

EXCITED TORSIONAL STATES OF DIMETHYLETHER (CH₃)₂O

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Rotational transitions belonging to the three lowest torsional states of dimethylether (DME), (CH₃)₂O, have been analyzed using the recently developed model for molecules with two equivalent methyl rotors and C_{2v} symmetry at equilibrium (PAM.C2v_2tops program) [1]. Significant progress in fitting transitions within the first and second excited torsional states of DME has been achieved and the comprehensive dataset has been reproduced within experimental accuracy by our fit. The dataset comprises not only assignments from the literature and previous measurement campaigns (ground state [2], torsional excited states [3,4]), but also new measurements. These new measurements have been carried out using the Kharkiv spectrometer in the Institute of Radio Astronomy of NASU (Ukraine) from 49 GHz to 180 GHz and from 255 GHz to 400 GHz. Details of the experimental dataset, its analysis and the fit will be discussed^a.

[1] V.V. Ilyushin, J.T. Hougen, *J. Mol. Spectrosc.* 289, pp.41-49, 2013.

[2] C. P. Endres, B. J. Drouin, J. C. Pearson et al. *A&A* 504, 635–640 (2009).

[3] C.P. Endres, H.S.P. Müller, F. Lewen, et al., 65th ISMS, 2010 abstract id. FC01.

[4] S.E. Bisshop, P. Schilke, F. Wyrowski, et al., *A&A* 552, A122, 19 (2013).

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