



Contribution ID : 80

Type : posters

## Simulation of a cost-affordable Cosmic Ray Muon Tomographer

*Thursday, 16 December 2021 12:30 (15)*

Cosmic rays arrive at Earth and produce particle showers, especially atmospheric muons, which can be used to image a volume due to multiple Coulomb scattering and absorption of different materials. In this work, we simulate the cosmic-ray flux and their showers using CORSIKA. Then, we perform a GEANT4 simulation of a prototype topographer composed of two detectors, each made of two planes of an array of sensors. The sensors 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, aluminium) by measuring the absorption and incoming and outgoing angles of muons passing through these materials. We evaluate a realistic scenario and 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.

**Primary author(s)** : RENGIFO GONZÁLES, Javier (Pontificia Universidad Católica del Perú)

**Co-author(s)** : Dr BAZO, José (Pontificia Universidad Católica del Perú)

**Presenter(s)** : RENGIFO GONZÁLES, Javier (Pontificia Universidad Católica del Perú)

**Session Classification** : Posters

**Track Classification** : Nuclear and Particles