

## SELF- AND AIR-BROADENED OXYGEN A-BAND PARAMETERS

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Self- and air-broadened oxygen A-band spectra, previously reported by Brown and Plymate<sup>a</sup> were combined with new higher pressure (1 to 3 atm) spectra of air and fitted with a multispectrum analysis to investigate lineshapes and to improve the precision of the molecular parameters for the O<sub>2</sub> A-band at 13100 cm<sup>-1</sup>. These data were recorded with the McMath-Pierce Fourier-transform interferometer located at the National Solar Observatory on Kitt Peak in Arizona. The transition wavenumbers have been referenced to recent stabilized cavity-ring-down laser measurements of Robichaud et al.<sup>b</sup> calibrated against a <sup>39</sup>K standard. Deviations from the conventional Voigt profile were observed while better fits were obtained with Dicke-narrowing (Rautian or Galatry) and speed-dependent Voigt lineshapes. Line-mixing, apparent in the higher pressure air spectra, was successfully fit through the R-branch head with first-order Rosenkranz coefficients exhibiting odd-even J staggering indicative of interbranch spin-rotation coupling. The results will be compared to other literature measurements and theoretical models of the oxygen A-band.<sup>c</sup>

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<sup>a</sup>L. R. Brown and C. Plymate, *J. Mol. Spectrosc.* 199, 166 (2000).

<sup>b</sup>D. J. Robichaud, J. T. Hodges, P. Maslowski, L. Y. Yeung, M. Okumura, C. E. Miller and L. R. Brown, *J. Mol. Spectrosc.* (2008) in press

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