

# MWPC & RW repair plans

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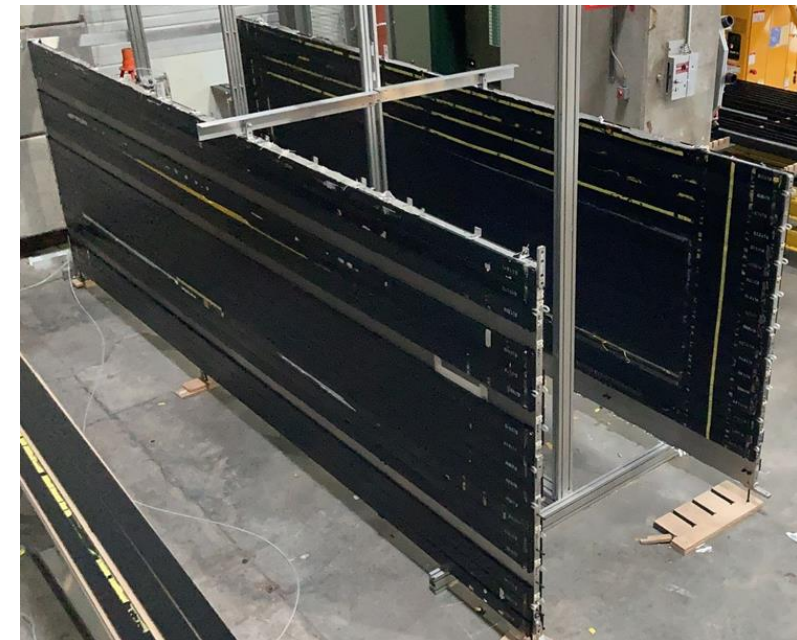
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# RW maintenance

## Historic note

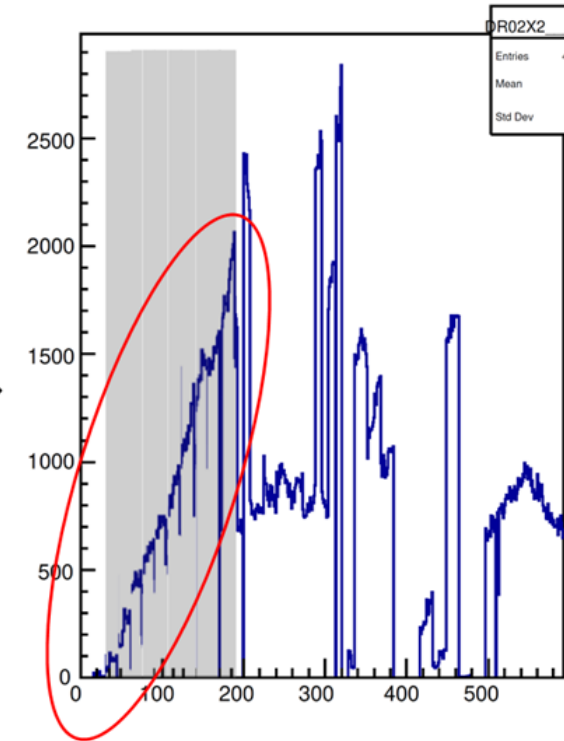
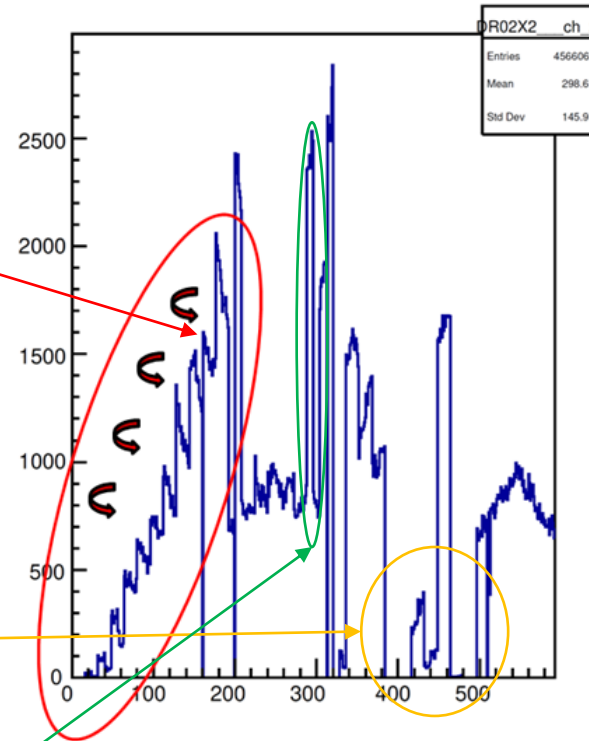
- RW has been facing a very bad gas leaking situation that was degrading over years
- In 2019 and spring of 2021 a complete disassembly and full test of all the MDTs has been performed
- Significant amount of tubes has been found leaking and were repaired to the best of our knowledge
- The COVID limitations did slow down the works and to be ready for 2021 Running time a huge effort was done by both the Torino and Dubna team to reassemble the detector
- Unfortunately, event if we were in time for the physical assembly, the last operations related to the HV, Gas and RO were performed probably on a too rapidly
- which caused certain collected data quality degradation in 2021



