THE SUBMILLIMETER SPECTRUM OF THE GROUND HYDROXYL TORSIONAL STATE OF ETHYL ALCOHOL (CH_3CH_2OH)

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The ground state spectrum of the three torsional sub-states (*trans*, *guanche+* and *gauche-*) of the asymmetric internal hydroxyl rotation in ethyl alcohol has been recorded through 652 GHz. Our previous *trans*[a] and *gauche*[b] work has been expanded to include approximately 3000 assigned transitions through J=40 and K_a=17 including approximately 1000 which show significant deviation from a standard asymmetric rotor pattern due to *trans-gauche* interactions. The location of these interactions has enabled us to determine the *trans-gauche* energy difference accurately. The application of a fixed-frame-axis method (FFAM) Hamiltonian to this asymmetric top-asymmetric frame internal rotation problem is discussed. The results of a three-state FFAM analysis are presented.

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[a] J. C. Pearson, K. V. L. N. Sastry, M. Winnewisser, E. Herbst and F. C. De Lucia, *J. Phys. Chem. Ref. Data* **24**, 1 (1995).
[b] J. C. Pearson, K. V. L. N. Sastry, E. Herbst and F. C. De Lucia, *J. Mol. Spectrosc.*, in press (1996).