



TFT Detector status

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CERN BE-ABP-NDC

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TWOCRIST Fiber Tracker (former ALFA)

Detector overview

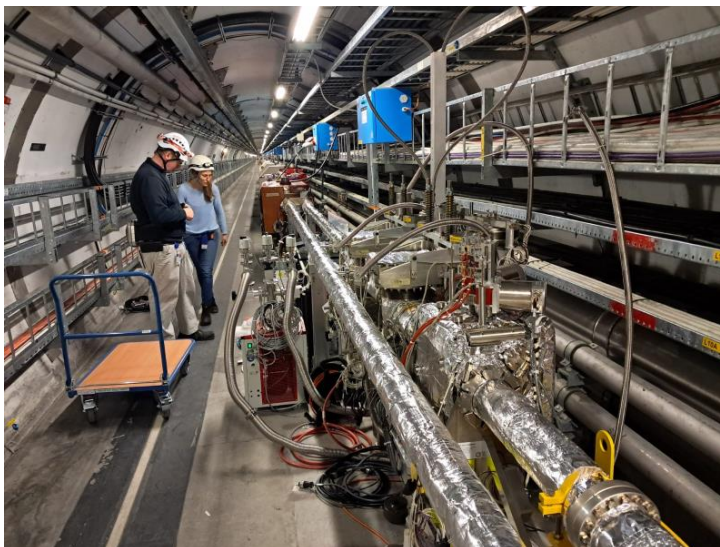
- 10 planes of scintillating **fibers**, crossing in a pentagonal shape
- 23 MultiAnode PhotoMultiplier Tubes (**MAPMTs**) each read by its own photomultiplier front-end (**PMF**)
- Scintillator tile for **trigger**
- **Motherboard** to process the trigger and to collect and send data to the **DAQ**



Laboratory test-stand built to prepare
TFT before installation



Installation in IR3



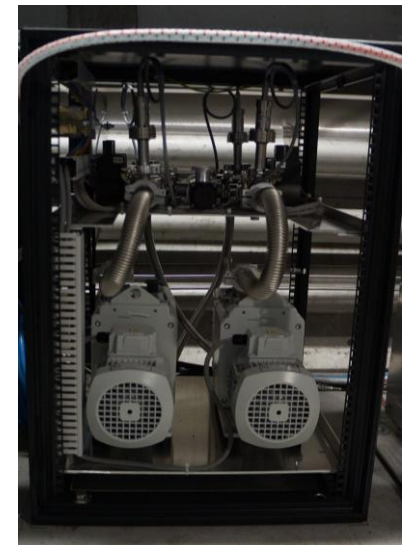
Detector installation

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 + Custom 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

Read-back config

NORMAL

ALL

NONE

Select All
Deselect All
Abort

LED / Trigger

CONFIGURED

Latency

CONFIGURED

LED mode

1 kHz Clock

LED 2

Bias Step

230

Pulse width

0 ns

Trigger Logic

T1

T2

T1T2

Tol1

Tol2

Tied

SETUP

Trigger Rate

0

Hz

PMF configuration

Gains

EQUALIZED

0

MD
Threshold

8

0

20

Gains

M1

37

OL1

20

Trigger 1
Threshold

8

0

20

Gains

M2

17

OL2

48

Trigger 2
Threshold

8

0

20

PMF_1

PMF_2

PMF_3

PMF_4

TR_1

PMF_5

PMF_6

PMF_7

PMF_8

PMF_9

PMF_10

PMF_11

PMF_12

PMF_13

PMF_14

PMF_15

PMF_16

PMF_17

PMF_18

PMF_19

PMF_20

PMF_21

PMF_22

PMF_23

Configured

Not Configured

Disabled

Read back failed

Transition

Full remote control
of the detector

ATLAS ALFA - Infrastructure
PVSS SYSTEM

ISEG CRATE

READY

OK

Communicatic

Alive

CAN bus

0x10000000

Crate state

ON

Modules

RP1

RP2

RP3

RP4

RP5

RP6

RP7

RP8

CAN BUS - ELMB

READY

E

AlfaCanBus0

SHUTDOWN

E

AlfaCanBus1

SHUTDOWN

E

CAN PSU

STARTED

OK

ELMB PSU

OPERATIONAL

E

AlfaCanBus2

READY

OK

AlfaCanBus3

NOT_READY

E

AlfaCanBus0

STOPPED

F

ELMB 1 (RP3)

