

PMT Readout from Bo  
Michael Phipps  
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# Progress with analyzer.c

- All plots now saved as root files
- Stitched events extended to include ADC samples across all frames
- Bad events filtered from analysis
- Good events defined and analysis restricted to these events

# Bad Events

- ~ 1/7 of the events in ADC readout have either an incomplete header or an inappropriate number of samples per channel

```
f203ffff f24df000 f000f000 fe23f010 ffb2f83a
589
0 94047fff a785a000 a7ffa7ff a800a7ff aa38a810 afffae9e afffafff afffafff
8 afffafff af6eafff ac3aadbc aa19ab04 a8f8a96f a870a8a7 a832a84c a819a823
16 a80da812 a807a80a a805a807 a804a804 a803a803 a801a801 a800a801 a800a800
24 a7ffa7ff a7fea7fe a7fea7fe a7fea7fe a7fda7fd a7fca7fd a7fda7fc a7fca7fc
32 a7fba7fd a7fba7fc a7fba7fc a7faa7fb a7faa7fa a7faa7fa a7fba7fa a7faa7fa
40 a7fba7fa a7faa7fa a7faa7fa a7faa7fa a7faa7fb a7faa7fb a7faa7fa a7f9a7f9
48 a7faa7fa a7faa7f9 a7f9a7f9 a7faa7fa a7f9a7f9 a7faa7f9 a7f9a7f9 a7f9a7f9
56 a7f9a7f9 a7f9a7f9 a7f9a7f9 a7f8a7f9 a7faa7f9 a000a7ff a801a798 a800a801
64 a81ca802 a898a85d a8aea8b2 a876a897 a837a854 a809a81d a7f2a7fc a7e7a7eb
72 a7e3a7e5 a7e1a7e1 a7e4a7e1 a7e9a7e6 a7eea7eb a7f2a7f0 a7f6a7f4 a800a7fb
80 a809a805 a80ea80b a80ea80d a80ba80c a808a809 a803a805 a7ffa801 a7fda7ff
88 a7fca7fd a7fca7fc a7fda7fd a7fda7fd a7ffa7fe a800a7ff a801a800 a802a801
96 a803a803 a804a804 a803a803 a803a803 a802a802 a801a802 a7ffa800 a7fea7fe
104 a7fda7ff a7fda7fd a7fca7fd a7fda7fd a7fda7fe a7fea7fd a7fea7fe a802a7fe
112 a7f9a7f8 a7f8a7f9 a7f9a7f9 a7f9a7f9 a7f8a7f9 a7f9a7f9 a7f9a7f9 a7f8a7f8
120 a7f9a7f8 a7f9a7f9 a7f9a7f9 a7f9a7f9 a7f9a7f9 a7f9a7f9 a7f8a7f9 a7faa7f9
128 a7f9a7f9 a7f9a7f9 a7f8a7f9 a7f9a7f9 a7f9a7f9 a7faa7f9 a7f9a7fa a7f9a7f9
136 a7f9a7f9 a7f8a7f9 a7f8a7f9 a7f9a7f9 a7f9a7f8 a7f9a7f8 a7f9a7f8 a7f9a7f8
144 a7f7a7f8 a7f9a7f9 a7f9a7f8 a7faa7f9 a7f9a7f9 a7feb7f9 a801a800 a801a801
152 a802a801 a802a802 a802a802 a801a802 a802a802 a802a802 a801a802 a802a801
160 a802a802 a800a801 a800a801 a800a800 a800a800 a800a800 a7ffa7ff a800a800
168 a800a800 a801a801 a802a801 a802a802 a802a802 a802a802 a803a802 a803a802
176 a803a802 a803a802 a802a802 a801a802 a801a801 a801a801 a800a7ff a800a7ff
184 a7ffa7ff a7ffa7ff a7ffa7ff a800a7ff a800a800 a800a7ff a7ffa800 a7ffa800
192 a800a800 a800a800 a800a800 a800a800 9406b800 a518a060 a7ffa7ff a806a800
```

