

ASSIGNMENT OF ROTATIONAL TRANSITIONS OF TORSIONALLY EXCITED STATES OF ACETONE,  
CH<sub>3</sub>COCH<sub>3</sub>

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Rotational transitions of one torsionally excited state of acetone have been assigned in the spectrum from 260 to 350 GHz recorded with the FASSST spectrometer.<sup>a</sup> The transitions were predicted and analyzed with an effective rotational Hamiltonian for molecules with two periodic internal motions.<sup>b</sup> It was possible to fit 205 components from all four torsional substates of 62 *R*-transitions ( $J = 19 - 34$ ) to 27 spectroscopic parameters (dimensionless standard deviation 1.92). The following internal energy tunneling parameters were obtained:  $\epsilon_{01} = 5684(16)$  MHz,  $\epsilon_{1-1} = 99.22(61)$  MHz,  $\epsilon_{11} = 63.81(53)$  MHz. The *EE* components of another vibrationally excited state have been identified, and it is hoped that more definite results on this state will be available by the time of the meeting.

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<sup>a</sup>D. T. Petkie, T. M. Goyette, R. A. P. Bettens, S. P. Belov, S. Albert, P. Helminger and F. C. De Lucia, *Rev. Sci. Instr.* 68, 1675 (1997).

<sup>b</sup>P. Groner, *J. Chem. Phys.* 107, 4483 (1997).