NOOPERATIONA

E

ELMB 2 (RP4)

NOOPERATIONA

E

AlfaCanBus1

STOPPED

F

ELMB 1 (RP1)

NOOPERATIONA

E

ELMB 2 (RP2)

NOOPERATIONA

E

AlfaCanBus2

STARTED

OK

ELMB 1 (RP5)

OPERATIONAL

OK

ELMB 2 (RP6)

NOOPERATIONA

E

AlfaCanBus3

STARTED

OK

ELMB 1 (RP7)

NOOPERATIONA

E

ELMB 2 (RP8)

NOOPERATIONA

E

Vac. and Ventil.

READY

F

SECTOR 8-1

RP side

11.06

Pump1

11.07

Pump2

1265.94

mBar

VALVE1
Mode

AUTO

State

CLOSED

PUMP1
Mode

AUTO

State

STOPPED

FANS
Far

ON

Near

ON

VALVE2
Mode

AUTO

State

CLOSED

PUMP2
Mode

AUTO

State

STOPPED

SECTOR 1-2

RP side

14.20

Pump1

124.47

Pump2

1265.94

mBar

VALVE1
Mode

AUTO

State

CLOSED

PUMP1
Mode

AUTO

State

STOPPED

FANS
Far

ON

Near

ON

VALVE2
Mode

AUTO

State

CLOSED

PUMP2
Mode

AUTO

State

STOPPED

Marathon LV

READY

E

RCM 1

ON

Output OK

RCM 2

ON

Output OK

RP1

OFF

OK

0.03 V

0.38 A

RP2

OFF

OK

0.03 V

0.33 A

RP3

ON

OK

5.00 V

9.12 A

RP4

OFF

OK

0.09 V

0.37 A

RP5

ON

OK

5.00 V

0.91 A

RP6

OFF

OK

0.09 V

0.32 A

RP7

OFF

OK

0.03 V

0.32 A

RP8

OFF

OK

0.03 V

0.35 A

VME crate

READY

OK

Crate

ON

CH 0

4.99 V

28.49 A

OK

CH 1

12.01 V

0.28 A

OK

CH 2

47.80 V

0.00 A

OK

CH 3

3.30 V

20.93 A

OK

CH 5

12.01 V

0.54 A

OK

Fans speed

3360

t/min

Fan Temp.

