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Fine and hyperfine structure of ^{173}YbF[1] RICHARD MAWHORTER, ELISEANNE KOSKELO, GRACESON AUFDERHEIDE, Pomona College, JENS-UWE GRABOW, Leibniz Universitaet Hannover, TIMOTHY STEIMLE, Arizona State University, HAILING WANG, Arizona State University East China Normal University — ^{174}YbF has been used for some time in attempts to determine the electrostatic T,P violating electron electric dipole moment (eEDM). It was recently pointed out [1] that ^{173}YbF may be an avenue for determining an EDM induced by the magnetic quadrupole moment (MQM). As in the eEDM case, here the molecular properties of ^{173}YbF are experimentally advantageous. We report a detailed analysis of the fine and hyperfine structure in the $X^2\Sigma^+$ state from a combined analysis of rotational and optical transitions. Numerous hyperfine components in the N =4-5 and N =3-4 rotational transitions were recorded using a separated field pump/probe microwave optical double residence technique. Fourier transform microwave spectroscopy was used to record five features of the N =0-1 rotational transition. This rotational data was combined with precisely measured (0,0) $A^2\Pi_{1/2} - X^2\Sigma^+$ optical transitions of a cold molecular beam sample. Resulting fine and hyperfine parameters will be discussed and compared with recent theory [2]. 1. V.V. Flambaum, et al., arXiv:1810.02477v2 [hep-ph] (10 Dec 2018) 2. P. Schwerdtfeger, et al., Mol. Phys. **114**, 1110 (2016)

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