Contribution ID: **41** Type: **not specified**

Optimization studies for the upgraded readout electronics of the ATLAS liquid argon calorimeter (student talk)

Thursday, 15 February 2018 21:30 (15 minutes)

Multiple analog and digital signal processing techniques are simulated to optimize the energy reconstruction performance of the upgraded readout electronics of the liquid argon hadronic endcap calorimeter in the ATLAS detector. The ATLAS detector is designed to record proton-proton collisions at the Large Hadron Collider (LHC). The detector will be upgraded in 2024-25 alongside the LHC's accelerator chain to cope with a factor 7 increase in luminosity. In this high luminosity environment, radiation will attain levels that the current detector readout electronics were not originally designed to sustain. The current readout electronics are also incompatible with the technical requirements introduced by the planned upgrade of the experiment's trigger system. Therefore, a complete overhaul of the readout electronics for the ATLAS liquid argon calorimeter system is required. In addition, the increased interaction rate will result in a degradation of the measured detector energy resolution. A detailed simulation of the hadronic endcap calorimeter readout electronics under the expected high luminosity conditions is used to optimize the various parameters of the analog and digital readout chain. The results of these optimization studies will be presented.

Primary author: Mr AMBLER, Alessandro (McGill)

Presenter: Mr AMBLER, Alessandro (McGill)

Session Classification: Session #1