HIGH-RESOLUTION MODEL-INDEPENDENT TERM VALUES OF METHANOL FOR A VARIETY OF VIBRATIONS INCLUDING OVERTONES AND TORSION-VIBRATION COMBINATION STATES

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High-resolution torsion-vibration term values are evaluated for methanol and many of its isotopic variants including highly excited vibrations. The term values are model independent in the sense that they are measured with respect to the lowest energy level E_0 (for $J = K = 0$, A- Symmetry) of the vibrational ground state. In contrast, most high resolution term values in the literature are given relative to the bottom of the torsional potential, which is a model dependent quantity. The evaluated term values for the parent CH_3OH species, span a wide range of modes from ν_1 to ν_{12} including ν_1 overtones up to the $6\nu_1$, ν_{12} overtones up to $5\nu_{12}$, and a variety of combination bands. High resolution term values for a reasonable number of states are also determined for $^{13}CH_3OH$, CD_3OH, CH_3OD, CD_3OD, $^{13}CD_3OH$ and $CH_3{}^{18}OH$. While some of the presented term values are presented for the first time, the summary includes all known high resolution literature data. The term values tabulated here represent real quantum states of the molecule and they constitute a consistent database for theoreticians who calculated the vibrational level structure based on $ab\ initio$ or model potential energy surfaces.