Species Tag:	34002	Name:	CD2HOH
Version:	1		Doubly-deuterated methanol
Date:	September 2021		$v = 0$, 1 and 2 (e_0, o_1, e_1)
Contributor:	L. H. Coudert		A' & A'' species
Lines Listed:	7417	$Q(300.0) =$	19423.4376
Freq. (GHz) $<$	500	$Q(225.0) =$	11268.4157
Max. J	26	$Q(150.0) =$	5255.8661
LOGSTR0 $=$	-9	$Q(75.00) =$	1563.4091
LOGSTR1 $=$	-9	$Q(37.50) =$	490.4886
Egy. (cm^{-1}) $>$	0	$Q(18.75) =$	145.2964
$\mu_a =$	0.8956	$Q(9.375) =$	39.8511
$\mu_b =$	1.37	$Q(5.000) =$	12.4120
$\mu_c =$	0	$Q(2.725) =$	4.5666

The linelist is based on an analysis of microwave, sub-millimeter wave, terahertz, and FIR data pertaining to CD_2HOH [Coudert, Motiyenko, Margulès, Kwabia Tchana, *J. Mol. Spectrosc.* (2021) accepted]. Energy levels were calculated using the theoretical approach developed for CH_2DOH [Coudert, Zemouli, Motiyenko, Margulès, & Klee, *J. Chem. Phys.* **140** (2014) 064307]. The fitted data involve torsion-rotation transitions with $0 \leq v \leq 2$, up to $J = 26$. Torsional levels $v = 0$, 1, and 2 can be respectively labeled e_0, o_1, and e_1 with the labeling scheme of Su and Quade [Su & Quade, *J. Mol. Spectrosc.* **134** (1989) 290].

The linelist is formatted as a JPL catalogue line file [Pickett, Poynter, Cohen, Delitsky, Pearson, & Muller, *J. Quant. Spectrosc. Radiat. Transfer,* **60** (1998), pp. 883–890]. Transitions are assigned with the rotational quantum numbers J, K, p, with $0 \leq K \leq J$ and $p = 1$ or 2, defined in accordance with Coudert *et al.,* and the torsional quantum number v.

The dipole moment components are given in Debye in the molecule fixed axis system of Coudert *et al.* such that the axis of internal rotation is parallel to the molecule fixes z-axis. The partition function $Q(T)$ was determined taking a zero energy for the $v = 0, A', J = K = 0, p = 1$ lowest lying level; a degeneracy factor of $(2J + 1)$; and a maximum J-value of 40.