

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

Cosmic-ray muon radiography is a technique for imaging the variation of density inside the top few hundred meters of a volcanic cone. With resolutions up to tens of meters in optimal detection conditions, muon radiography can provide images of the top region of a volcano edifice with a resolution that is considerably 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, like those expected from dense lava conduits, low density magma supply paths or the compression with depth of the overlying soil.

The MU-RAY 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 and to have low power consumption, good angular and time resolutions, large active area and modularity. The telescope consists of two X-Y planes of 2x2 square meters area made by plastic scintillator strips of triangular shape. Each strip is read by a fast WLS fibre coupled to a silicon photomultiplier. The readout electronics is based on the SPIROC chip. The status of the project and the first results of the tests of the prototype components will be presented.

Summary (Additional text describing your work. Can be pasted here or give an URL to a PDF document):

http://people.na.infn.it/~saracino/MURAY_Vienna.pdf

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