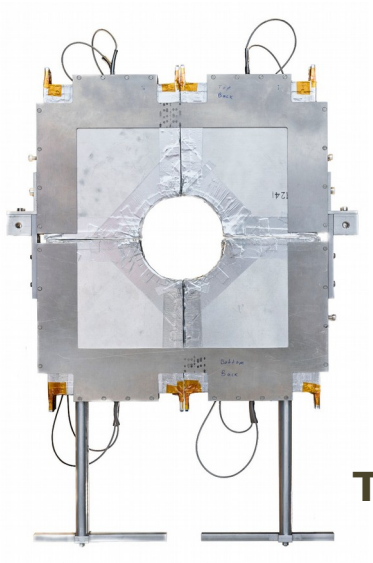
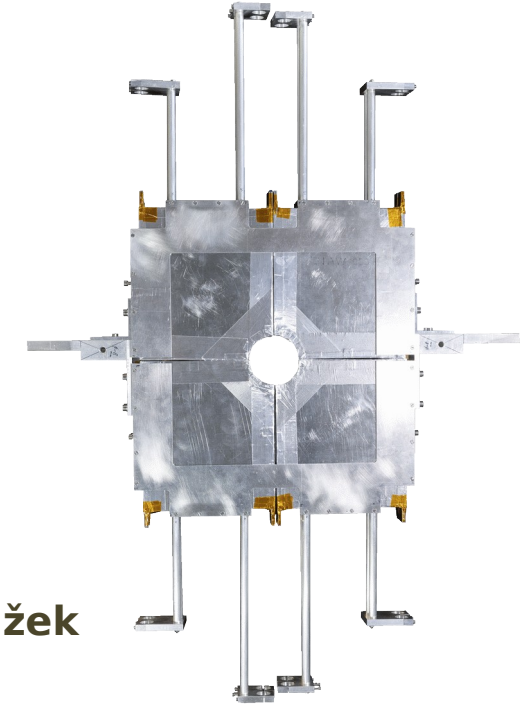
What comes next for FDD and our lab?



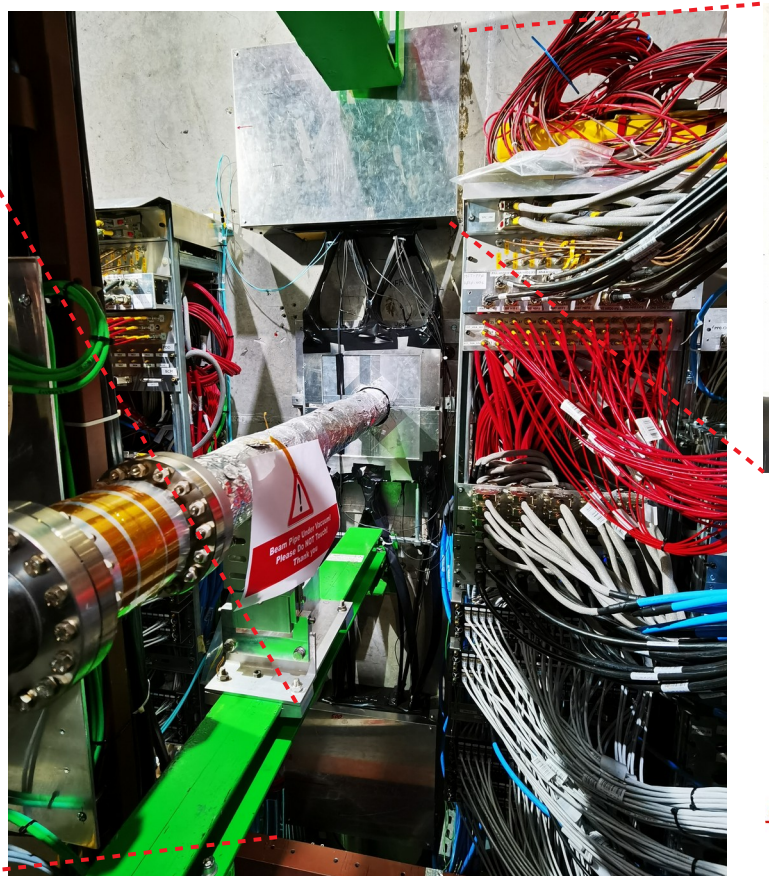


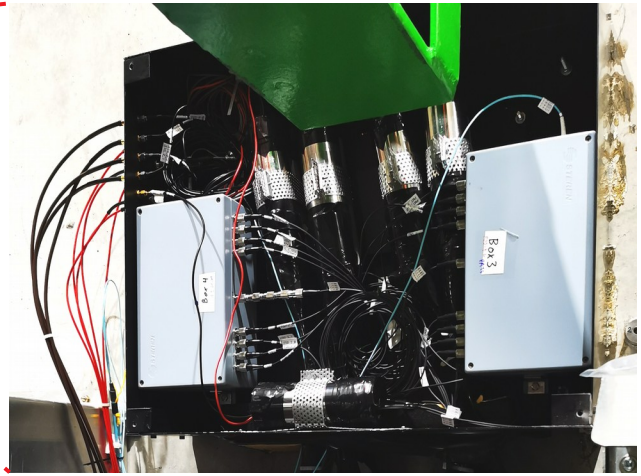
Solangel Rojas Torres

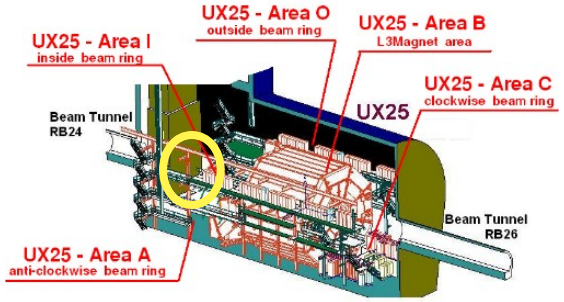
Třetí miniworkshop difrakce a ultraperiferálních srážek

