BCM1F TDCs status

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CMS-FCAL Meeting
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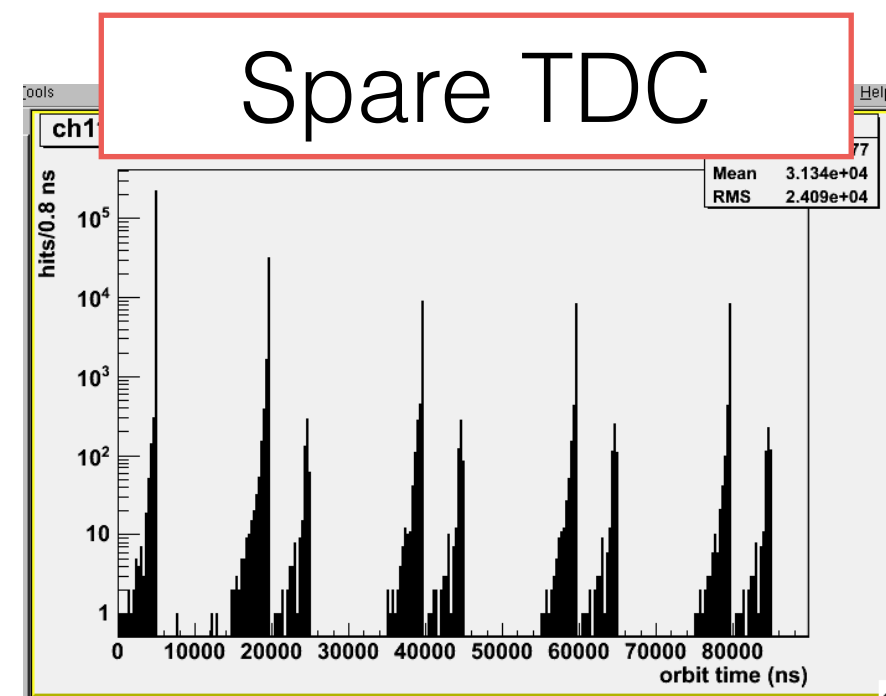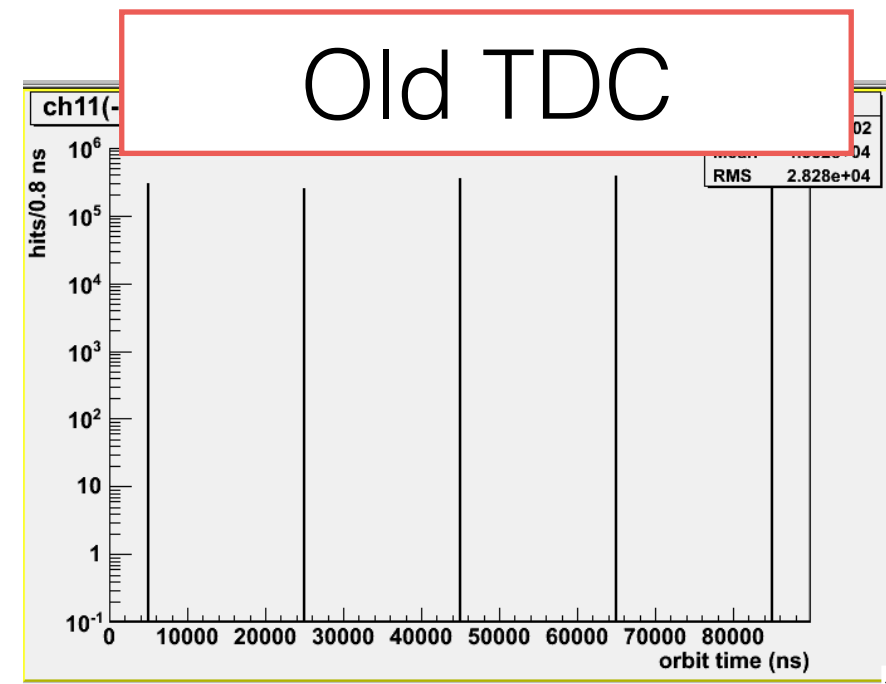
- Status of TDCs

- Tests with TDC boards

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Status of TDCs

- Before the power glitch yesterday the system was running fine.

- Until now I cannot connect to the crate. [ERR:]No Caen VME controller found!

