TFT Detector status

Chiara Maccani, Sune Jakobsen, Krzysztof Korcyl, Gianluca Valentino

CERN BE-ABP-NDC

27/03/2025

# TWOCRYST Fiber Tracker (former ALFA)

Detector overview

- 10 planes of scintillating **fibers,** crossing in a pentagonal shape

- 23 MultiAnode PhotoMultiplier Tubes (**MAPMTs**) each read by its own photomultiplier front-end (**PMF**)

- Scintillator tile for **trigger**

- **Motherboard** to process the trigger and to collect and send data to the **DAQ**

Laboratory test-stand built to prepare TFT before installation
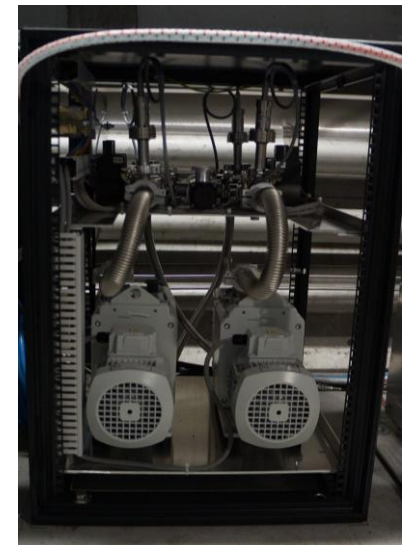
Installation in IR3
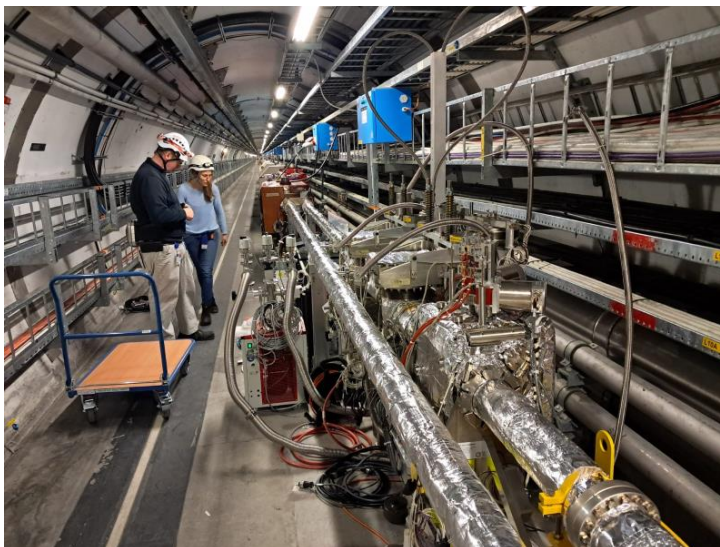
Detector installation

TFT successfully installed in XRPV.B4L3.B2

+ miniracks

- Vacuum pumps
- Low voltage power supplier
- TTC (trigger) and GOL (data) fibers

Rack installation

- **Power suppliers units**
  - High Voltage PSU
  - CAN Bus PSU
- **DAQ:**
  - Timing and Trigger Crate
  - BOBR + Costum clock card
  - Readout Driver
- **Fibers:**
  - TTC (trigger) and GOL (data) from the tunnel
  - LHC clock

All connected and powered

- **Mini-computer farm**
  - Detector Control System (DCS)
  - ReadOut System (ROS)
  - 5 servers

