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Atmospheric Measurement Techniques Discussions

Interactive comment on "Scanning Polarization Lidar LOSA-M3: Opportunity for Research of Crystalline Particle Orientation in the Clouds of Upper Layers" *by* Grigorii P. Kokhanenko et al.

Anonymous Referee #4

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General comments:

The paper describes a new lidar system for monitoring oriented ice crystals in clouds. My comments will focus mainly on the lidar system, since I'm not an expert in cloud remote sensing. Overall I think this work is worth publishing in AMT.

Specific comments:

The lidar description needs to be revised in order to be provided in a more clear way to the reader. Some examples:

1. Provide a full description of the various symbols in Figure 2, in the caption of the

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figure.

2. Provide a full description of the measurement sequence, in terms of the measurements at near and far zones, measurements at different wavelengths, measurements with linearly- and circularly-polarized emission (and corresponding detection), so the sequence of the measurements and their time resolution is clear. The use of a new figure to provide this sequence visually would help.

3. The system relies heavily on its rotating parts, but in the text there is not much information about their synchronization. Please provide your comments on this and/or the tests you performed to check for this.

Some more comments:

1. Make Fig. 4a and 4b two different figures. It is confusing to be in the same figure, because the first refers to the rotation of the phase plates and the second refers to the definition of their initial position.

2. Change caption of Fig. 5a to "lidar signal used to mount the plates at their initial position"

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