14.September. 2021

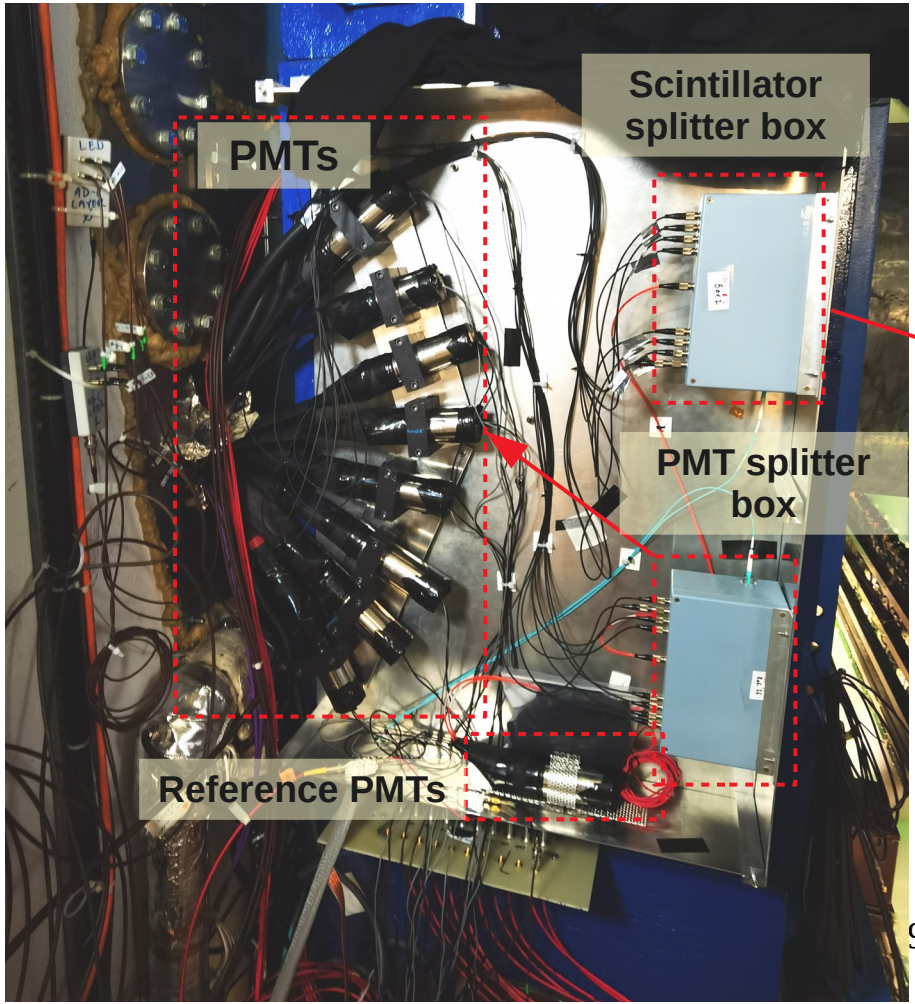
Current status: FDD-A

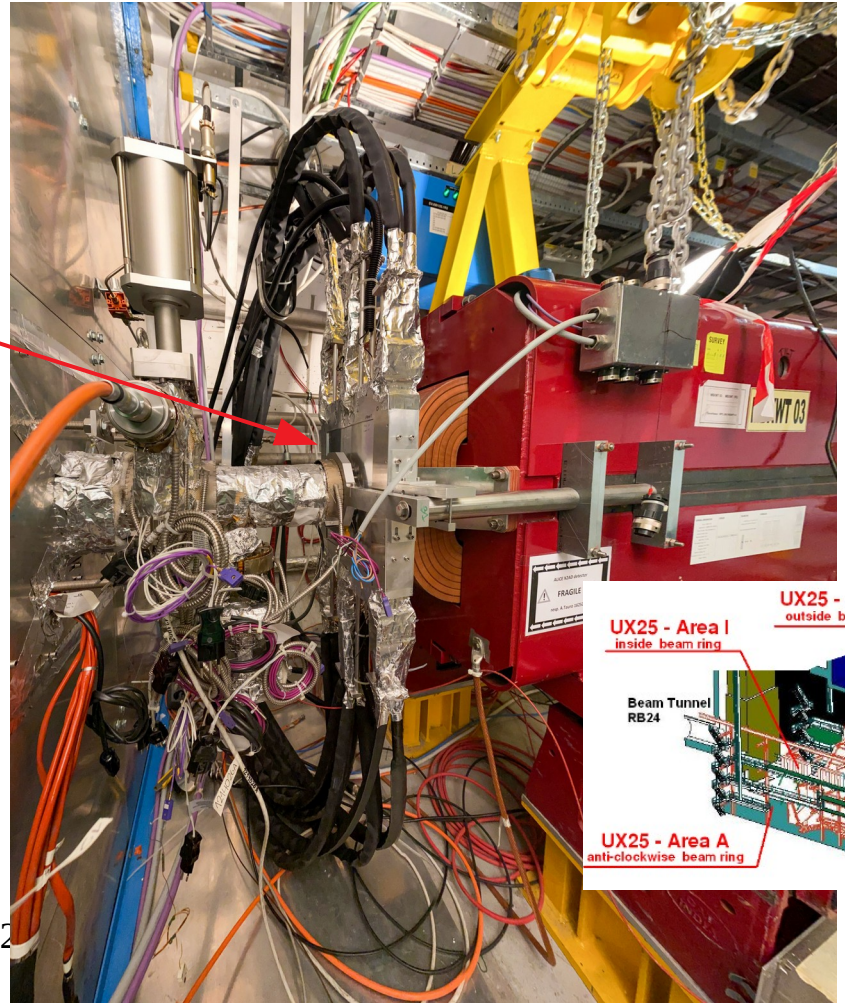


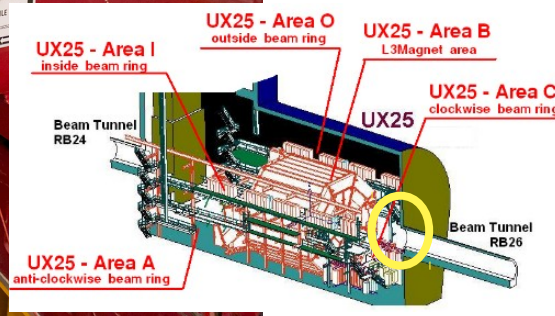




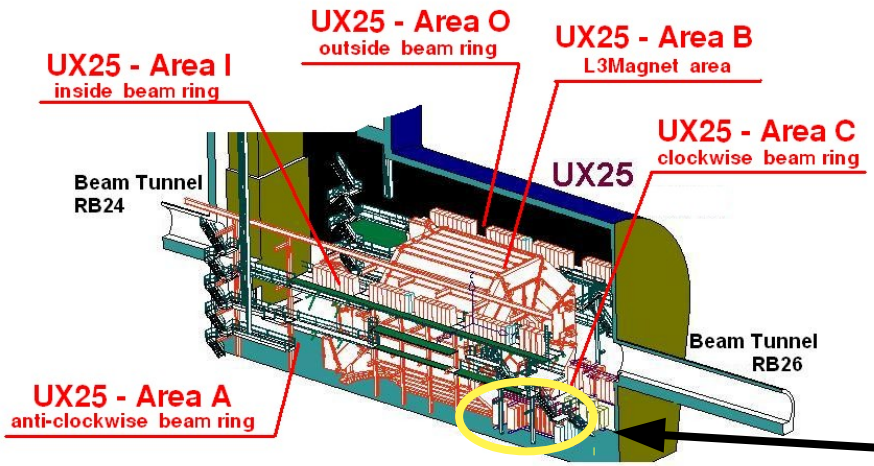
Current status: FDD-C

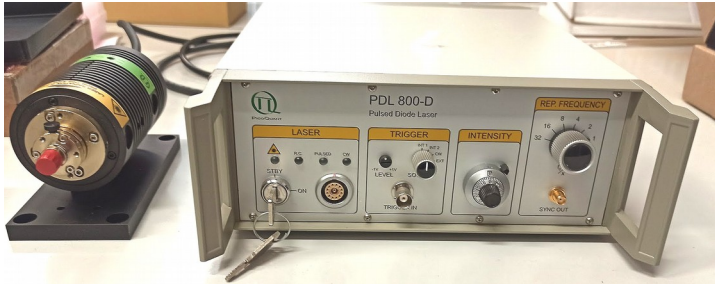






Front-End Electronics and Laser Calibration system





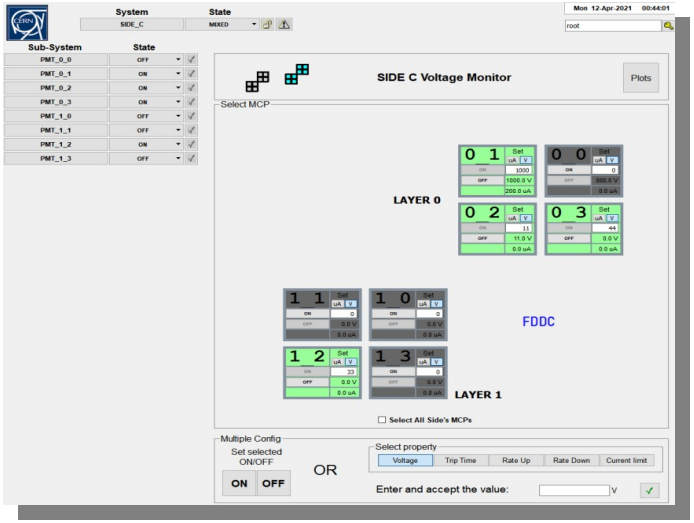
After installation work