Detector Control System

- **PMF** configuration
- **High voltage** configuration
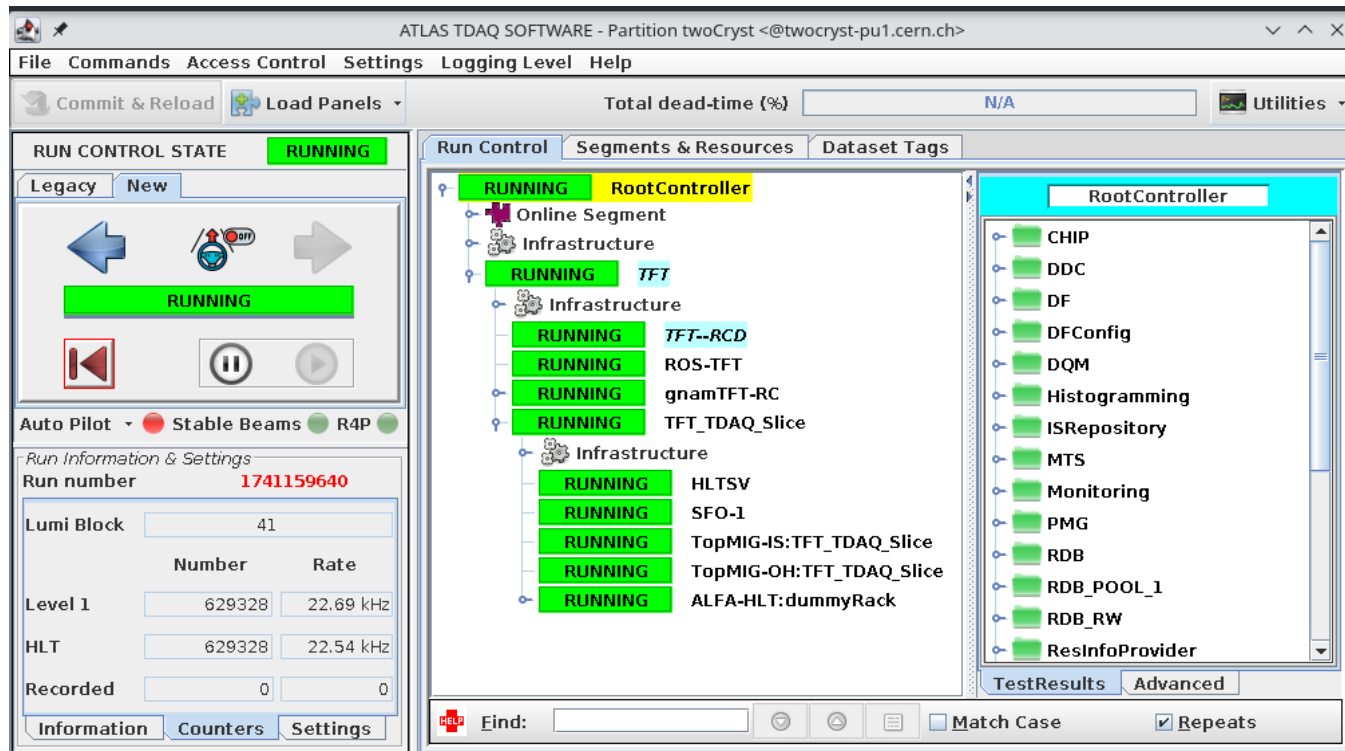- Motherboard and movement **monitoring**
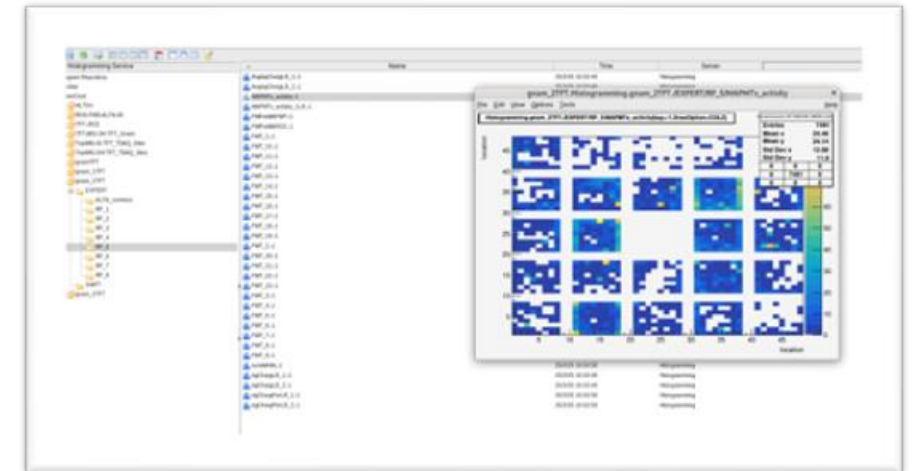- Rack **crates** control

