RECENT PROGRESS IN THE ROTATIONAL SPECTROSCOPY OF NITRIC ACID

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Nitric acid has received spectroscopic attention for its internal rotation and its role in atmospheric remote sensing of the stratosphere. Current studies of the millimeter and submillimeter wave rotational spectrum of several vibrational states lying above 1000 cm^{-1} will be presented that are of theoretical and atmospheric interest. The breadth of assignments and the corresponding analyses vary with each state and in most cases include assignments made in the symmetric-top limit. The first group of states include $\nu_8 + \nu_9$, $\nu_6 + \nu_7$, $\nu_6 + \nu_9$, and $\nu_7 + \nu_9$, all of which exhibit a torsional splitting and have well developed analyses. Tentative assignments and analyses of several other states include $2\nu_7$, $3\nu_9$, ν_3, ν_4 and possibly $\nu_5 + \nu_9$ will also be presented, several of which also exhibit a torsional splitting. For states in which there also has been infrared work, the relationship with these pure rotational studies will be considered. Additionally, the analysis of the ground state rotational spectrum of $H^{15}NO_3$ measured in natural abundance will also be presented.