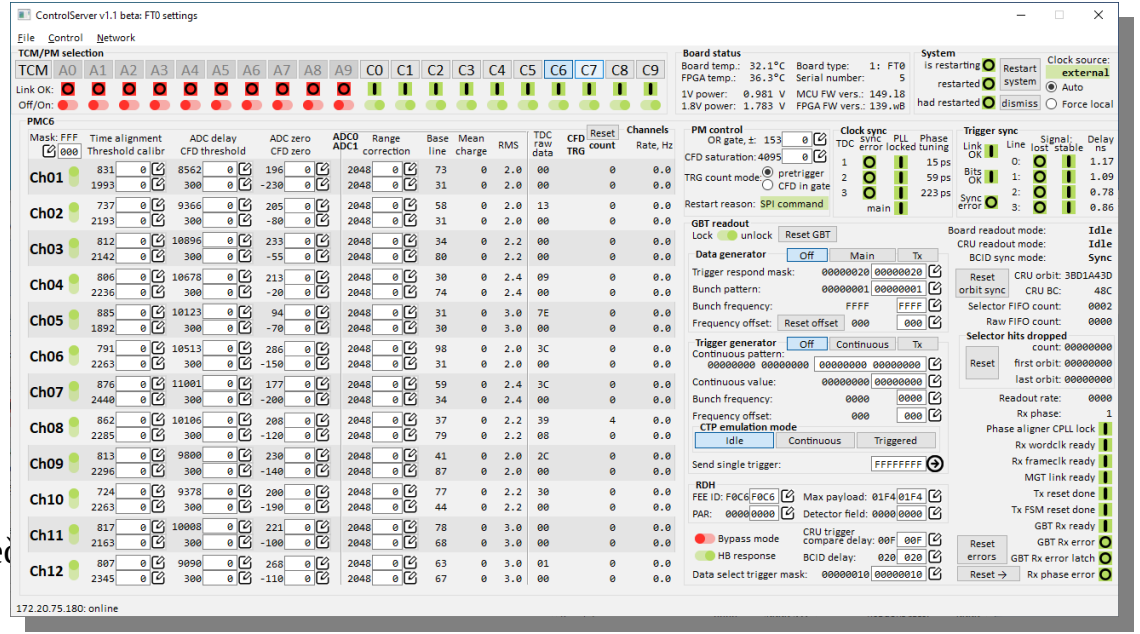
- Light leak test
- Measure the real length of the signal cables
- Test the calibration system:
  - Laser
  - Optical fibres
  - Splitters
- Fix and connect everything

Preparation for pilot beams

Week 42 (18.Oct.2021)

- ✓ Detector Control System
  - High Voltage
  - Front-End Electronics (FEE) → provisional control server
- ✓ Equalize detector signals to FEE and calibration system





