

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

Received and published: 28 August 2012

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

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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 μ inside and outside the tunnel to compare them to ρ that a reduction in the muon μ reflects the average density of the overburden -> He measured the μ inside and outside the tunnel of muons from cosmic ray interactions in the atmosphere and compare them to ρ that a reduction in the muon μ 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

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I 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.

I 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 scintillator 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.

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