



Contribution ID: 270

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## Firmware development of the ALICE MID readout card at the LHC

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ALICE (A Large Ion Collider Experiment) is the detector at the Large Hadron Collider (LHC) at CERN which is studying properties of the Quark-Gluon (QGP) Plasma using lead-lead (Pb-Pb), proton-proton (pp) and proton-lead (p-Pb) collisions. To cope with the increasing luminosity of the LHC, due to the need for more statistics and precision measurements of the QGP, the ALICE experiment is planning a major upgrade of its detectors during the Long Shutdown-2 (LS2) period, which is at present foreseen to start end of 2018. With the increased luminosity the detectors should be able to read out 50 kHz Pb-Pb collisions, and 200 kHz pp and p-Pb collisions at nominal performance. While some systems such as the ALICE Inner Tracking System will be replaced, most other detectors, including the Muon Spectrometer (Tracking and Trigger systems) will receive new front-end and readout electronics. This will allow all detectors to be read out at the expected interaction rates either upon a minimum-bias trigger or in a continuous mode. Central to this upgrade strategy is a new high-speed readout approach based on a Common Readout Unit (CRU). This unit is being developed for detector data readout, concentration and multiplexing onto the Online/Offline Computing farm (O2) for event reconstruction and storage, as well as distributing trigger and timing information to the on-detector electronics.

The ALICE Muon Identifier (MID) is the proposed future designation of the ALICE Muon Trigger System after LS2. The main task of the South African team at iThemba LABS is to develop and test the MID-specific code for the CRU FPGA (Field Programmable Gate Array) as part of the ALICE MID Upgrade and to coordinate these developments with the central ALICE CRU team. This poster presentation will focus on these activities.

**Apply to be considered for a student award (Yes / No)?**

No

**Level for award (Hons, MSc, PhD, N/A)?**

N/A

**Main supervisor (name and email) and his / her institution**

Dr. Zinhle Buthelezi  
zinhle@tlabs.ac.za  
NRF/iThemba LABS

**Would you like to submit a short paper for the Conference Proceedings (Yes / No)?**

No

**Primary authors:** Mr BOYLES, Nathan (UCT, NRF/iThemba LABS); Mr QHOBOSHEANE, Sehlabaka (NRF/iThemba LABS)

**Presenter:** Mr BOYLES, Nathan (UCT, NRF/iThemba LABS)

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