THE OPTICAL STARK SPECTRUM OF the $[17.8]0^+ - X^1\Sigma^+$ BAND OF GOLD MONOFLUORIDE,AuF

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The bonding and electrostatic prperties of gold containig molecules are highly influenced by realtivistic effects[a]. Recently Varberg's group reported[b] on the field-free detection and analysis of the $[17.8]0^+ - X^1\Sigma^+$ band system of AuF at Doppler limited resolution. Here we report on the analysis of the same band recorded field free and in the presence of a static electric field for a cold molecular beam sample. The Stark induced shifts of the R(0)(17756.156 cm^{-1}), R(1)(17756.640 cm^{-1}) and P(1)(17755.123 cm^{-1})branch features were analyzed to determine the permanent electric dipole moment, μ_{el}, of 2.025 D and 4.218 D for the $[17.8]0^+$ and $X^1\Sigma^+$ states, respectively. The agreement with the various DFT [c] and wave-function[d] based predictions will be discussed.

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