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Experimental and simulation study of cosmic muons detected with a water Cherenkov detector of the LAGO collaboration

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In the present work we study the secondary cosmic ray flux registered in a water Cherenkov detector (WCD) produced by the interaction of cosmic rays in the atmosphere. The background radiation was characterized in Lima, Peru, at 00 Lat. 00 Long. The detector employed is part of the array of the LAGO collaboration. A secondary trigger is used to filter noise from the electronics in addition to specific processes such as singular photons and thermionic emission.

A study of the muon decay time was performed, as long as the Michel electron spectrum that results from the muons decay process. The LAGO simulations toolkit ARTI was used, that connects CORSIKA to simulate the atmospherics propagation of particles and GEANT 4, for the detector simulation. ARTI was used to estimate and compare the muon flux arriving at a WCD in Lima, and the response of the detector using real data.

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