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Title:Rotational spectrum of formamide up to 1 THz and first ISM detection of its ν <inf>12</inf> vibrational state
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Abstract:Context. Formamide is the simplest bearer of peptide bond detected in the interstellar medium (ISM). Aims. There is still a lack of laboratory data on its rotational spectrum in the THz domain. Methods. We measured the rotational spectrum of formamide in the frequency range 400-950 GHz. The ground and first excited vibrational state of the normal species as well as the ground state of ¹³C isotopic species were analysed. Results. The results obtained represent an extension by a factor of two in frequency range compared to previous studies. Of all transition frequencies in the dataset about 45% are new measurements. A reliable set of rotational constants allows accurate predictions of transition frequencies in the THz domain. Based on the spectroscopic results, the ν<inf>12</inf> = 1 excited vibrational state of formamide was detected in the IRAM 30 m line survey of Orion KL for the first time in the ISM. © ESO, 2012.
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