THE ZEEMAN EFFECT IN THE (0,0) $B^2\Sigma^+$-$X^2\Sigma^+$ BAND SYSTEM OF CALCIUM MONOHYDRIDE, CaH

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Several branch features of the (0,0) $B^2\Sigma^+$-$X^2\Sigma^+$ band system of calcium monohydride, CaH, have been recorded in the presence of a static magnetic field with strengths approaching 300 Gauss. The optical spectra were recorded at a spectral resolution of approximately 30 MHz (FWHM) and exhibit proton magnetic hyperfine interactions associated with the $X^2\Sigma^+$ (v=0) state[a,b].Both parallel and perpendicular orientations of the probing optical laser with respect to the applied fields have resulted in different spectra for each feature. Modeling of the Zeeman splittings was based on previous field-free parameters[c] of the strongly interacting $B^2\Sigma^+$ (v=0) and $A^2\Pi_{3/2}$ (v=1) levels. A discussion of the determined effective g-factors is presented. A comparison to the Zeeman-LIF spectroscopic analysis of magnetically trapped CaH performed by Friedrich et al.[d], which was restricted to the $R_1(0.5)$ ($\nu = 15761.96$ cm^{-1}) branch feature, will be given.

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