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Study the Angular Distribution of atmospheric Muons

A cosmic ray telescope has been designed to analyze the angular distribution of cosmic ray muons. The cosmic ray telescope configuration involves four scintillators, grouped in pairs with each pair separated by a distance. The size of each scintillator detector is $4\text{cm} \times 4\text{cm}$ and the distance between each pair can vary from 10cm to 500cm. Scintillator detectors coupled with SiPMs as the primary device for detecting muons. The variation of muon flux with the zenith angle of cosmic rays follows the function form, $f(\theta) \propto \cos^n \theta$, where n depends on the latitude and longitude. The measurements at 8 different orientations give the value of the exponent, $n = 2.0703$. The initial aim of the project is to experimentally validate this correlation. But, this is a portable setup and can be set up in any EHEP school or science exhibition to show the variation of muon spectra as a function of zenith angle. This talk will give the details of the experimental setup including electronics and the estimation of n with its error.

Field of contribution

Experiment

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