

THE THZ SPECTRUM OF GLYCOLALDEHYDE

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The vibration-rotation spectrum of the ν_1 -0, ν_2 -0 and ν_3 -0 bands of glycolaldehyde was recorded up to 12 THz, using the far-infrared beamline AILES at the synchrotron SOLEIL and a Fourier transform spectrometer coupled to a multipass cell. More than eight thousands lines were assigned, revealing the rotation structure up to $J=80$, $K_a=38$ for the ground state. The THz data were fitted simultaneously with pure rotational transitions of better accuracy observed in the microwave (1), in the millimeter-wave (2) and in the sub-millimeter-wave (3) range. In addition new data were recorded at Lille in the 150-300 GHz and 750-950 GHz range. The THz lines and the microwave - (sub)-millimeterwave lines are reproduced with a standard deviation of $2 \cdot 10^{-4} \text{ cm}^{-1}$ and 40 KHz, respectively.

Glycolaldehyde has been identified toward the galactic center (4). The vibrational state partition function can be re-evaluated according to the bands origins associated with ν_1 , ν_2 , and ν_3 , which are observed experimentally for the first time.

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