ROVIBRATIONAL STATES OF HBF^+ AND HCO^+ ISOTOPOLOGUES UP TO HIGH J: THEORY AND EXPERIMENT

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Near-equilibrium potential energy surfaces for HBF^+ and HCO^+, obtained from high-level calculations beyond fc-CCSD(T), are employed in variational calculations for many rovibrational states of various isotopologues. Calculated effective spectroscopic parameters are in excellent agreement with available experimental data and many predictions are being made, also for line intensities of HBF^+ and HCO^+ isotopologues. Combining a difference frequency system with glow discharge and a discharge modulation scheme, six and seven lines of the ν_1 bands for $H^{11}BF^+$ and $H^{10}BF^+$, respectively, were observed. Together with data obtained from microwave spectroscopy, the spectroscopic constants of the ν_1 states could be derived through least-squares fitting.