Update on TDAQ status

Riccardo Ridolfi, Giacomo Ubaldi, Mauro Villa

13 December 2022 – XIII FOOT Collaboration Meeting

TDAQ development for HIT2022
HIT2022 TDAQ report
TDAQ development for CNAO2022
CNAO2022 TDAQ report

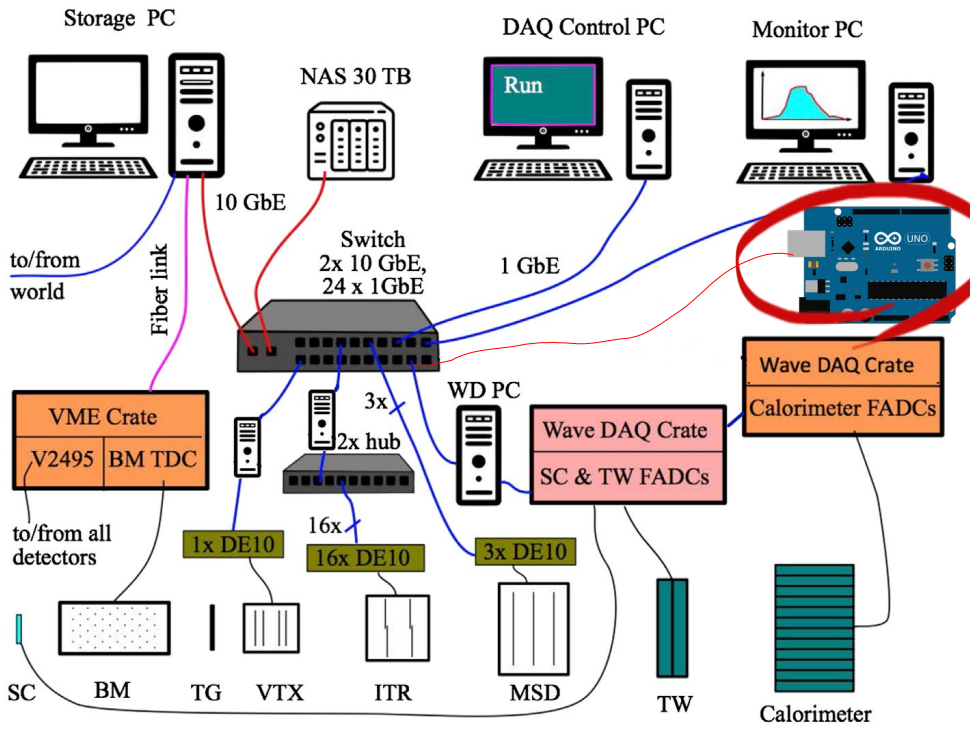
Ongoing activity for HIT2022

from Strasbourg presentation

- implementation of **calorimeter temperature reading** in the general TDAQ

- an **Arduino** reads all the temperatures via a custom system on VME

- Arduino will be connected on main switch to achieve the best integration with existing systems and with TDAQ



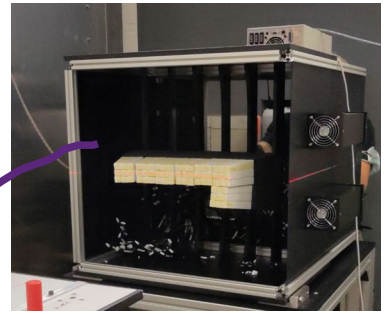
Temperature readout with Arduino

- joint effort with Torino team, especially with Luciano Ramello for the sketch

- **every 20 seconds Arduino reads all the temperatures** and sends data via slow control when requested

- TDAQ **writes** Arduino info in data **only when a new readout is available** (a lot of empty Arduino events in the datastream)

- **Arduino ran smoothly** both at HIT2022 with one board and at CNAO2022 with two boards (some troubles in mid-November due to an oversight but data can be readout)



Report on HIT2022 data taking

- **very long data taking**, more than expected (57 hours)

- MSD scan with 7 He energies (six stations)

