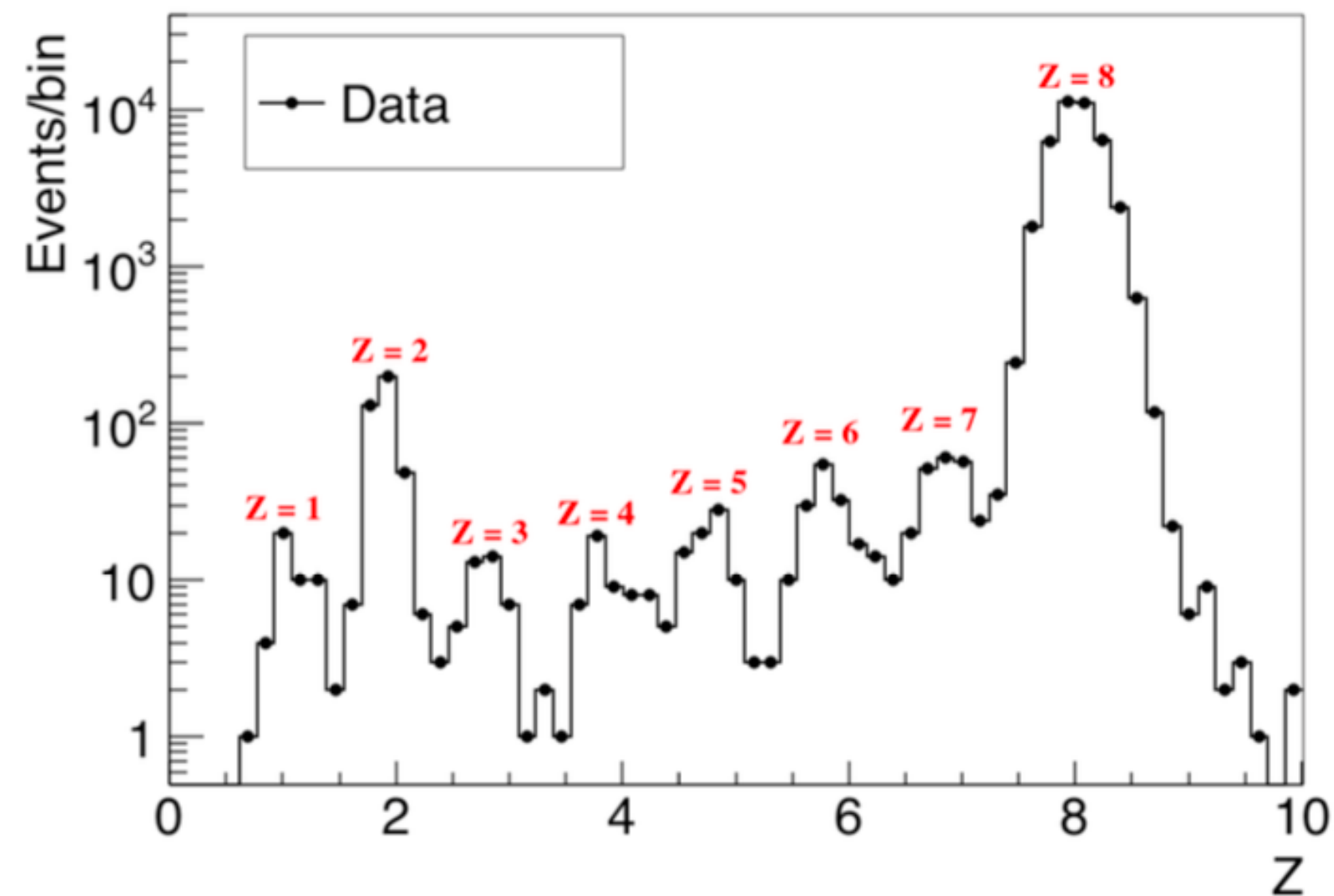


Report on trigger and WaveDAQ



L. Galli e M. Francesconi, INFN Sezione di Pisa
FOOT Physics Meeting, 03/03/2021

Trigger and WaveDAQ working group

- Main focus
 - *setup WaveDAQ system and organise tests to optimise the simultaneous readout of TW, Margarita and Calorimeter*
 - sampling frequency
 - synchronisation
 - *Fragmentation trigger algorithms*
 - brainstorming by both HW and SW groups
 - *final proposal to be shared and discussed among the collaboration*
 - *preliminary thoughts will be shown today by Angelica*
- If you are not yet included and you want to join, you are welcome

WaveDAQ preparation status

- System installed with available boards and in use by TW
 - *cosmic rays used for signal check and detector preliminary configuration*
 - **see Matteo slides**
 - *new “footon” server in use*
 - *full system installed in a movable rack for easier transportation*

