



Contribution ID: 7

Type: **not specified**

The development of Strontium-90 Tile scanning table for TileCal at the ATLAS experiment

Wednesday, 23 March 2022 16:15 (15 minutes)

During Phase I upgrade of the Tile Calorimeter of the ATLAS experiment, the characterization and qualification of assembled E3 and E4 scintillator counters (Crack) was conducted through manual scans using a strontium-90 radioactive source and a small scanbox containing a photomultiplier tube. The Crack counter, clear optical fiber cable and connections were exposed making transmitted scintillation light vulnerable to contamination by external light. This necessitated the development of an automated scanning system and appropriate size of scanbox to allow housing of all components. The one-coordinate positioning system of the scanner is driven by a powerful 103H5210-5240 Bipolar Stepper Motor. The motor is controlled by an X-NUCLEO-IHM02A1 two-axis stepper motor driver expansion board based on the L6470 component, which is plugged onto the Arduino Uno R3 microcontroller to enable correct functionality. The boards are accessible via a ttyACM0 serial port using a Universal Serial Bus cable connection and a software to control the movement and data acquisition. The new scanning box will be employed after Run 3 of the Large Hadron Collider.

Primary author: MOKGATITSWANE, Gaogalalwe (University of the Witwatersrand)

Co-author: Prof. MELLADO-GARCIA, Bruce (iThemba LABS, Wits)

Presenter: MOKGATITSWANE, Gaogalalwe (University of the Witwatersrand)

Session Classification: Parallel Session VI, Instrumentation