THE ORIGIN BAND OF THE $\tilde{b} - \tilde{a}$ SYSTEM OF CH_2

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Optical double resonance measurements of several rovibronic transitions in the $\tilde{b}\,^1B_1 \leftarrow \tilde{a}\,^1A_1$ origin band of CH_2 were reported at the 2008 Symposium.[a] Although these assignments are unambiguous, the data are sparse and the spectral resolution was limited by the pulsed laser used. We have therefore recorded the complete absorption spectrum between approximately 8200 cm^{-1} and 8400 cm^{-1} at Doppler-limited resolution using an extended cavity diode laser source. This region includes the expected positions of both the $K_a = 0 \leftarrow 1$ and $K_a = 1 \leftarrow 0$ subbands. Although the calculated intensities for these transtions are small,[b] the observed spectra have good signal-to-noise ratio and many additional transitions are seen. We have assigned all the expected transitions involving $K_a^{'} = 0$, and part of the subband with $K_a^{'} = 1$. However definitive assignment of transitions involving $J^{'} = 4$ and higher in the second subband have so far eluded us, and additional optical double resonance measurements are needed to decide between several possible assignments.

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[a] Z. Wang *et al.*, paper WG03, 63rd OSU International Symposium on Molecular Spectroscopy.

[b] J.-P. Gu *et al.*, J. Molec. Struct. **517-8** 247 (2000).