THE ν_1 and ν_2 BANDS OF DOBr AND THE ROTATIONAL SPECTRA OF THE $v_2 = 1$ AND $v_3 = 1$ STATES

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The ν_1 and ν_2 bands of DOBr centered near 2673.2 and 853.4 cm^{-1} respectively have been observed at 0.006 cm^{-1} resolution. The ν_1 band is perturbed by an anharmonic resonance ($\Delta K_a = 0$) with $3\nu_3+\nu_2$. In addition, the millimeter spectra arising from the $v_2 = 1$ and $v_3 = 1$ states have been observed. All rotational and vibrational spectra from both bromine isotopic species have been fitted with a single calculation. The perturbation in the ν_1 band has been well described. Equilibrium rotational and centrifugal distortion constants have been determined. The equilibrium structure has been derived from the DOBr and HOBr rotational constants. The harmonic force field has been calculated and will be compared with that of HOCl and with those derived from *ab initio* calculations. Changes in quadrupole coupling with the BrO stretch and DOBr bend have been determined.