Contribution ID: **409** Type: **Oral Presentation**

A Search for a Scalar Resonance using Di-Photons in Association with a lepton and a b-jet with the ATLAS Detector

Wednesday 9 July 2025 12:10 (20 minutes)

The Multi-lepton anomalies at the LHC are indicative of a scalar resonance with a mass around 150 ± 5\,GeV in the $\gamma\gamma$ and $Z\gamma$ spectra in association with leptons and jets with a global significance of 5.4σ. This provides a compelling avenue for exploring new physics beyond the Standard Model using the di-photon channel. This project investigates the hypothesized resonance, where the scalar decays into a photon pair accompanied by a muon or electron and a b-jet $S(\rightarrow \gamma\gamma) + \geq 1\ell + b$-jet. An analysis of the ATLAS data will be done in this channel, using the easyjet analysis framework, thus possibly reinforcing the hypothesis.

Apply for student award at which level:

MSc

Consent on use of personal information: Abstract Submission

Yes, I ACCEPT

Author: NDHLOVU, Baballo-Victor (University of the Witwatersrand)

Co-authors: Prof. MELLADO, Bruce (University of the Witwatersrand); Mr NTUMBE, Kgothatso (University of the Witwatersrand); Mr MAKGETHA, Kutlwano (University of the Witwatersrand); Dr KUMAR, Mukesh (University of the Witwatersrand); Mr MBUYISWA, Njokweni (University of the Witwatersrand); Dr MAZINI, Rachid (University of the Witwatersrand); Mr KAKANCU, Vuyolwethu (University of the Witwatersrand)

Presenter: NDHLOVU, Baballo-Victor (University of the Witwatersrand)

Session Classification: Nuclear, Particle and Radiation Physics-2

Track Classification: Track B - Nuclear, Particle and Radiation Physics