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Geoscientific Instrumentation Methods and Data Systems
Discussions

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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I am doing my best to give suggestions to improve the paper. I want to avoid disputes.

COMMENTS TO ANSWERS TO MY COMMENTS ON THE FIRST TWO PAGES

I am pleased to read that the author accepts most of my comments

Abstract. The abstract is often given independently of the text. Please make the geometry understandable without the support of Fig. 1. As dimension, I would only the 5 m thickness (rather than length): see comment p 647 1-2.

P 644 8-9 I did not question the substance of the text. My comment was of language: replace "of" by "on", to be checked by English speaking person. I have also added

"snow": it is not essential to add anything, but in case one should say "rock" overburden.

P 645 1-2 I meant that the sentence "Thus, cosmic-ray muon radiography can be applied to any objects located elevations vertically above where the detector is placed" is unclear and may lead to misunderstanding. The author must reformulate it. A longer sentence is probably needed. My suggestion is to say to say that one makes use either of muons coming from above the structure to be investigated by a detector underneath it, or by quasi-horizontal muons with the detector placed sideways.

18-19 I suggest to say "and the single scintillator strips do not have to be read out as separate units"

COMMENTS ON THE FOLLOWING PAGES

P 646 6-7 I would simply say "The WLS fiber transmits light with minimal attenuation because there is a clad layer outside it"

15-19 I would say "When supplied by 870 V electric voltage, the typical peak of the pulse height output from the MAPMT was 80 mV, and the pulse width was 2 ns. We measured the total electric power consumption by using a power meter (HIOKI 3334 AC/DC POWER HITESTER) and found that it was 9 W including the power consumption by the electronics."

21-24 "the" accuracy, "the" density wherever they appear

P 647 1-2 If I understood correctly, the relevant dimension is what is called length but I would call thickness. I would then say "The steel block is 5 m thick along the muon trajectories and weighs âĹij 15 tons.". If one gives the width, one should also give the height, but the figure already depicts it and they are not dimensions of primary relevance.

7 "the" root mean square

8 "The" RMS

9 “the” minimum

10 I suggest to replace “is a value that is defined by” by “is the ratio of”

P 648 14 It is probably better to say “which can be used to correct the horizontal distributions of muons”

P 649 11 I suggest to replace “transmit” by “go through” “insensitive” has to be removed

12 The comparison of 5 m iron to 2 km rock is misleading, unless one says explicitely “a similar experiment with 1 km rock and adequate statistics” or something like that. Mentioning the statistics is essential

25 “The” angular resolution

28 “The” RMS angular resolution

P 650 15 “The” accuracy

19 after “1 km” one must specify “and adequate statistics is available”

20-23 “and it was determined between a RMS angular resolution and an interval angle of the detection system” is unclear to me and presumably to some others, sorry.

25 skill “and” expertise “benefitted” , please check

Figs. 2, 3 Muon “events”

GENERAL COMMENT: the english should be polished here and there

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