

Design and simulation of a cost-affordable Cosmic Ray Muon Tomographer

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Atmospheric muons can be used to image a volume due to multiple Coulomb scattering and absorption of different materials. This work presents the design and CORSIKA/Geant4 simulation of a prototype composed of an array of detectors. The detectors are based on plastic scintillators and silicon photomultipliers targeting new and cost-affordable technology. In order to image a volume we study the possibility to discriminate different materials (e.g. lead, concrete, iron, water, aluminum) by measuring the absorption and incoming and outgoing angles of muons passing through these materials. We optimize the geometry and angular resolution of the array using simulations with the aim to scan structures such as large buildings and natural formations with muon tomography.

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Simulation; Cosmic Rays, Muons, Tomography, Detectors

Collaboration

other Collaboration

Subcategory

Experimental Methods & Instrumentation

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