CONTINUOUS-WAVE CAVITY RINGDOWN STUDY OF THE $^{14}N_2^+$ MEINEL SYSTEM 2-1 BAND AND THE FIRST POSITIVE BAND SYSTEM OF N_2^*

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We have observed the 2-1 vibronic band of the N_2^+ $A^2\Pi_u$-$X^2\Sigma_g^+$ system using continuous-wave cavity ringdown spectroscopy (cw-CRDS). The N_2^+ was formed in a positive column discharge of a mixture of N_2 and argon, and spectra were collected between 937 and 984 nm with a tunable external cavity diode laser. A total of 112 N_2^+ lines have been observed. In addition, more than 400 lines from the first positive band system of N_2^* were also observed during this experiment. The relative intensities of the N_2^* and N_2^+ bands were found to change with discharge cell pressure, and so each spectral region was observed at two different pressures to aid in distinguishing the spectra of these species. Both the N_2^+ and N_2^* spectra have been assigned and the molecular constants have been determined for each species, and the interpretation of these spectra will be reported.