REINVESTIGATION OF THE GROUND AND FIRST TORSIONAL STATES OF METHYLFORMATE

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We have reinvestigated the laboratory spectrum for the methylformate molecule involving both the ground and first torsional states. We have fitted within almost experimental accuracy a data set for $HCOOCH_3$ consisting of 3496 v_t=0 and 774 v_t=1 microwave lines, using the so-called "rho axis method" (RAM) and a model extended to include perturbation terms through eight order. The previously published v_t=0 and v_t=1 microwave lines covering J values up to 43 in the ground and up to 18 in the first excited states have been extended by new measurements from Lille with maximum values of J = 62. The final fit requires only 49 parameters to achieve a weigthed standard deviation for the whole fit of 1.43 for a total of 4270 lines. This result represents an improvement over the previous fit which achieved a standard deviation of 1.96 for 3862 lines using 69 parameters. A calculation of the linestrengths of torsion-rotation transition up to J=60 needed for the astronomical survey is also presented.