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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Influence of line mixing on the retrievals of atmospheric CO_2 from spectra in the 1.6 and 2.1 µm regions" *by* J.-M. Hartmann et al.

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The authors are grateful to the reviewer for his comments and particularly for those which help in improving the English. Now concerning the comment on the notations of the CO2 band, we are not sure it is correct.

In fact, the notations used in the present work (ie the numbering of the vibrational levels within Fermi manifolds) are the same as those used by all others except for one.

For instance, our notations are the same as those used in the latest issue of the HITRAN database and in the following early paper on CO_2levels: L.S. Rothman, R.L. Hawkins, R.B. Wattson, R.R. Gamache. *Energy levels, intensities, and linewidths of atmospheric carbon dioxide bands*, JQSRT 48, 537-566 (1992). According to this pa-

per, the levels are numbered in decreasing energy. For instance, the lowest one of the $2\nu_1+\nu_3$ Fermi triad (which includes $2\nu_1+\nu_3$, ν_1+2 $\nu_2+\nu_3$, and $4\nu_2+\nu_3$) is 20^01_3, then comes 20^01_2 and the one of highest energy is 20^01_1. Note that all the recent papers (by Toth, Predoi-Corss, Malathy-devi, etc) on the CO_2 bands in the 1.6 and 2 μm region use the same notations.

To our knowledge, the paper: Dejian Fu, Keeyoon Sung, Chris D. Boone, Kaley A. Walker, Peter F. Bernath. *Ground-based solar absorption studies for the Carbon Cycle science by Fourier Transform Spectroscopy (CC-FTS) mission*. JQSRT 109, 2219-2243 (2009) is the only one which uses a different notations. The notation is somehow arbitrary. The only important point is that it should be consistent and, from this point of you, using notations in agreement with recent papers and with those of the HITRAN database is important. Thus we have decided to keep our notations.

Interactive comment on Atmos. Chem. Phys. Discuss., 9, 4873, 2009.

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Interactive Comment