Data Acquisition

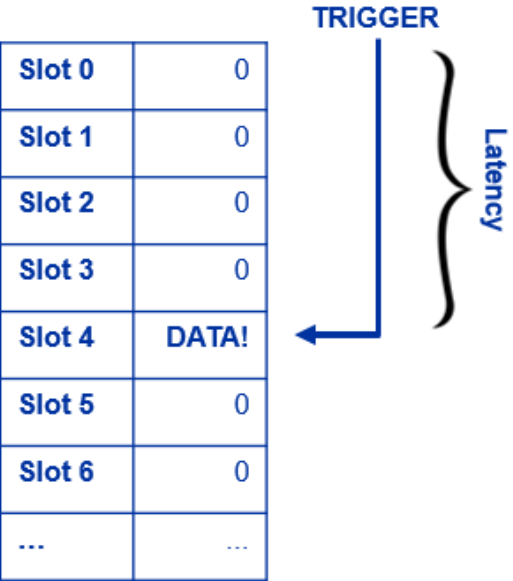**DAQ partition runs successfully into the computer-farm**

- Run can be **started** and **stopped** from GUI
- **Online monitoring system** (GNAM) is available:
  - Set of histograms that can update/reset at different time rates
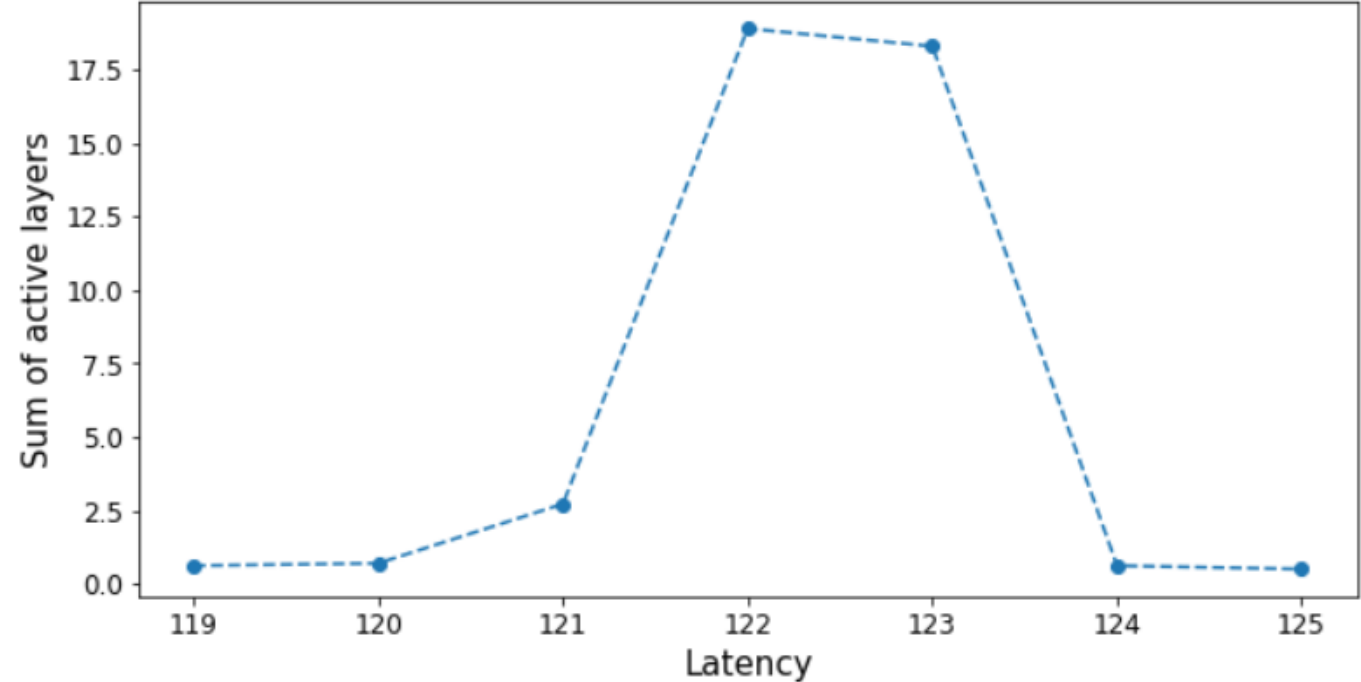- Data from GNAM are saved into **eos**

