ROTATIONAL SPECTRA OF ISOTOPIC $CH_3CN$ IN THEIR $v_8 = 1$ EXCITED VIBRATIONAL STATES

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Methyl cyanide, $CH_3CN$, is an important interstellar molecule, in particular in hot and dense molecular cores, and it may play a role in the atmospheres of planets or of Titan. Therefore, we have recorded extensive rotational spectra up to $\sim$ 1.6 THz. Ground state rotational transitions of a number of minor isotopologs could be identified up to 1.2 THz in natural isotopic composition, including $CH_2DCN$ and $^{13}CH_3^{13}CN$.[a]

Recently, we have analyzed the rotational spectra of $^{13}CH_3CN$, $CH_3^{13}CN$, and $CH_3C^{15}N$ in their $v_8 = 1$ excited vibrational states from spectra covering most of the frequencies between 0.44 THz and 1.20 THz. The analyses of the $^{15}N$ and $^{13}C$ species were facilitated by previous data up to 144 GHz and 56 GHz, respectively. Spectroscopic parameters determined in the fits will be compared with those of the main isotopolog.[b] The importance of these results, in particular for radio-astronomical observations with the Atacama Large Millimeter Array (ALMA), will be stressed by the detection of transitions pertaining to the $^{13}C$ species in Sagittarius B2(N).

[a] H. S. P. Müller, B. J. Drouin, and J. C. Pearson, *Astron. Astrophys.* **506** (2009) 1187.

[b] H. S. P. Müller et al., manuscript in preparation.