

Atmos. Meas. Tech. Discuss., referee comment RC2
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Optical sensor

Anonymous Referee #2

Referee comment on "A compact static birefringent interferometer for the measurement of upper atmospheric winds: concept, design and lab performance" by Tingyu Yan et al., Atmos. Meas. Tech. Discuss., <https://doi.org/10.5194/amt-2021-81-RC2>, 2021

A new compact static called birefringent Doppler wind imaging interferometer (BIDWIN) is developed for the purpose of observing upper atmospheric winds using suitably isolated airglow emissions. The data is simulated in the lab using a prototype instrument and the wind is retrieved and compared with wind wheel velocity. The new instrument is validated for use of wind measurements of upper atmosphere. The paper can be accepted considering some questions as follows:

1. In general, this manuscript is too long. The introduction of airglow radiation in section 2.1 can be more concise. It is recommended to incorporate it into the first chapter

2. Line 26 describes FPI and DASH, "primarily in the thermosphere region." This description is not rigorous enough, because UARS/FPI has already realized the middle atmosphere wind field detection (can reach below 40km).

3ã□□the Birefringent Doppler Windimaging Interferometer (BIDWIN) in 2th line of abstract should be moved to the first line

4. The influence of stray light is not been considered in the prototype testing. In fact, this is very important that needs to be considered in the availability evaluation of the measurement result. So it is recommended to add

5. In the evaluation of wind velocity measurement accuracy, the light source used by the author is He-Ne laser, but the intensity of the laser is several orders of magnitude larger than the intensity of airglow. Please explain whether the testing results are convincing.

6ã□□Figure 13 just shows a result of wind drift with time, how about the result of wind drift with temperature?