HIGH-RESOLUTION LASER SPECTROSCOPY OF $A^3\Pi_{1u} \leftarrow X^1\Sigma_g^+$ SYSTEM OF Br_2

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Doppler limited vib-rotational spectrum of the $A^3\Pi_{1u} \leftarrow X^1\Sigma_g^+$ system of $^{79}Br_2$, $^{81}Br_2$, and $^{79}Br^{81}Br$ have been measured using a titanium sapphire laser. We adapted the two-tone modulation method to detect the absorption spectrum[1]. Measurements were made at room temperature in the region of 13000 – 13700 $\mathrm{cm}^{-1}$and at 150°C in the region 12000 – 13000 cm^{-1}, as determined using a wavelength meter (Burleigh WA-1500) calibrated to the two-photon spectrum of Rb at 778 nm. The wavenumber accuracy measurement was estimated to be 0.005 cm^{-1}. About 10,000 lines of P, Q, and R-branches from $20 \leq J \leq 100$ were assigned and spectroscopic constants of $^{79}Br^{81}Br$ for $v' = 4 - 9$ were determined using a global least-squares fit to all lines of the three isotopic species by taking the reduced mass ratios into consideration. The details of the results will be presented.

1. D.E.Cooper and R.E.Warren, *J.Opt.Soc.Am.B*, **4,** 470 (1987).