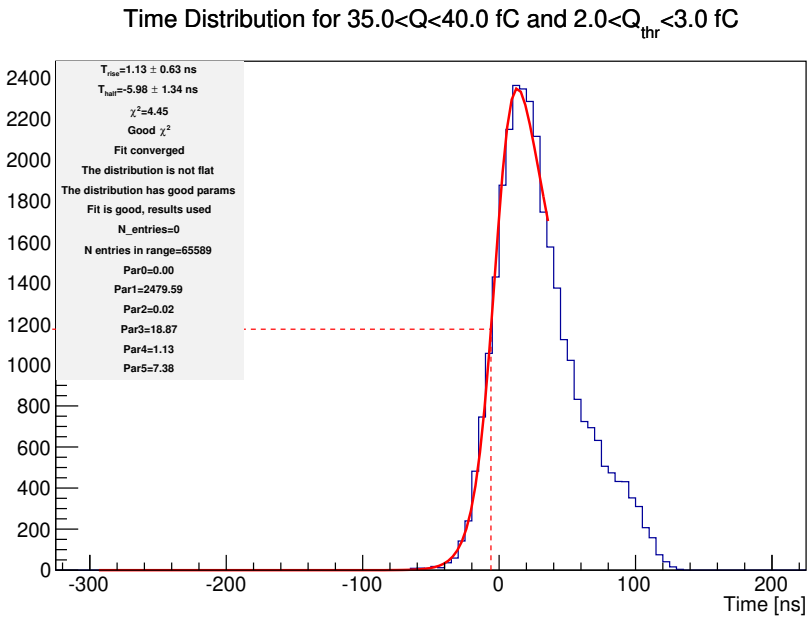
Time Distribution - Time Walk Low Charge

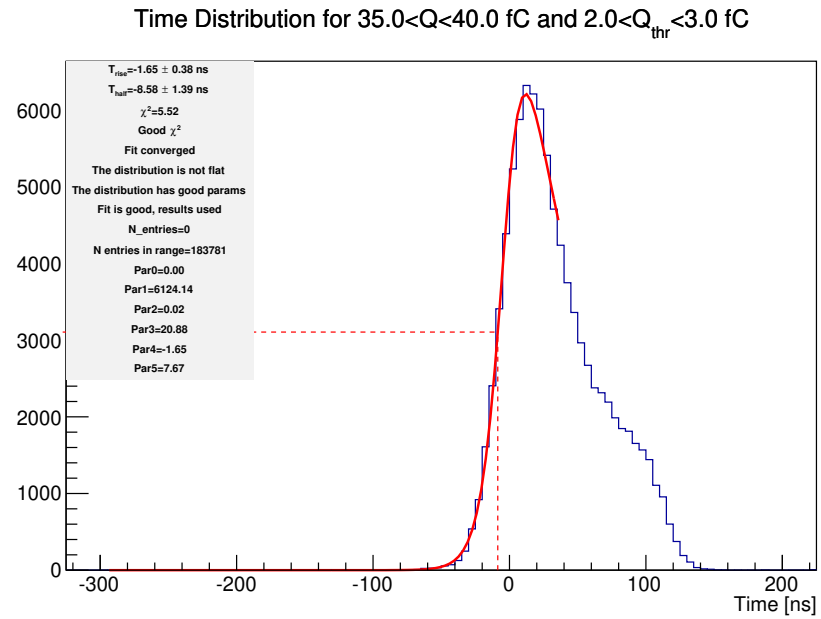




- Fit removes constant background
- Also removes events from the second/third peaks
- Size of the peak is much smaller
- Times differ by 4 ns (11.6 ± 0.9 vs 7.5 ± 0.6)

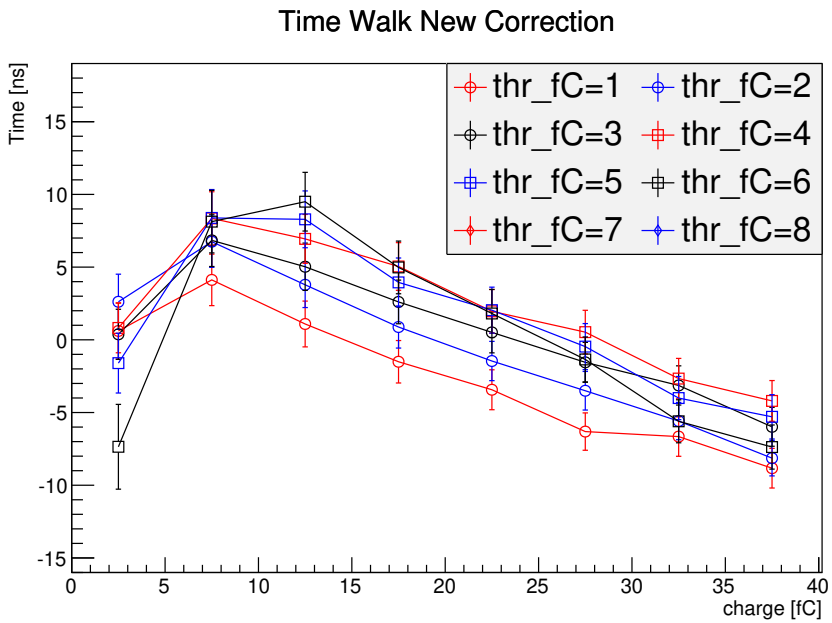
Time Distribution - Time Walk High Charge

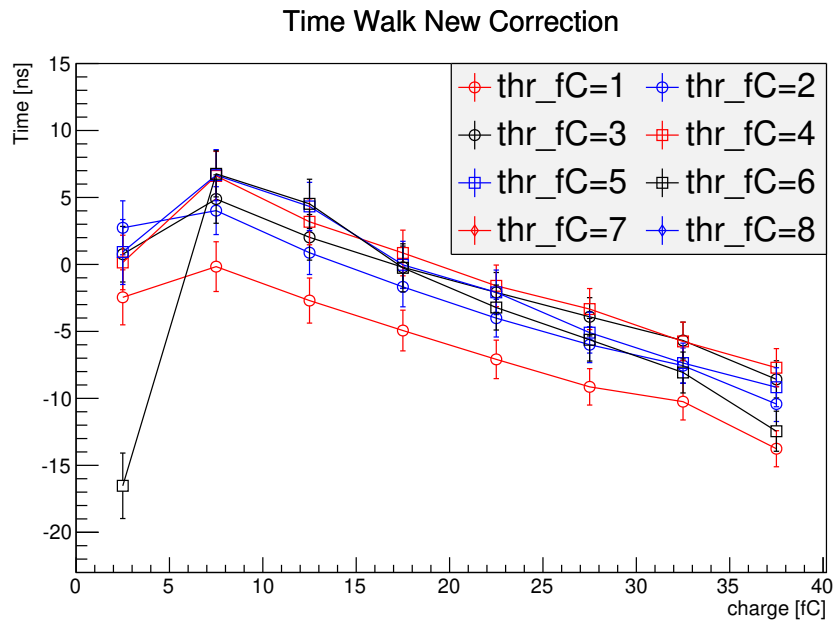




- Expect less of an effect
- Peak is smaller
- Lump on right side is smaller
- Time difference is less (1.1±0.6) vs (1.65±0.4)

Time Walk Summary





- Left for fit, right no fit
- Corrections at low Q are actually lower with the fit

Summary

- Same procedure has been applied to time reference
- Iteration between time walk and reference has not been done yet
- Initial results show low Q time walk discrepancy is not due to noise