FAR-INFRARED LASER STARK SPECTROSCOPY OF $^{13}$CD$_2$OD

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The Stark spectrum of $^{13}$CD$_2$OD has been investigated in the far-infrared region using the HCN and DCN lasers. The spectra were taken at room temperature for both parallel and perpendicular polarizations using electric fields up to 60 000 V/cm. An extensive series of absorption lines observed with the 337 µm line has been assigned to the $J = 9$ to 15 members of the $K = 5 \leftarrow 4 E_2$ Q-branch in the $v_T = 1$ torsional state. Further analysis of this Q-branch multiplet has yielded the branch origin, $\nu_0 = 882 847.7$ MHz, and expansion coefficients, $a = 93.6785$ MHz and $b = -0.2689$ MHz. An R-branch transition observed at 337 µm has been assigned as $J_K = 9 \leftarrow 8 A v_T = 0$. Two families of resonances observed with the 195 µm line have been tentatively identified as members of the Q-branch multiplet $J_K = J \leftarrow J - 2 E_2 v_T = 2$ for $J = 11$ and 12. Zero-field frequencies for all assigned transitions are given with improved accuracy over those calculated from the available molecular constants.