THE INTENSITIES OF METHANE IN THE 3 μm REGION REVISITED

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The analysis of the linestrengths of the infrared spectrum of methane (12 and 13) in the 3 μm region has been revisited on the basis of new measurements from Fourier Transform spectra recorded at Kitt Peak under various optical densities.
A simultaneous fit of these new data with previously reported tunable double-frequency laser data has been done.
An effective transition moment model in tensorial form up to the third order of approximation within the Pentad scheme has been used.
The standard deviations achieved are very close to the experimental precision: 3 % and 1.2 % respectively for the two sets of data for the $^{12}CH_4$ molecule, representing a substantial improvement with respect to earlier studies.
The integrated band strengths obtained in the present work differ from previously reported values by factors ranging from -5 % to +5 %.
The correction for the ν_3 band, the strongest band of the Pentad system, is close to +2 % with respect to the study of Hilico et al. (J. Mol. Spectrsoc. **168**, 455-476 (1994).