# RW maintenance

## Main issues

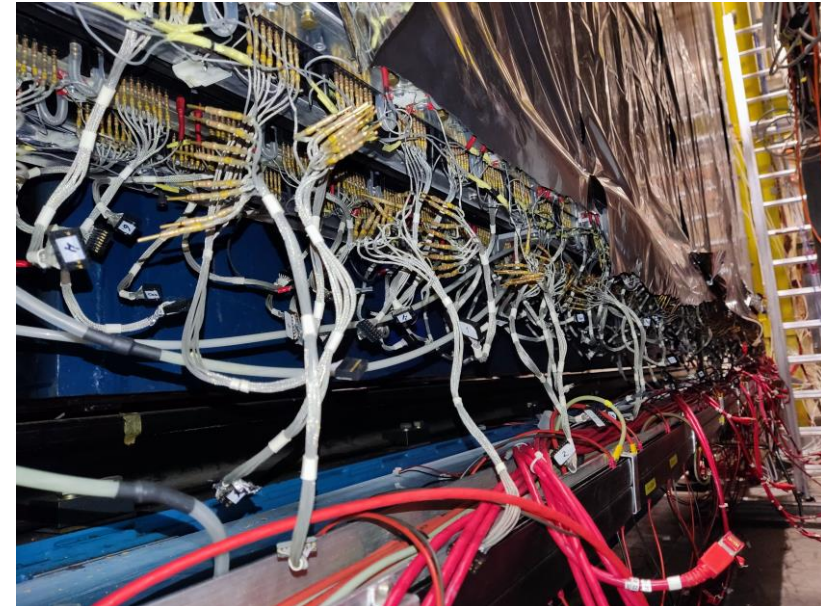
- We had problems with the FE connection
- Some issues with the LV power supply with mixed lines
- Apparently some gas issues are there again (24-26 MDTs)
- We need to completely redo the EM shielding that was only partially remounted during 2021



# RW maintenance

We decided to

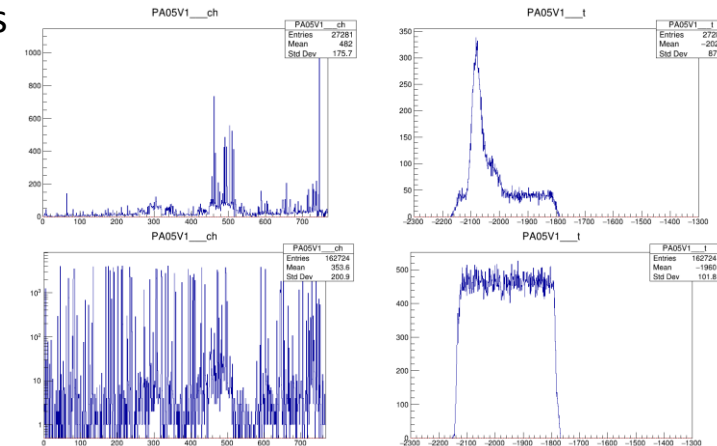
- Dismount all the FE electronics in order to have an access to the gas and HV lines of the RW
- Check all the gas sections and identify if there are many damaged MDTs
- Lay again all the LV lines to check the correct connections
- Individually test all the HV lines
- After all this operations the FEs will be remounted with additional EM shielding



