THE ROTATIONAL SPECTRUM AND OBSERVATIONAL STUDY OF HYDROXYACETONE

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The rotational spectrum of hydroxyacetone, or acetol, has been studied up to 346 GHz. Due to internal rotation of the methyl top, the spectrum is split into A and E states. For the A state, which was treated as a semi-rigid molecule, 578 new lines have been assigned and fit in the ground state up to J=60. Precise rotational and centrifugal distortion constants have been determined for this state. Using the splitting between the A and E states as a guide, 288 new lines in the ground E state have been assigned up to J=60 as well. Fitting of these lines is currently underway.

Because of its close structural relationship to glycolaldehyde and dihydroxyacetone, both of which have been detected in the galactic center region SgrB2(N-LMH)[a b], an observational search of acetol was conducted in this same region at the Caltech Submillimeter Observatory in july 2004. No lines were successfully observed, but a column density upper limit of 8.0×10^{14} cm^{-2} was determined.

[a] J. M. Hollis, F. J. Lovas and P. R. Jewell, 2000, *ApJ* **540**, 107-110.

[b] S. L. Widicus-Weaver and G. A. Blake, 2005, *ApJ*, submitted.