Rich Wall Status for 2022

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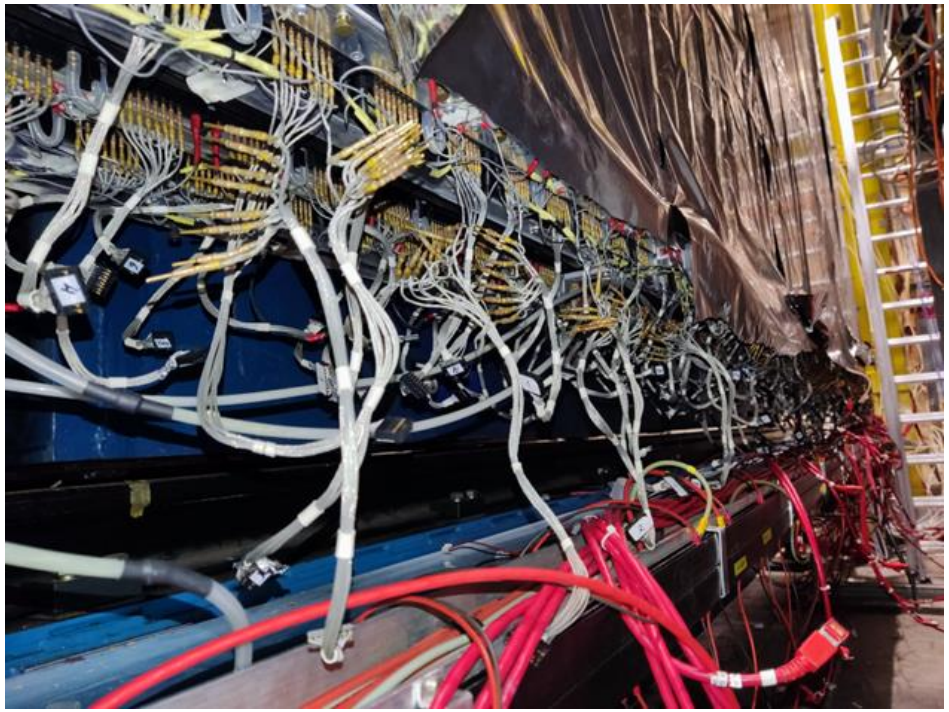
General comments on the 2022 Richwall preparation

We have faced in 2021 sever problems related to a “express assembly” of the detector before the Run and during the winter the detector’s infrastructure and the FEs were basically rebuild

- ✓ All the LV lines had been dismounted and assembled again
- ✓ All the HV lines had been redone (dismounted and remounted on the detector again)
- ✓ All the FE cards down to the analog parts were dismounted and remounted
- ✓ The gas system was modified and in some places assembled from scratch

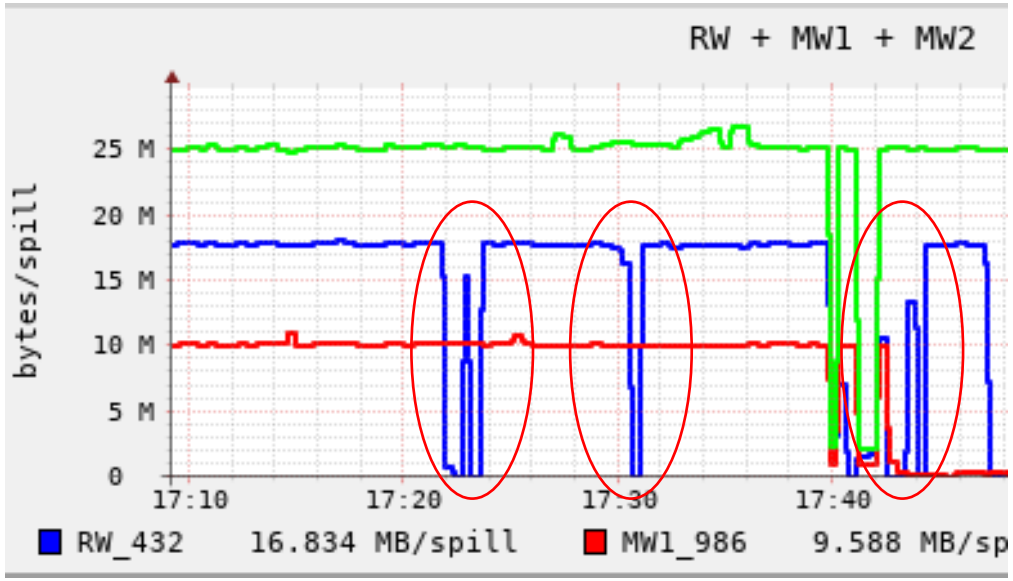


No action was performed at the RO location, nor any change was done to the configuration

