DETECTION OF THE MAGNETIC DIPOLE-ALLOWED ORIGIN BAND OF THE $\widetilde{A}\leftarrow\widetilde{X}$ TRANSITION OF THE NITRATE RADICAL $NO_3$

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Despite its simplicity and atmospheric significance, the lowest electronic states of $NO_3$ remain poorly understood. The $\widetilde{A}^2\mathrm{E}''$ state is Jahn-Teller (JT) active and is pseudo-JT coupled to the ground $\widetilde{X}^2\mathrm{A}_2{}'$ and excited $\widetilde{B}^2\mathrm{E}''$ states. While the band origin $0_0^0$ of the $\widetilde{A}\leftarrow\widetilde{X}$ transition is purely electric forbidden, the cavity ringdown spectrum of the vibronically-allowed $\widetilde{A}\leftarrow\widetilde{X}$ bands has shown rotationally-resolvable structures. We have detected the magnetic dipole-allowed origin ($\sim$7060 cm$^{-1}$) via CRD spectroscopy. Analysis of the band contour along with its implications of the JT/Pseudo-JT couplings in the dark $\widetilde{A}$ state of $NO_3$ will be discussed.