THE HYPERFINE SPECTRUM OF THE OPEN-SHELL COMPLEX NO-HF

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The microwave spectrum of NO-HF exhibits many unusual effects with a partially quenched orbital angular momentum associated with the NO axis. This angular momentum is coupled to the magnetic moment and the electric quadrupole moment of the nitrogen nucleus, and the magnetic moments of the hydrogen and fluorine nuclei giving more than forty observable lines for each rotational transition.
A large number of hyperfine transitions have been observed for the complex NO-HF, in the rotational levels $J = \frac{3}{2}(e) - \frac{1}{2}(e)$, $J = \frac{5}{2}(e) - \frac{3}{2}(e)$, $J = \frac{3}{2}(f) - \frac{1}{2}(f)$, and $J = \frac{5}{2}(f) - \frac{3}{2}(f)$, with assignments having been made for many of the transitions. The assignments are made using a variety of information including Zeeman patterns, relative intensities, and double resonance.
The assignment of both the e and f states is important because they consist of different linear combinations of the basis functions and provide data on different parameters in the least-squares fitting of the spectrum.