The DAQ Issues

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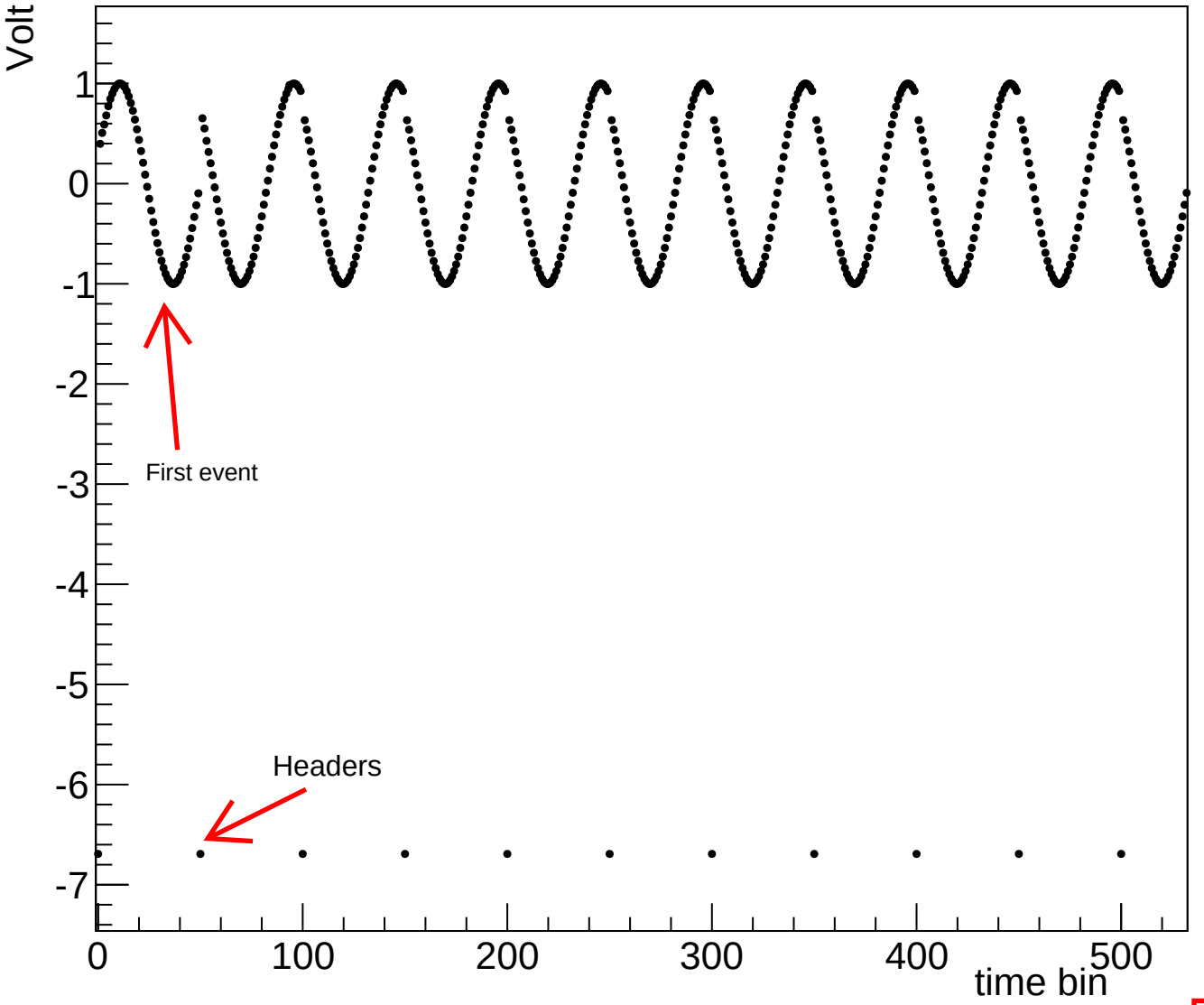
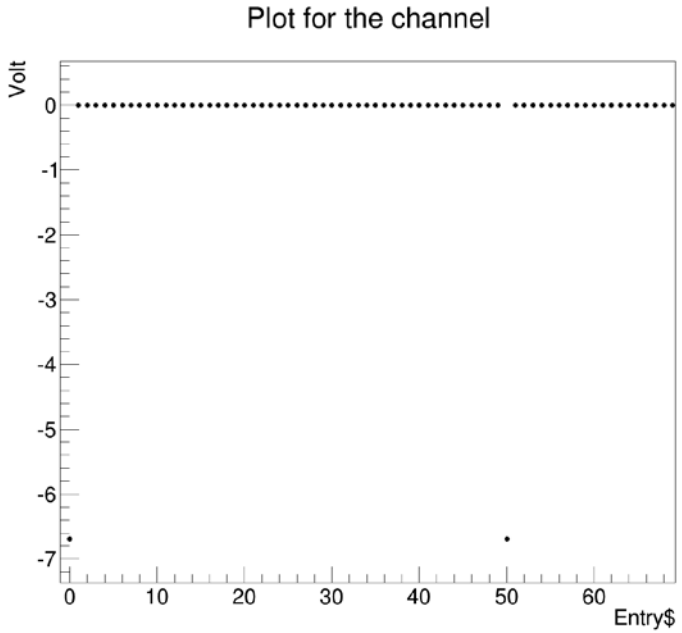
1. The DAQ seems to get synchronized after the first event. Thus the first event does not fit to the same periodicity as the remaining. **(See slide#3)**
2. The length of the very first event is NOT fixed rather somewhat volatile (sometimes partial event sometimes half and sometimes full). In some cases the length of the first event is even different between two modules of the same DAQ. **(See slide#4)** & (Slide#7)
3. The very first T0/header of the run in some cases is NOT the very first sample of the run as expected. (But this is a consequence of Issue-2). **(See slide#4)**
4. We do not know for sure if the missing 37 samples(0.74ms out of 16.66ms) per Event is the DAQ arming time or something else. Requesting more samples to compensate missing sample results in overlap between events.
5. In rare cases two headers show up for one event. **(See slide#5)**
6. In rare cases the DAQ gets frozen (the activity light goes off) and requires reboot entering the cave.
7. We could NOT use the latest firmware with Checksum as it was completely unstable. i.e. the DAQ changes the parameters(event length, nacc etc) automatically within 20 minutes of run time.
8. We wanted to keep all the bits while doing averaging (i.e. use nacc=16,1). But the votls above 10 V get wrapped indicating we can not go beyond 24 bit. Hence we are forced to use nacc=16,16 . **(See slide#6)**
9. 10 seconds timeout for TCP/IP between two T0.

