ROTATIONAL SPECTROSCOPY OF ETHYLAMINE INTO THE THz

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Ethylamine is one of the molecules that exhibits a challenging combination of two low frequency motions: inversion and internal rotation. The separation between these modes is fortunately appreciably greater than in the lighter methylamine, and the cm-wave rotational spectra of *anti*-ethylamine[a] and $gauche$-ethylamine[b] have been assigned some time ago. Recent astrophysical interest prompted laboratory investigation of $anti$-ethylamine up to 270 GHz and an associated astronomical search for this species in Sgr B2(N).[c]

We report extensive new coverage of the rotational spectrum of ethylamine obtained in the form of three broadband segments, each recorded by using a different instrumental technique. The spectrum in the 115-376 GHz region was obtained with the FASSST spectrometer,[d] at 555-650 GHz by using cascaded harmonic multiplication from a cm-wave synthesizer, and at 867-1081 GHz by also using FASSST, but with frequency tripled output from a 300 GHz-region BWO oscillator. The spectrum is at an advanced stage of analysis, carried out by means of the graphical assignment AABS package,[e] and results obtained for both $anti$- and $gauche$-ethylamine are presented.

[a] E.Fischer, E.Botskor, *J. Mol. Spectrosc.*, **91**, 116-127 (1982).
[b] E,Fischer, E.Botskor, *J. Mol. Spectrosc.*, **104**, 226-247 (1984).
[c] A.J.Apponi, et al., *Astrophys. J.*, **673**, 1240-1248 (2008).
[d] I.Medvedev et al., *J. Mol. Spectrosc.*, **228**, 314-328 (2004).
[e] Z.Kisiel et al., *J. Mol. Spectrosc.*, **233**, 231-243 (2005).