Contribution ID: **227** Type: **Poster presentation**

The laser control system for a calibration facility of light detector

Friday 10 June 2016 10:30 (1h 35m)

Laser calibration facilities play a key role in the study and characterization of detectors like electromagnetic or hadronic calorimeters. They can be operated both during physics data taking and off run. Typically these facilities are based on a lasers source which deliver light to each detector element via a light distribution system. The laser control system typically manages the interface between the experiment and the laser source, allowing the generation of light pulses according to specific needs as detector calibration, study of detector performance in running conditions, evaluation of DAQ performance. Any specific implementation depends on hardware features. As an example light pulses could be generated according to a physics distribution as it appens in physics run or real data taking. In this case light pulses should be generated according to a pattern which follows a programmable function and changes on a statistical base event by event.
In this work we present a laser control system for calibration of a calorimeter. It is a custom solution based on an hybrid platform hosting an FPGA and an ARM processor. We present the system architecture and the performances of a preliminary implementation.
This system, in a more specific and specialized version, will be used in the *Muon g-2 experiment (E989)* at Fermilab.

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Session Classification: Poster Session 2

Track Classification: Control, Monitoring,Test and Real Time Diagnostics Systems