HIGH RESOLUTION SPECTROSCOPIC PROBES OF LARGE AMPLITUDE VIBRATION: THE (0,22,0)Π AND (0,24,0)Π LEVELS OF $NH_2(^2A_1)$

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We will report on the spectroscopy, fluorescence lifetime, hyperfine and Zeeman properties of levels in the $NH_2(^2A_1)$ state that are associated with large amplitude vibrational motion, focusing on (0,22,0)Π and (0,24,0)Π. Consistent with previous work, we find that the rotational structure of (0,22,0)Π is largely unperturbed and is well fit by a model Hamiltonian, from which the spectroscopic parameters were extracted. A similar analysis applied to (0,24,0)Π reveals some scattered perturbations. The measured fluorescence lifetimes are in good agreement with theoretical predictions. Hyperfine and Zeeman quantum beat studies allow determination of the ^1H hyperfine structure and elucidation of the weak field Lande g-factors, which provide detailed information on couplings with other electronic states.