HIGH RESOLUTION SPECTROPSCOPY OF CO_2 IN THE $4500 - 7500$ CM^{-1} REGION

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Several of the CO_2 rovibrational bands in the $4500 - 7500$ cm^{-1} region are excellent candidates for atmospheric remote sensing; however, many crucial global carbon cycle science questions require atmospheric CO_2 retrievals with a precision approaching 1 ppmv. Such precise retrievals require that line positions and line intensities be known with greater accuracy than is currently available. The positions and intensities of transitions due to hot bands as well as the less abundant $^{13}CO_2$, ^{18}OCO and ^{17}OCO isotopomers must also be well characterized since these transitions necessarily have different temperature characteristics and may perturb the CO_2 retrieval. Using spectra recorded on the Kitt Peak FTS, we have reanalyzed the line positions for more than 50 vibrational states with energies up to 7700 cm^{-1}. Comparisons made to the HITRAN database show good agreement for the strong $^{12}CO_2$ transitions but discrepancies ranging from 0.003 to 0.0100 cm^{-1} for many of the weaker hot band and isotopomer transitions.