LINE PARAMETERS FOR THE OXYGEN A BAND

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Simulation of the oxygen A band to a level that is sufficient for accurate studies of the Earth's atmosphere is complex in that not only are Doppler and Lorentz broadening important, but also Dicke narrowing, pressure shifts, line mixing and speed dependence. In addition all of these parameters except the speed dependence require temperature dependence parameters as well. To measure all of the required line parameters with the multispectrum nonlinear least squares fitting technique,[a] spectra were acquired by the Bruker IFS125-HR Fourier Transform Spectrometer at the Jet Propulsion Laboratory in combination with various multpass cells, a cavity ring down spectrometer at NIST and a photoacoustic spectrometer at the California Institute of Technology. The combination of the data from these three very different types of spectrometers in a single simultaneous fit of the entire band enables the measurement of all of these quantities. The results to this point will be summarized.[b].

[a] D. Chris Benner, C. P. Rinsland, V. M. Devi, M. A. H. Smith, and D. Atkins, JQSRT 1995;53:705-21.

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