# MWPC maintenance

## Main issues

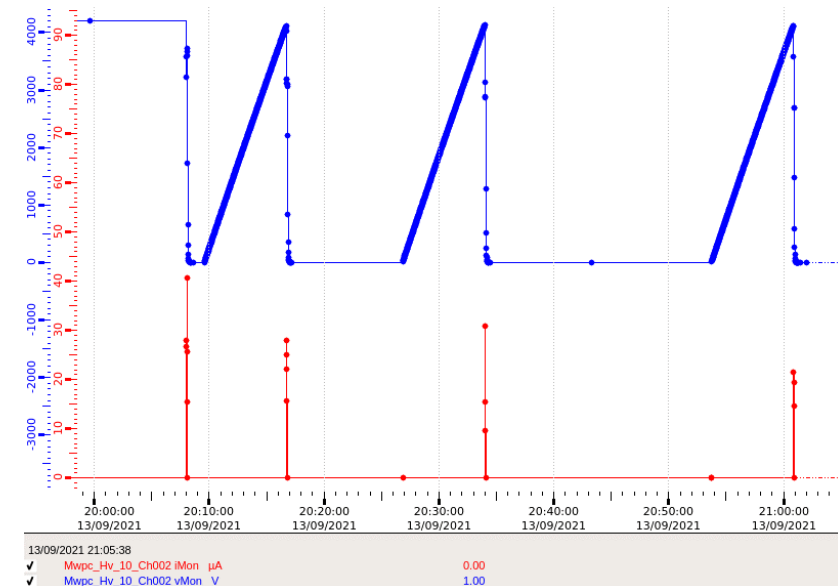
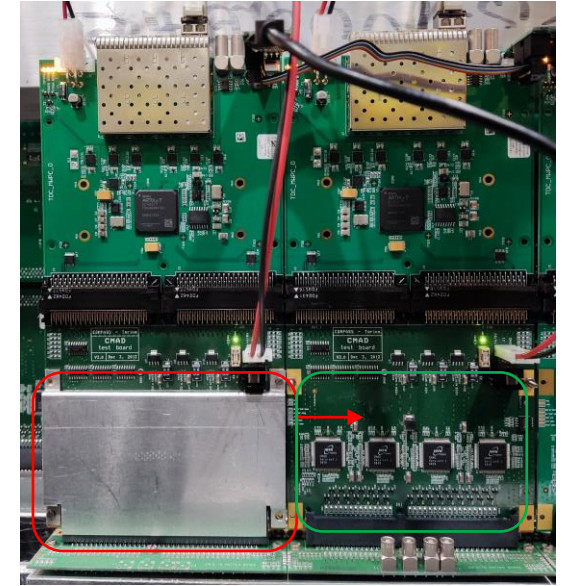
- We have faced some problems with the Mylar
  - Window has broken on PA01
  - Several chambers might have risks of performance degradation during 2022
  - We would like to repair the PB station that has HV and Mylar problems
- We had some higher noise on the PA05 with the new FEs where we need to mount EM protections shields



# MWPC maintenance

## Main elements

- We have started the check of the new iFTDC based FEs for the mapping
- We will dismount all the FE cards from the PA05, mount the modified EM screening shields and reassemble the chamber
- We will dismount the PB10 station and move it into the clean area for mylar refurbishment and check of the HV lines that gave us problems
- Depending on the repair of the PB10 we will decide if we have the time and material to repair any other chamber



# MWPC maintenance

## Considerations on the PB05 repair in the clean area

- We have stretching machine installed and the chamber opening table should be available
- We will need to use  $\sim 5 \times 5 \text{m}^2$  space to perform the preparation of the replacement mylar foils
- We will need  $\sim 3 \times 3 \text{m}^2$  to perform the rotation and the insertion of the chamber on the opening table
- If all goes without major problems 2-3 weeks could be a sufficient time window to complete the work



# Conclusions

- The work has been started on both the RW and the MWPCs
- The operations on the RW may be expected to last for ~1 month in case no serious problems are discovered
- The refurbishment of the MWPC will most probably take 1,5-2 month if we decide to change the external window on more than one chamber
- At the moment we have an almost permanent presence at CERN for the operations, we will see if we can maintain this pace