

Atmos. Meas. Tech. Discuss., referee comment RC2
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Comment on amt-2021-133

Anonymous Referee #2

Referee comment on "Mobile and high-spectral-resolution Fabry–Pérot interferometer spectrographs for atmospheric remote sensing" by Jonas Kuhn et al., Atmos. Meas. Tech. Discuss., <https://doi.org/10.5194/amt-2021-133-RC2>, 2021

This is an excellent paper describing the advantages of using Fabry-Perots interferometers (FPI) in compact spectrographs for remote sensing measurements in the atmosphere. The authors emphasize that FPI-based instruments provide higher resolving power in comparison to conventional grating spectrographs (GS) of similar physical dimensions. The results are convincing and supported by an elegant prototype demonstration. The paper is very well written and certainly suits the scope of AMT. I have only minor suggestions to be addressed in the manuscript:

- The authors limit their consideration to the geometrical dimensions of the instrument. However, more factors can and should be considered in the development of the mobile optical instrument. I would name mechanical and thermal stability, cost of production, and maintenance requirements. The paper would benefit if some of these points could be addressed by the authors.
- Despite being essentially different in principle, laser spectroscopy offers high resolution and selective detection of trace gases and recent developments also show that the laser-based solutions can also be made compact and energy-efficient. The presented development could be put in the context of state-of-the-art mobile/compact laser systems.
- Line 448, the discussion on isotope detection is somewhat vague. Could you add what isotopes and in which compound you are aiming to detect?
- Minor technical comment: Line 439 "... will be by **a factor of ... 0.04 lower** than that of ... " Please check if it is a correct statement.

Again, this is an excellent paper that deserves publication!