

TOF-Wall status

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Current System status



The system is currently running, all the bars are acquiring cosmic rays.

Data are being acquired testing several configurations, varying:

- Overvoltage
- Gain
- Sampling frequency
- Clock frequency

The first goal is to check if there is any SiPM board / optical coupling that needs to be fixed before closing the detector.

Useful info for data processing

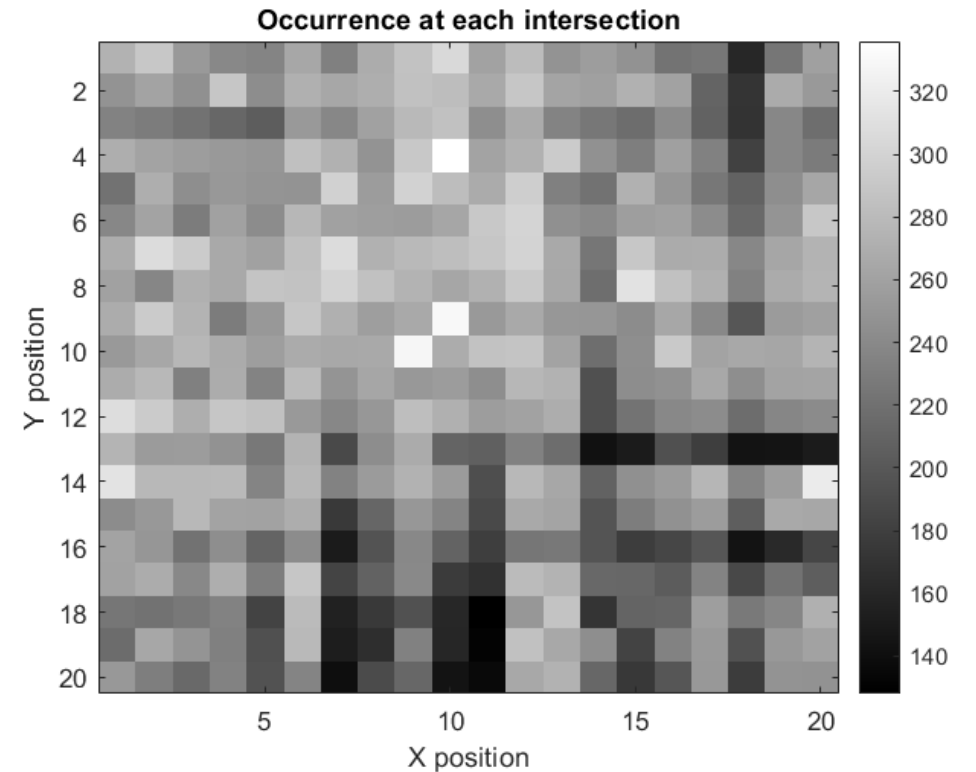
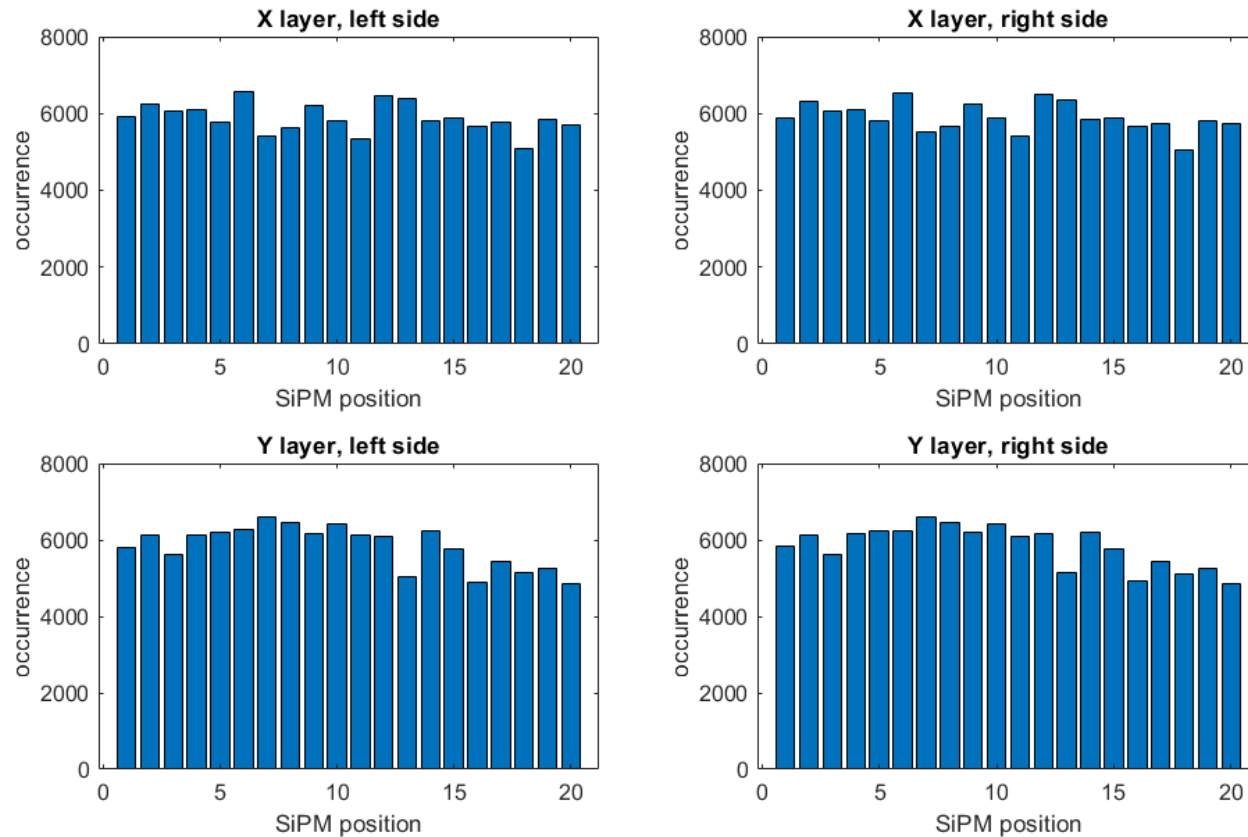
The current order of the boards in the crate is the following:

