

DAQ Update - CM41

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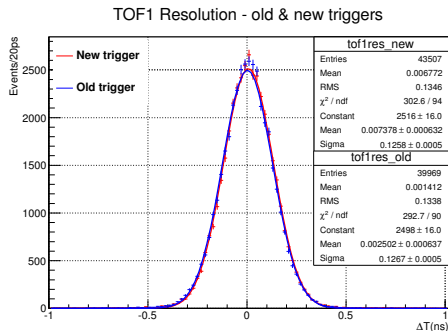
June 22, 2015

- Migration to the new Trigger system
- The new look of the MICE DAQ system
- Data corruption protection
- Software framework for fast data processing

Test of the integration with the time-of-flight detectors

- The integration with the TOF detectors is validated systematically. This validation is very important because the TOF measurement depends strongly on the trigger.
- A dedicated run on the weekend of the 28th March 2015 was used to collect data for a new TOF calibration using both the new and the old trigger systems.

Final validation of the new Trigger system

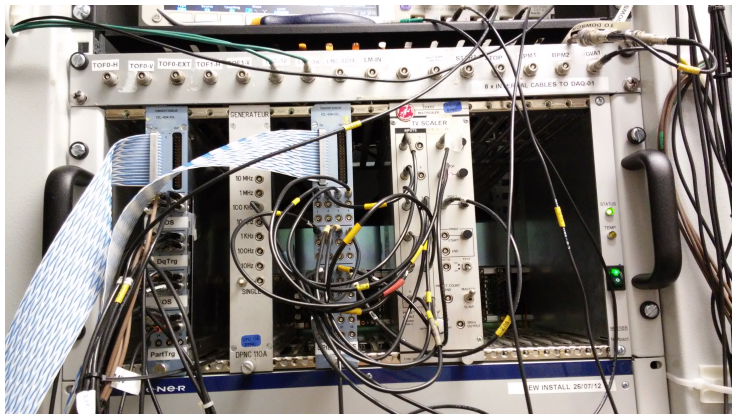


- No difference in the performance of the TOF detectors was found when using the new trigger compared to what was obtained using the old trigger.

New Trigger

- An asynchronous external veto (tracker veto) has been implemented.
- The documentation of the new trigger is completed. It is available at: <http://micewww.pp.rl.ac.uk/projects/online/wiki/DAQUserManuals>
- The old trigger system is now dismantled.
- The new system has been routinely operated since April.

The new look of the MICE DAQ system

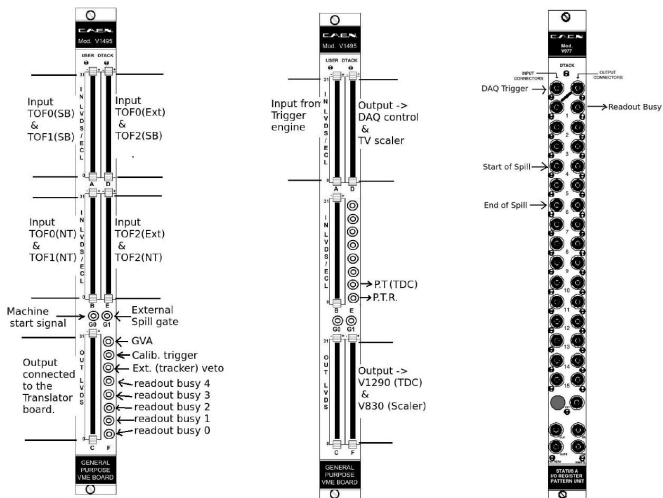


Now the cabling is simple and easy to understand.

The new look of the MICE DAQ system



Maybe not so simple here, but ...



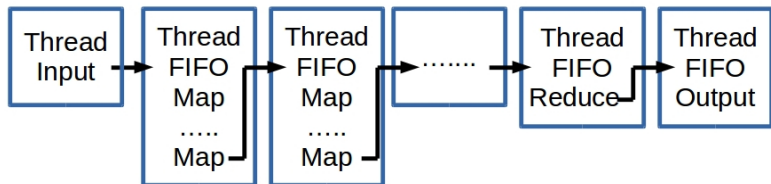
Left: Trigger engine board connection scheme. Middle: Translator board connection scheme. Right: I/O connection scheme.

Data corruption protection

- The unpacking is now very well protected against the different forms of data corruption.
- Rhys works on an automated data quality checks and an interface between the Online Monitoring and EPICS. More details in his slides.
- The reason for the occasional trigger mismatches has been identified. We found an oscillating 6V channel of the Power supply of the old NIM crate. This is also the most probable explanation of the 10% inefficiency of the old trigger. The crate has been replaced.
- We still have a problem in the data coming from some of the tracker boards. More details in Ed's presentation.

Software framework for fast data processing (mic11)

- This is essentially a reuse of an old code I wrote for a different software project.
- MAUS is used as a third party. All original MAUS maps are used without changing anything.
- The data processing is driven by a bunch of classes written c++11.
- The code allows for a single-thread or a multi-thread processing.



Software framework for fast data processing (mic11)

mic11 was very useful as an online tool:

- For quick look into the data and DAQ related debugging.
- For quick processing of new TOF calibrations.
- For developing a new MAUS code (InputDAQCpp....).

Conclusion

The DAQ system is in a good shape
and is ready for Step IV.