

**Millimeter and sub-millimeter wave spectra of HCOO¹³CH₃
in $v_t = 0$ and 1.**

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The detection of nineteen new rotational transitions of the parent molecule of methylformate (HCOOCH₃) in the second lowest excited torsional mode ($v_t = 2$) was recently reported in Orion-KL [1], as well as the detection of eighty new lines corresponding to the two ¹⁸O isotopologs of methylformate in their ground states [2]. The laboratory work on HCOO¹³CH₃ was continued [3]. A wide spectral range from 50 to 940 GHz was recorded in Lille with the submillimeter-wave spectrometer based on harmonic generation of a microwave synthesizer source, using a multiplication chain of solid state sources (50-100 and 150-940 GHz) and a backward wave oscillator (100-150 GHz), and coupled to a 2.2 m cell. The absolute accuracy of the line positions is better than 30 kHz up to 630 GHz and 50 kHz above. The two states ($v_t = 0$ and 1) were fitted together using the RAM Hamiltonian of the BELGI program and a new set of 45 parameters was accurately determined.

The fit contains 6445 lines corresponding to the ground state up to $J = 63$ and $K_a = 35$ and 2857 lines related to $v_t = 1$ up to $J = 60$ and $K_a = 26$. The detection of new $v_t = 1$ lines in Orion KL will be reported and discussed.

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