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

HOLGER S. P. MÜLLER, *I. Physikalisches Institut, Universität zu Köln, 50937 Köln, Germany*; B. J. DROUIN, J. C. PEARSON, *Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA 91109, USA*; A. BELLOCHE, K. M. MENTEN, *Max-Planck Institut für Radioastronomie, 53121 Bonn, Germany*.

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.