PROBING THE ELECTRONIC STRUCTURE OF YbCl USING LASER SPECTROSCOPY

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The high resolution spectrum of the $A^3\Pi - X^3\Sigma^+$ transition of YbCl has been recorded near 550 nm using laser excitation spectroscopy. The output of a Coherent 699-29 ring dye laser operating in single frequency mode was used to obtain Doppler-limited spectra. Selective detection of laser induced fluorescence was utilized to record spectra with an accuracy of 0.003 cm$^{-1}$. Unequivocal assignment of the rotational numbering was obtained using resolved fluorescence spectra. Data from two isotopomers, $^{172}$Yb$^{35}$Cl and $^{174}$Yb$^{35}$Cl, have been employed in a least-squares fit of sets of molecular constants. The rotational analysis of the $A - X$ system will be discussed.