DEVELOPMENTS IN FAST SCAN SUBMILLIMETER SPECTROSCOPIC TECHNIQUE (FASSST) AND COMPUTER AIDED ASSIGNMENT OF ASYMMETRIC ROTOR SPECTRA (CAAARS) SOFTWARE SUITE.

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Most molecules of astrophysical, chemical, and environmental importance exhibit strong maxima in their interaction strengths with electromagnetic radiation in the millimeter and sub-millimeter spectral range. Over the past decade or so, we have developed the Fast Scan Submillimeter Spectroscopic Technique (FASSST), which makes possible rapid interrogation of a large number of ro-vibrational transitions. We have also developed automated approaches for the analysis of the resulting large spectral data sets, most notable of these being CAAARS (Computer Aided Assignment of Asymmetric Rotor Spectra). This work has been a process of continual enhancement of both hardware and software. In this talk we will describe the current state-of-the art for this hardware/software combination, recent extensions, and potential future enhancements. This will include a multiplier based extension of the spectral range based on the more well behaved lower frequency BWOs. Recent spectroscopic work will be used to illustrate the characteristics of the system.