

## ASSESSING THE PERFORMANCE OF A 6-18GHz BROADBAND MICROWAVE SPECTROMETER

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Rotational spectroscopy is an incredible tool for determining molecular structures, with capabilities that include experimentally establishing bond lengths and angles with incomparable precision and investigating transient, weakly bonded, chemical species. We have designed, built, and characterized a broadband microwave spectrometer based on chirped pulse excitation, built to measure rotational spectra in the 6-18 GHz range. We introduce our molecules using a supersonic expansion, thereby achieving a rotational temperature of 1-2 K for our molecules. This brings the maximum in the rotational Boltzmann distribution into the frequency range of the instrument. The spectrometer performance has been benchmarked by measuring the pure rotational spectrum of carbonyl sulfide (OCS). We are in the process of performing spectroscopic measurements of halothane. Details of how the spectrometer works and analysis of the acquired data will be presented.