Issues 1-3 make it difficult using Root Tree for the data taken using the DAQ. Since creating Tree requires the assumption that your data is perfectly periodic. And the branch of the tree fails even if only one event is distorted.

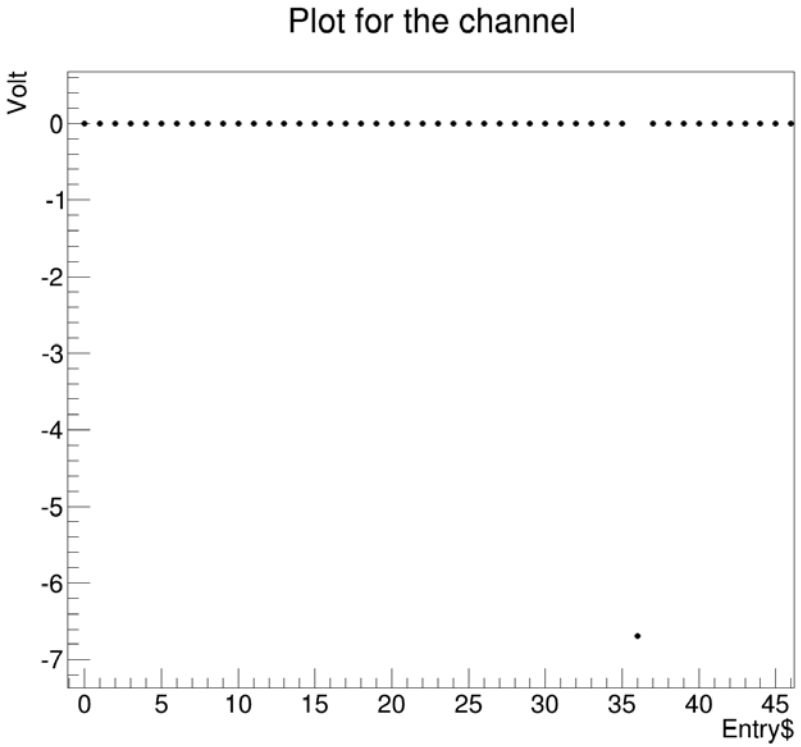
The DAQ gets synchronized after first event (Issue-1)