22

oC

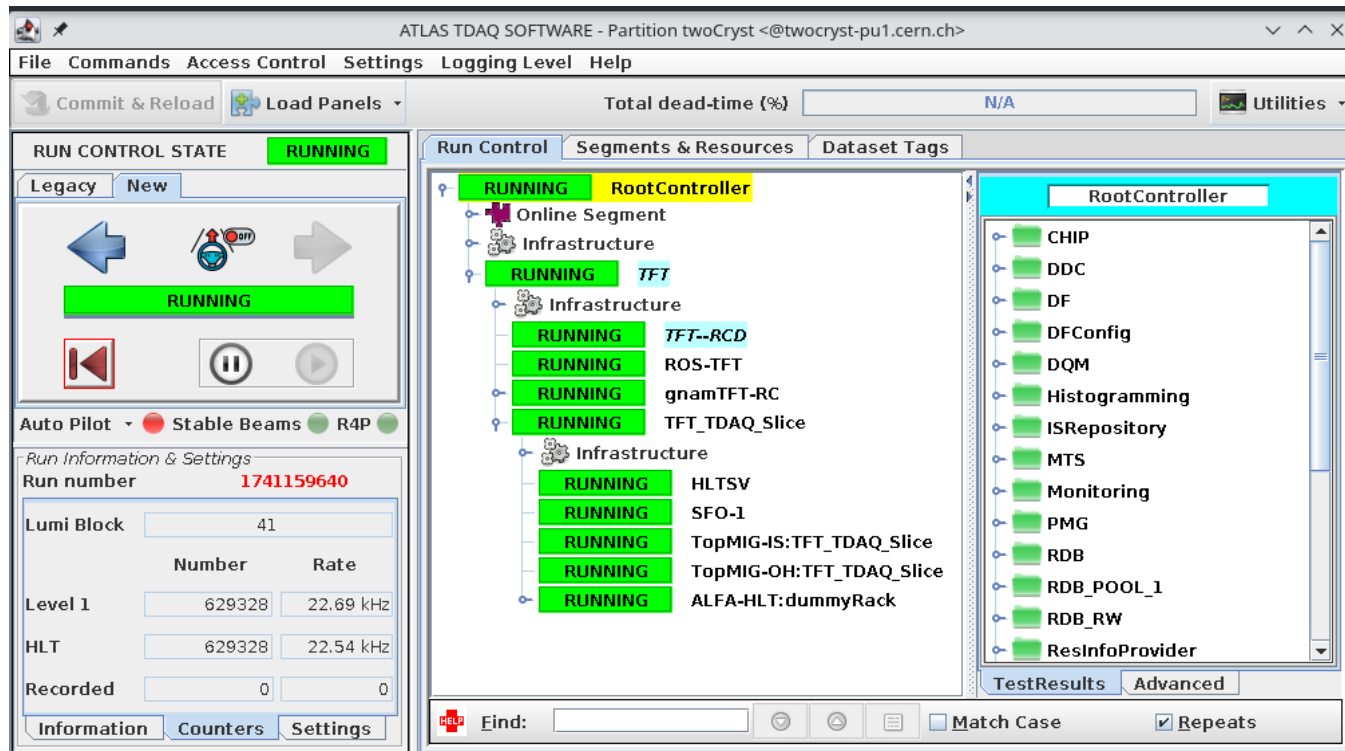
PS Temp.

22

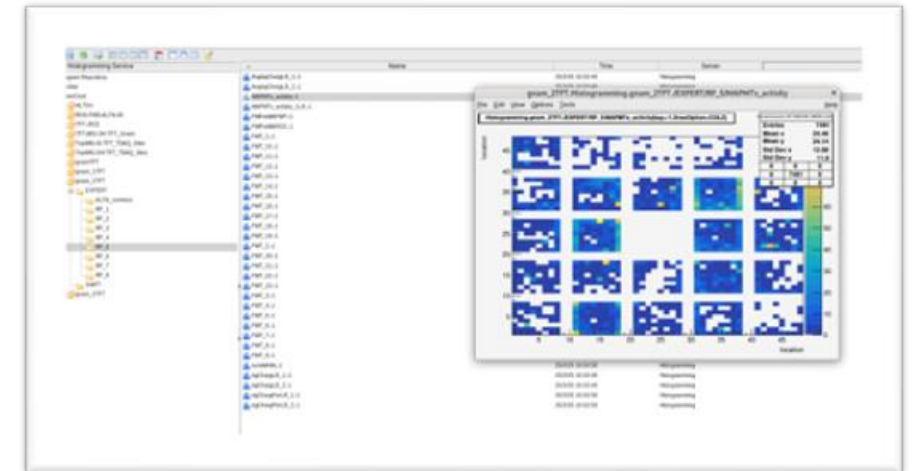
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Data Acquisition

