Neptune: CO and HCN Distributions From Observations at the Cso

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Wc used the Caltech Submillimeter Observatory (CSO) to make spatially unresolved observations of the 230.538 GHz 2-1 transition of CO and the 265.886 GHz 3-2 transition of HCN at Neptune. All observations used the 10.4 meter antenna with a double sideband S] S-junction heterodyne receiver. Spectra were obtained with parallel acousto-optic spectrometers simultaneously providing 580 MHz bandwidth at 0.57 MHz resolution and 50 MHz bandwidth at 0.049 MHz resolution. Observed line shapes agree with prior observations by Rosenqvist et al. and Marten et al. Analysis of the line shapes and intensities will yield information about the distributions of CO and HCN in the stratosphere of Neptune, and these results will be compared with previous results. The data imply that the, mixing ratios of CO and HCN must decrease with altitude somewhere within the pressure range from 1 to 0.001 mbar. HCN data will also address the sharp saturation-induced decrease in the HCN mixing ratio at lower levels in the stratosphere.