

Interactive comment on “Probabilistic analysis of ambiguities in radar echo direction of arrival from meteors” by Daniel Kastinen and Johan Kero

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Dear Referee #1,

Thank you very much for the useful feedback on the manuscript. As the suggested revisions are quite substantial we believe it is a good idea for us to first present an outline of our planned modifications to the manuscript. This way, if they are satisfactory (to Referee #1) or there have been some misunderstanding, we can mutually confirm the changes before we begin implementation. This is also for the benefit of the other Reviewers, as they can see the plan and discussion.

C1

Major comments response:

1. We agree with the assessment. There are several possible actions we can take to fix this problem but we suggest the following:

- Move figures relating to specific radar system results (and include a more complete set) and unnecessary examples to supplementary material only available online
- Move detailed written results / discussion points on specific radar systems that are not necessary to goal #1 to an appendix or remove entirely based on its importance
- As all specific Ambiguity vs SNR probability results will be moved to supplementary material, instead compute and create maps equivalent to Fig. 13 for each radar system and include in the manuscript
- Clarify the remaining written results on specific radar systems with respect to goal #1
- Clarify the conclusions with respect to goal #1
- Perform consequence-revisions based on previous points (e.g. edit description of sections in the introduction)

2. Such simulations have been performed but were not included in the manuscript as they did not affect the Ambiguity dynamics, but rather only the absolute error of unambiguous measurements. These results will now be added to the manuscript as a specific example and with some explanations.

3. When examining Fig. 13 the hexagonal symmetry is illustrated. However, the map is much less "smooth" and "uniform" than one would expect. As such there is no possible

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way to choose just a small finite set of source DOA's to represent all possible ambiguity dynamics. However, one might try to choose something in a well determinable region (close to white), something in an indeterminable region (close to black) and something in between. As suggested previously, if we create maps equivalent to Fig. 13 for each radar system we can overlay the selected source DOA's on these maps to motivate the choice of source DOA according to the "low, middle, high" selection. If the source DOA's that we had selected are not representative when doing this, we will change the source DOA and re-run the simulations, otherwise we will keep them as they are and add the motivation to the manuscript.

If these suggested modifications are satisfactory or they need additional re-iteration, please let us know as soon as possible so we can begin the work!

Minor comments: We agree with the comments and they will all be addressed in the revised manuscript (except the one concerning Fig. 3: the 7th circle is the one around the entire array).

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