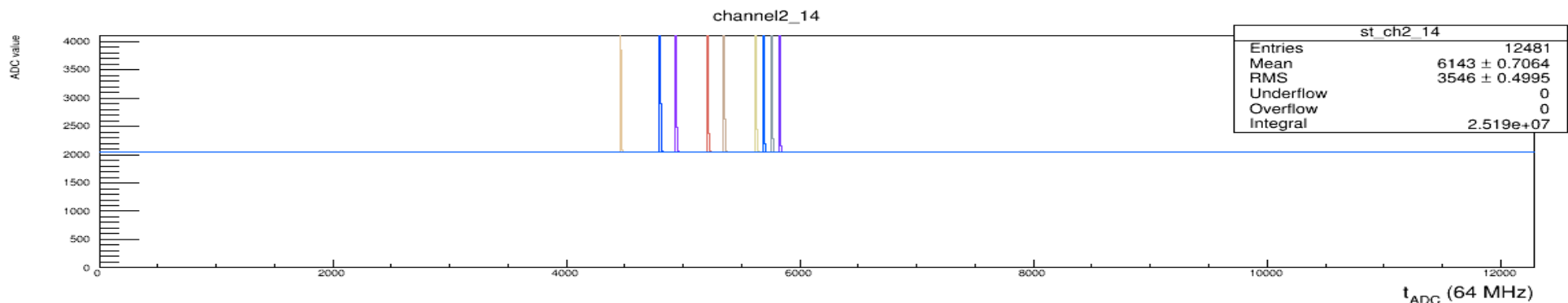
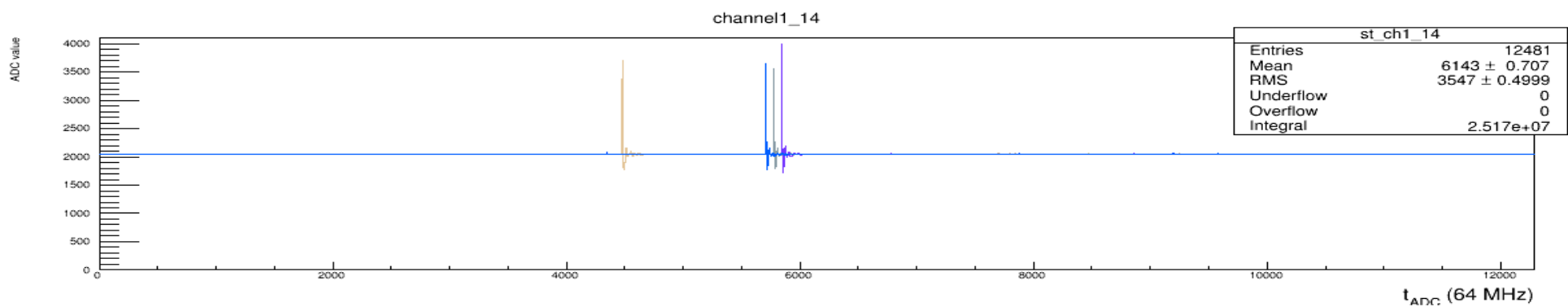
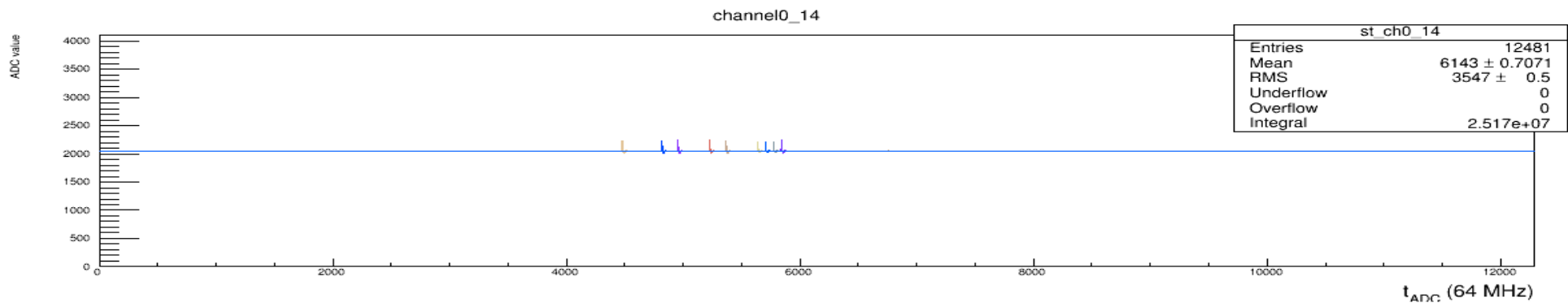
Samples in this channel should end after 192 words