Latency scan

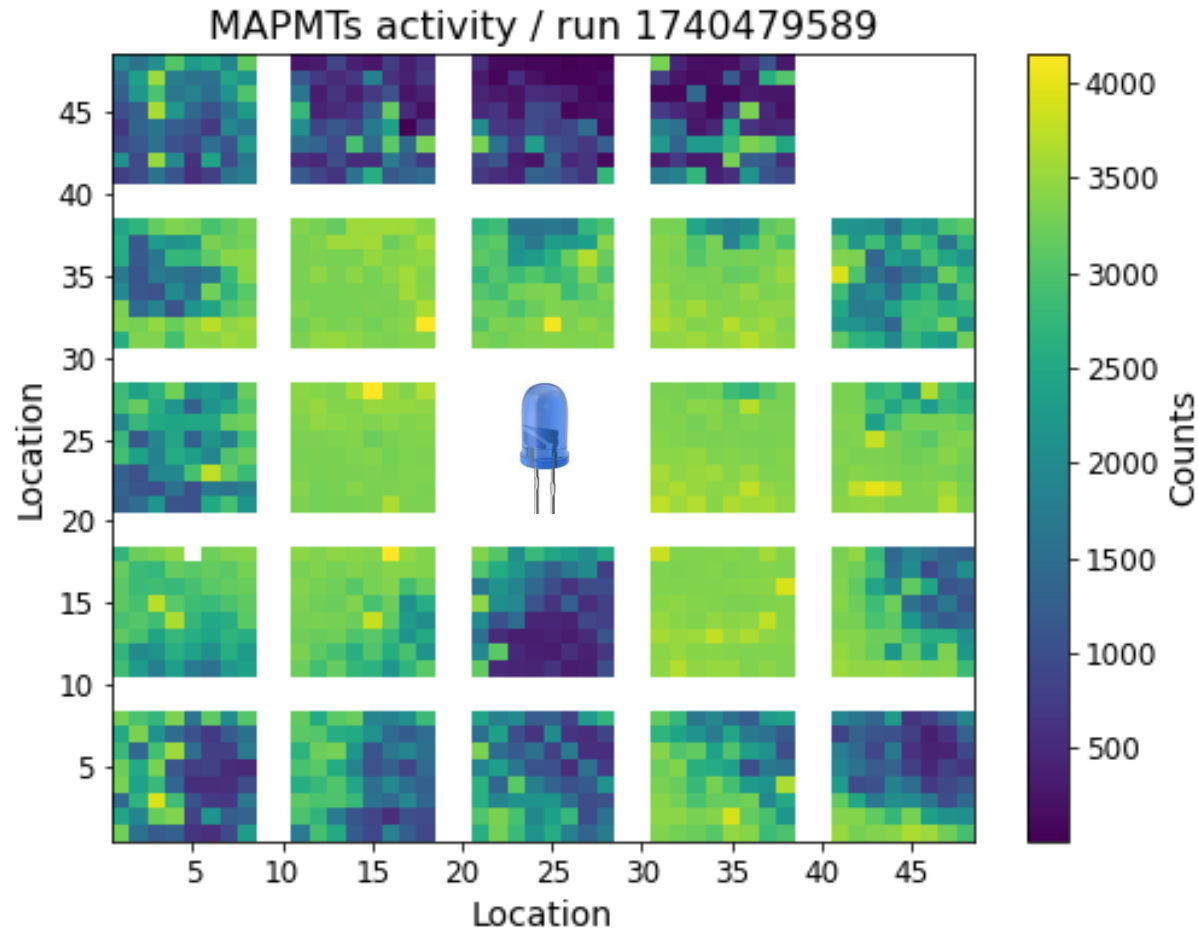Two **LED** installed into Roman Pot allow the test of set-up without particles

Detector needs to be **timed-in** after the installation of new fibres

➜ a new latency scan was performed

Detector response at optimal latency

→ All MAMPTs channels respond to LED light

Confirmation that detector electronics, DCS and DAQ are operational

Next steps

- **FESA** integration to communicate to CCC *(ongoing)*

- Optimization **stability** *(ongoing)*

- **Histograms** optimization (track reconstruction, rebinning…) *(ongoing)*

- **Latency scan with particles** *(pending)*

home.cern