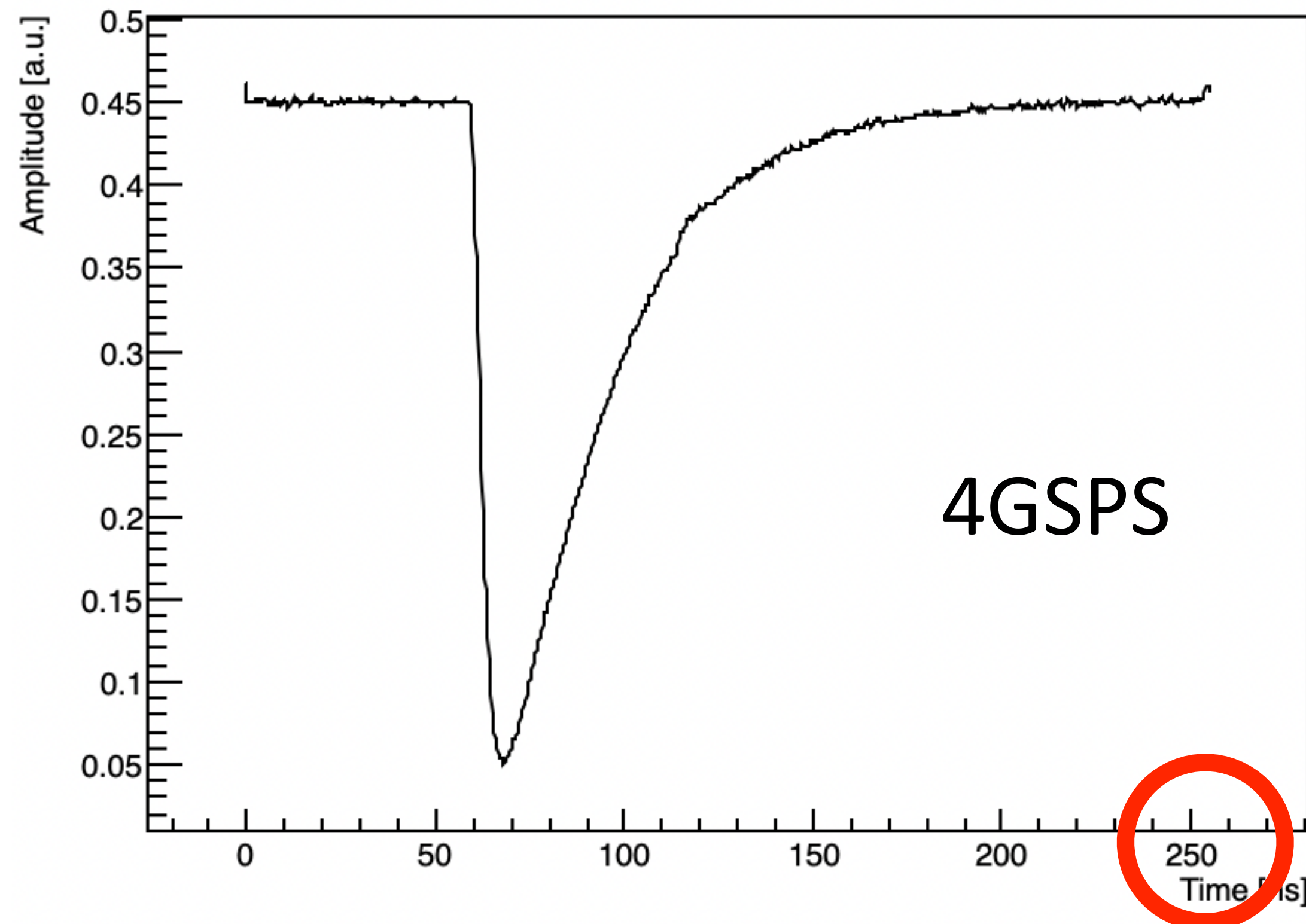


WaveDAQ degrees of freedom

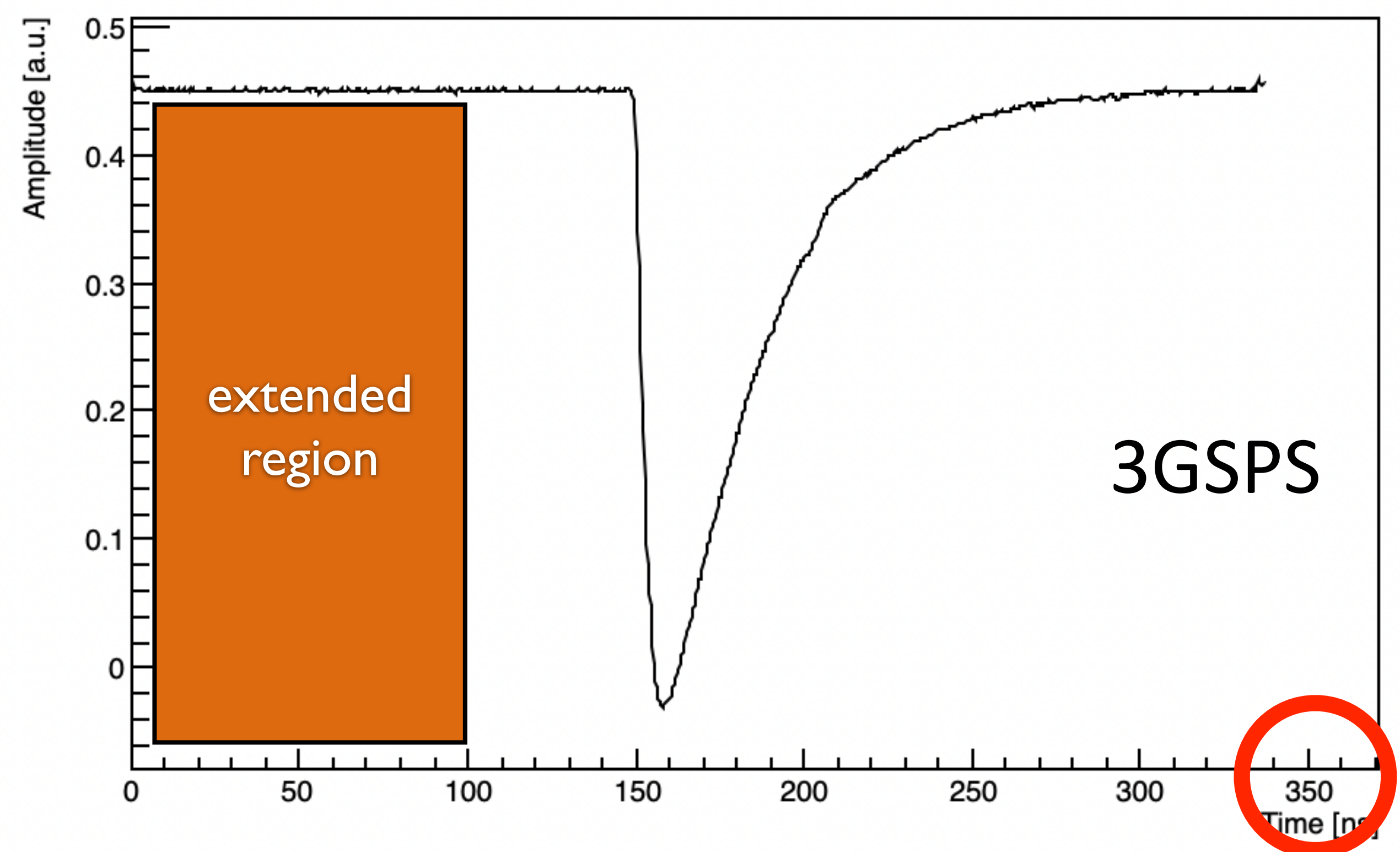
- Parameters to be fixed
 - sampling frequency*
 - TW and Margarita so far @4GSPS
 - performance @3GSPS? May be needed to accommodate complex trigger algorithms such as the fragmentation*
 - many intermediate values are possible
 - Calorimeter
 - 1 or 2GSPS?*
 - Can we synchronise boards with different with different sampling frequency without deteriorate the time resolution?
In principle YES but must be checked
- Possible combined data taking in Pisa with cosmic soon*
 - still under discussion