- Concerning the high-rate scenario, need to test some of the ideas already presented. Meanwhile, to keep the TDCs running, it might be necessary to mask some of the channels.
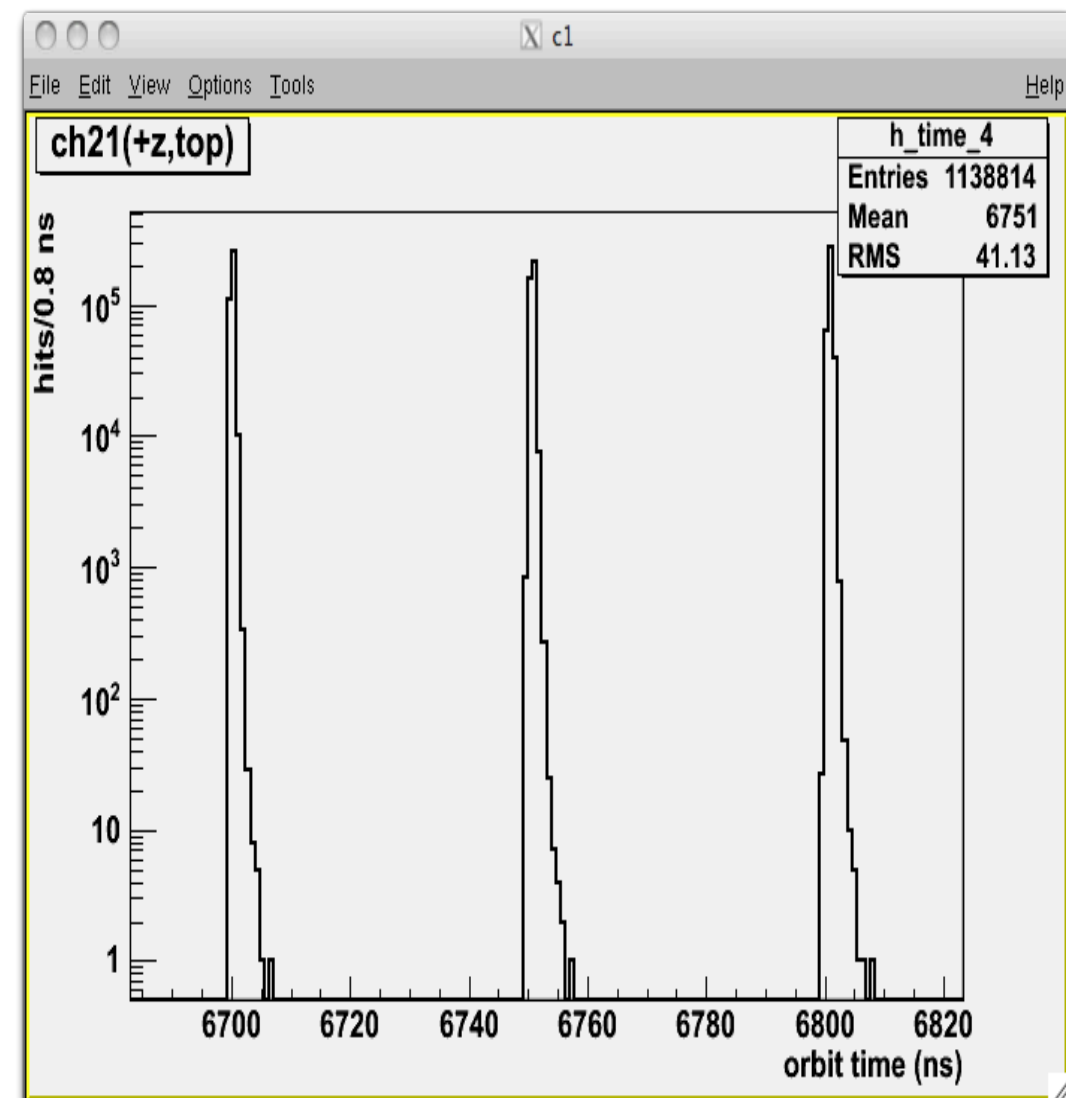
TDC boards tests (I)

- Available spare of TDC board in P5 had different firmware. Needed small modification in the software to run it.

- Spare TDC board showing weird results with test pulses.

