IMPROVEMENT OF SPECTROSCOPIC CONSTANTS FOR THE $A^3\Pi_{1u} \leftarrow X^1\Sigma_g^+$ SYSTEM OF Br_2

NOBUO NISHIMIYA, TOKIO YUKIYA, and MASAO SUZUKI, *Department of Electronics and Information Technology, Tokyo Polytechnic University, Iiyama 1583, Atsugi-City, 243-0297 Kanagawa, Japan*; ROBERT J. LE ROY, *Department of Chemistry, University of Waterloo, Waterloo, Ontario N2L 3G1, Canada*.

High-resolution spectroscopy in the near infrared region is very important for frequency standards. We have measured the Doppler limited vibrational-rotational spectrum of ICl,[a] IBr,[b] I_2[c] and Br_2[d] by using a titanium sapphire laser, and have reported their spectroscopic constants. The present work presents revised spectroscopic constants for the X-state of Br_2 which are obtained by performing a combined-isotopologue least-squares fit to all available data for the three isotopic species. We are also attempting to observe the lowest vibrational levels of the A-state in order to allow us to determine the potential energy function of this state. Measurements were made at room temperature in the region $13000 - 13700$ cm^{-1} and at 150-250°C in the region $11600 - 13000$ cm^{-1}. Details of these results will be presented.

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