



The MU-RAY project: volcanoes radiography with cosmic-ray muons

Fabio Ambrosino (1,2) and the MuRay Collaboration Team

(1) Dipartimento di Scienze Fisiche, Università degli Studi di Napoli "Federico II", Italy , (2) INFN, Sezione di Napoli, Italy
(fabio.ambrosino@na.infn.it)

Cosmic-ray muon radiography is a technique for imaging the variation of density inside the top few hundred meters of a volcanic cone. With a resolution of few ten meters in optimal detection conditions, muon radiography can provide images of the top region of a volcano edifice with a level of detail that is significantly better than that typically achieved with conventional methods. Such precise measurements are expected to provide us with information on anomalies in the rock density distribution, such as those expected from dense lava conduits, low density magma supply paths or the compression with depth of the overlying soil.

The MURAY project aims at the construction of muon telescopes and the development of new analysis tools for muon radiography.

The telescopes are required to be able to work in harsh environment, to have low power consumption, good angular and time resolutions, large active area and modularity. We present a detector prototype consisting of three X-Y planes of one square meter area made by plastic scintillator bars of triangular shape. Each bar is read by a fast WLS fibre coupled to a Silicon photomultiplier (SiPM). The readout electronics is based on the SPIROC chip. The status of the project and the first results in the tests of the prototype and its components will be presented.