A NEW TREATMENT OF THE $2\nu_3$ (A_1) INFRARED BAND OF METHYL BROMIDE CH_3Br AROUND 1213 cm^{-1}

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The high-resolution Fourier transform infrared spectrum of methyl bromide CH_3Br has been reinvestigated in the v_3 = 2 vibrational excited state around 1213 cm^{-1}, for both ^{79}Br and ^{81}Br isotopologues.
Thanks to new accurate K-dependent and J-dependent ground state parameters, up to sextic centrifugal distortion constants, 420 new infrared transitions of the $2\nu_3$ band have been assigned for $CH_3{}^{79}Br$ and $CH_3{}^{81}Br$, extending the rotational quantum number values up to K_{max} = 15 and J_{max} = 60. For each isotopic species, a standard deviation of 2 x 10^{-4} cm^{-1} has been obtained for about 700 lines of $2\nu_3$. The new parameter values of the v_3 = 2 excited state are in good agreement with ones determined previously by infrared spectroscopy, but significantly more accurate.

[1]Hamid Najib *J. Mol. Spectrosc.*, **370**, (2020)111297.

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