

Muon radiography of Stromboli volcano with nuclear emulsions

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Stromboli is one of the most known and studied active volcanoes in the world. Nevertheless the details of its internal structure are not well defined yet. The resolution of traditional geophysical survey methods (as seismic, etc) of the order of 0.1-1 km does not allow the detection of the possible gas and lava channels under Sciara di Fuoco, the most interesting part of the dome. We applied the muon radiography method for that. The spatial resolution of this method applied to volcanoes is less than 100 m and could reach 10 m in favorable exposure conditions. A nuclear emulsion detector of 0.96 m² was installed on the volcano slope in October 2011 and it was kept there for 5 months of exposure, integrating cosmic rays. Emulsions were extracted in March 2012, developed and sent to the scanning laboratories for their analysis. The details of the exposure and the preliminary results of data analysis will be reported here. This work was performed by Italian emulsion groups in collaboration with INGV Napoli section and with Tokyo University muon radiography lab.