DAQ partition runs successfully
into the computer-farm

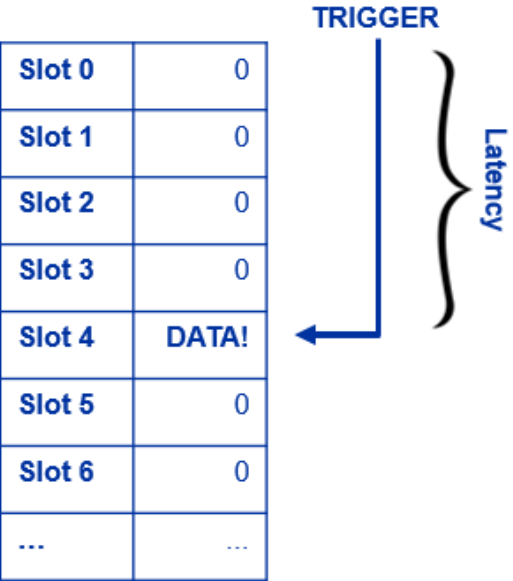


- Run can be **started** and **stopped** from GUI
- **Online monitoring system** (GNAM) is available:
 - Set of histograms that can update/reset at different time rates
- Data from GNAM are saved into **eos**

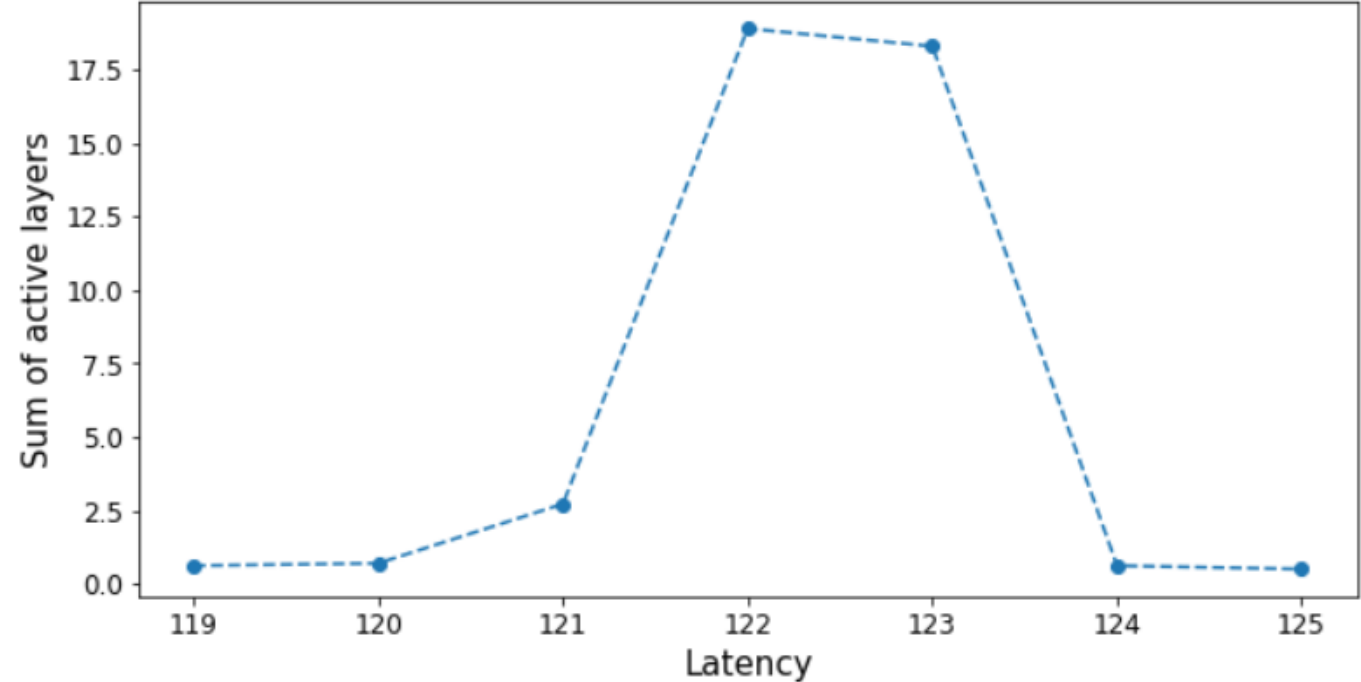


