

Atmos. Meas. Tech. Discuss., referee comment RC2  
<https://doi.org/10.5194/amt-2022-158-RC2>, 2022  
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## Comment on amt-2022-158

Liviu Ivanescu (Referee)

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Referee comment on "Earth observations from the Moon's surface: dependence on lunar libration" by Nick Gorkavyi et al., Atmos. Meas. Tech. Discuss.,  
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### General comments

This is a useful study, quantifying the Earth movement in the Moon sky, which can then be used to optimise Earth observations from the Moon. Based on this analysis, it emphasizes the possibility of using a multi-slit based spectrograph, each slit associated with a different spectral range, and with a different position of the Earth in the sky.

The authors should develop not only the advantage of a fixed observing platform on the Moon, but also the issues. For example, the libration is not always moving at the same speed, or following the same path (i.e. sometimes the Earth may not go through some of the slits; sometimes, it may stay on one slit, then return). Scanning different spectral ranges at different times may not be relevant to compare them.

The quality of the graphs in the draft is poor, raster at around 140 dpi. For the final paper please use vector based graphics or raster of at least 300 dpi!

### Specific comments

31 – Forward direction is around  $0^\circ$ , while backscatter direction is by definition around  $180^\circ$ . Then, the phase angle cannot be between  $2^\circ$  and  $12^\circ$ . Also, why is starting at  $2^\circ$  and not at  $0^\circ$ ? In addition, why is that much anyway if the size of the Earth as seen from L1 is  $< 1^\circ$ . Even if these affirmations come from other papers, they seem so strange that the

reader may question if they are true. Please be proactive and give more info (for example, by answering my questions above) to convince the reader.

81 – Still concerning the Figure 2, I know you had this one for a long time in the manuscript, but I realise now that it is misleading to have the Epic image as an “insert” of smaller dimensions. It suggests you may have such a large change in angular dimension of the Earth between LRO and Epic. I suppose the Earth angular size should be similar in both. Then I would rather suggest to put those pictures side by side in Fig 2, with the same size of Earth.

167 - Figure 6 was never introduced or discussed in the text. The figure should be introduced after its first mention.

243 – Here you give a definition of the “draconic month” different from that of line 100. They may be equivalent, but that is not necessarily obvious for the reader. Please use the same definition, or explain why the two definitions are equivalent.

374 – I think you could remind in the conclusions more from your results that could be useful messages for the reader, like the statistics (density) of points, speed of libration etc. Otherwise, it looks as you didn’t find much.

## Technical comments

1 – This comment is just an advice to avoid using “:” in the paper title “Earth Observations from the Moon surface: dependence 1 on lunar libration”. This is a special formatting character in Latex and it usually leads to errors when citing and referencing your paper.

9 – “ $1.9^\circ \pm 0.1^\circ$ ” has to be in italic as well, if the entire Abstract is.

12 – Add: reaching “**an amplitude of**”  $7.9^\circ$ .

13 – Add: center of the Earth “**to**” move

53 – The resolution of Fig 1 is 142 pixels/inch and the journal requires minimum 300 pixels/inch. If those pictures are not available at higher resolution, you may increase by resample it artificially to respect the rule.

81 – Same as for 53. I suspect your pdf maker was set to a lower resolution. Please check and, if true, increase its resolution rather than resampling the pictures.

84-85 – I think you mean “**a** linear (one-dimensional) array **of** 5064 elements.” instead of “the linear (one-dimensional) array from 5064 elements.”

114 – Concerning “between  $0.0255 \div 0.0775$ ”, I do not think the sign “ $\div$ ” is correctly used. It is more for calling a “division”. You should better use “between 0.0255 and 0.0775”.

167 - Figure 6 is also of a too low resolution.

183 – Why do you have a break of line (row) here?

191 – Replace “over a given point” with “above a given point”.

266 – You forgot the verb “is”  $N = 2191$ .

283 – You have to be consistent when calling the Figures 10-11 (as everywhere else), not Figs 10-11.

336-338 – Use Figure 7 not Fig. 7.

340-343 – Use Figure 12 not Fig. 12.

378-379 – “We suggest that proposed lightweight EPIC-Moon instrument on a fixed platform will provide the proof of concept” is ill formulated. May be you want to say “We suggest a lightweight EPIC-Moon instrument on a fixed platform to serve as a proof of concept”, or something similar.