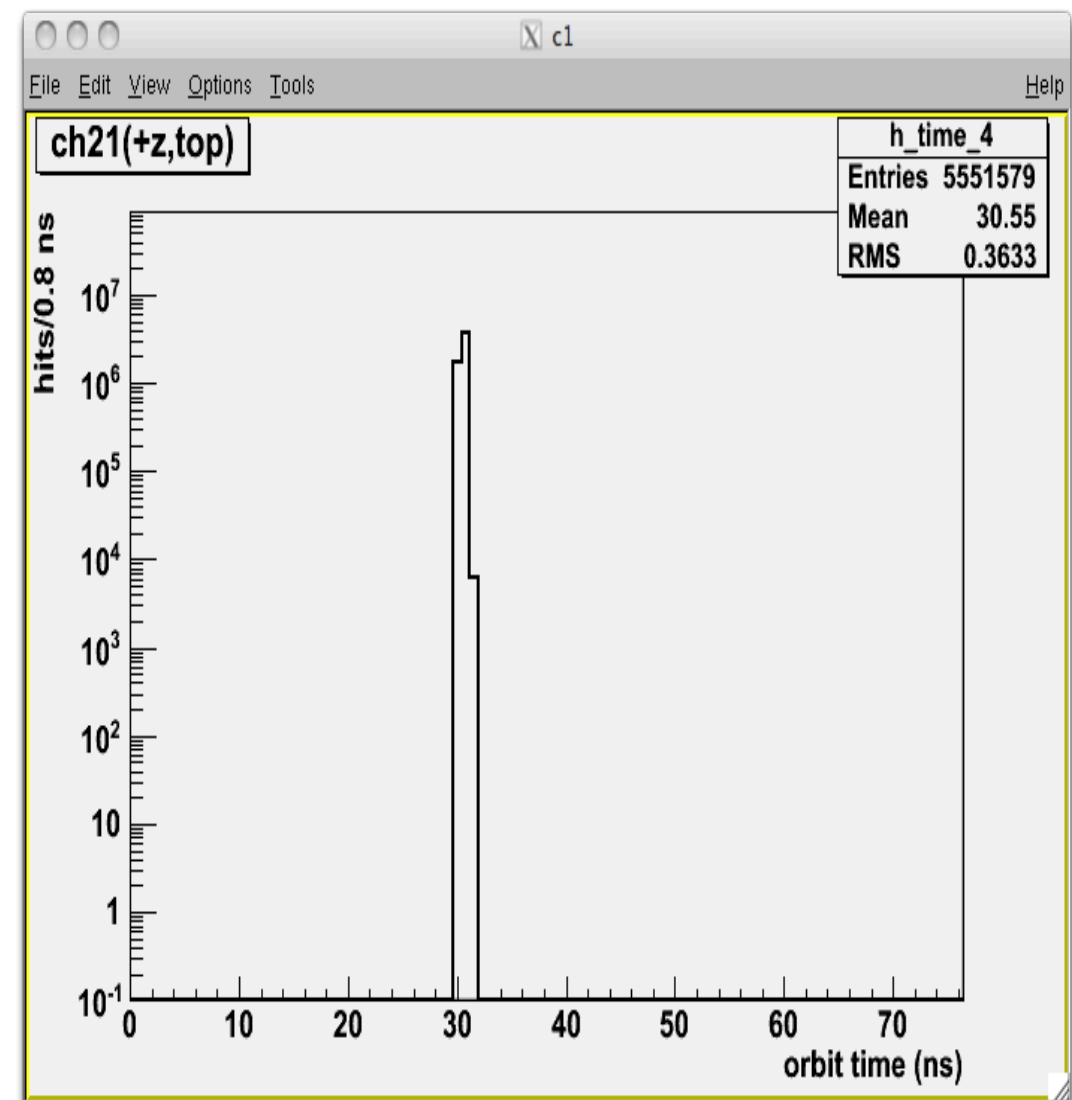- Board changed in the electronics pool.

Old TDC

Spare TDC

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TDC boards tests (II)

- New board is good showing the results as the old one…

- Short tails seen in both old and spare TDCs…

- …but no advanced 10 ns peak.