Wfm and sampling frequency

TW Board 82 Ch 10



TW Board 94 Ch 1

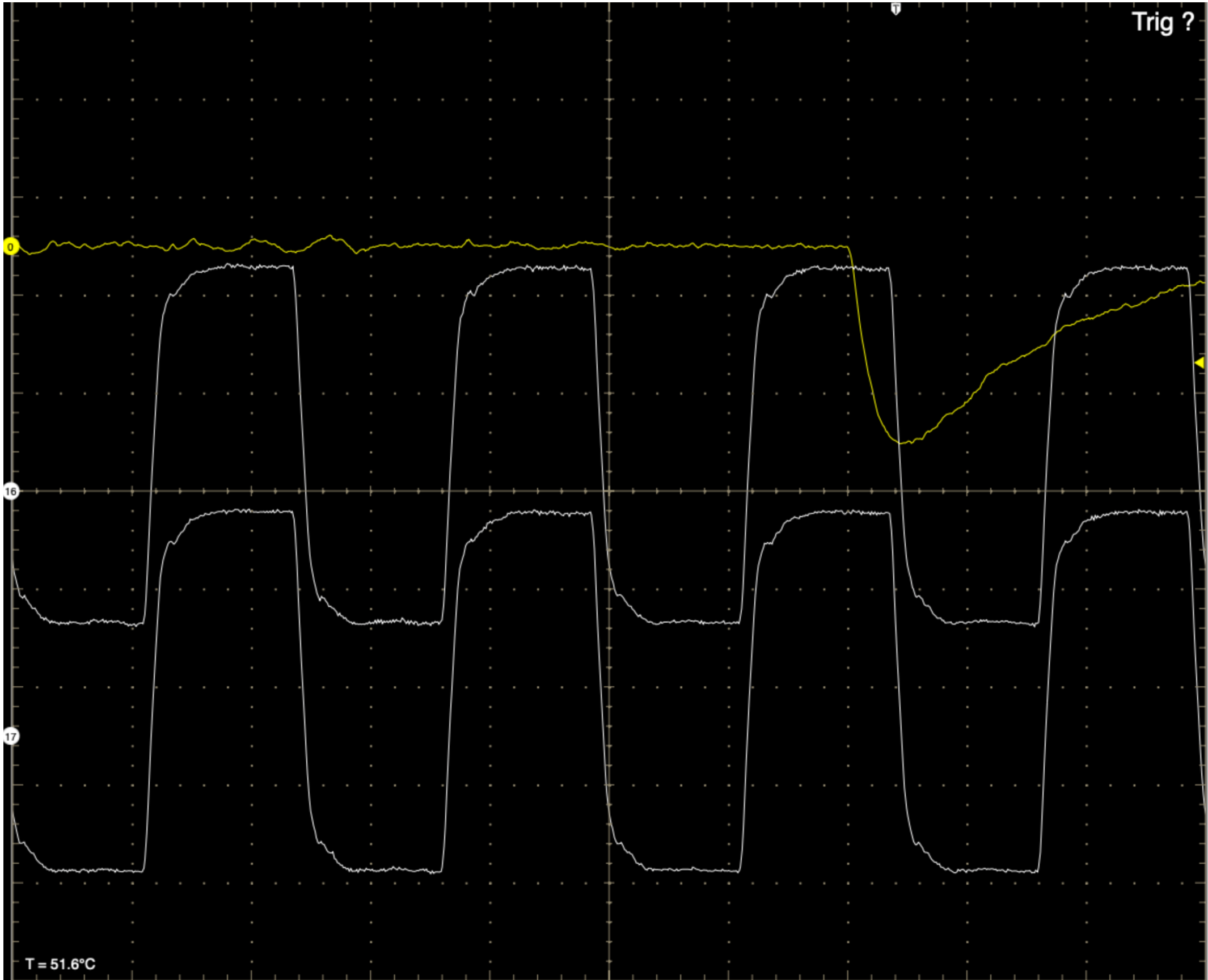
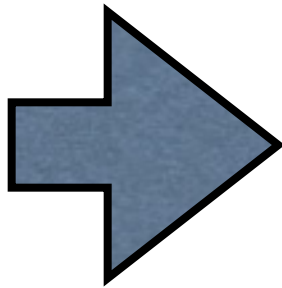
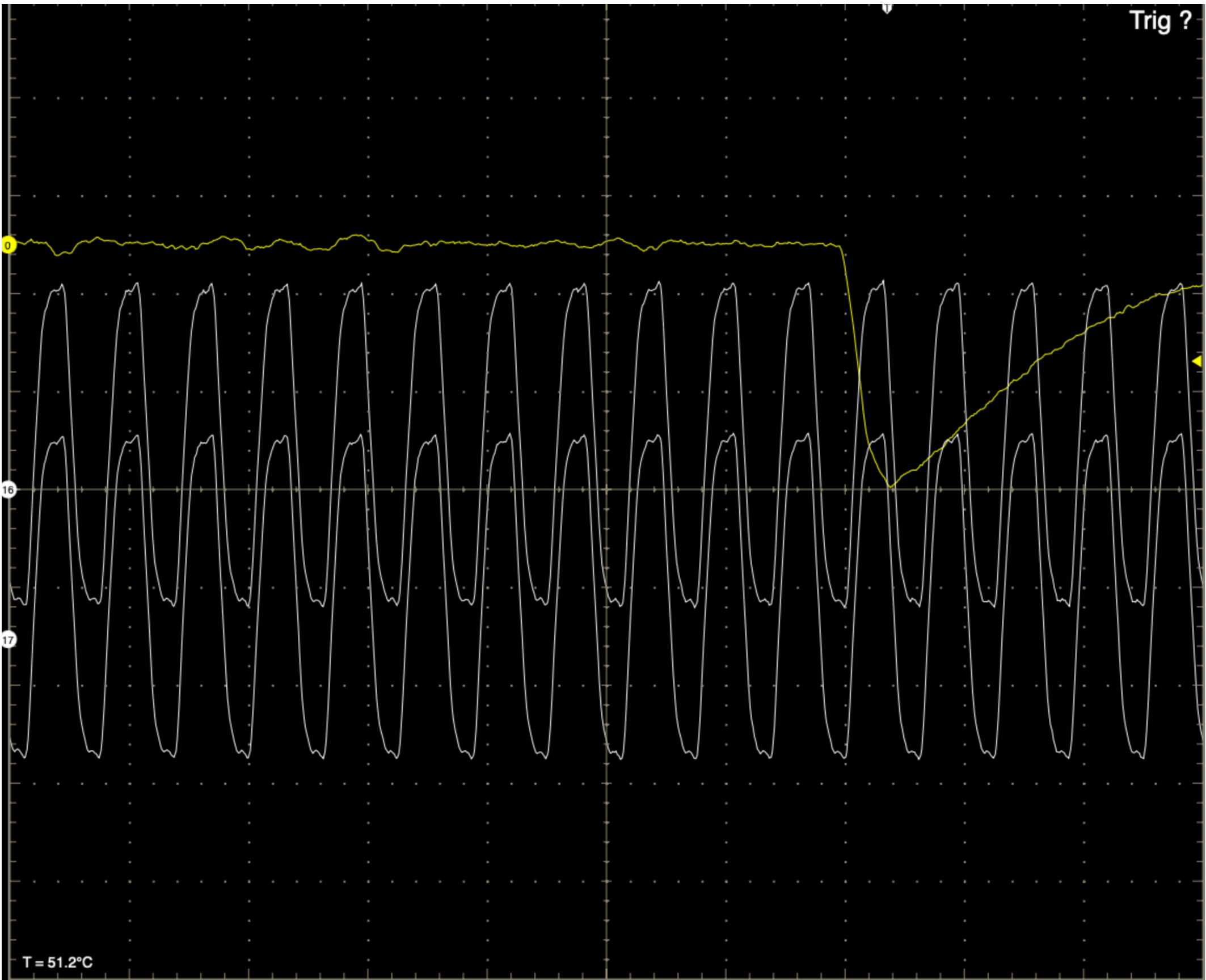


