

FOURIER TRANSFORM EMISSION SPECTROSCOPY OF THE $A^2\Pi-X^2\Sigma^+$ (RED) SYSTEM OF $^{13}C^{14}N$.

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High resolution emission spectra of the $A^2\Pi-X^2\Sigma^+$ transition of $^{13}C^{14}N$ have been measured in the 15000–24000 cm^{-1} region. Molecules were produced by the reaction of $^{13}CH_4$ and $^{14}N_2$ in an active nitrogen afterglow discharge. The spectra were recorded using the Fourier transform spectrometer associated with the McMath-Pierce Solar Telescope of the National Solar Observatory. A rotational analysis of 27 bands involving the excited state vibrational levels $v' = 9-22$ and the ground state vibrational levels up to $v'' = 12$ has been obtained. A much improved set of spectroscopic constants have been determined for the $v = 0-22$ vibrational levels of the $A^2\Pi$ state by combining the present measurements with those reported previously for the $v = 0-8$ vibrational levels of the $A^2\Pi$ state^a and existing infrared and millimeter-wave measurements of $^{13}C^{14}N$. The 6–3, 7–4, 8–5 and 9–6 bands of the $B^2\Sigma^+-A^2\Pi$ transition were also identified in the 23300–24000 cm^{-1} region and were included in the final analysis. An experimental line list and calculated term values are provided.

^aRam et al., *Astrophys. J. Suppl. Ser.*, 188, (2010), 500.