ANALYSIS OF THE HIGH-RESOLUTION JET-COOLED FLUORESCENCE EXCITATION SPECTRA OF THE HIGHER LEVELS IN THE 29 769 CM^{-1} BAND SYSTEM OF ACETALDEHYDE: FURTHER REFINEMENTS OF THE TORSION-INVERSION POTENTIAL CONSTANTS.

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Acetaldehyde molecules in the first singlet excited state contain two coupled low frequency vibrational modes, ν_{14} (inversion) and ν_{15} (torsion). In an earlier paper, [a] a two dimensional least squares analysis of the first seven bands in the UV spectrum of acetaldehyde jet-cooled vapor gave an excited state barrier to inversion of 585.13 cm^{-1} and a torsional barrier of 721.43 cm^{-1}. A discussion of the results of a vibrational and rotational analysis of 12 additional bands beyond this earlier analysis will be presented. The assignment of the 14_0^2 band has changed and the inclusion of the higher members of the torsional mode has given refined values for the barriers.

[a] H. Liu, E. C. Lim, C. Muñoz-Caro, A. Niño, R. H. .Judge and D. C. Moule, J. Mol. Spectrosc., **175**, 172-189 (1996).