HIGH-RESOLUTION SPECTROSCOPY OF THE (0,2) AND (6,9) BANDS OF THE $B^4\Sigma_u^- \leftarrow X^4\Sigma_g^+$ TRANSITION OF C$_2^+$

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The first electronic spectrum of the molecular ion C$_2^+$ was recorded in 1984 by O’Keefe et. al. in a beam of mass selected ions$^a$. Three years later, Maier and coworkers did an extensive analysis on several bands of the $B \leftarrow X$ system$^{b,c,d}$. While their spectra showed several perturbations, the low resolution of their experiment hindered the analysis of the perturbation and the quartet splitting. In 1993, Zackrisson and Royen obtained a high resolution spectrum of the (0,1) band and determined the molecular constants and perturbation parameters$^e$.

In the work that follows, velocity modulation with heterodyne detection has been used to record the (0,2) and (6,9) bands of the $B \leftarrow X$ system of C$_2^+$. The (0,2) band has been rotationally analyzed and the spectrum shows perturbations which are attributed to an interaction between the $B^4\Sigma_u^-$ and the $2^2\Pi_u$ states. Molecular constants and perturbation parameters have been obtained.