The first event length is sometimes even different between tow modules of same DAQ for the same run

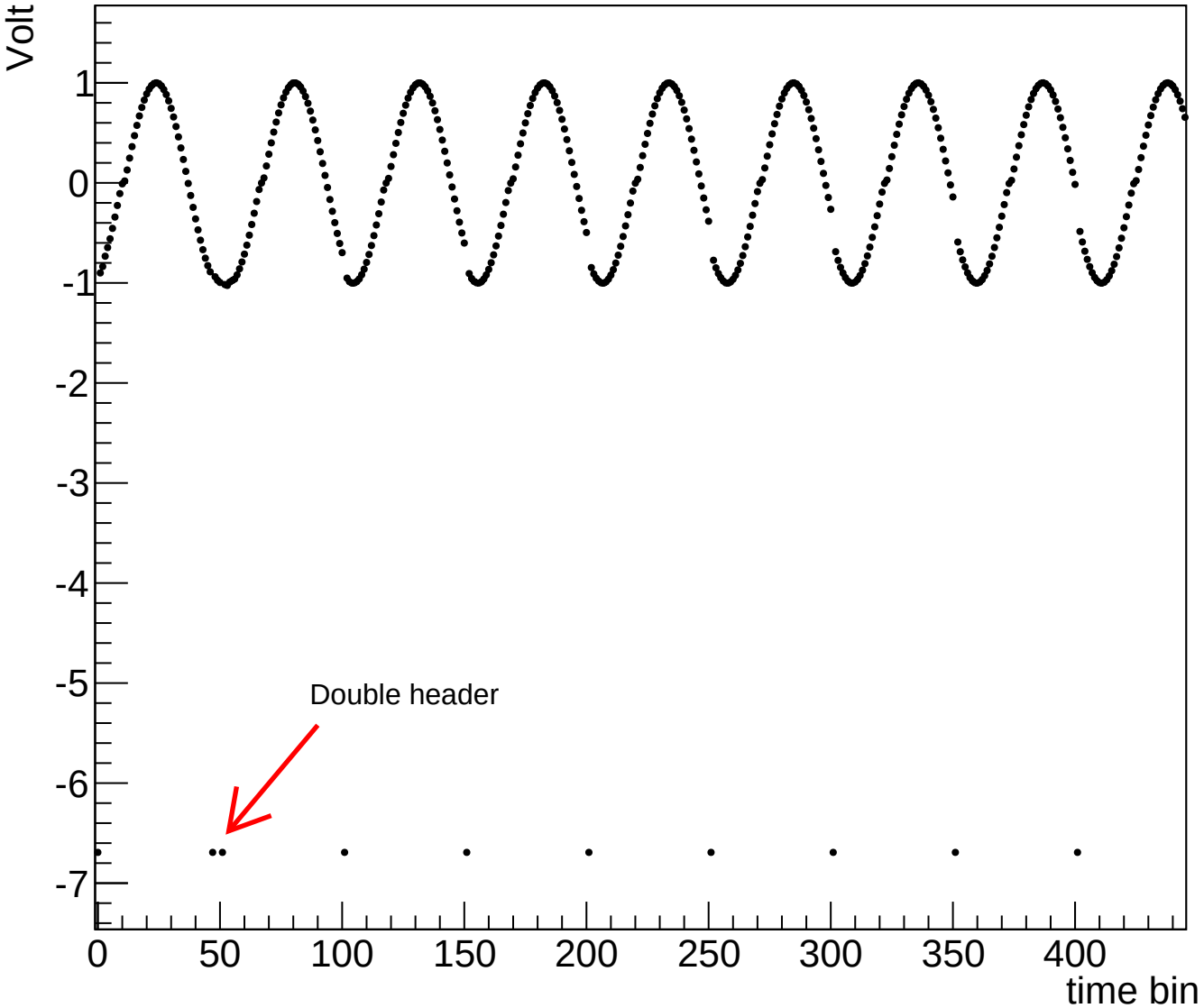


DAQ21 left module with full first event

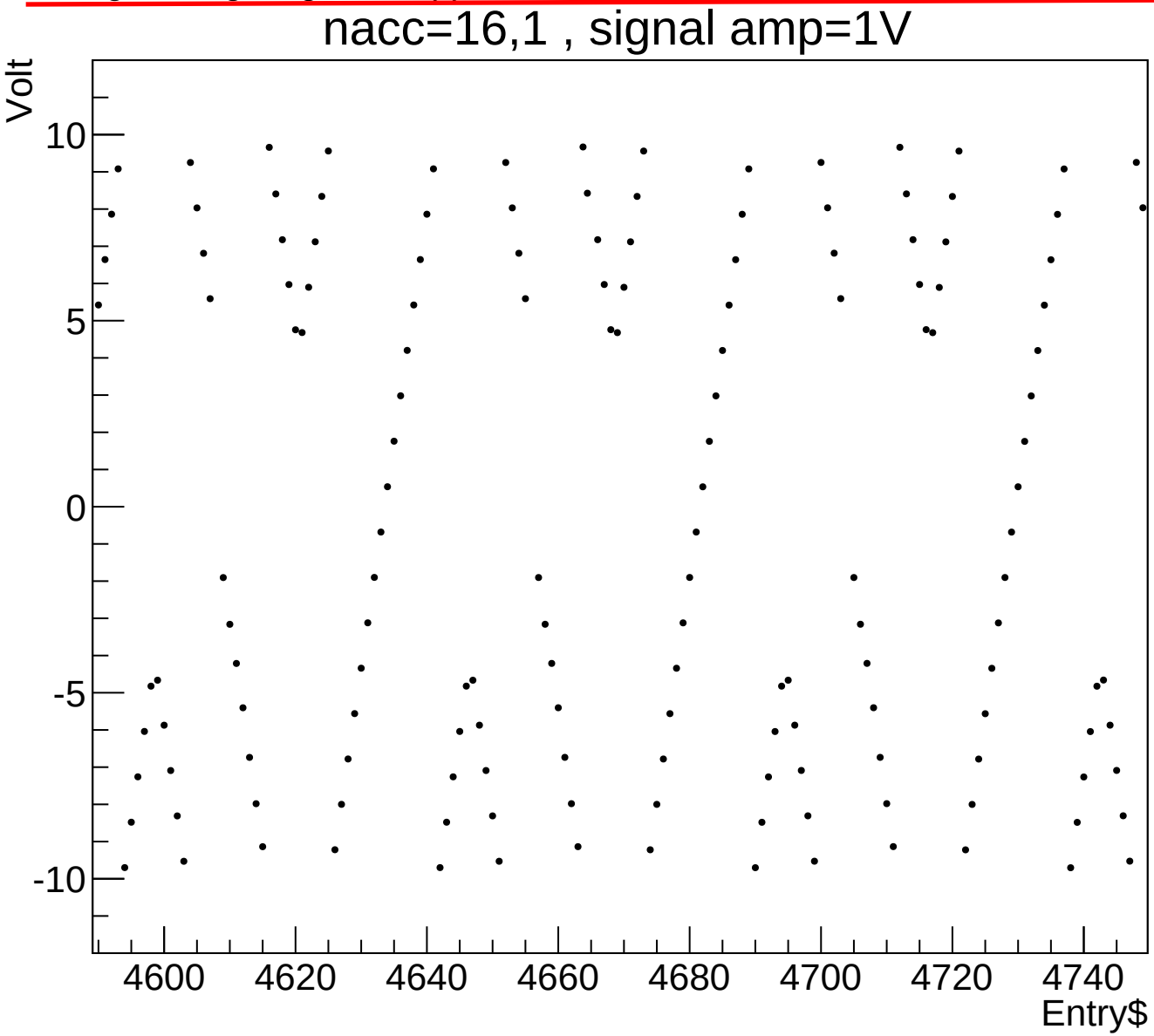


