

# System test (detector electronics, CRU, CTP, FLP), installation and commissioning: planning, requirements

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# Time scale

- Currently waiting for the delivery of the first CRU (delayed)
- Currently waiting for the delivery of the lab LTU
- Several system tests with the CRU and the LTU are planned already before system commissioning at point 2
- Most tests not critical for point 2 installation, because they concern mainly firmware stability and verification  $\Rightarrow$  overlap of tests with point 2 installation not critical
- System commissioning at point 2 expected to start in mid 2019

## Tests planned with CRU/LTU hardware

- Measurement of optical power threshold (important for point 2 chamber calibration)
- Link stability and stress test of ORI implementation in lab using a pseudo random generator from a test chamber and verification of the data using low optical power
- Measurement of the BER as a function of the optical power
- Test of the new trigger sequence to trigger both tracklet and full readout
- Test of the readout chain including packetization using data generators integrated into the firmware and in the chamber respectively

## Tests planned with CRU/LTU hardware

- Test of the full readout chain at high trigger rates and test of the busy mechanism (requires the availability of the lab LTU)
- Stress test of logic with the maximum number of links (30) connected to the CRU and pseudo random number generators on chambers
- The latter test has to be done during point 2 commissioning at the real detector because the lab test chambers provide only 2 links
- CRU supports full debugging of data path using slow control registers as well as dumping out data to the FLP hard disk

# Test equipment: Backup trigger setup without LTU

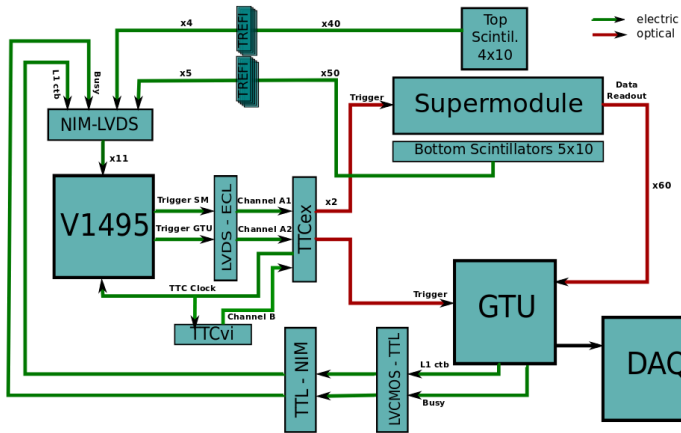


Figure: Jonas Anielski: Entwicklung eines Triggersystems zum Testen und Kalibrieren der Supermodule des ALICE-TRD

## Test equipment: TRD chamber hardware

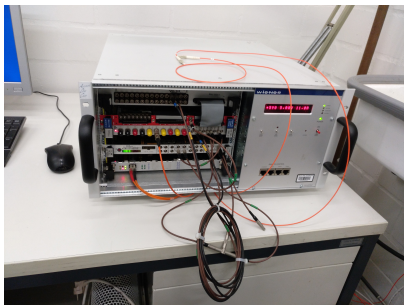


Figure: New VME crate with trigger hardware

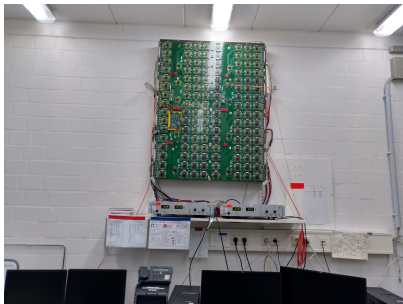


Figure: TRD chamber 'Jerry'

- Test setup prepared to allow lab tests of readout chain when CRU arrives
- Integrate lab LTU into the test setup when it becomes available and replace the current trigger setup by the final one