

Interactive comment on “The KM3NeT project: status and perspectives” by A. Margiotta

Anonymous Referee #2

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This is a useful report to give a status of the current KM3NeT plans. The paper gives a good overview of the design and plans described in the design report. It is a helpful paper for the community to have a reference of the KM3NeT status. The paper should be published. Some of the comments below are for consideration. I think that especially comment 2 requires to add some content.

Comments on content: 1) It would be useful to have a reference for the IceCube sensitivity. (It looks OK.) 2) It would be useful to provide some fundamental information about the scope of KM3NeT. How many optical modules are assumed in a baseline configuration? How many photomultipliers are assumed of one or the other kind (MultiPMT or hemispherical PMT? What quantum efficiency has been assumed?) It would also be useful, to provide an approximate figure of the assumed instrumented volume, which is probably around 6 km^3 . However the report is rather casual in just stating multi km^3 . It is important to see such figures in order to be able to understand the

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comparison of sensitivity to IceCube.

3) consider stronger statements? 578/line 9: The statement is weak. It reads as if KM3NeT would offer only a hint The author perhaps meant to say: A significant excess of reconstructed tracks from a specific direction above the expected background from atmospheric neutrinos would provide evidence for a cosmic source of neutrinos.

578/10: The statement about diffuse flux really tries to say that a diffuse astrophysical flux of neutrinos may also be identified just based on energy, if the energy of the observed neutrinos is sufficiently high that it is incompatible with the atmospheric neutrino flux. The statement of $\gamma = -3.7$ is not rigorously correct because of charm component etc. Again if the energy is high enough and the flavor ratio OK it will more than just indication.

4.) The reader may wonder about the site strategy for the future, however it may be beyond this paper to try to approach that questions. (The community would be curious about pro's and cons of multiple sites. Eg, cost of logistics, effective volume for cascade events. However, as mentioned, this may not be the place to try to discuss that.)

5.) SECTION 4.1: Suggest to add as a main advantage for the multi-PMT module the rejection of background in high noise environment as stated later in line 580/24.

6.) SECTION 4.2 It appears that the "bar detection unit" is not tied to an OM design where the "String detection unit" is explicitly seen to utilize only multi-PMT OM. If this is the correct understanding, it may be worth to state that explicitly.

7.) The statement in 580/20 that there is no significant difference in the choice of the OM design is a fundamental statement to neutrino telescopes. If it is indeed meant this way, it may concluded that the choice is driven by other factors (cost etc.)

I add a few comments regarding style and language for your consideration:

Figure 2, 4, 5, 7 and 9: Figures are a pixelized images or may be just screen captures in poor resolution, It would be nice to have better resolution figures, would just look

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better. Recommend finding the PDF source if possible, or redoing it. Figure 7 is OK.

577/14 fundings → funds 577/15 in two sites → at two sites in the Mediterranean Sea

578/5 wording: → reconstruction of the particle's direction 578/26 fundings → funds

582/19 start its construction at the Capo Passero and Toulon sites

Interactive comment on Geosci. Instrum. Method. Data Syst. Discuss., 2, 575, 2012.