DAQ21 right module with partial first event for the same run as left module.

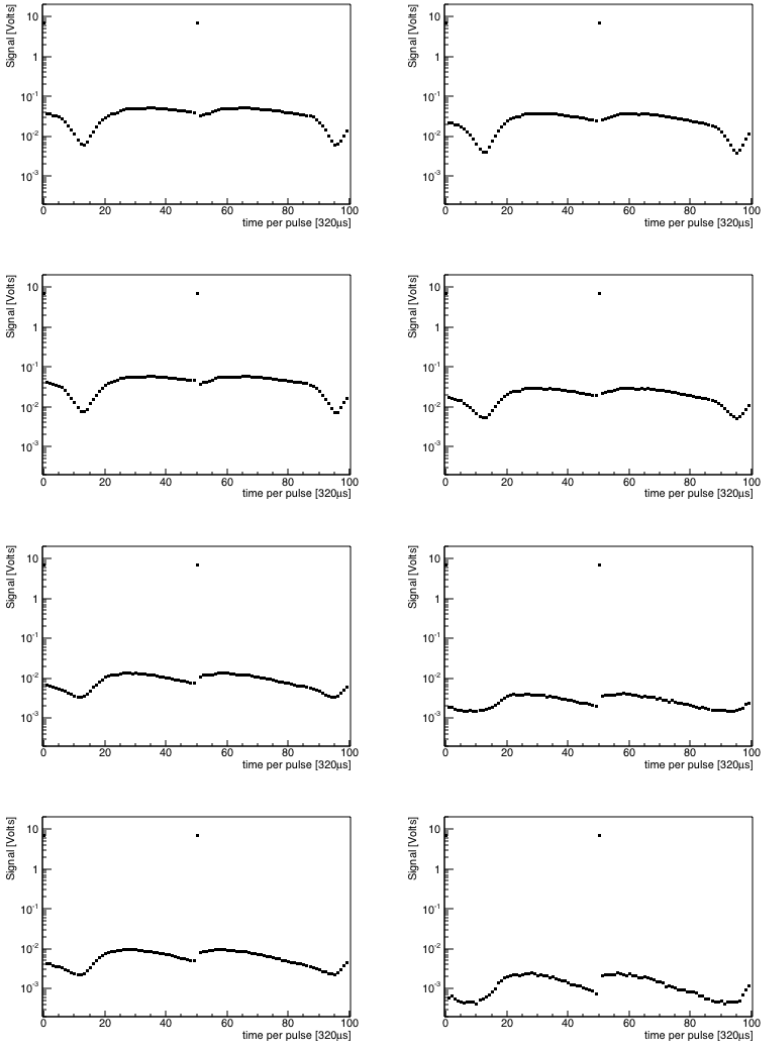
Double header for same event(Issue-5)



Triangular Signal gets wrapped for nacc=16,1 when it goes beyond 10V (Issue-8)



The first event length is different between two modules of same DAQ for same run in some cases (here only first two events plotted)



First event length same for both modules (Left & right)

First event length NOT same for both modules (Left & right)