

Workaround to speed up the event display

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The problem

- LArSoft event display was reported to **spend about 5 minutes to display a noise data event** from MicroBooNE; the same delay would happen on each zoom change
- two main issues were identified:
 - attempt to render all 80M data points in the view (that can contain less than 100k)
 - expensive DB checks in `LArProperties` queries
- the workaround: consolidate the 80M data points into the number of boxes/pixels that the view is able to render in the current window
- `LArProperties` issue (actually in `DatabaseUtil`) is also fixed
- this has been observed to cut down execution time by a factor ≈ 50
- more details were kindly given on my behalf by [Erica Snider](#) at [August 25th Coordination Meeting](#)

Glitches and improvements

The workaround has some side-effects:

- a new consolidation needs to happen each time the view changes
 - not optimal, but I haven't noticed relevant delays
 - for some interactive “events”, the system does not realize it has to reconsolidate, yielding to **non-optimal or partial display** of the information (this should be evident to the user)
- the way data is combined in one cell may be changed: maximum ADC count (current), average, sum;
I believe in the old code any of the ADC counts above threshold is picked
- new implementation would easily allow for automatic determination of the threshold (given a prescription)

Glitches will be fixed, and behaviour changed, *only on demand*.

- code has been in `lareventdisplay` feature branch `feature/gp_FasterDigits` for more than two weeks
- received only one report for a (basically known) glitch
- if deemed useful, I can add an "Redraw view" to manually force the "consolidation" when the automatic detection of resize fails
- I request merging into `develop` branch