INTERACTION OF VIBRATIONAL MODES IN 1,4-FLUOROBENZYL ALCOHOL AS REVEALED BY ROTATIONALLY RESOLVED ELECTRONIC SPECTROSCOPY

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1,4-Fluorobenzyl alcohol (FBA) exhibits a number of closely spaced ($\sim 50\ cm^{-1}$) bands in its vibrationally resolved $S_1 \leftarrow S_0$ electronic spectrum at $\sim$ 269 nm, previously attributed to a -CH_2OH torsional mode. We report here a rotationally resolved study of the four members of this progression. All bands can be fit with rigid rotor Hamiltonians; a comparison of the parameters obtained from these fits shows that all bands belong to the same conformer. All bands exhibit a $\sim$ 300 MHz splitting due to the torsion-rotation interaction. Band 3 and 4 also exhibit splitting (of $\sim$100 and $\sim$800 Mhz, respectively) due to interactions with other low energy vibrational modes. The nature of these modes and their possible participation in the energy relaxation pathways will be discussed.

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