Contribution ID: **18**   Type: **Poster**

The Upgrade for the Data Acquisition System of the KOTO Detector

Thursday, 28 May 2015 17:29 (0 minutes)

The goal of KOTO experiment at J-Parc is to discover and measure the rate of the rare decay . The data acquisition system is built around a 14-bit 125MHz ADC frontend boards and a three-tiered trigger system. The detector analog signals are shaped, digitized and stored inside a 4 µs deep pipeline. The L1 and L2 trigger boards received data from the ADC via 2Gbs. Data passing the L2 decision are sent to a computer cluster via a 1Gb Ethernet connection based on UDP protocol for event reconstruction and L3 trigger. The DAQ system was used during KOTO first physics run in May 2013 and ran at sustained L2 trigger rates of 14KHz, as per design specifications. An upgrade to the L3 architecture using the Infiniband network communication for event building will be commissioned in March 2015. It is complemented by enhancements in the clock distribution system and a redesigned Master Trigger and Control board, which allows to save the data in separate trigger streams. To cope with the increase in proton intensity projected for 2016 and 2017, a major upgrade to the L2 Trigger hardware based on the ATCA standard is being considered. The ATCA standard provides a natural solution to the current KOTO DAQ constraints, including communication between boards and higher input and output bandwidth. This framework will provide for a L2 trigger able to implement real-time clustering and timing analysis of different components.

Primary author: Dr TECCHIO, Monica (University of Michigan)

Co-authors: Dr AMEEL, Jon (University of Michigan); Prof. CAMPBELL, Myron (University of Michigan); Mrs SU, Stephanie (University of Michigan)

Presenter: Dr TECCHIO, Monica (University of Michigan)

Session Classification: Front end, Trigger, DAQ and Data Management - Poster Session

Track Classification: S5 - Front End, Trigger, DAQ and Data Management