AIR-BROADENED LINE WIDTHS AND SHIFTS IN THE ν_3 BAND OF $^{16}O_3$ AT TEMPERATURES BETWEEN 160 AND 300 K

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The 9.6-μm bands of O_3 are used by many remote-sensing experiments for retrievals of terrestrial atmospheric ozone concentration profiles. Line parameter errors can contribute significantly to the total errors in these retrievals, particularly for nadir-viewing[a]. We have used the McMath-Pierce Fourier transform spectrometer at the National Solar Observatory on Kitt Peak to record numerous high-resolution infrared absorption spectra of O_3 broadened by various gases at temperatures between 160 and 300 K. Over 25 air-broadened spectra were analyzed simultaneously using a multispectrum nonlinear least squares technique[b] to determine Lorentz pressure-broadening and pressure-induced shift coefficients along with their temperature dependences for selected P- and R-branch transitions in the ν_3 fundamental band of $^{16}O_3$. We have compared the present results with other measurements reported in the literature for O_3 broadened by air or by N_2.

[a]J. Worden, S. S. Kulawik, M. W. Shephard, S. A. Clough, H. Worden, K. Bowman and A. Goldman, *J. Geophys. Res.* **109**, 9308-9319 (2004).
[b]D. Chris Benner, C. P. Rinsland, V. Malathy Devi, M. A. H. Smith and D. Atkins, *JQSRT* **53**, 705-721 (1995).