

Interactive  
Comment

## ***Interactive comment on* “Evaluation of positioning and density profiling accuracy of muon radiography by utilizing a 15-ton steel block” by H. K. M. Tanaka**

**Anonymous Referee #2**

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The following comments and suggestions refer to the first two pages of the manuscript. The density of required improvements is high. I suggest that the authors present a manuscript more carefully thought in its writing, before going ahead in the evaluation. I think that this also will make more effective the general discussion. PLEASE INFORM BY EMAIL WHEN THIS IS DONE BY THE AUTHORS

PAGE 644

Abstract The geometry must be reformulated relatively to the muon path. It is unclear in the following aspects: - a block has 3 dimensions, only two are given - width and length have no intrinsic meaning, they are relative to an observer - what matters is the

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dimension along the muon path, supposedly called width

8-9 of the snow overburden on

9-11 Nowhere it is written that muons come from cosmic ray interactions in the atmosphere! E.g. replace the sentence as follows He measured the muon flux inside and outside the tunnel to compare them to confirm that a reduction in the muon flux reflects the average density of the overburden -> He measured the flux inside and outside the tunnel of muons from cosmic ray interactions in the atmosphere and compare them to confirm that a reduction in the muon flux reflects the thickness of the overburden

11 average density -> thickness

13 Start a new paragraph after 10%.

13 The method -> When applied to a volcano, the method

14 How can a volume be parallel to a plane?! Rephrase e.g. as follows: The method measures the absorption of muons along a cross section of the target volume volcano parallel to the plane of the detector, on which the average density along all muon paths is projected. -> The method measures the absorption of muons in the volcano projected to the plane of the detector along all muon paths.

24 numerous -> abundant

PAGE 645

1 1-2 The following sentence is not understandable and could be wrong understood (it seems to exclude quasi-horizontal muons and consider only vertical muons) : Thus, cosmic-ray muon radiography can be applied to any objects located elevations vertically above where the detector is placed.

1 11 a combination of plastic scintillator strips has -> plastic scintillator strips have

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I 18-19 and the scintillator strip does not have to be separated into units

I 21-22 for a certain outdoor -> for an outdoor

I 25-27 and I 1 of page 646 The plane contains 24 plastic scintillators arranged along the x and y coordinates like a lattice, to determine the vertex point by determining the coincidence of two signals from two scintillator strips; it consists of 144 coincident elements. -> The plane contains 24 plastic scintillators strips arranged in two arrays along the x and y coordinates, to determine the hit point in the plane by the coincidence of the signals from x-y scintillator strips; the coincidences are registered in a matrix of 12x12 elements.

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Interactive comment on Geosci. Instrum. Method. Data Syst. Discuss., 2, 643, 2012.

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