INFRARED DIODE LASER SPECTROSCOPY OF FUNDAMENTAL AND HOT BANDS OF BBr ($X^1\Sigma^+$)

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Infrared absorption spectra of $^{11}B^{79}Br$, $^{11}B^{81}Br$, $^{10}B^{79}Br$ and $^{10}B^{81}Br$ have been observed between 650 and 720 cm^{-1} in a BBr_3/He ac discharge using diode laser spectroscopy. Over 200 lines consisting of both fundamental and hot bands up to $v'' = 5$ have been fitted to Dunham expansions. The fitted parameters are used to derive the vibrational constants of $^{11}B^{79}Br$, $\omega_e = 685.1844(17)$ cm^{-1} and $\omega_e x_e = 3.7347(11)$ cm^{-1}. The equilibrium dissociation energy is also obtained from expanded Dunham-Morse potential, $D_e = 32647(49)$ cm^{-1}.