Aims of the Pilots beams for FDD

- Calibration of the detector: PMTs high voltage scan.
- Find and adjust FEE parameters.
- Check the FEE readout to the Online-Offline ALICE infrastructure.

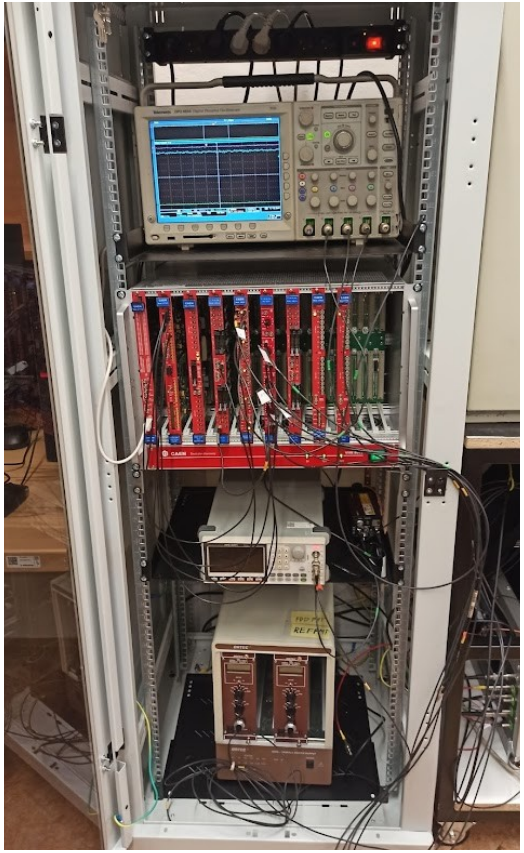
What next?

- Analyze the pilot-beam data to set the optimal parameters of the detector: HV and FEE settings.
- Study the radiation hardness of the scintillator materials.

