

## ***Interactive comment on “Few years’ experience with Automatic DIFlux systems: theory, validation and results” by Antoine Poncelet et al.***

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Absolute measurements at a Geomagnetic Observatory are critically important for the production of the definitive data product. These measurements are traditionally done by a single person who has been extensively trained. The observations are usually done once or twice a week at observatories where personnel are readily available. As scientific budgets shrink and observatories are established in more remote places, alternatives such as the Automatic DI-Flux are needed. The development of the Automatic DI-Flux is of great interest to the geomagnetic observatory community and this paper provides a valuable update on the progress of this instrument. This paper should be published, however, I do have some comments that should be addressed before publication.

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In section 2. A reference is needed for Lauridsen and Kerridge. In the presentation of equation 1, all terms are defined except  $R_y$  and  $R_z$ . It would make everything clearer if they were defined. In the definitions of the collimation errors, there are references to the “horizontal and vertical plan”. I think the correct word would be “plane”.

Section 2.1. The equations are simplified by using the small angle approximation. Is this really necessary? There are a lot of scientists in the observatory community who are of the opinion that the small angle approximation should be eliminated in favor of the exact computation.

Section 2.2 Inclination is misspelled in the header. Also, would “Inclination computations are” be better than “Inclination development is”.

Section 3.2, first line, the word “in” should be replaced with “is”.

Section 3.3, the third sentence would read better if the phrase “strikes the” between the words “then embedded”

Section 4.2. I find figure 5 hard to read, because the graphs are too small. The scales are difficult to read. I would suggest stacking the graphs in a single column so they can be more easily read. The discussion of the results shown in the graph is minimal. A short discussion of the D results would be useful.

Section 4.3. In the line marked 10, I think the word you want is “moisture” instead of “moist”. In the following paragraph, where Figure 7, is discussed, you state “except in 10 the last set of data”. I think something is missing here. What do you mean by “10”? Is that days, the number of observations, or something else?

Section 4.4. I believe the section title needs to be changed to match the rest of the document. In the last sentence, numbered as 5, I would change the end to “unexpected power failure”. It would be helpful if Figure 8 were a little bigger. It is also hard to tell where the figure caption ends and the text resumes. In Figure 9, should the first word of the caption be “Drift”?

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Section 5. Is there anything discussed in this paper that could be done to improve or enhance the instrument?

There are a number of minor edits to the English and grammar that would make the paper a little easier to read. I would be happy to help the authors with this. I could send them a scan of my marked up copy if they wish.

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