Canadian Association of Physicists
Association canadienne des physiciens et physiciennes

Contribution ID: **58** Type: **Oral Competition (Graduate Student) / Compétition orale (Étudiant(e) du 2e ou 3e cycle)**

(G*) Machine Learning for Energy Reconstruction at ATLAS

Monday 7 June 2021 13:10 (10 minutes)

A crucial task of the ATLAS calorimeter is energy measurement of detected particles. In the liquid argon (LAr) calorimeter subdetector of ATLAS, electromagnetically and hadronically interacting particles are detected through LAr ionization. Special electronics convert drifting electrons into a measurable current. The analytical technique presently used to extract energy from the measured current is known as optimal filtering. While this technique is sufficient for past and Run3 pile-up conditions in the LHC, it has been shown to suffer some degradation of performance with the increased luminosity expected at the High Luminosity LHC. This presentation will explore machine learning techniques as a substitute for optimal filtering, examining the strengths, weaknesses, and limitations of both energy reconstruction methods.

Author: POLSON, Lucas Alexander (University of Victoria (CA))

Presenter: POLSON, Lucas Alexander (University of Victoria (CA))

Session Classification: M2-10 Machine learning in HEP & Novel reconstruction techniques I (PPD) / Apprentissage automatique en PHE et nouvelles techniques de reconstruction I (PPD)

Track Classification: Particle Physics / Physique des particules (PPD)