FOURIER TRANSFORM SPECTROSCOPY OF THE $A^3\Pi - X^3\Sigma^-$ TRANSITION OF OH^+

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The OH^+ ion is an important species in the Interstellar Medium. It has been used to infer the cosmic ray ionization rate and is an important intermediate for generation of more complex astrochemical species. OH^+ observations are typically performed in the sub-millimeter and near-UV ranges, and rely on laboratory spectroscopy to provide transition frequencies. Observations of the $A^3\Pi - X^3\Sigma^-$ bands are used to both identify OH^+ and determine the column densities along sight lines.[a]

These A-X observations have relied on previous measurements with a grating spectrometer and photographic plates.[b] Here, we present data recorded at Kitt Peak using a Fourier transform spectrometer of the A-X band system. This data and other available data are combined to determine new molecular constants for the A and X electronic states. These new data are between one and two orders of magnitude more precise and should be used in support of observations in lieu of the older transition frequencies. We also intend to calculate improved line intensities in support of astronomical observations.

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[a] Zhao, D. *et al.* 2015, ApJ, 805, L12

[b] Merer, A.J. *et al.* 1975, CaJPh, 53, 251