Instead it ends after 388 words

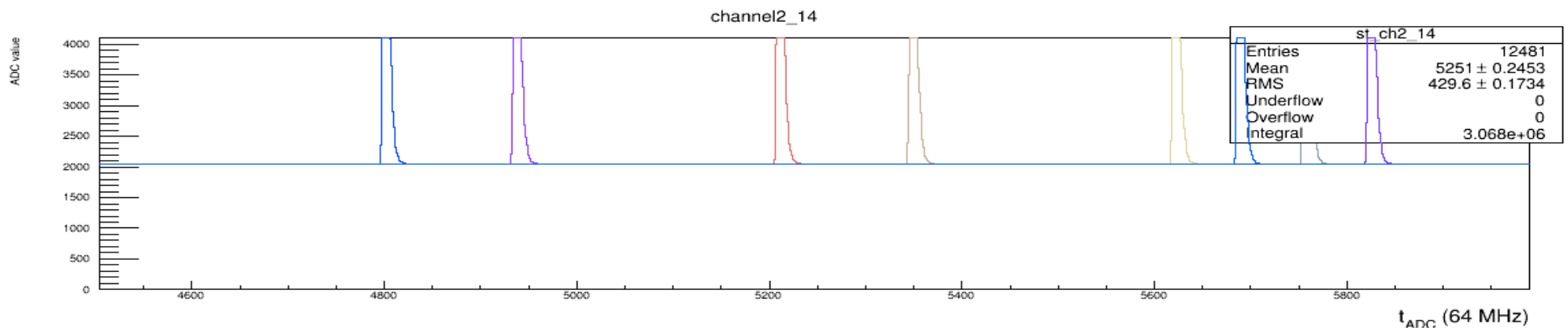
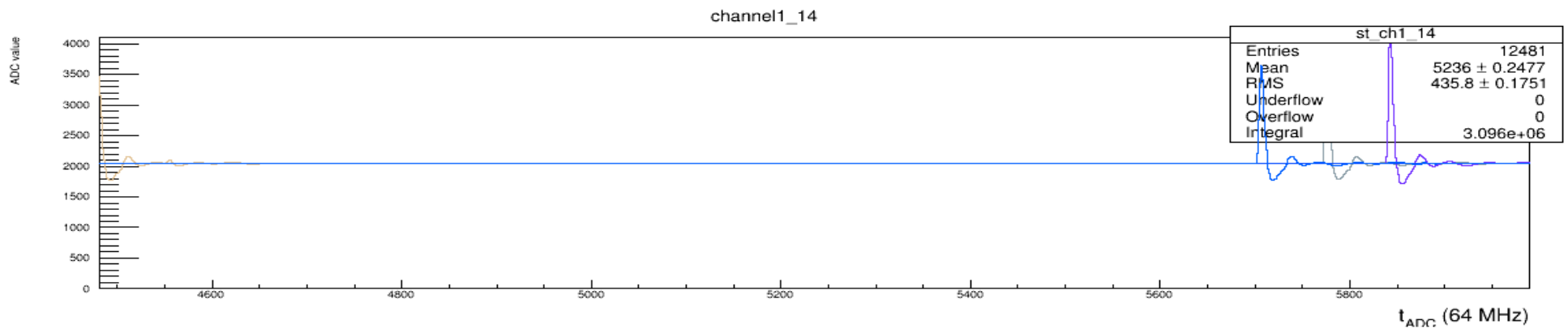
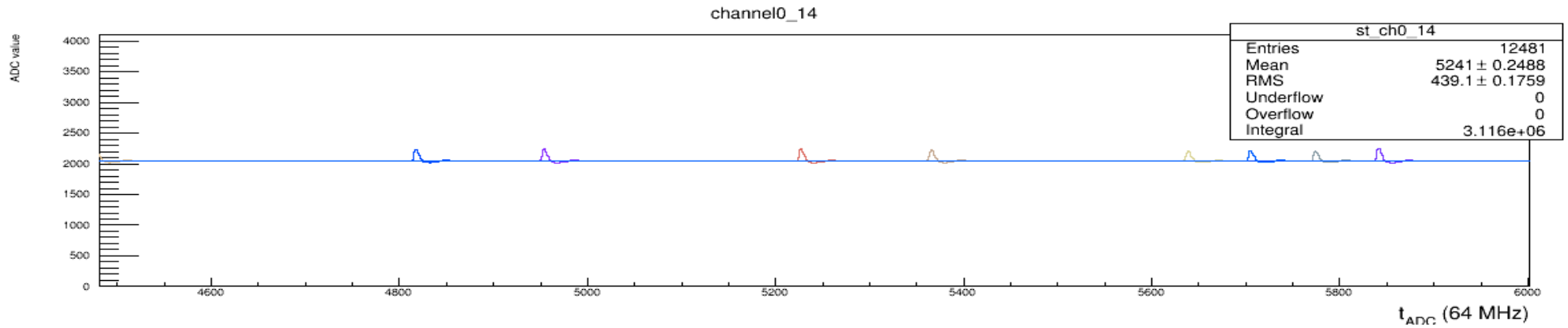
# Good Events

