

FAR-INFRARED LASER MAGNETIC RESONANCE SPECTROSCOPY OF VIBRATIONALLY EXCITED NH

M. JACKSON^a, L. R. ZINK, *Department of Physics, University of Wisconsin-La Crosse, La Crosse, WI 54601*; J. FLORES-MIJANGOS, *Instituto de Ciencias Nucleares, UNAM, México, D.F.*; A. ROBINSON and J. M. BROWN, *Physical and Theoretical Chemistry Laboratory, University of Oxford, Oxford, OX1 3QZ, United Kingdom.*

The laser magnetic resonance (LMR) spectroscopic technique has been used to investigate the rotational spectrum of the NH radical in its $^3\Sigma^-$ ground electronic state. An optically pumped molecular laser was used as a source of radiation in the 26.7683 to 123.3066 cm^{-1} region of the far-infrared. The molecular transitions were brought into resonance with the laser frequency using magnetic fields up to 2 T. Using twenty-seven laser lines, spectra were recorded in both parallel ($\Delta M_J = 0$) and perpendicular ($\Delta M_J = \pm 1$) polarizations. Observation of the $N' \leftarrow N'' = 1 \leftarrow 0, 2 \leftarrow 1, 3 \leftarrow 2$ and $4 \leftarrow 3$ transitions in the first and second excited vibrational levels of NH allows its molecular parameters (particularly the hyperfine constants) to be refined.

^aSupport from the National Science Foundation (under Grant No. #0200746) is gratefully acknowledged.