

## PURE ROTATIONAL SPECTRUM OF $\text{CN}^+$

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The pure rotational spectrum of the elusive  $\text{CN}^+$  cation has been observed for the first time using the cryogenic ion trap apparatus Coltrap by applying an action spectroscopy scheme. For the  $^{12}\text{C}^{14}\text{N}^+$  species, the three lowest rotational transitions have been observed each of which exhibits hyperfine structure from the presence of the  $^{14}\text{N}$  nucleus. The rare  $^{12}\text{C}^{15}\text{N}^+$  isotopolog has been studied up to the  $J = 4 - 3$  transition. The observations conclusively confirm  $\text{CN}^+$  to occupy a  $^1\Sigma^+$  electronic ground state. Given the ubiquity of the CN radical in space,  $\text{CN}^+$  is an appealing candidate for future radio astronomical searches.