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Title:Submillimeter spectrum of methyl bromide (CH3Br)
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Abstract:Methyl bromide is a ubiquitous component of the atmosphere, but has yet to be remotely detected in the upper atmosphere. Due to the strong ozone depletion capability of the activated bromine species, the total atmospheric bromine load needs to be carefully monitored. Combined analysis of precise measurements and cataloging of the rotational spectrum of methyl bromide may enable its concentration to be monitored with future remote sensing instrumentation. In an effort to extend and improve previous work for this molecule, the spectrum of CH3Br has been measured at JPL. Using an isotopically enriched 13CH3Br (90%) sample, spectra have been recorded from 750 to 1200 GHz. Quantum number assignments cover the CH379Br, CH381Br, 13CH379Br and 13CH381Br isotopologues with J < 66 and K < 17 for the ground and \nu3 vibrational states. The dataset for the 12C isotopologues is more precise than previous THz measurements resulting in reductions of rotational and distortion parameter uncertainties by factors of 2-15. Parameters of the \nu3 state of the 12C isotopologues are improved by 2-105. The spectra of the 13C isotopologues are the first reported beyond J = 2.
Number of references:35