LABORATORY ROTATIONAL SPECTRUM AND ASTRONOMICAL SEARCH OF S-METHYL THIOFORMATE

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Methyl thioformate $CH_3SC(O)H$, is a monosulfur derivative of methyl formate, a relatively abundant component of the interstellar medium (ISM)[a]. Methyl thioformate being the thermodynamically most stable isomer with a C_2H_4OS formula, it can be reasonably proposed for detection in the ISM. Theoretical investigations on this molecule have been done recently by Senent et al.[b]. Previous experimental studies on this molecule have been performed by Jones et al.[c] and Caminati et al.[d] and its microwave spectrum was recorded between 10 and 41 GHz.

In this study, S-methyl thioformate has been synthesized by reaction of methyl mercaptan with formic-acetic anhydride. The millimeter wave spectrum was then recorded for the first time from 150 to 660 GHz with the Lille's spectrometer based on solid-state sources [e]. Around 2300 lines were assigned up to $J = 70$ and $K = 15$ and a fit for the ground torsional state $\nu_t = 0$ performed with the *BELGI-C_s* code[f] will be presented and discussed. Our aim is to provide a line list for an astrophysical research.

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