MICROWAVE SPECTROSCOPY OF t-ETHYL METHYL ETHER IN THE TORSIONALLY EXCITED STATE

KAORI KOBAYASHI, TAKANORI MATSUI, SHOZO TSUNEKAWA, *Department of Physics, University of Toyama, 3190 Gofuku, Toyama, 930-8555 Japan*; and NOBUKIMI OHASHI, *University of Kanazawa, Japan*.

Organic molecules with internal rotation are very good candidates of interstellar molecule. The internal rotation is equivalent to the low-lying vibrational mode of torsion. Molecules in torsionally excited states are more difficult to assign than the ground state because the splitting caused by the internal rotation is larger and weaker signal. New highly sensitive telescopes like ALMA that is under construction are capable to detect weaker signal and many weaker transitions of these molecules in the excited states will be detected. Therefore, it is indispensable to have precise microwave frequencies of this kind of molecule. In t-ethyl methyl ether, there are two methyl groups; one is bonded to the oxygen and the other is bonded to the carbon. We succeeded to assign the transitions due to t-ethyl methyl ether in the torsionally excited state related to the oxygen-bonded methyl group by using Stark-type microwave spectrometer. The analysis considering two methyl groups will be presented.