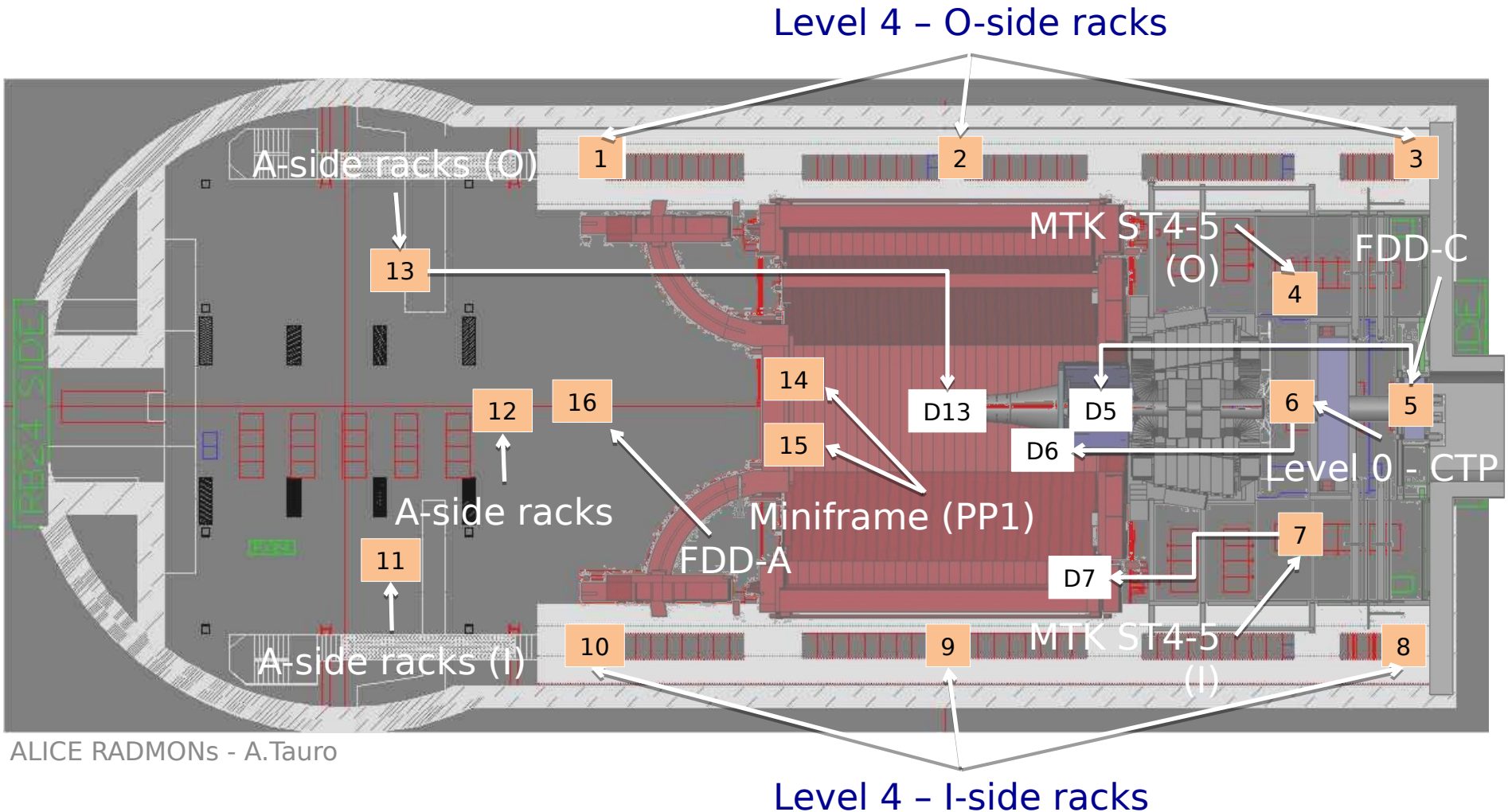
Scintillator radiation radiation hardness

- Measure the performance of samples of scintillators after receiving radiation inside ALICE cavern
  - FDD scintillator material → Bicron BC-420
  - Silicon high temperature resistence → Custom scintillator manofactured in Mexico
- Cilindrical samples → ~10 mm diameter x 20 mm long
- Test with cosmics muons or laser in the laboratory before and immediately after being radiated.

