SUBMILLIMETERWAVE SPECTROSCOPY OF HIGHLY ASTROPHYSICAL INTEREST MOLECULE: HYDROXY-ACETONITRILE

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Hydroxyacetonitrile is a simple derivative of methanol. This molecule has a strong astrophysical interest. In astrophysical environment, the formation of hydroxyacetonitrile ($HOCH_2CN$), has been shown to compete with aminomethanol (NH_2CH_2OH), a glycine precursor, through the Strecker synthesis[a]. in addition its photochemistry leads to the formation of formylcyanide (CHOCN), ketenimine (CH_2CNH), formaldehyde (CH_2O), hydrogen cyanide (HCN), carbon monoxyde (CO)[b]. Its detection in the ISM will provide crucial hints in the formation process of complex organic molecules.
The lack of data about this molecule, only studied up to 50 GHz[c], is mainly due to two reasons. First, this is not commercially available, the synthesis should be perform. Second, the most stable conformer is the gauche one. This exhibits large amplitude motion due to the two equivalent configurations possible. Due to tunneling effect, each level is split into 0^+ and 0^- substates. This makes the analysis of the spectra delicate. We will report here the very first results obtained. *This work was supported by the CNES and the Action sur Projets de l'INSU, PCMI.*

[a]Danger, G. et al.*ApJ* **756**, (2012) 11
[b]Danger, G. et al.*A&A* **549**, (2012) A93
[c]Cazzoli, G. et al.*J. Chem. Soc., Faraday Trans. 2* **69**, (1973) 569