- 3GSPS -> less points on the edge, might have an impact on the timing
- 3GSPS-> wider time window, can accomodate a larger trigger latency

Slow down synchronisation CLK

80 MHz

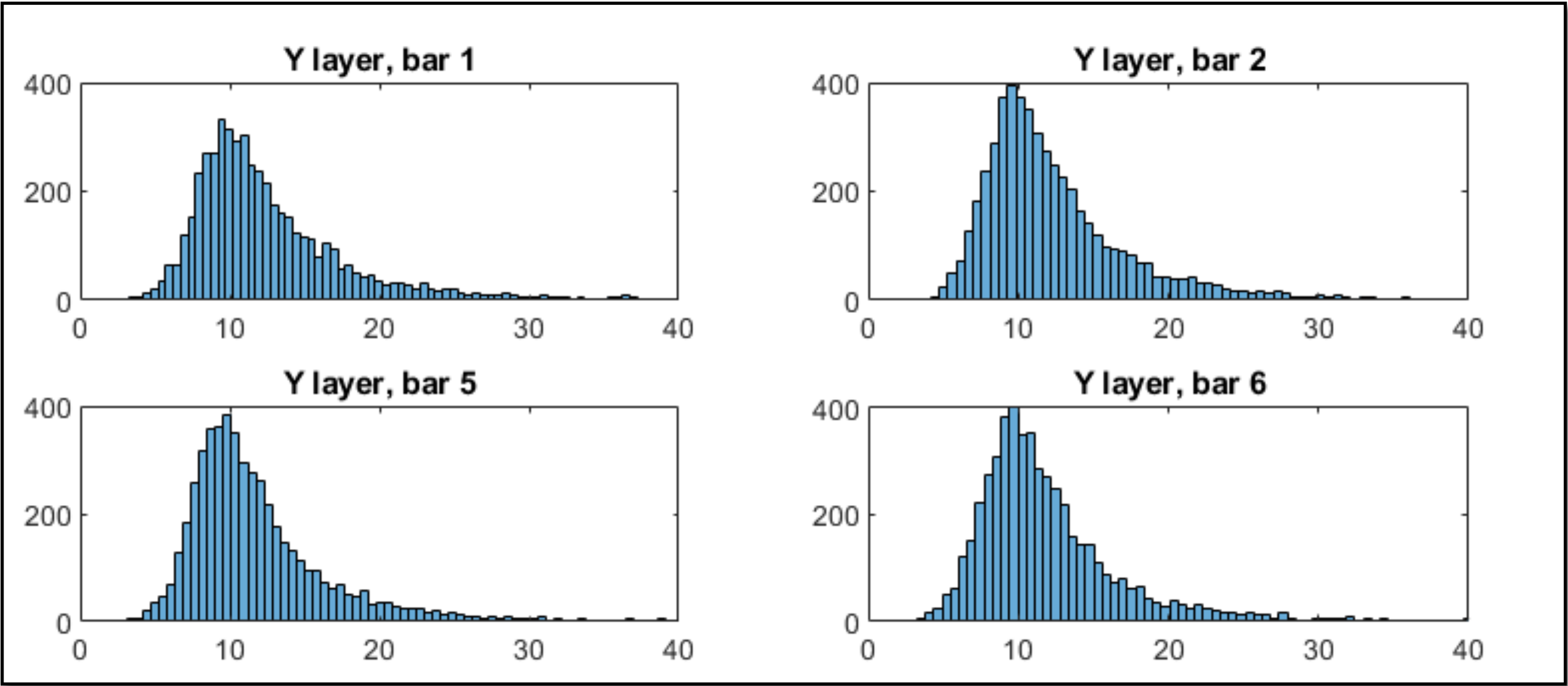
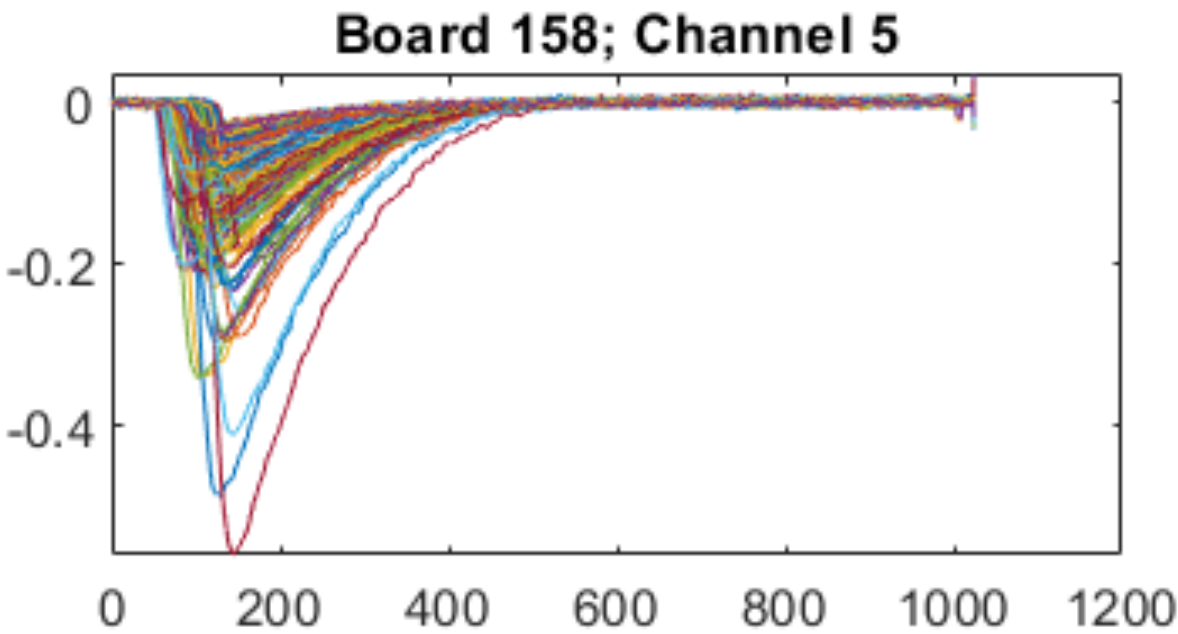
