SPECTRAL LINE PARAMETERS INCLUDING LINE MIXING AND SPEED DEPENDENCE IN THE P- AND R-BRANCHES OF CO$_2$ AT 6227 cm$^{-1}$.

D. CHRIS BENNER, V. MALATHY DEVI, Department of Physics, The College of William and Mary, Williamsburg, VA 23187-8795; LINDA R. BROWN, CHARLES E. MILLER, ROBERT A. TOTH, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, California 91109.

In addition to accurate line center positions and absolute intensities, air- and self- broadening, pressure shifts, line mixing coefficients and speed dependence parameters in the P-and R-branches of the 30013$^+$--00001 parallel band have been measured from high-resolution (0.01 cm$^{-1}$) room temperature ($\sim$ 294 K) absorption spectra of CO$_2$ in the 6120 to 6280 cm$^{-1}$ region. These parameters were retrieved by a single fit covering the entire spectral region with a total of 26 spectra simultaneously by using our multispectrum nonlinear least squares technique. The data were recorded with the McMath-Pierce Fourier transform spectrometer and the 6-m base path White-type cell available at the National Solar Observatory on Kitt Peak, AZ. The path lengths used in the experiments range between 25 and 121 m and the total gas pressures varied from 11 to 900 Torr. High accuracies in the retrieved rovibrational constants (G, B, D . . .) and intensity parameters (line and band intensity and Herman-Wallis factors) were achieved using position and intensity constraints. Line mixing effects were determined using the relaxation matrix formalism. The analyses were performed using a Voigt line profile modified with line mixing and speed dependence. The results will be compared to values reported in the literature and with our recent measurements of the 30012$^+$--00001 band.

---

$^c$V Malathy Devi et al. JMS accepted, 2007.