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Atmospheric Measurement Techniques Discussions

Interactive comment on "Accurate laser measurements of ozone absorption cross-sections in the Hartley band" *by* J. Viallon et al.

Anonymous Referee #1

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The paper describes a new method for measuring ozone absorption cross sections at three UV wavelengths with a laser. For these wavelengths there are now three groups reporting data within their stated accuracy. For two groups with smallest uncertainties the differences are well within 1%. When compared to other laboratory spectroscopic work the present work is more focused on accuracy issues due the metrology heritage of the authors. Thus, I must admit I enjoyed reading this paper. It is clear, detailed and yields spectroscopic data with quality assessed well defined accuracy. The paper should be published with some minor modifications.

There are only few points where still systematic error sources could be hidden:

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The timing of the actual spectroscopic measurement with respect to filling of the cell was not reported. So it is not clear if the ozone was already decomposed during the measurement or after. A part of the decomposition could happen when ozone is streaming through the apparatus after the recording of the spectra during condensation.

In case of ozone decomposition there is the assumption that the ozone and the oxygen are well mixed. This may not be the case when decomposition happens at the pressure gauges which are only open for a short time period.

The temperature homogeneity is not well established. Only one additional measurement inside the cell is reported. Since the cell is not in a vacuum chamber temperature inhomogeneity may occur.

Stray radiation at the windows inside the cell may cause a systematic error in the absorption path length. This error was not addressed.

Interactive comment on Atmos. Meas. Tech. Discuss., 7, 8067, 2014.