- Three test pulses 50 ns apart sync with orbit trigger.
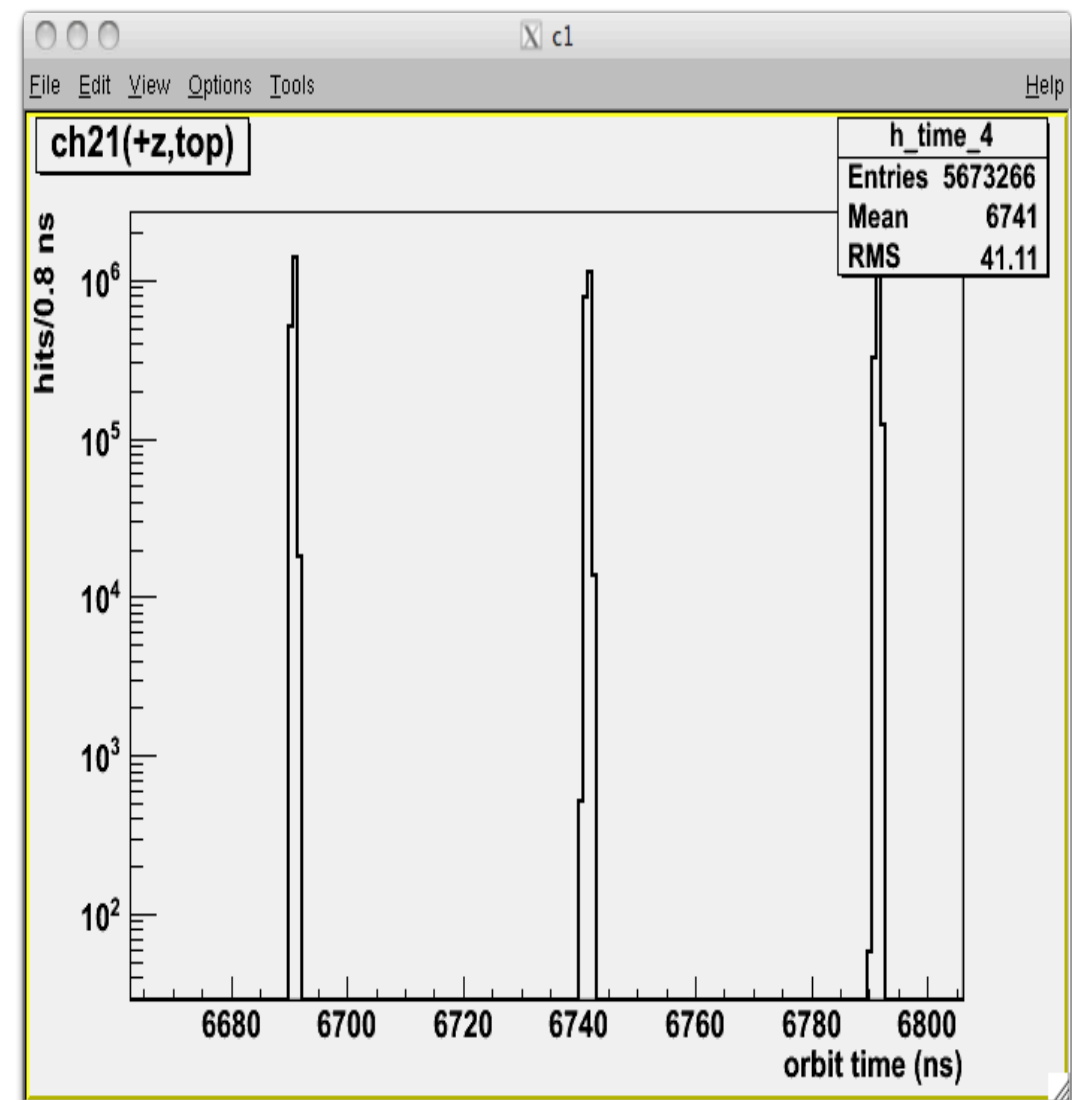
- Investigation…

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TDC boards tests (III)

- Using another pulse generator.

- Same signal for orbit and hit. No sensitivity to jittering.

