MICROWAVE STUDY OF METHYL FORMATE IN THE NEW VIBRATIONAL EXCITED STATES

YUSUKE SAKAI, KAORI KOBAYASHI, *Department of Physics, University of Toyama, 3190 Gofuku, Toyama, 930-8555 Japan*; MASAHIRO TSUKAMOTO, MASAHARU FUJITAKE, and NOBUKIMI OHASHI, *Kanazawa University, Japan*.

The methyl formate molecule is a typical example of the molecule with high spectral density found in interstellar space. We have recently identified methyl formate in its second torsional excited state in Orion KL [a]. The observed intensity suggests the possible detection of the transitions of this molecule in the higher vibrational states, which prompted us to conduct this study.
The accumulated microwave spectral data taken at the University of Toyama was used to search for the excited state with the aid of the computer program developed at Kanazawa University. We have assigned series of lines in the two new vibrational excited states. There seems to exist perturbation between these two states. The results of the fit and the origin of these two states will be presented.

[a] S. Takano *et al.*, *Accepted to Publications of the Astronomical Society of Japan*