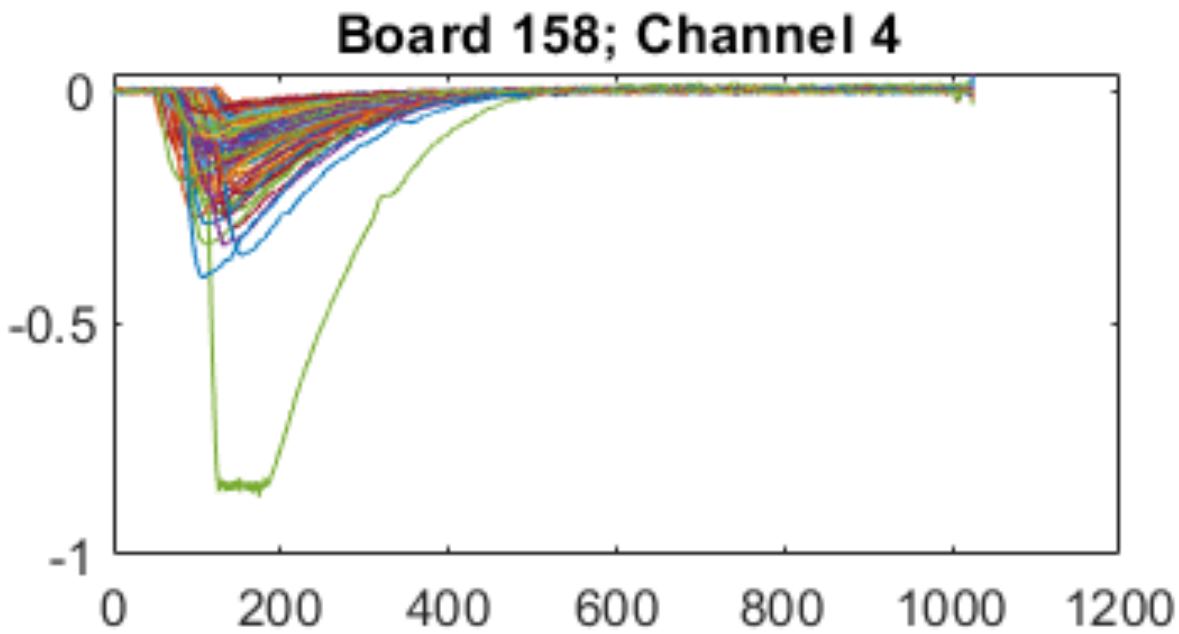
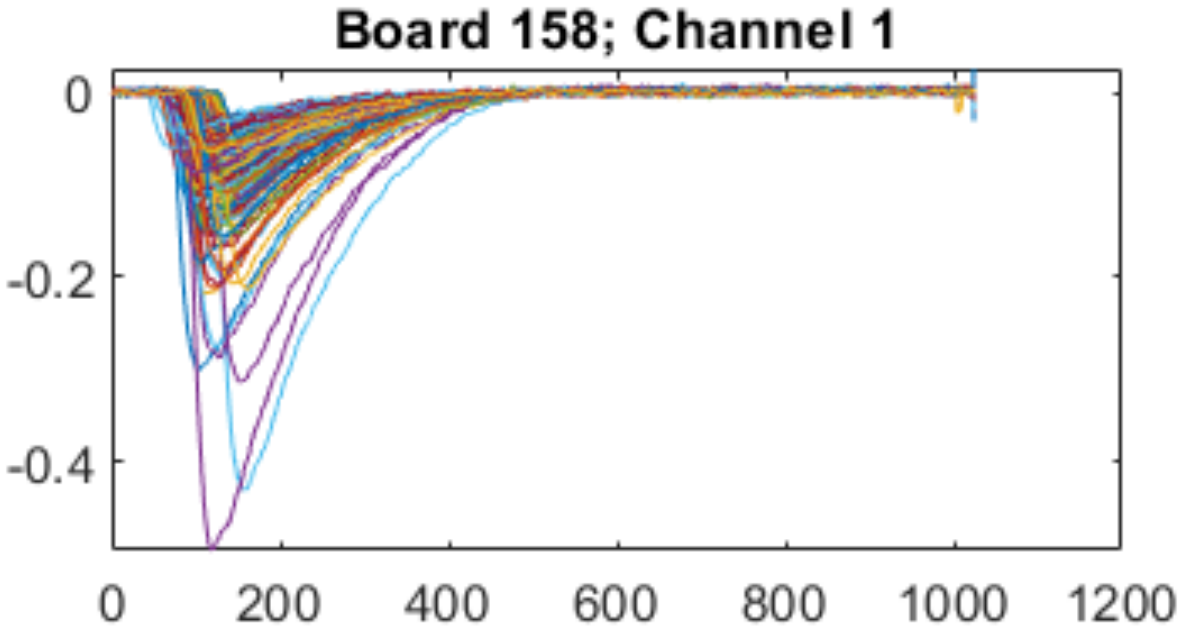
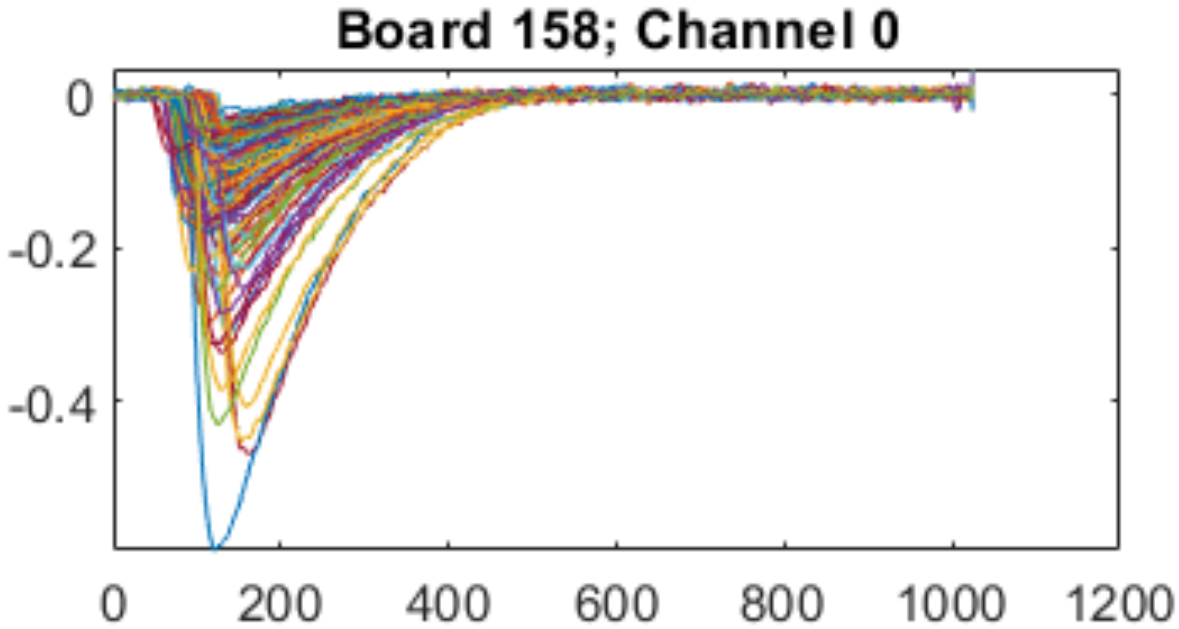
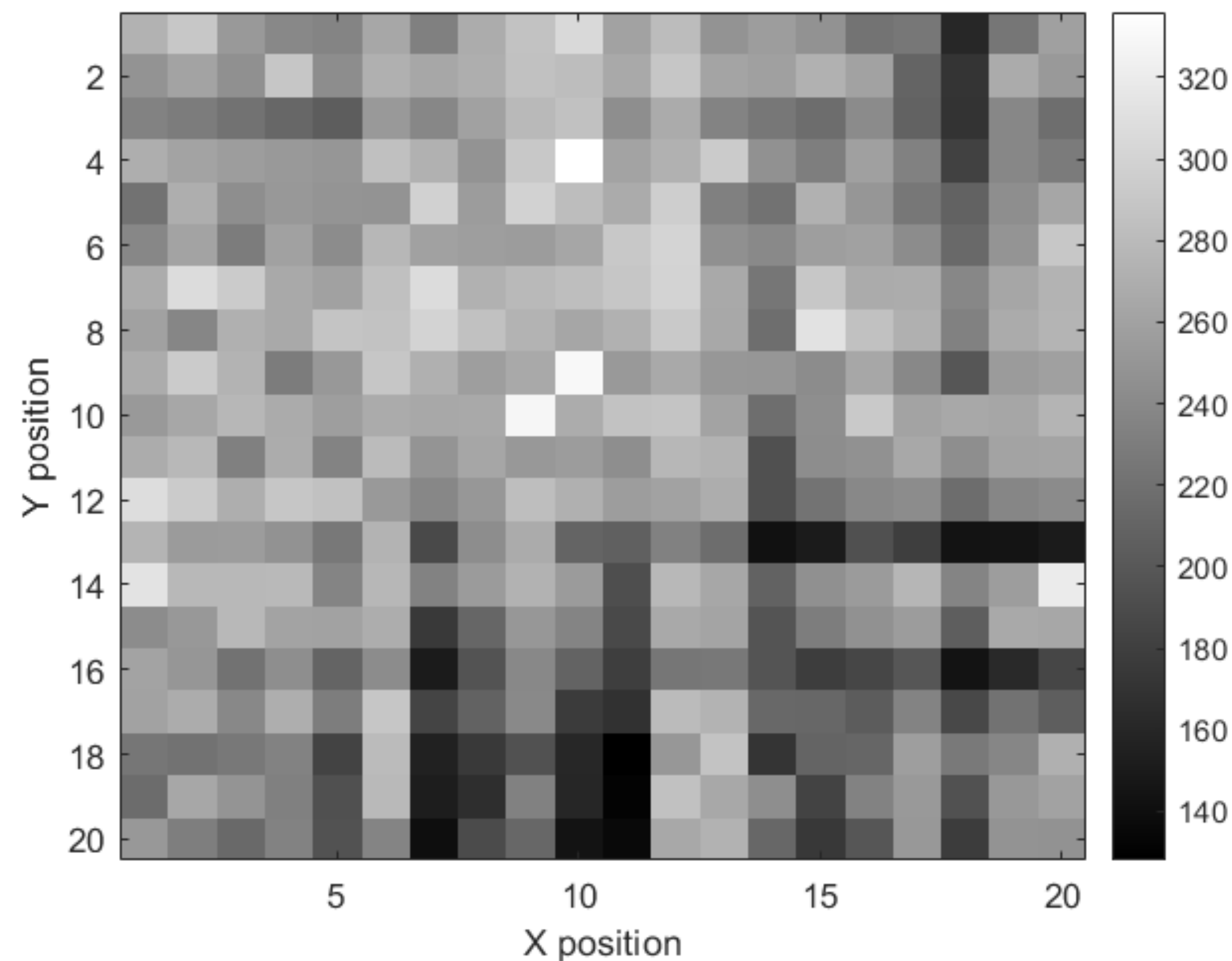
20 MHz



DAQ ongoing...

from Matteo

Occurrence at each intersection



Temperature check

- Temperature read by TW sensor through WDB as will be in FOOT
- *history from MIDAS to monitor the trend*
- *check if we see some effect in detector performance with cosmic*



- WaveDREAM production almost completed
 - *expected within the end of March*
- Integration test with Bologna group into general DAQ
 - *WaveDAQ (only electronics without detectors) in Bologna in April*
 - final integration and test of the new interface board for trigger and synchronisation signals distribution

backup

Trigger and delays in WDAQ

