FURTHER ANALYSIS OF THE LABORATORY ROTATIONAL SPECTRUM OF CH₃NCO

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Identification by the Rosetta mission that CH_3NCO is among the more plentiful molecules on the surface of the comet Churyumov-Gerasimenko stimulated rapid detection of this molecule in the interstellar medium.^{*a,b*} In particular, we have been successful in detecting almost 400 lines of CH_3NCO in $Orion^b$ by extending the Koput^{*c*} cm-wave assignment to frequencies relevant to mm-wave radio-telescopes through measurement of the complete laboratory spectrum up to 363 GHz.^{*b,d*}

Presently, we describe further progress in understanding the laboratory rotational spectrum of CH_3NCO . Assignment has been extended to transitions with K > 3 by analysis of Stark and hyperfine patterns of the corresponding lowest-Jtransitions. Broadband spectra of synthezised pure ¹³CH₃NCO and CH₃N¹³CO isotopic species have also been recorded and assigned. Furthermore, the progress in fitting this very low barrier and highly perturbed internal rotation spectrum is described.

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^bJ.Cernicharo, Z.Kisiel, B.Tercero, et al., A&A 587, L4 (2016).

^cJ.Koput, J. Mol. Spectrosc. 115, 131 (1986).

^dZ.Kisiel et al., 65th ISMS, Columbus, Ohio, RC-13 (2010); 70th ISMS, Champaign-Urbana, Illinois, TG-08 (2015).