We had no reason to expect any problem as the system is unchanged since 2009 and had never failed before

Present status of the problem

- All the HW remounting work was finished in May 2022
- We expected to simply switch on the power of the R/O and proceed the commissioning
- In May the detector just did not send any data and the main doubt was a faulty HotGeSiCa
- We did exchange the module but id did not help, started to look into the FE but the unexpectedly the R/O started to operate
- We were surprise but blamed some eventually aging connection as there was no clear way to reproduce the previous "failed" condition
- Unfortunately when we went to nominal triggers it was found out that the RW is missing ~15% of the data

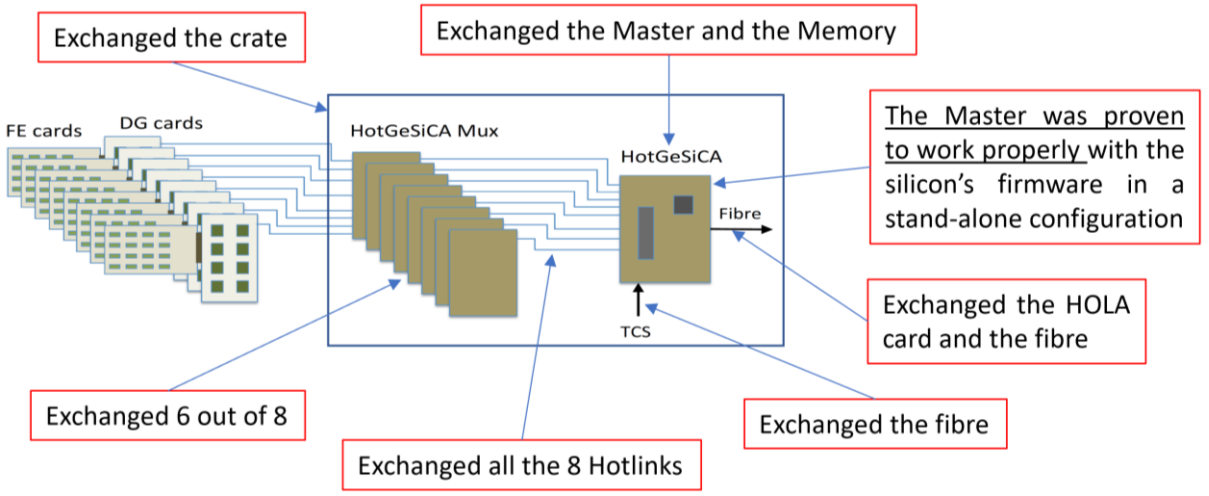


- The investigation restarted and from the looks of the problem most probable cause were the trigger delivery or sporadic R/O modules failures due to FE misfunction or a problem of the module
- First the trigger was tested to be OK, then preparing to test the FEs, suddenly the detector stopped the data communication and came back to the May situation

New observations and considerations

What was already done:

- ✓ Physical exchange of the components
- ✓ New Master modules creation
- ✓ Check of the Master module with a Silicon firmware -> it is working
- ✓ Check of the whole data chain till the DAQ barrack and in the barrack
- ✓ Attempt to modify the firmware to monitor the internal software situation -> Failed due to the age of the modules



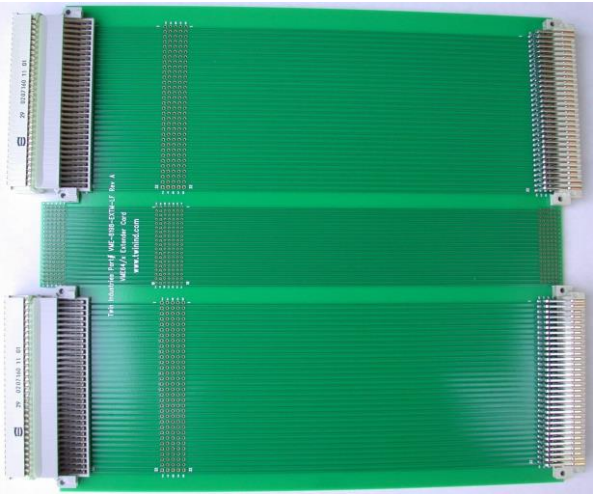
I had decided to try to physically check the signals on the HotGeSiCa modules to evaluate the data propagation and localise eventual problematic modules

- ❑ The idea is to trace on the level of the Hotlink interface chips the data transmission signals and to check the general presences of all the signals on the boards

It seems form the first observations that there is the trigger on all the elements of chain but it might not be properly "read" by the GeSiCas and the FE cards

Next steps

- We plan to proceed this investigation during the next MD
- If confirmed, that would indicate we have some generalised problem
- It could be an electrotechnical problem



We are still unsure on the possible cause, we hope to have news ASAP.