- Slot 5 -> WD 158
- Slot 6 -> WD 159
- Slot 7 -> WD 160
- Slot 8 -> WD 161
- Slot 9 -> WD 164
- Slot 10 -> WD 163

While the connection map between bars and crate is the same as in the previous data taking.

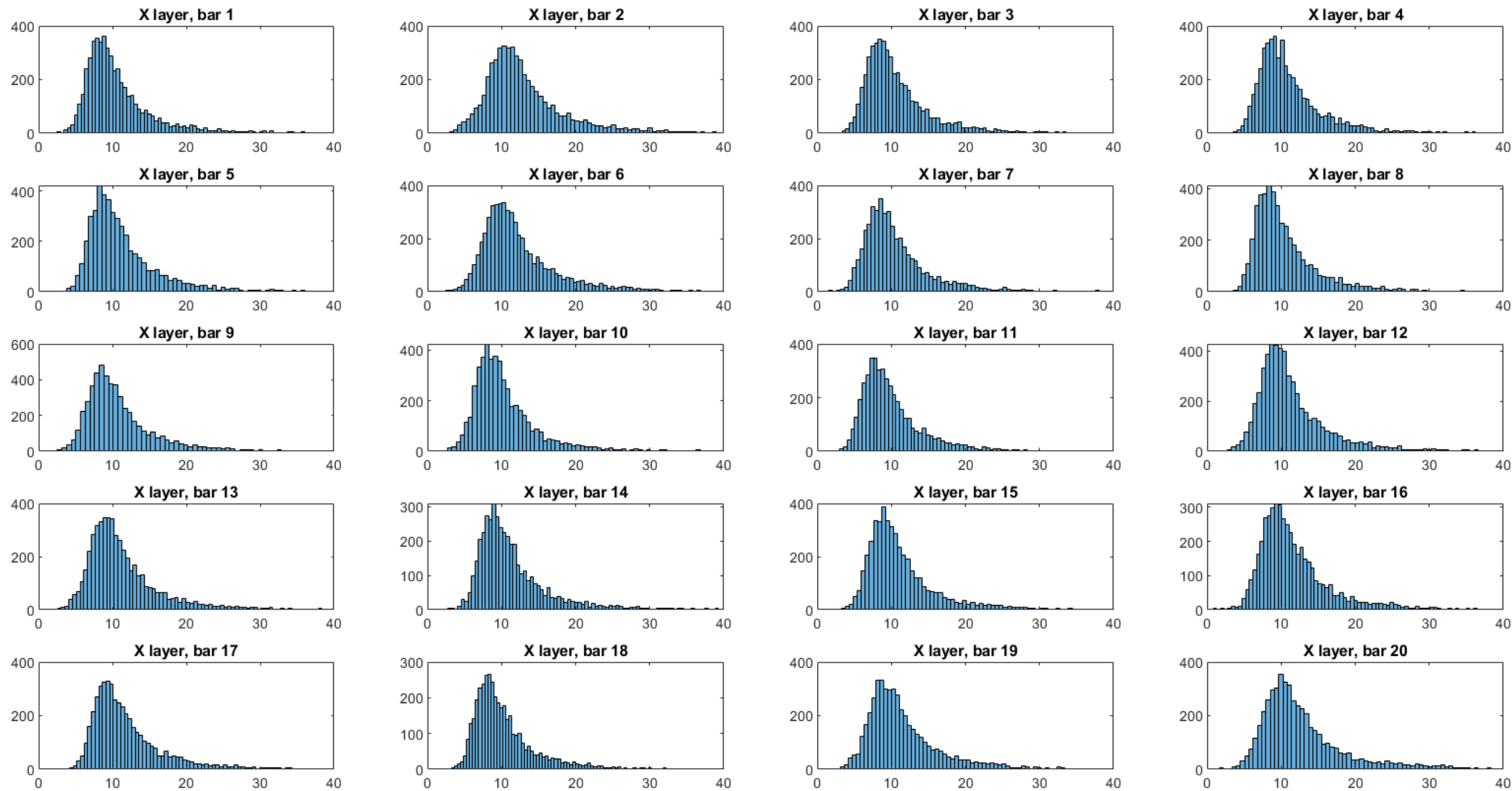
First results

Occurrence for each channel of the TW

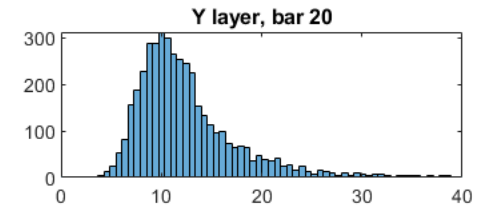
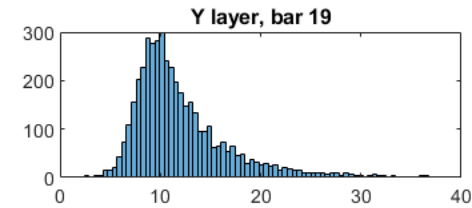
