SELF- AND AIR-BROADENING AND SHIFTING OF METHANE IN THE 4200-4500 CM^{-1} SPECTRAL RANGE

ADRIANA PREDOI-CROSS, *Physics Department, University of Ottawa, 140 Louis Pasteur St., Ottawa, ON, K1N 6N5 Canada*; V. MALATHY DEVI,D. CHRIS BENNER, *Department of Physics, The College of William and Mary, Box 8795, Williamsburg, VA 23187-8795* ; and LINDA R. BROWN, *Jet Propulsion Laboratory, California Institute of Technology, Pasadena CA 91109*.

This work presents a detailed measurement of methane spectra recorded at an unapodized 0.011 cm^{-1} resolution in the 4200-4500 cm^{-1} spectral range. The spectra were recorded at room temperature using the FTIR spectrometer of the Kitt Peak National Solar Observatory (NSO), Arizona. We report measurement results for over one thousand transitions. Symmetry dependent variations in the broadening coefficients are observed in the scattering of the broadening parameters. The self- and air- pressure shift coefficients are negative and transition-dependent. Similar to the pressure-broadening coefficients, transition-dependent variations in the pressure-shift coefficients are apparent from the scatter in the measured shift coefficients for a given J'' value. The new measurements will be discussed and compared to values reported in the fundamentals.