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The South African contribution based on the TileCoM and Tile GbE Switch to the Tile Pre-Processor Modules for the ATLAS Tile Calorimeter: Progress and Current Status.

University of Johannesburg contributes 25% to the final design of the Tile Pre-Processor Modules for the ATLAS Tile Calorimeter at the High-Luminosity Large Hadron Collider (HL-LHC). This work focuses on the status of the Tile Computer-on-Module (TileCoM) and the Tile Gigabit Ethernet Switch (Tile GbE) in terms of firmware, software and hardware integration. The procurement of 62 Xilinx FPGAs for the Control Processing Module (CPM) and 60 Zynq FPGAs for the TileCoM has been initiated, ensuring robust data processing capabilities. Additionally, a dedicated test station at the University of Johannesburg has been established to integrate the TileCoM, Tile GbE, and CPM for validation in terms of sensor data acquisition and performance testing. Significant progress has also been made on the TileCoM's Open Platform Communications Unified Architecture (OPC UA) server, a key component for remote control and monitoring. This presentation provides an update on these developments, highlighting South Africa's vital contributions to the ATLAS Tile Calorimeter Phase-II upgrade.

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Primary author: Dr GOLOLO, Mpho (University of Johannesburg)

Presenter: Dr GOLOLO, Mpho (University of Johannesburg)

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