THE ROTATIONAL SPECTRUM OF $H^{15}NO_3$: ALL STATES BELOW 1000 cm^{-1}

DOUGLAS T. PETKIE, MARK KIPLING, and ASHELY JONES, *Department of Physics, Wright State University, Dayton OH 45435*; PAUL HELMINGER, *Department of Physics, University of South Alabama, Mobile, AL 36688*; IVAN MEDVEDEV and ATSUKO MAEDA, *Department of Physics, The Ohio State University, Columbus, OH 43210*; BRIAN J. DROUIN and CHARLES E. MILLER, *Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA 91109-8099*.

The rotational spectrum of $H^{15}NO_3$ was recorded using isotope enriched samples at Ohio State University with the FASSST spectrometer and at the Jet Propulsion Laboratory with the cascaded frequency multiplication spectrometer. The OSU system used a heated cell over the frequency range of 118-370 GHz while the JPL room temperature measurements included the frequency ranges of 74-109, 400-410, 639-656, and 800-850 GHz. Transitions in the ground and six lowest vibrational states, 6^1, 7^1, 8^1, 9^1, and the $5^1/9^2$ dyad, have been assigned and fit using Watson-type Hamiltonians. The 9^1 and 9^2 states require torsional parameters to account for the observed torsional splitting of $\sim$2.4 MHz and $\sim$70 MHz, respectively. Fermi and Coriolis interactions were included to accurately describe the strong interactions in the $5^1/9^2$ dyad and to account for an observed torsional splitting of $\sim$15 MHz induced onto the 5^1 state. The analysis of each state will be presented along with a discussion of the spectroscopic constants.