

## CH<sub>3</sub>OH SUB-DOPPLER SPECTROSCOPY

GERMAN YU. GOLUBIATNIKOV, SERGEY P. BELOV and ALEXANDER V. LAPINOV, *Institute of Applied Physics of RAS, 46 Ulyanov str., 603950 Nizhny Novgorod, Russia.*

The methanol torsion-rotation spectrum in the first three torsional states has been measured and analysed for a search of  $m_e/m_p$  variations from comparison of radio astronomical and laboratory frequencies and for studies of systematic velocity motions in star-forming regions. The investigation is based on Lamb-dip measurements with sub-Doppler spectrometer developed at IAP RAS. CH<sub>3</sub>OH-A and -E frequencies have been obtained with an accuracy of  $\sim 1$  kHz at 48–510 GHz for more than 500 transitions in  $v_t = 0$ , more than 200 transitions in  $v_t = 1$  and 100 transitions in  $v_t = 2$ . For many b-type transitions the removed degeneracy of the CH<sub>3</sub>OH levels due to different nuclear spin statistics was measured in a form of doublets with unresolved hf structure. Some a-type transitions show resolved spin-rotational splitting.