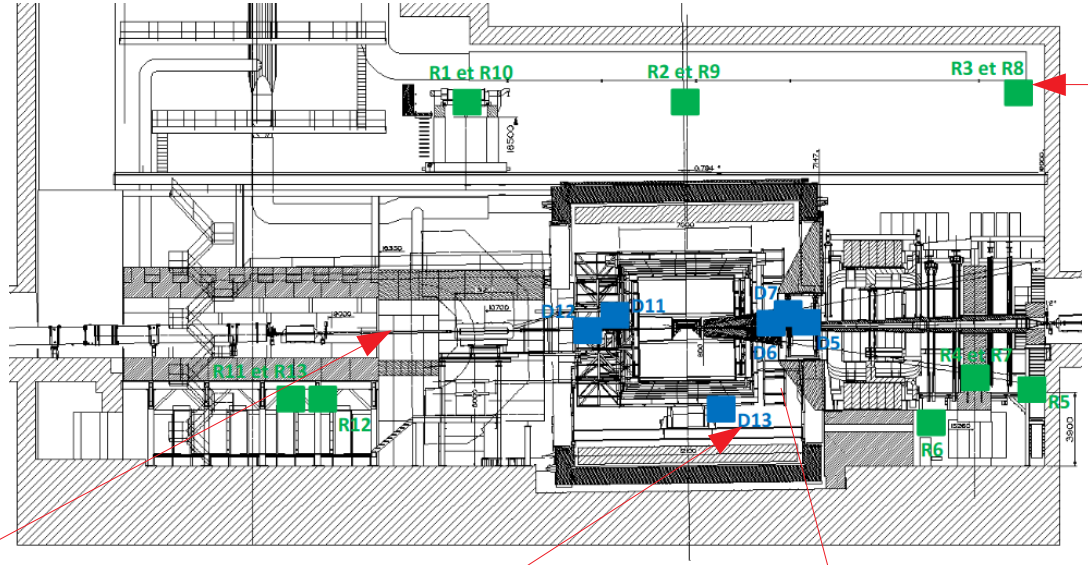
Equipment and material

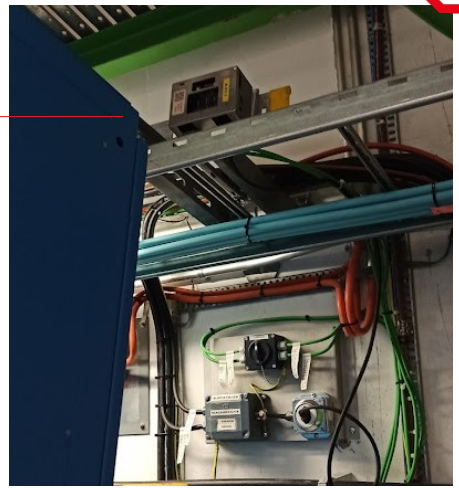


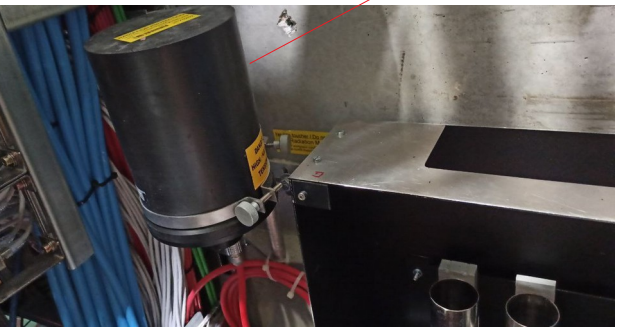
Radiation Monitors

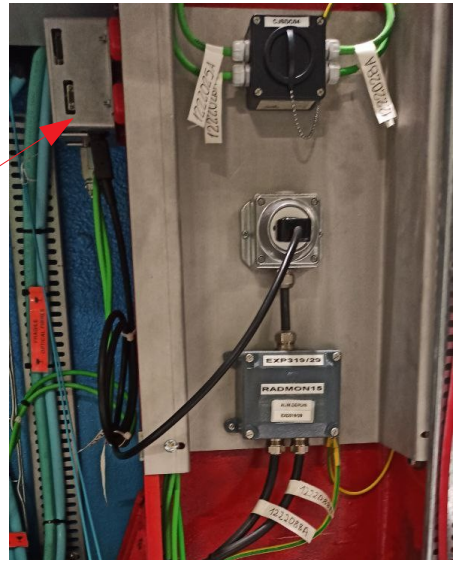


Radiation Monitors





