



Participation in Hardware Activities

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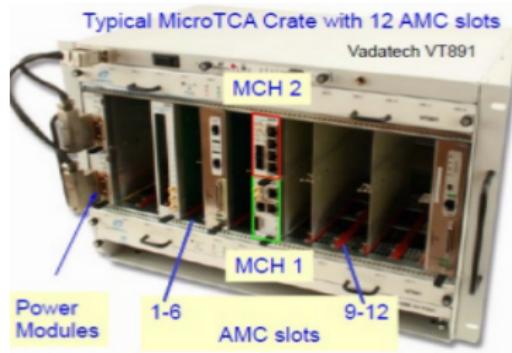
Motivation

Increase in energy from 8 to 13 TeV in Run II of the LHC will require high speed and continued acquisition of data.

- Problem: HCAL back-end electronics used for Run I supported VME based DAQ system.
 - Provided 1.6Gbps data link
 - For Run II, the optical data rate is 4.8Gbps
- Solution: μ TCA (Micro Telecommunication and Computing Architecture)
 - Providing high speed data transfer
 - Efficient for long expected functional lifetime

μ TCA - Specifications

- μ TCA standard developed by telecommunication industry
- Allows upto 12 AMC (Advanced Mezzanine Card) cards
- 2 special hub slots in each crate occupied by
 - MCH (μ TCA Carrier Hub)
 - AMC13
- Power Modules for voltage supply



Set-up at PU

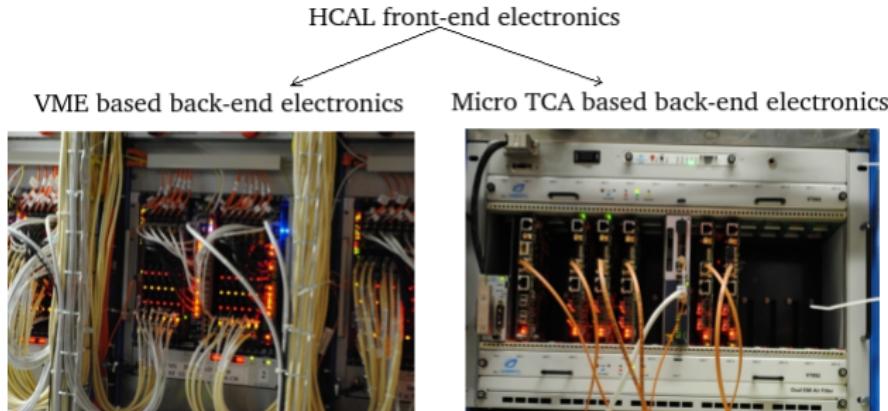
- A μ TCA setup is installed at Panjab University, Chandigarh.



- ▶ Sufficient power supplied to the MCH card by the Power Module.
- ▶ Proper communication between the MCH and μ TCA crate.
- ▶ 12 V supply to the AMC/ μ HTR (HCAL Trigger/Readout) cards.

Need of Optical Splitters

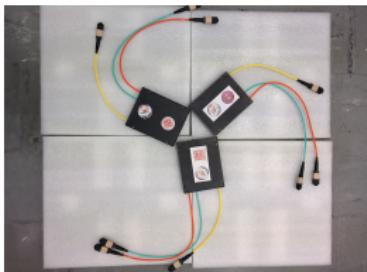
- Three μ TCA crates have been replaced for the HF upgrade and nine crates have been installed along with VME system for HB/HE upgrade.
- For the commissioning and validation of μ TCA, it is important to operate μ TCA in parallel with the existing VME electronics for complete HB/HE.
- Achieved by splitting the incoming optical signal from front-end electronics into two equal parts.



- ▶ 50:50 optical splitters
- ▶ Signal Loss reduced by 5 to 7dB

Participation in Hardware Work at CERN

- I along with Anterpreet tested 19 μ HTR cards at 904, Prevessin site and installed them at P5, CMS Experiment.
- We also tested 15 Power Modules and 6 μ TCA cards.
- I along with Varun Sharma (DU), placed the optical splitters (the first unit bearing the India-CMS logo) in trays which were then installed at P5.



- 17 DAQ Shifts (April to July)
- 14 DAQ and 2 DQM shifts
(Anterpreet - Feb to May)



THANKS!!