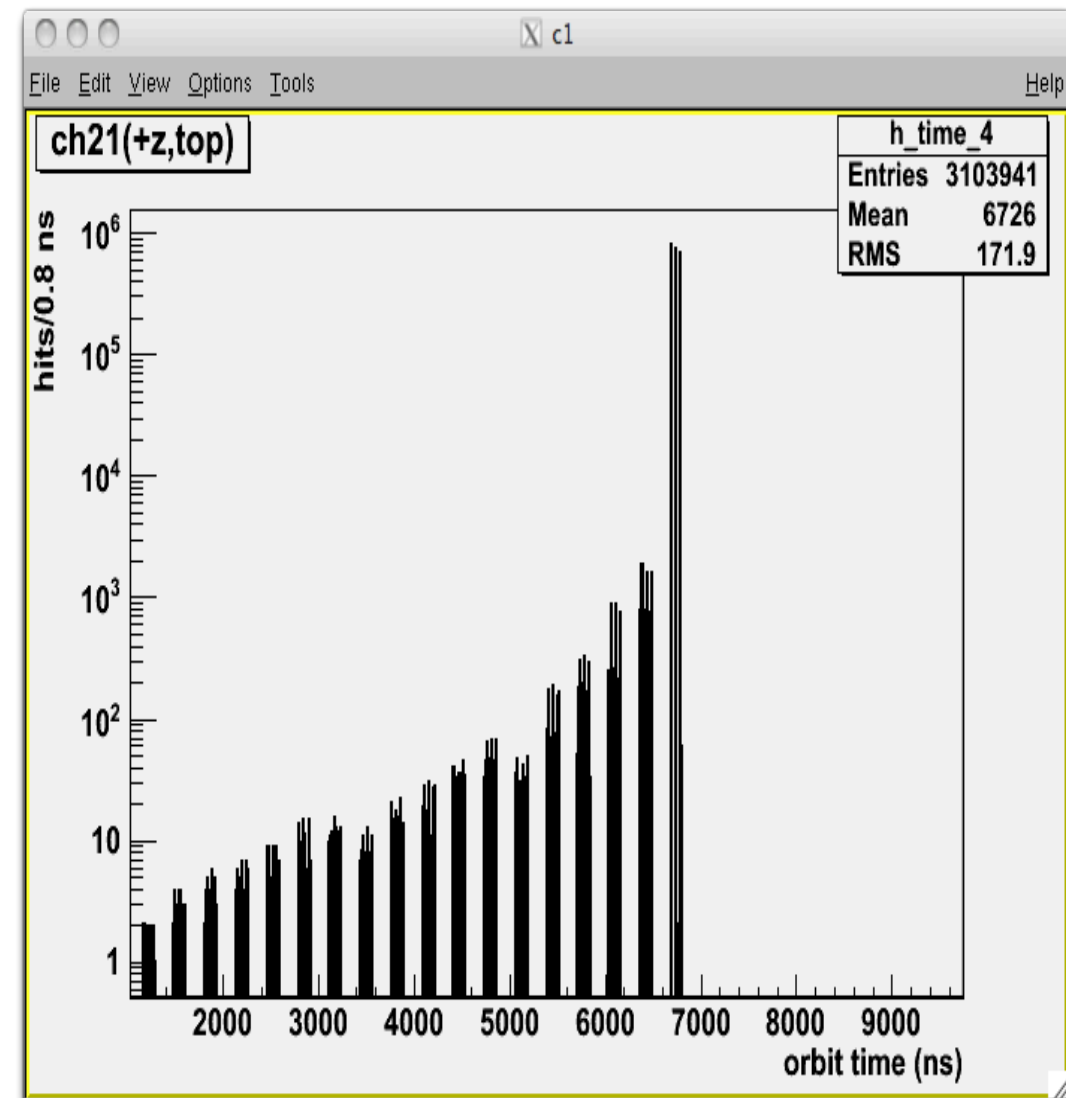- Moving back to the other setup with the orbit trigger and three pulses the tails are back.

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TDC boards tests (IV)

- Right after power cycling the crate.

- No changes in the system.