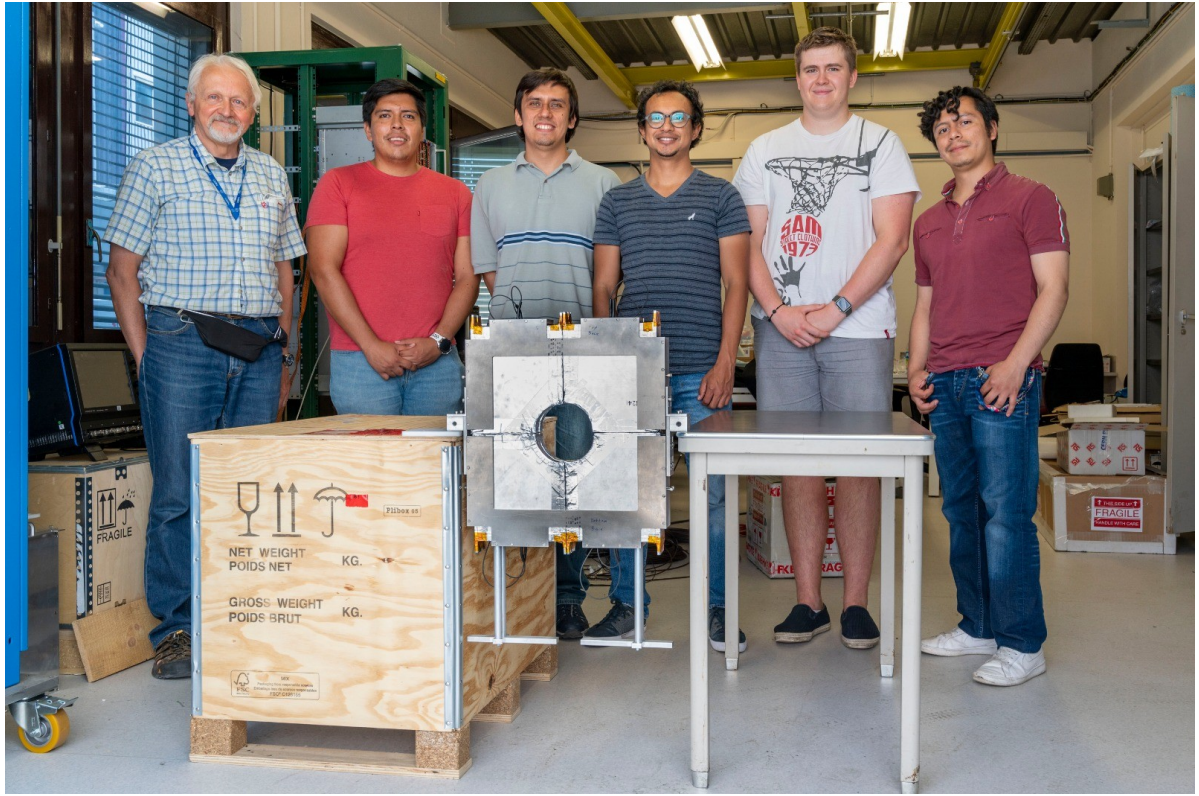




Summary

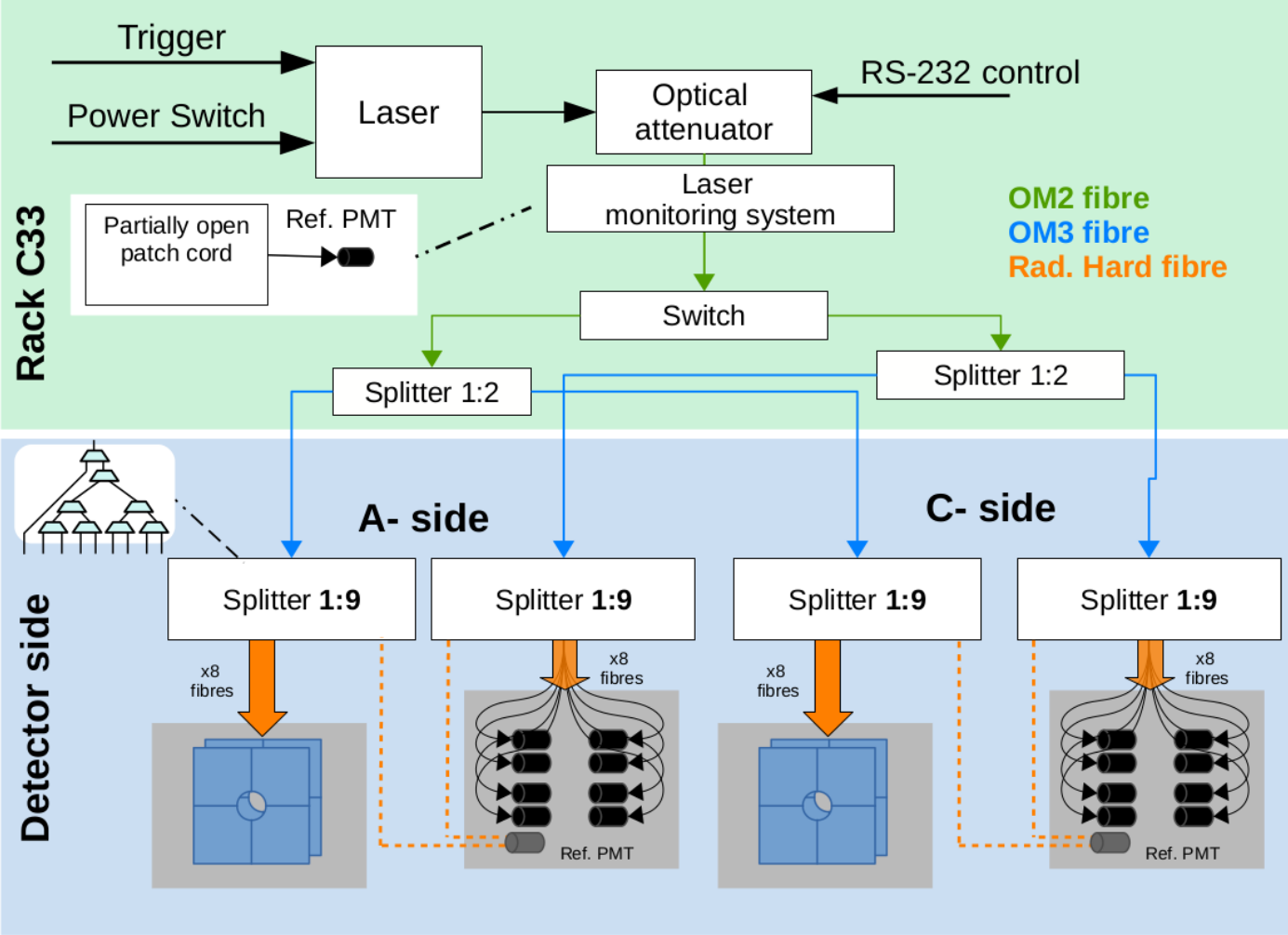
- ✓ FDD is almost getting ready for the Pilot beams
- ✓ We are looking forward to make research in scintillator detectors in our faculty!

Thank you all!

