

ROTATIONAL SPECTRUM OF CD₃OD: NEW MEASUREMENTS AND ASSIGNMENTS IN THE $v_t = 0, 1$ and 2 TORSIONAL STATES

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We present^a the results of our new study of the torsion-rotation spectrum of the fully deuterated isotopolog of methanol (CD₃OD). The new measurements were carried out from the millimeter wave range (starting at 34.5 GHz) to the terahertz range (up to 1.1 THz) using spectrometers in Kharkiv and Köln. We extend the rotational quantum number coverage up to $J_{\max} = 50$ in this work. The analysis is done using the rho axis method and the RAM36 program code, as in our earlier studies on CD₃OH^b and CH₃OD. Our preliminary fits show that the $v_t = 2$ torsional state is affected by intervibrational interactions with non-torsional vibrational modes which propagate down through intertorsional interactions, similar to the cases of CD₃OH and CH₃OD. Taking into account the astrophysical significance of methanol and its isotopologs, we decided at this stage of the analysis to concentrate our fitting attempts on the ground and first excited torsional states of CD₃OD. We will present the status of our investigations.

^aWe are grateful for the support of the Deutsche Forschungsgemeinschaft and the Volkswagen foundation. The assistance of the Science and Technology Center in Ukraine is acknowledged (STCU partner project P756).

^bV. V. Ilyushin et al., *Astron. Astrophys.* **658** (2022) A127