- No tails for a while…

- …but after some time, could be minutes or hours, the tails were back.
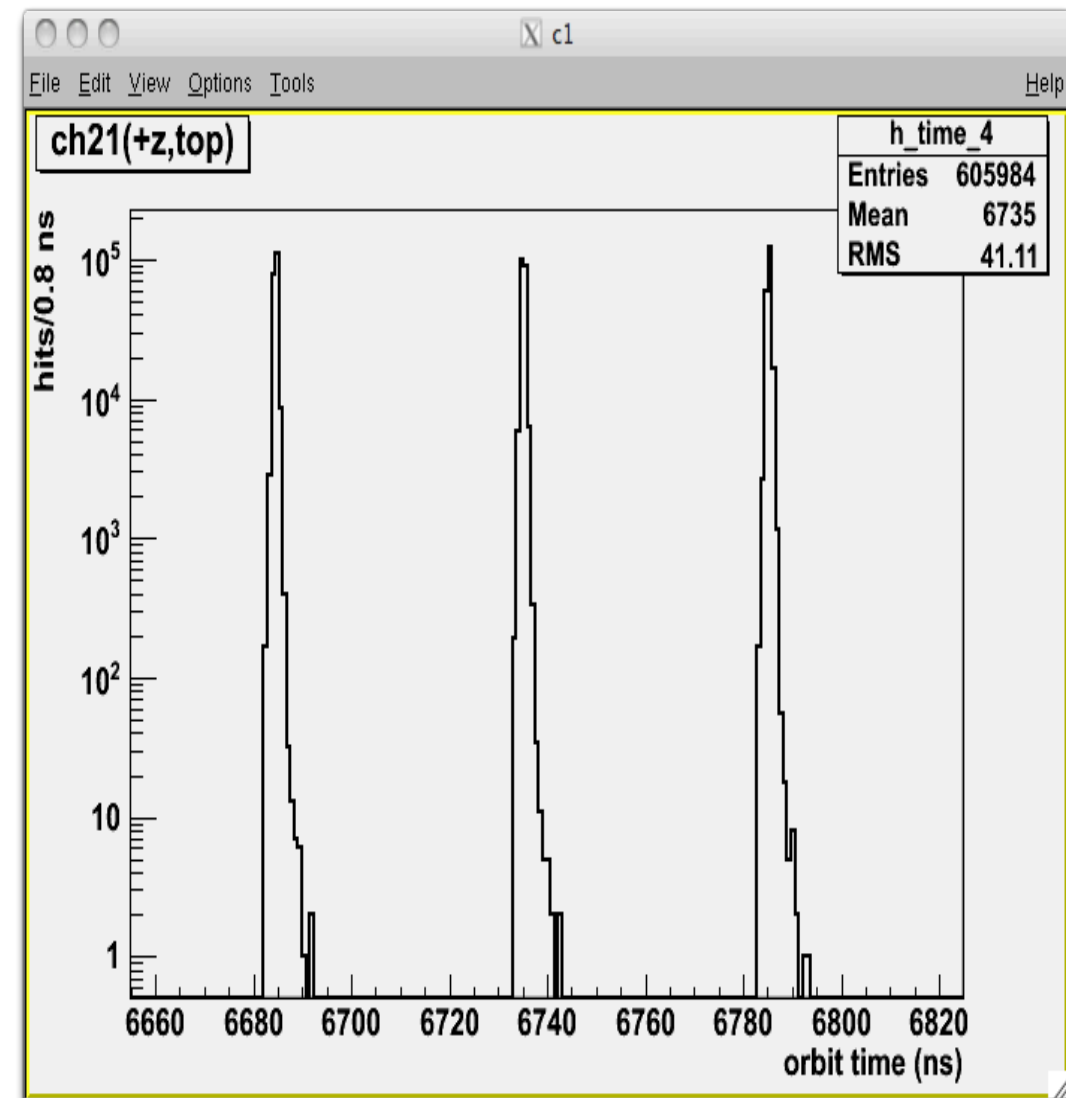
TDC boards tests (V)

- Bypassing the discriminator.

- Strange pattern!? Noise from pulse generator?

- It also appeared when the thresholds were too low and the discriminator was connected.

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TDC boards tests (VI)

- Bypassing the VETO board.

- Tails are still there.

TDC boards tests (VII)

```
-> Initialization of TDC_V767_CAEN
 -> Looking for TDC_V767_CAEN at 0x11110000 ...
VME Bus Data = 0
 Detected Board ID: 0-0-2-ff
 Revision ID: 0
 Serialnumber: 59
```

← Expected data
from VME bus – zero

```
 -> Initialization of TDC_V767_CAEN
 -> Looking for TDC_V767_CAEN at 0x11110000 ...
VME Bus Data = 7000
 Detected Board ID: 7000-7000-7002-70ff
 Revision ID: 7000
 Serialnumber: 1879076923
```

Random data
from VME bus

```
 -> Initialization of TDC_V767_CAEN
 -> Looking for TDC_V767_CAEN at 0x11110000 ...
VME Bus Data = fd00
 Detected Board ID: fd00-fd00-fd02-fdff
 Revision ID: fd00
 Serialnumber: 4244700475
```

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TDC boards tests Summary

- The first available spare TDC board had a different firmware. Small modifications in the codes allowed to run it, but it was faulty. Swapped with another one from the pool.

- TDCs not showing 10 ns peaks but showing short tails after the pulse peaks. Tails disappear for some time after power cycling the crate.

- Both TDC boards, old and spare, show the same results.

- Sometimes the VME bus data readout by TDCs give different results than expected. Not correlated with observed nasty tails.

- Spare TDC in the new BCM1F test crate set by Elena. I still need to port the software to ctrl4.

- Many thanks to Elena for the great help with these tests.