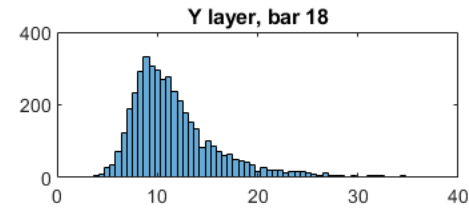
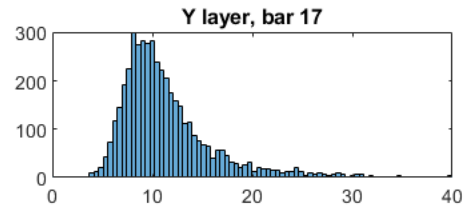
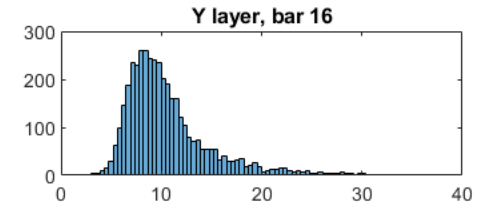
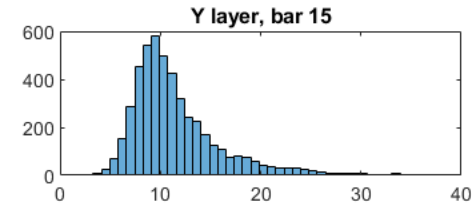
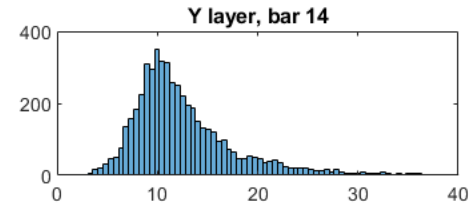
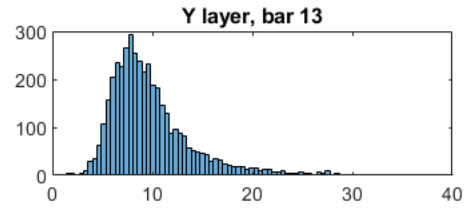
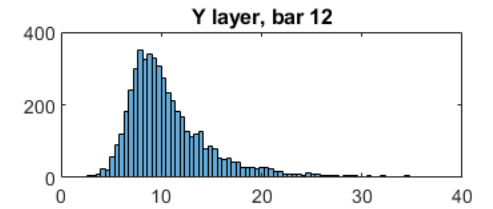
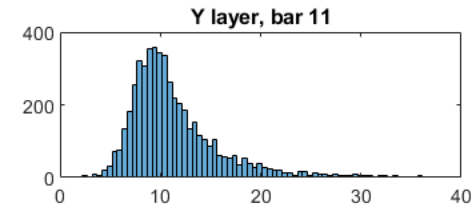
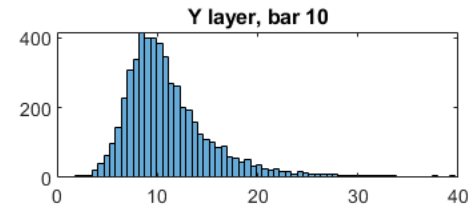
