ANALYSIS OF THE $0_0^0$ AND $3_1^0$ BANDS IN THE $\tilde{A} - \tilde{X}$ TRANSITION OF YC$_2$

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The $0_0^0$ and $3_1^0$ band systems of the $\tilde{A}^2A_1 \leftrightarrow \tilde{X}^2A_1$ transition of YC$_2$ were recorded in high resolution using laser-induced fluorescence on molecules produced in a molecular beam. Asymmetry splittings in the $\tilde{X}^2A_1$ state were measured by recording the optical spectrum in the presence of a weak static electric field $^a$. Several pure rotational transitions were also recorded in the (0,0,0) $\tilde{X}^2A_1$ vibronic state using pump/probe microwave optical double resonance spectroscopy. The three sets of parameters were combined to produce fine and hyperfine parameters for the $\tilde{A}$ and $\tilde{X}$ states. Rotational constants and structural parameters were determined for both electronic states by fitting the combined data sets to an effective hamiltonian for a rigid molecule. An interpretation of the fine structure parameters will be given.