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Adaptations to the Data Analysis Model for Cherenkov Detectors

The Latin American Giant Observatory (LAGO) is an observatory focused on the detection of cosmic rays and space weather phenomena using a network of water Cherenkov detectors. Currently, LAGO is transitioning to new hardware with higher time resolution, which requires an improvement and adaptation of the current calibration algorithms. In this work we present an improvement of such algorithm by focusing in the measurement of the Michel spectrum instead of the caracteristic muon hump (energy deposited by muons crossing vertically the WCD), allowing us to classify the measured signals according to the type of particle crossing the WCD. Thus, we presented the results of a machine learning model based on the OPTICS algorithm to improve particle classification in LAGO's WCD signals acquired with LAGO's new hardware.

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