

Study of the identification of cosmic radiation muons and electrons signals in water-Cherenkov detectors

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Abstract:

Cosmic rays continuously arrive on Earth and their effects can be observed in detectors located on the planet's surface. The interactions of these cosmic rays with the Earth's atmosphere generated an intense flux of electrically charged particles, composed mostly of muons and electrons. In this work we present a study to identify electron and muon signals generated in a water-Cherenkov detector named Tanca [1]. This detector is installed on the campus of the Universidade Estadual de Campinas and is part of the Latin America Giant Observatory (LAGO) [2]. The study was carried out through a Monte Carlo simulation based on Geant4 [3]. We present a study of the characteristics of pulses related to charge and time that allow us to calculate the probability of the signal being from one of these particles.

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References:

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