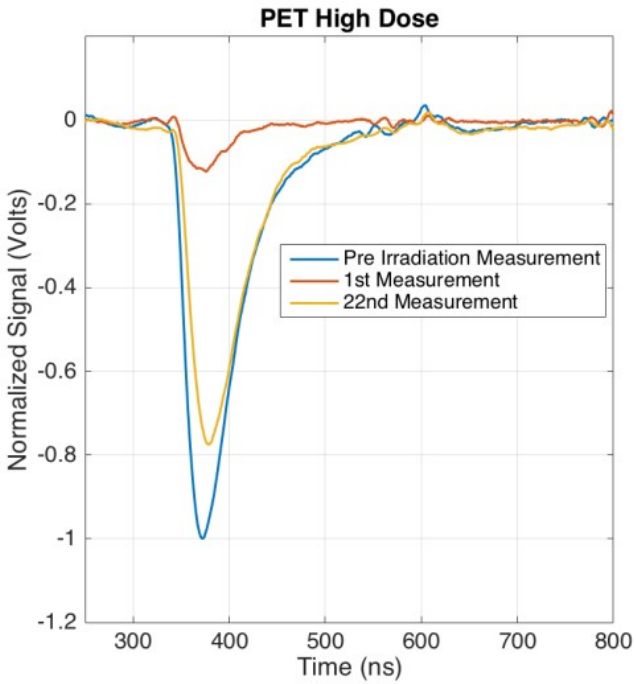


Backup

Laser calibration system



Measurement of the performance changing on the time after radiation



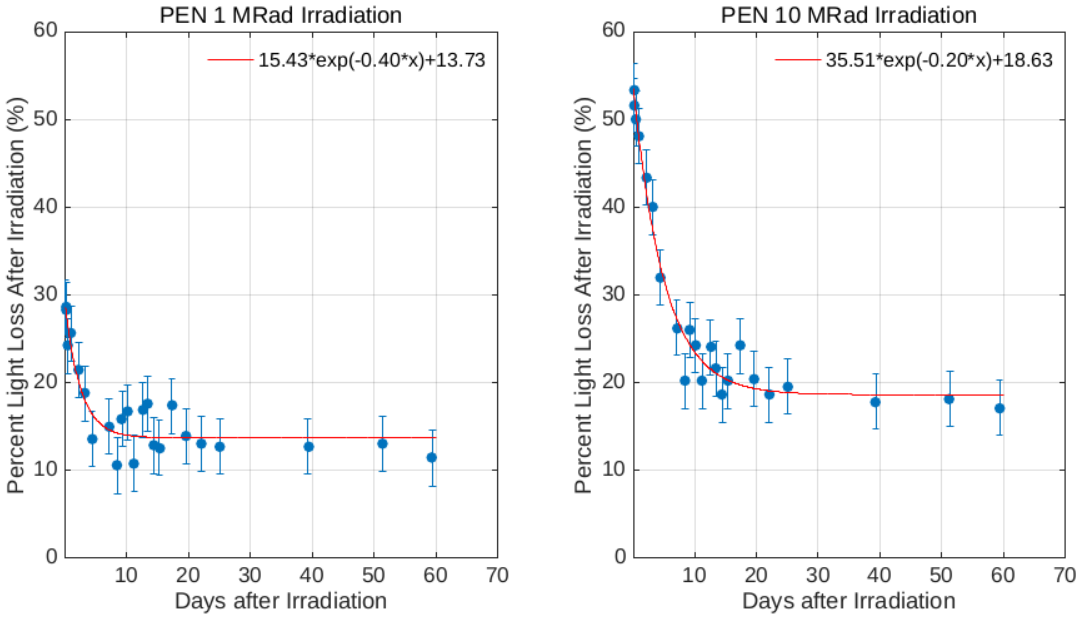


Figure 3. PEN Results, 21 measurements over 40 days.

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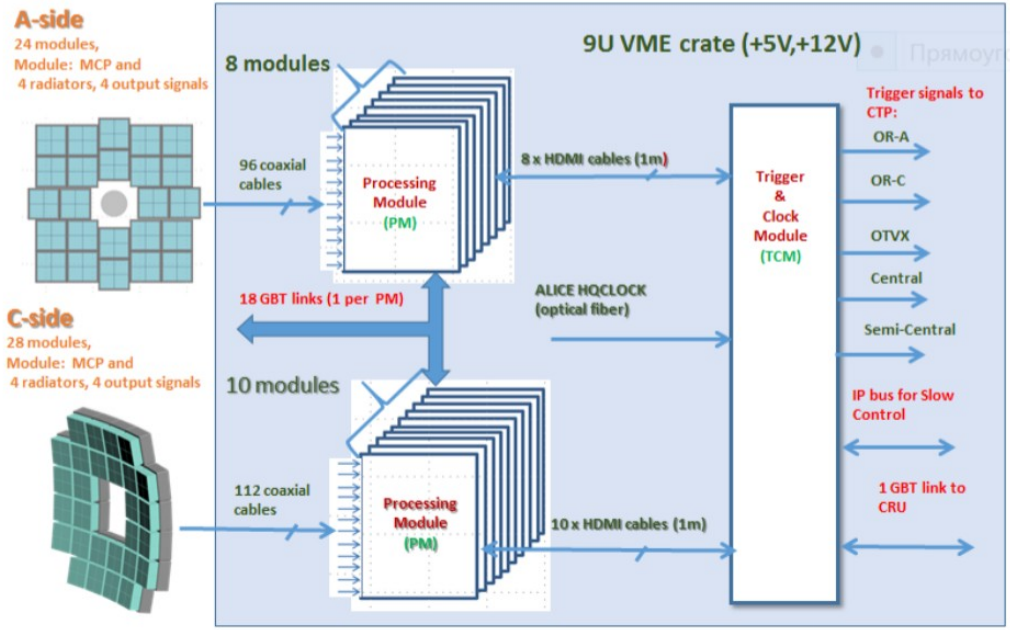
Front-End Electronics

All three FIT sub-detectors use the same electronics scheme

- Processing Module (PM):
  - 12 signal inputs for fast digitization of charge and time.
- Trigger and Clock Module (TCM):
  - dedicated FW for each detector, low latency trigger generation (< 425 ns for FT0).

Modified LHC crate with power-only back plane