



Preliminary Monte Carlo simulation study of the structure of the Galeras Volcano using Muon Tomography

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Muon radiography is based on the observation of the absorption of muons in matter, as the ordinary radiography does by using X-rays. The interaction of cosmic rays with the atmosphere produce Extensive Air Showers (EAS), which provide abundant source of muons. These particles can be used for various applications of muon radiography, in particular to study the internal structure of different volcanoes edifice. We will discuss the study the different volcanoes in Colombia focusing on Galeras located 9 km from Pasto City.

In this work we present the first study of the muon lateral distribution to the Pasto altitude (4276 m a.s.l.) and a preliminary simulation the volcanic cone using GEANT4. For the interaction of the cosmic rays with the atmosphere we have used the CORSIKA 74004 software with an atmosphere tropical model and QGSJETII-04 as hadronic model for the high energies and GHEISHA2002d for low energies. The analysis considers two different primary particles (proton and iron), four zenith angles (0° , 30° , 45° and 60°) with energies in the range of 1 to 100 TeV.

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