TEMPERATURE DEPENDENCE OF AIR-BROADENED HALF WIDTH AND PRESSURE SHIFT COEFFICIENTS IN THE 30012 - 00001 BAND OF $^{12}C^{16}O_2$

D. CHRIS BENNER, V. MALATHY DEVI, *Department of Physics, College of William and Mary, Box 8795, Williamsburg, VA 23187-8795, USA*; ADRIANA PREDOI-CROSS, *Department of Physics, University of Lethbridge, 4401 University Drive, Lethbridge, AB T1K 3M4 Canada*; A.R.W. MCKELLAR, *Steacie Institute for Molecular Sciences, National Research Council of Canada, Ottawa, ON K1A 0R6 Canada*; L.R. BROWN, R.A. TOTH and C.E. MILLER, *Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA 91109, USA.*

For atmospheric applications, the temperature dependence of half width and shift coefficients is required on a line-by-line basis. In this study, transitions of carbon dioxide in the 30012 - 00001 band broadened by air were recorded using two different Fourier Transform Spectrometers (A Bomem in Ottawa and the McMath-Pierce FTS in Arizona) using dilute mixtures at temperatures between 215 K and 296 K. These data were analyzed using a multispectrum fit technique applying a Speed Dependent line shape model with line mixing. The positions and intensities of the spectral lines were constrained to conform to the appropriate quantum mechanical relationships while retrieving the temperature dependences of air-induced pressure broadening and pressure shifts. Line mixing via the relaxation matrix has also been obtained. Results will be compared to values from other studies available in the literature. The research performed at University of Lethbridge and the National Research Council of Canada was sponsored by the National Sciences and Engineering Research Council under the Strategic Research Program. Part of the research described in this paper was performed at the Jet Propulsion Laboratory, California Institute of Technology and the College of William and Mary, under contracts and cooperative agreements with the National Aeronautics and Space Administration.