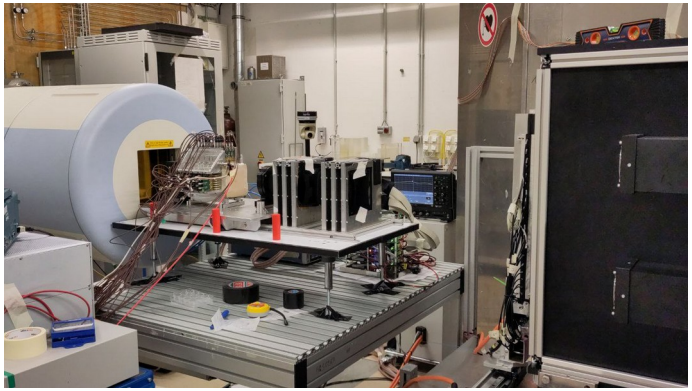
- two calorimeter crystals calibrated with about **80 energies**

- 220, 200, 140, 100 MeV/u Helium beam, ~11M MB and ~4M fragmentation trigger with 5mm C target + 1M w/o target for each energy (**64M events in physics runs!**) with a rate between 300 Hz and 1kHz (SC, BM, MSD, TW, CALO)

- **quick TW scan** with 220MeV protons with PMMA and upstream monitoring chamber inside

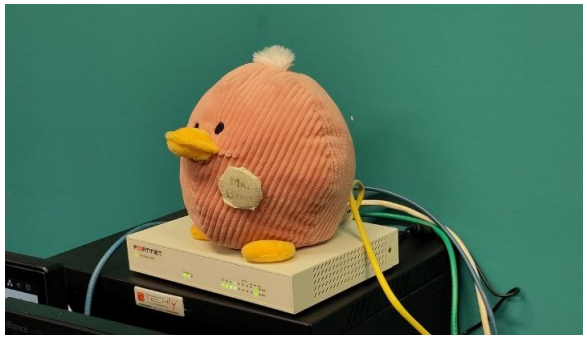
- **clipping** on WaveDAQ trigger very important to remove pileup due to beam structure

- **new monitoring histos** on trigger thresholds and trigger rates



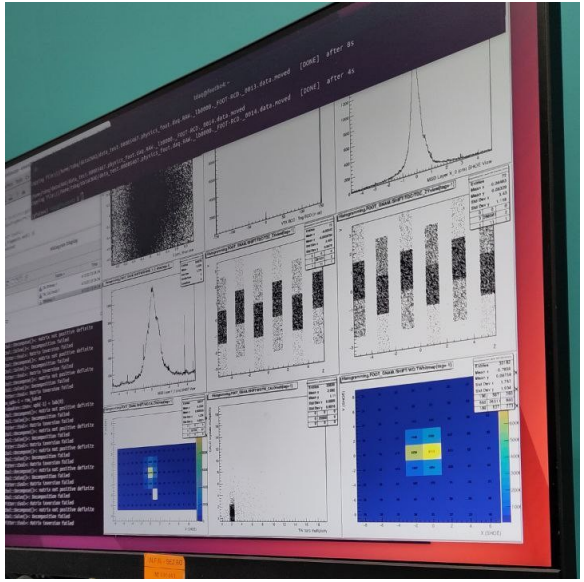
Development for CNAO2022

- integration for **Inner Tracker** was carried out both remotely and in Frascati in the first week of November



- the **integration from DAQ standpoint was successful** (4 out of 8 sensors) but trigger jumping issue present as for Vertex detector

- added firewall in FOOT TDAQ infrastructure, network setup much smoother for personal devices and web can be reached → **real time data transfer to T1** at 60MB/s (your_name_on_t3@ui01-foot.cr.cnaf.infn.it:/storage/gpfs_data/foot/shared)



- **automatic busy** w/o editing XML files (from December, first DAQ task of Giacomo U.)

-some **SLIPPER plots on GNAM** online monitoring (from December, feat. Roberto Z.)