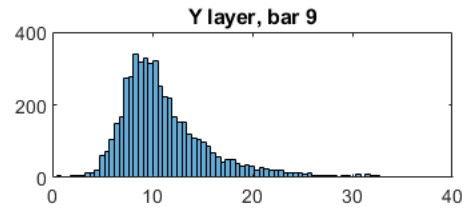
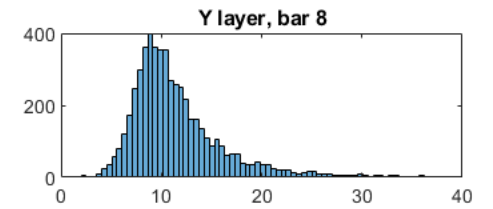
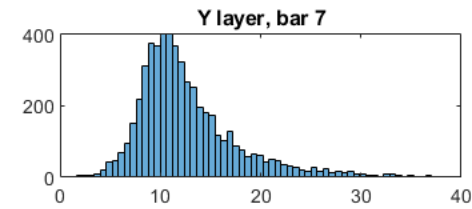
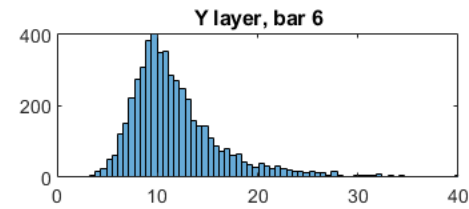
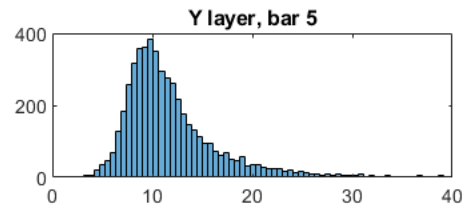
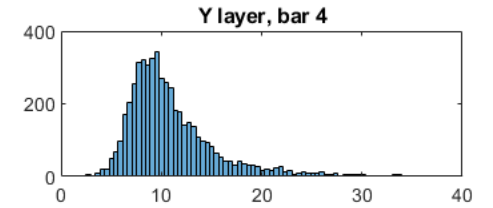
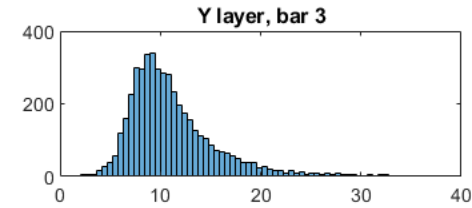
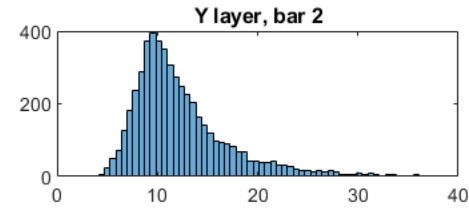
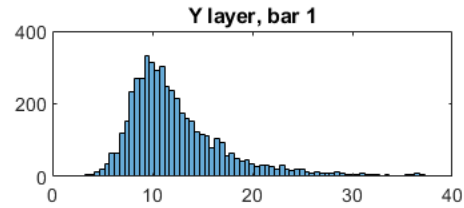


