SPECTROSCOPIC CHARACTERIZATION OF $Be_2{}^+$ $X^2\Sigma_u{}^+$ AND THE IONIZATION ENERGY OF Be_2

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Rotationally resolved spectra for $Be_2{}^+$ were recorded with PFI-ZEKE technique. Vibrational levels v^+=0-6 were observed. The symmetry of the ground state was determined as $^2\Sigma_u{}^+$. The bond energy was found to be $D_e{}^+$ = 16348(5) cm^{-1} and the equilibrium distance $R_e{}^+$ = 2.211(8) Å. The ionization energy for Be_2 was refined at 59824(2) cm^{-1}. Comparisons with high-level theoretical calculations indicate that the bonding in $Be_2{}^+$ is adequately described by MRDCI calculations with moderately large basis sets.