

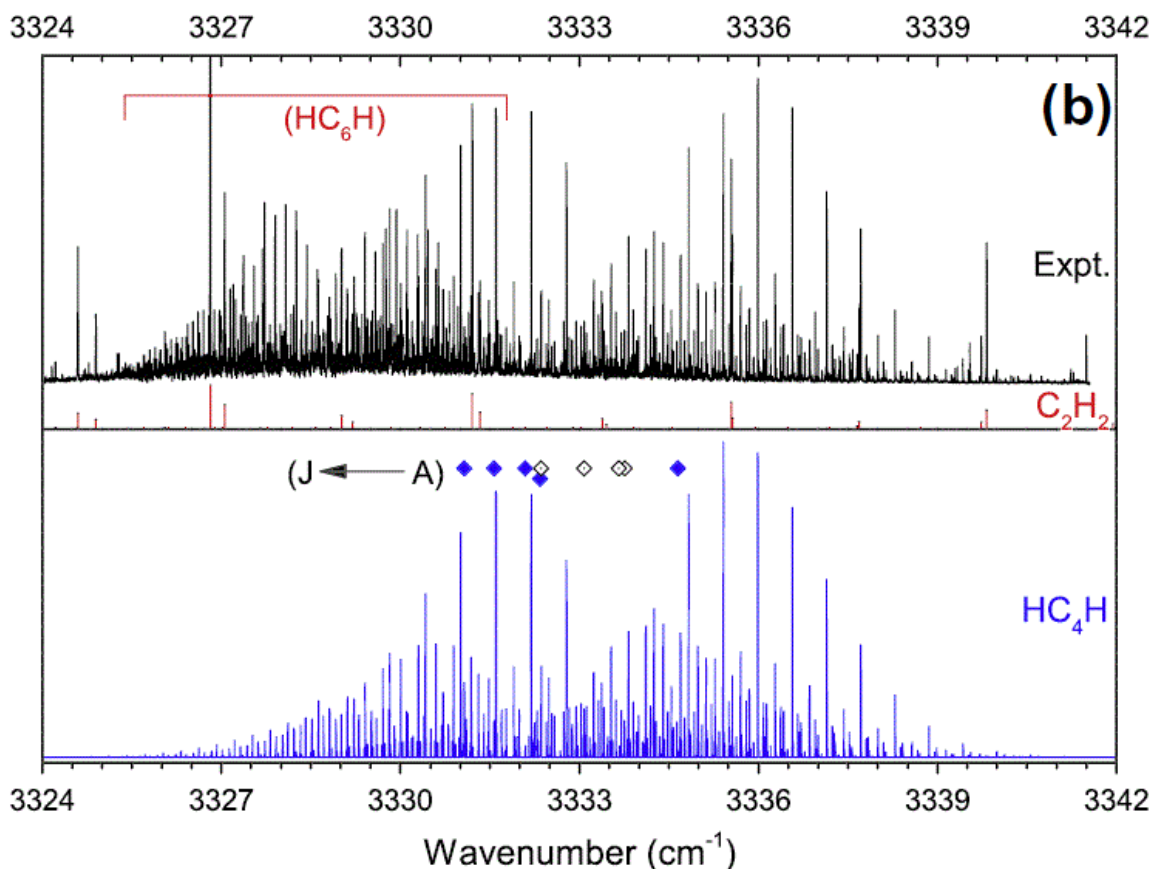
Tools for Molecular Astrospectroscopy: os-BBCEAS, CESAS and CRDS

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Light from space carries all the information it takes to identify molecules in the highly dilute regions in between and around stars, the interstellar medium (ISM). More than 180 different species, meanwhile, have been identified and show that the chemical processes in the ISM follow exotic chemical routes. Unambiguous identifications of these molecules only has become possible following dedicated laboratory experiments, providing accurate line positions and molecular parameters that are needed to interpret and to guide astronomical observations. In this talk several CES-based techniques are discussed with the aim to collect high resolution spectra of astrophysically relevant molecules. The focus is on unstable species; radicals and ions. Regular CRDS, both pulsed and cw (in the IR) allows to record highly precise rovibronic and rovibrational transitions of molecular transients. Broadband applications (optical shutter modulated broad band cavity enhanced spectroscopy - os-BBCEAS - and cavity enhanced self absorption spectroscopy - CESAS) allow to cover large wavelength domains with high sensitivity. Several molecules are discussed to illustrate the potential of the methods used here.



The cw IR CRDS spectrum of di- and triacetylene in the CH stretch region.