

## PHOTOELECTRON VELOCITY MAP IMAGING SPECTROSCOPY OF $\text{BeS}^-$

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The  $\text{BeS}^-$  anion to neutral ground state transition,  $X^2\Sigma^+ \rightarrow X^1\Sigma^+$  has been studied using photoelectron velocity map imaging spectroscopy. Rotational constants, vibrational intervals and the electron binding energy of  $\text{BeS}^-$  have been determined for the first time. Rotational constants were derived from band contour analyses, as the contours exhibited band head features associated with changes in the rotational angular momenta of  $\Delta N=0, \pm 1$ , and  $\pm 2$ . A dipole bound state (DBS) of  $\text{BeS}^-$  was observed  $130 \text{ cm}^{-1}$  below the detachment threshold. Autodetachment spectra for the transition to the DBS were rotationally resolved, providing an accurate rotational constant for  $\text{BeS}^-$ ,  $v=0$ . The experimental results were found to be in reasonable agreement with the predictions of high level ab initio calculations.