Report on CNAO2022 data taking

- **November** slot dedicated to **tests** (BM HV scan, CALO scanning with Carbon beam), 22 hours

- IT integration on-the-fly (~8 ms deadtime), **all detectors in for the first time!** (even if data are not good and for one run only)

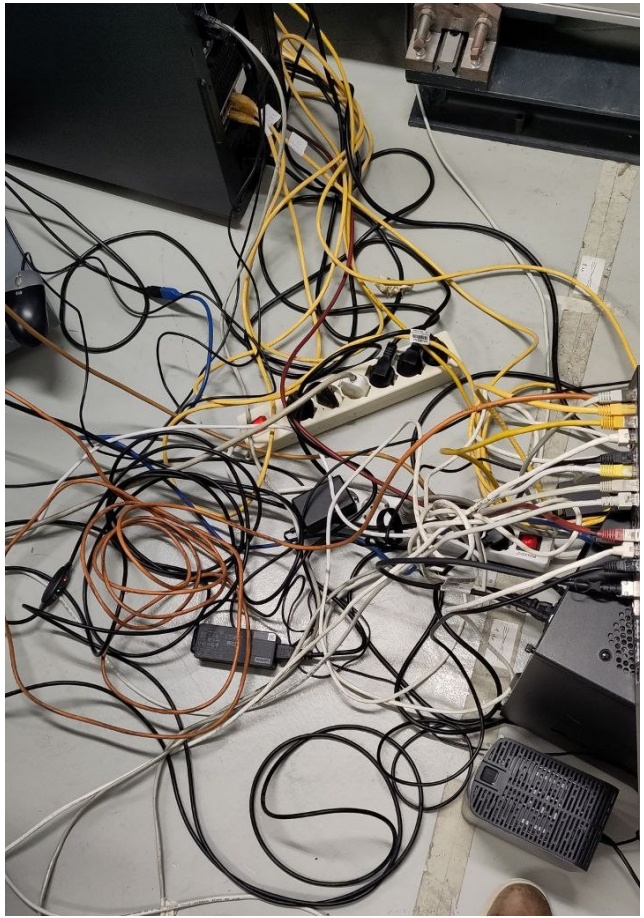
-frequent **VTX desync** depending on the beam rate

- **offline development** of TDAQ between Nov and Dec

- 200MeV/u Carbon beam with 5mm Carbon target, **2M events MB**, ~200Hz

- 200 MeV/u Carbon beam with 5mm Carbon target, **900k events with fragmentation trigger** at low rate (<100 Hz)

- 200 MeV/u Carbon beam **w/o target**, 300k events with fragmentation trigger



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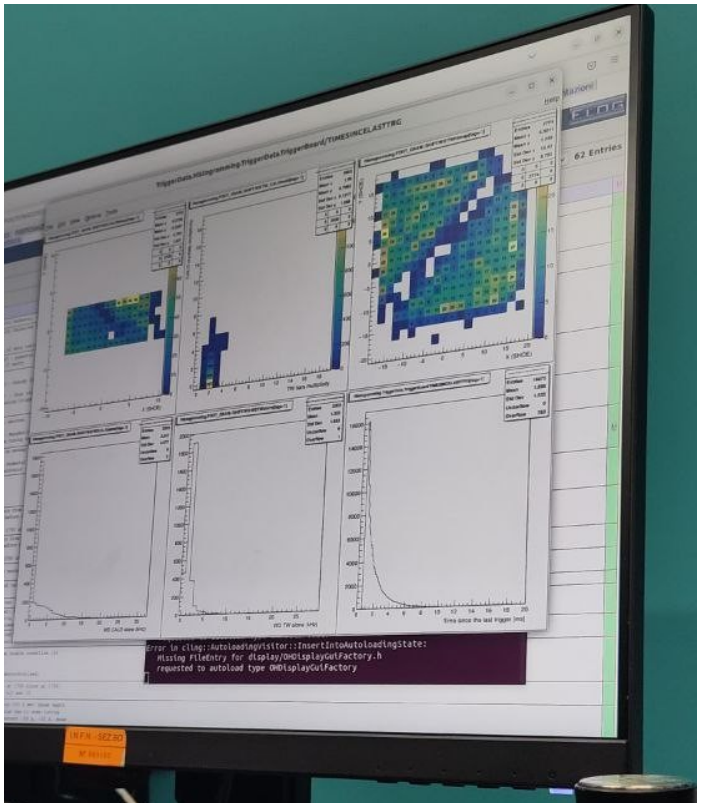
- **CALO active scanning** with Marco Donetti's script



Conclusions

Intense TDAQ development in last months in view of both data takings

No new issues arose in these months

IT (and VTX) integration still in progress

HIT2022 + CNAO2022 = 7 TB of data!

We will take some time to update all the TDAQ software (and all desktops)

Thanks for listening!