Latency scan

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

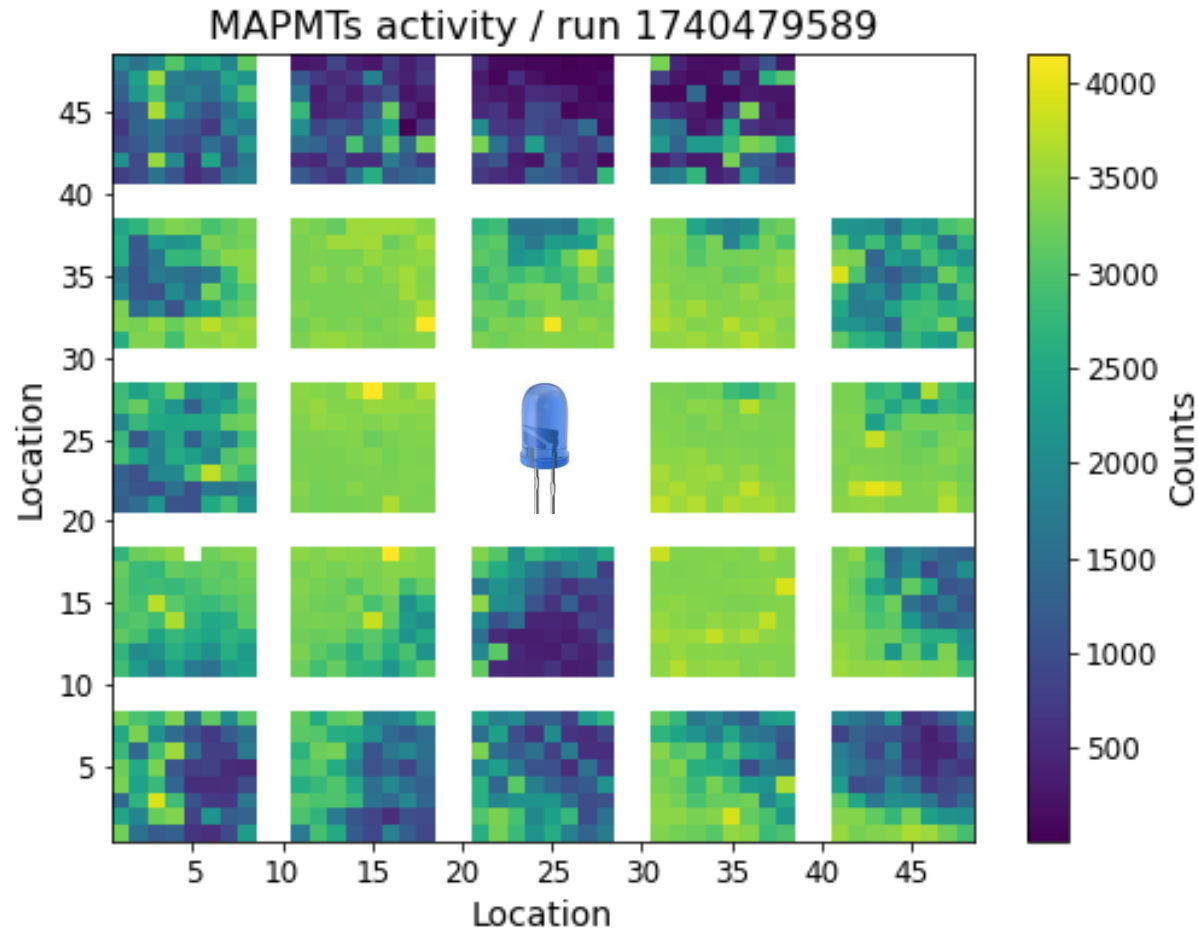


Detector needs to be **timed-in** after the installation of new fibres
→ a new latency scan was performed



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*)



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