ON THE ENERGY DEPENDENCE OF THE ZEEMAN AND HYPERFINE PARAMETERS IN THE $A^2\Sigma^+$ STATE OF OH AND OD

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We report quantum beat studies of the energy dependence of the Zeeman parameters in the $A^2\Sigma^+$ state of OH and OD, and the nuclear hyperfine parameters of OD($A^2\Sigma^+$). In contrast to a previous study, we find that the sign and magnitude of the anisotropic g-factor g_l for ν'=0 is consistent with that expected from Curl's relationship. However, at higher energies g_l changes sign, and possible explanations for this trend will be examined. The magnetic and electric quadrupole hyperfine constants were determined for OD($A^2\Sigma^+$,ν' = 0-3), and the constants for ν' = 2,3 are reported here for the first time to our knowledge. The derived values are consistent with available ab initio calculations.