- Not “bad events”
- Events with a maximum LED trigger ADC count over 2100
- Events in which a high or low gain pulse (over 2100 ADC) is within a given temporal distance from the trigger

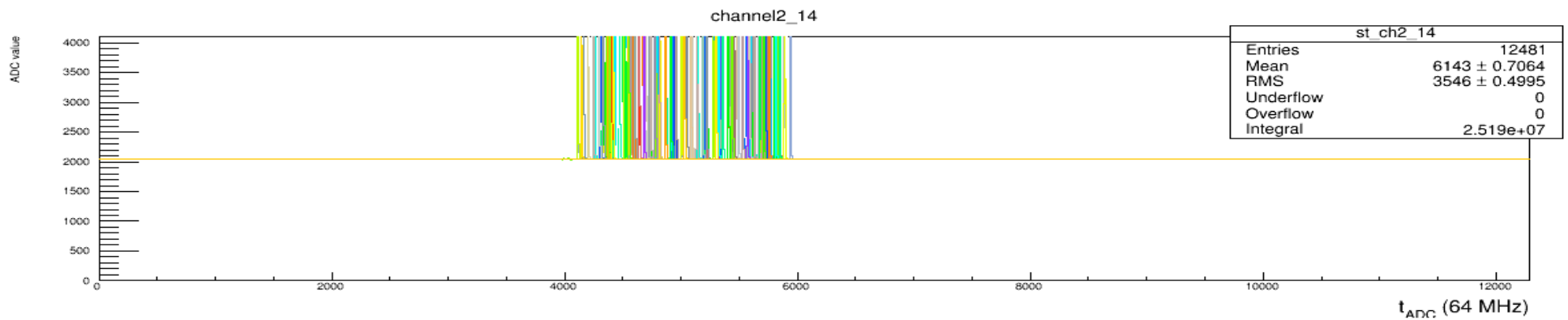
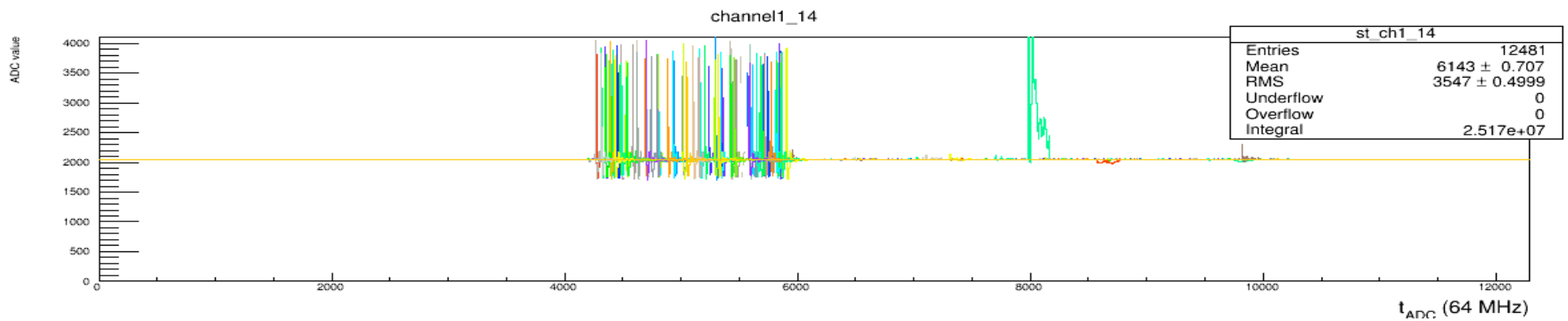
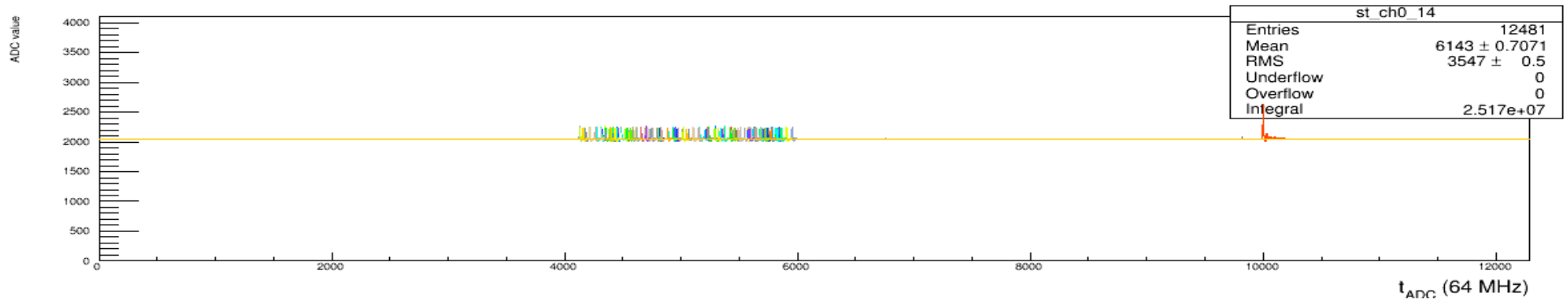
# 10 Good events within $\pm 1000$ samples from trigger (Zoomed out)



# Zoomed in version of previous plot



# Good events with no restriction on distance from trigger but cuts made for LED events in the first bin (231 LED



All trigger events: include number  
(1001 LED events out of 1001  
events)

- The only difference is that the first bin of the LED channel is required not to be 4096 (max ADC) but under the current version of the code we don't even have data for that bin! → bug in the hexadecimal readout somewhere



