SUBMILLIMETER WAVE SPECTROSCOPY AND ISM SEARCH FOR PROPIONIC ACID

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Two compounds with a C$_2$H$_4$O$_2$ formula have been detected in the Interstellar Medium (ISM): acetic acid (CH$_3$CO$_2$H) and methyl formate (CH$_3$OC(O)H), the latter being thermodynamically less stable than the former but more abundant. Among the higher homologues with a C$_3$H$_6$O$_2$ formula where a hydrogen atom in C$_2$H$_4$O$_2$ has been replaced by a CH$_3$ group, two compounds have already been detected: ethyl formate (EtOC(O)H) and methyl acetate (CH$_3$OC(O)CH$_3$). The higher thermodynamic stability of another isomer, the propionic acid (EtCO$_2$H), pushed us to record its rotational spectrum, since this compound has a high probability of being present in the ISM. The methyl top internal rotation should be taken into account, therefore the analysis is performed using RAM36 code$^1$. The spectroscopic results and its search in ISM will be presented. This work was supported by the CNES and the Action sur Projets de l’INSU, PCMI

$^1$Ilyushin, V.V. et al; J. Mol. Spectrosc. 259, (2010) 26

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