Some intersections are less likely than others (thresholds still need to be optimized)

Cosmic spectra – X layer



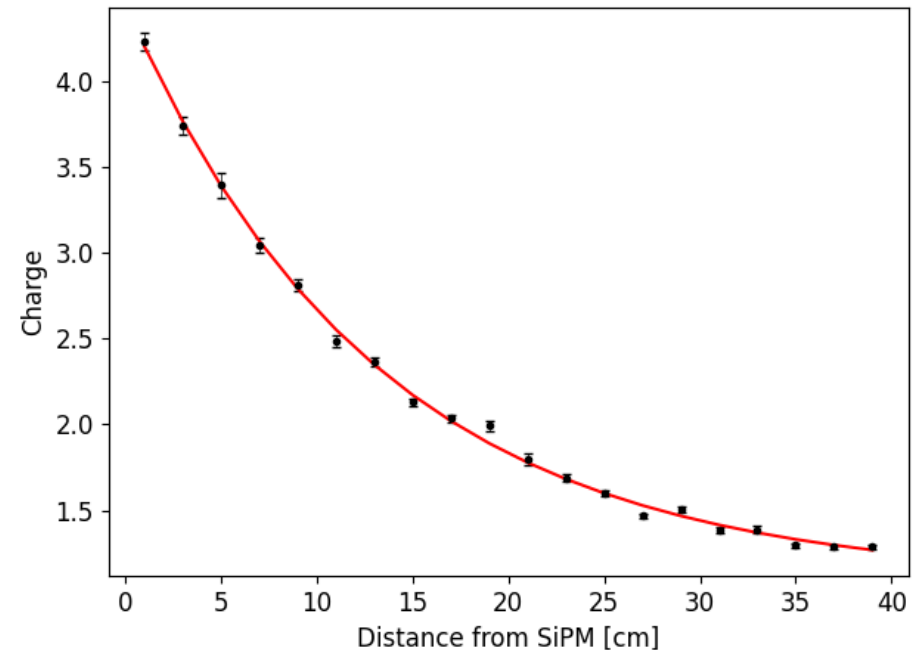
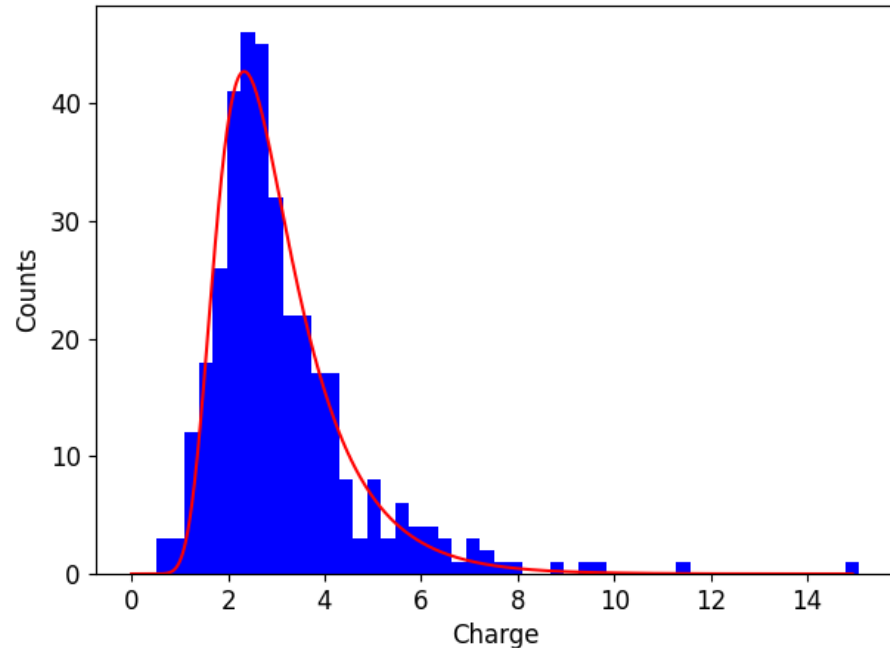
Cosmic spectra – Y layer



First results

The main objective is the verification of the uniformity of the performance in the detector:

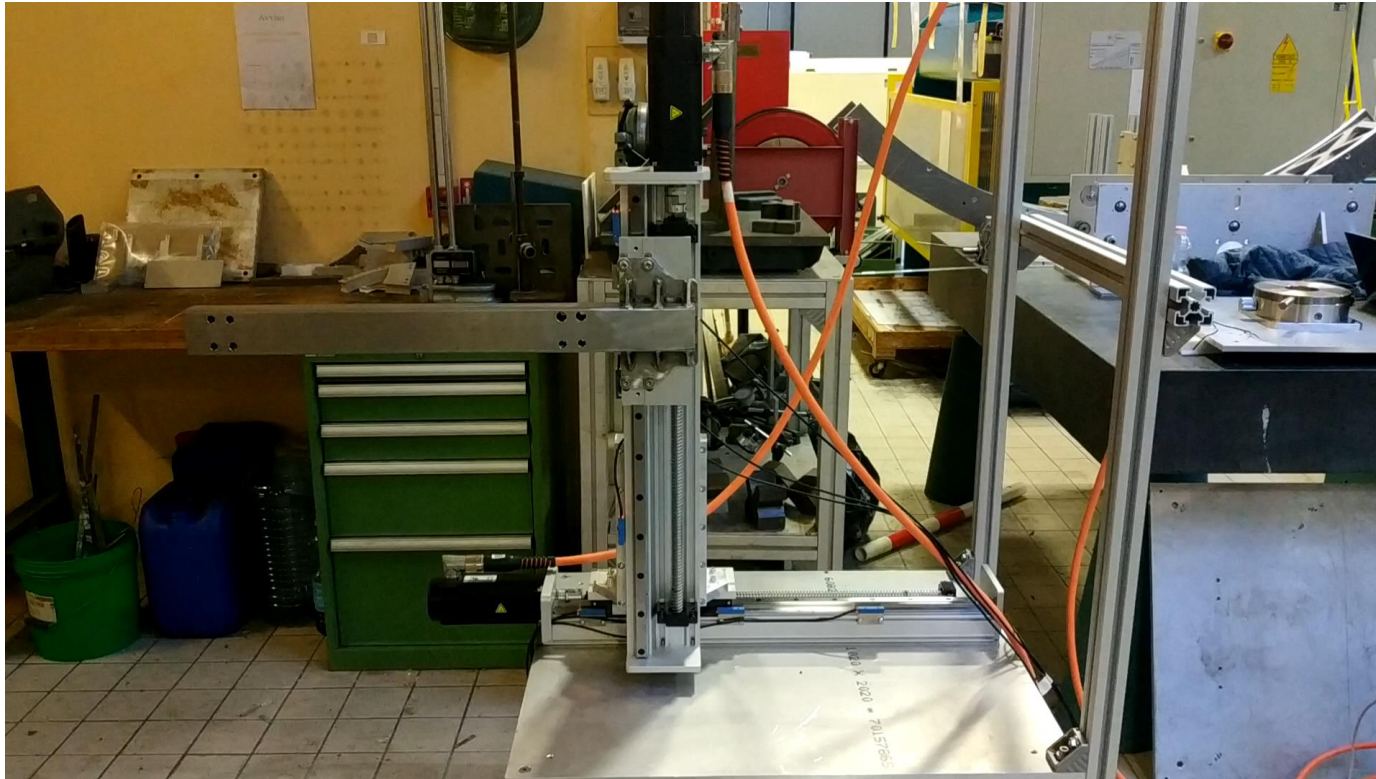
- Same energy collected in each bar
- Comparable attenuation length of the bars
- Same time resolution between each couple of channels (we do not expect good performance in terms of time resolution with cosmic rays, but analysis is ongoing).



First results

- Acquisition rate is few tens of Hz, so a reasonable statistics can be achieved in few hours → several tests can be easily performed.
- Up to now we are using a Gain of 10 (since the energy release by cosmic rays is quite low), which is not compliant with the final set-up.
- A second set of measurements will be performed with Gain = 1 and optimized thresholds to test the detection capability of the system at low energies (interesting for protons).

Motion stages



Stages have been tested and work properly.

They can accept both single commands and a list of positions at regular time steps.

A motion test with the detector installed on the arm will be performed as soon as this preliminary data taking will be ended.

Marco Pullia confirms that the 3-phase line needed for the system has been already installed in the experimental room at CNAO.