Comments to CAN-061 version from May 9 by Roman Poeschl

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Suggestions and questions :
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- Again I will not set many detailed comments but in the writing very often "... is done" is used (e.g. Line 139). I think that there are more appropriate terms. In this very case "applied" may be better. Please check the text.
Try to diversify a bit more.

- Some comments on legend sizes et al. have been already made by Gerald so I won't repeat them here.
See Gerald answers

- I have still my biggest problems with Secs. 5.3 an 5.4
* Fig. 5: As Gerald I don't understand the role of the mu in Fig. 5a
mu is defined as the mean value of the histogram along the y-axis. This value is then used as a threshold such as the left line value (or time pedestal) is determined as the bin centre of the first bin above 30% of the mu value. I added a zoomed plot in the additional plots.
See Gerald answers

* Sec. 5.4:
o This section is central to the analysis as here the time reference is defined. In this context a forward reference to Sec. 5.6 is not-adequate. One should show the corresponding distributions that motivates the application of a 2nd order polynomial here.
I changed the entire paragraph to include more details and remove the forward reference (put back reference in Sec. 5.6). I also added an example for one of the trigger reference channel before and after correction.

o The origin of the second peak seems to be well understood and one wonders why it appears at all in a Figure. Shouldn't one 1) take into account the even/odd pedestals into account and then 2) apply the polynomial?
Yes indeed, normally one should do the extraction of the pedestal separately for each bunch-crossing parity (even/odd) and then apply the polynomial for the non-linearity correction. However, this was forgotten at the time of the analysis and one pedestal value was extracted - therefore explaining the second peak. This was taken into account for future timing analyses.

o Line 247: Is the value 1.30ns as in the text or 1.395ns as in Fig. 6b?
Corrected

- Lines 256-258: This description is a bit clumsy. I propose to write something like: "A

procedure has been developed that takes into account delays due to signal propagation and differences in channel pedestals."
Thank you for the suggestion.

- Lines 259-260: I assume that it is not the histogram range that is reduced but rather the interval around the mean value. If not I have not understood what is done here.
The x-axis range is reduced iteratively around the mean value - it is corresponding to the same thing as the interval around the maximum bin value. I arranged the text.

- Fig. 9: In the caption a correction function is introduced but the parameters are not defined, nor it is clear how the correction is applied.
Corrected

- Line 289: "... where there are ... that " -> "... in which ..."
Corrected

- Line 367: "... is resulting at ..." -> ",,, amounts to ..."
Corrected

- Fig. 14: I think it is adequate to briefly recap the two-exponential and the meaning of the parameters, the more since the formula appears in the (tiny) legend.
That said it is not obvious why for pions the parameters \tau_{fast}, \tau_{slow} and c are given while for electrons and muons only c is given. Wouldn't it be a nice consistency check to extract the parameters for all type of particles?
The formula has been included with the parameters explained. The parameters \tau_{fast}, \tau_{slow} are motivated by the physics - neutron evaporation related to \tau_{fast} and neutron scattering and capture to \tau_{slow}. For electrons and muons, only the constant c is given as it is the only one that as a meaning in that case. The core of the electron and muon distributions are defined by the intrinsic time resolution of the detector and here \tau_{fast}, \tau_{slow} would not have any physical meaning. I agree that it would be nice to have a consistency check but it should be with pions.

- Fig. 17: What does the reader learn from this Figure? If you prefer you can leave it but I wouldn't mind it it's going to be dropped.
I agree that here the paragraph is too thin.. One can learn from this picture that the time dependency as a function of the hit radius depends on the shower start. This also has been cross-checked by looking at the time behaviour of different layers at a constant distance from the shower start where one expect the time behaviour to be the same. See additional plots. I dropped this paragraph for now, if needed it can be added with more substance later.

- Conclusion: Given the huge amount of technical work that went into the analysis, the conclusion is too thin. Let's be honest, the physics results are rather poor at this

stage and do not allow many conclusions. This is most presumably not the fault of the author but most likely due to short comings of the hardware.
I would expect therefore here a thorough discussion on what needs to be improved in order to come to better results in the future.
Thank you for the remark. I agree that not many conclusions can be drawn here mainly due to the shortcomings of the hardware. I added a paragraph on the improvement necessary to improve the time resolution.