ABSOLUTE INTENSITIES OF CO_2 LINES IN THE 1830 TO 4000 cm^{-1} SPECTRAL REGION

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Absolute intensities for over 10,000 transitions belonging to approximately 200 vibration-rotation bands of eight isotopic species of carbon dioxide in the spectral region between 1830 and 4000 cm^{-1} have been measured using a multispectrum nonlinear least-squares fitting technique[a]. A total of 6 spectra of a high-purity (99.995% minimum) natural sample of CO_2 recorded at 0.01-cm^{-1} resolution using the Fourier transform spectrometer at the McMath-Pierce facility of the National Solar Observatory at Kitt Peak were used for the analysis. These data were obtained at room temperature with sample pressures and pathlengths varying from 1 to 10 Torr and 25 to 386 m respectively. A few new bands which have not been predicted so far were identified and their intensities were determined. In addition, intensities of several pairs of interacting bands in $^{12}C^{16}O_2$ and $^{13}C^{16}O_2$ were also measured. The intensities obtained for each band have been analyzed to determine the vibrational intensity and nonrigid rotor coefficients. Comparisons between the results obtained in this study and other published values will be presented.

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[a]D. Chris Benner, C. P. Rinsland, V. Malathy Devi, M. A. H. Smith and D. Atkins, *JQSRT* **53**, 705-721 (1995).