PURE-ROTATIONAL SPECTROSCOPY OF PANHs III: PHENANTHRIDINE. POSSIBLE APPLICATIONS TO THE SPECTROSCOPY OF PROTONATED AROMATIC SPECIES

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Protonated species are believed to play a key role in the physical and chemical processes at work in the interstellar medium (ISM). The predicted abundances of precursor polycyclic aromatic nitrogen heterocycles (PANHs), and the stability of aromatic systems, make protonated PANHs a particularly important class of protonated species for ISM chemistry. Gas-phase protonation of simple PANHs, such as phenanthridine, is an excellent starting point for studying these systems. As a first step, we have obtained the pure-rotational spectrum of neutral phenanthridine using a direct absorption, mm/sub-mm spectrometer. We present the results of this study, and discuss applications of these result to future spectroscopic and dynamical studies of phenanthridine-H^+ and other protonated aromatic systems.