TORSION-ROTATION ANALYSIS OF TORSIONAL COMBINATION BANDS BUILT ON THE METHANOL OH STRETCH OVERTONE: $2\nu_1$, $2\nu_1$+ν_{12}, AND $2\nu_1$+$2\nu_{12}$

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The spectrum of the first overtone OH stretch band ($2\nu_1$) in jet-cooled methanol has been measured using Infrared Laser Assisted Photofragment Spectroscopy (IRLAPS) and detailed assignments have been made. In addition to the torsional fundamental band (δv_t=0) it was possible to observe and assign the torsional combination band with (δv_t=1 and 2). These transitions are very week but can be clearly resolved in the spectra. In total, 131 transitions reaching 19 different K levels in the $2\nu_1$ state have been fit to a global torsion-rotation Hamiltonian and the leading torsion-rotation parameters have been determined. Assignments for the much weaker and irregular torsional band structure for $3\nu_1$+ν_{12} and $3\nu_1$+$2\nu_{12}$ are in progress.