AIR-BROADENING AND SHIFT PARAMETERS IN THE ν_3 BAND OF OZONE

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Line parameter errors can contribute significantly to the total errors in retrievals of terrestrial atmospheric ozone concentration profiles using the strong 9.6-μm band, particularly for nadir-viewing experiments[a]. Detailed knowledge of the interfering ozone signal is also needed for retrievals of other atmospheric species[b] in this spectral region. We have determined Lorentz air-broadening and pressure-induced shift coefficients along with their temperature dependences for a number of transitions in the ν_3 fundamental band of $^{16}O_3$. These results were obtained by applying the multispectrum nonlinear least-squares fitting technique[c] to a set of 31 high-resolution infrared absorption spectra of O_3 previously recorded at temperatures between 160 and 300 K with several different room-temperature and coolable sample cells at the McMath-Pierce Fourier transform spectrometer at the National Solar Observatory on Kitt Peak. We compare our results with other available measurements and with the ozone line parameters in the 2008 HITRAN database[d] .

[a] J. Worden *et al., J. Geophys. Res.* **109** (2004) 9308-9319.
[b] R. Beer *et al., Geophys. Res. Lett.* **35** (2008) L09801.
[c] D. Chris Benner *et al., JQSRT* **53** (1995) 705-721.
[d] L. S. Rothman *et al., JQSRT* **110** (2009) 533-572.