ROTATIONALLY RESOLVED ELECTRONIC ABSORPTION SPECTRA OF CYANOPOLYACETYLENE CATIONS

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The high resolution absorption spectra of the $A^2\Pi \leftarrow X^2\Pi\ 0_0^0$ electronic transitions of the isoelectronic pair of cations, HC_5N^+ and NC_4N^+ have been obtained. The cations are generated in a liquid-nitrogen cooled hollow cathode discharge and detected using a frequency-discharge double modulation technique. Rotational analyses yields accurate ground and excited state rotational constants. Neutral cyanopolyacetylenes are prevalent linear interstellar molecules detected by radioastronomy. The dicyano analogues are expected to be similarly abundant. Rotational characterization of the corresponding ionized species by means of their electronic transitions provide important information for the identification of such species as carriers of the optical diffuse interstellar bands.