Contribution ID: **203** Type: **Oral Presentation**

An Internet-Of Things pilot project as a primer for future technological development for high-energy physics detector control systems.

Tuesday, 4 July 2023 14:20 (20 minutes)

Detector Control Systems (DCS) and Data AQuisition (DAQ) Systems are susceptible to technological development due to the intricate relationship between their design and currently available hardware. This when coupled to the manner in which particle detectors are required to evolve in order to accommodate ever-increasing instantaneous luminosities provides a unique opportunity for the development of novel DCS and DAQ systems. Once such emerging technology that has the ability to bring about a great shift in detector design is referred to as the Internet-of-Things (IoT). IoT can be defined as wireless communication amongst various devices (sensors) as well as an external network. The technology has broad applications to current and future detectors associated with the Large Hadron Collider and Future Circular Collider e-e+. The Wits Institute for Collider Particle Physics is undertaking a pilot project in order to develop the core skills required for the future development of IoT technology within particle detectors while also facilitating technology transfer. This project involves creating an air quality monitoring system comprising a mesh network of individual sensor nodes. The sensor array samples numerous air quality metrics and transmits them to a cloud for offline processing. An overview of the project will be provided with an IoT use case within particle detectors being discussed and will culminate in the presentation of the pilot
project.

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

Yes

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

PhD

Primary author: MCKENZIE, Ryan (University Of the Witwatersrand)

Co-authors: Prof. MELLADO, Bruce (University of the Witwatersrand and iThemba LABS, National Research Foundation); SOLANS SANCHEZ, Carlos (CERN); WILKINSON, Tristan Jade (University of the Witwatersrand); Dr CHENG, Ling (University of the Witwatersrand); Mr BALDWIN, Cameron (University of the Witwatersrand)

Presenter: MCKENZIE, Ryan (University Of the Witwatersrand)

Session Classification: Applied Physics

Track Classification: Track F - Applied Physics