Contribution ID: **1322** Type: **Parallel Talk**

Identification of Beam Particles Using Detectors based on Cerenkov effect and Machine Learning in the COMPASS Experiment at CERN

Friday, 8 July 2022 12:30 (15 minutes)

Cerenkov Differential counters with Achromatic Ring focus (CEDARs) in the COMPASS experiment beamline were designed to identify particles in limited intensity beams with divergence below 65µrad. However, in the 2018 data taking, a beam with a 15 times higher intensity and a beam divergence of up to 300µrad was used, hence the standard data analysis method could not be used. A machine learning approach using neural networks was developed and examined on multiple Monte Carlo simulations. Different types of network were tested and their configurations optimized using a genetic algorithm with the best performing model being integrated into the current data analysis software written in C++.

In-person participation

Yes

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