PENDULAR STATE SPECTROSCOPY OF AN ASYMMETRIC TOP: PARALLEL AND PERPENDICULAR BANDS OF ACETYLENE-HF

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High resolution infrared spectroscopy was used to investigate the orientation of the acetylene-HF van der Waals complex in static electric fields. Parallel and perpendicular band spectra were recorded at field strengths from 0-22 kV/cm, and a high degree of orientation was observed at the higher fields. The theory of pendular spectroscopy of asymmetric tops is presented with comparisons of calculated and experimental spectra. Rotational states giving rise to substantial orientation are identified and hybridized orientational probability distributions are presented. These states are prime candidates for state-to-state photodissociation studies.