PREPARATION FOR THE ASTRONOMICAL SEARCH FOR PROTONATED METHANOL

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It has been suggested that ion-molecule reactions play a major role in the formation processes of large organic molecules that have been observed towards dense hot molecular cores in high-mass star forming regions. However, in the past, detection of key molecular ions, such as protonated methanol ($CH_3OH_2^+$), in interstellar clouds has been impossible due to the lack of both laboratory spectra and astronomical data. With the upcoming spectra from the new SCRIBES (Sensitive, Cooled, Resolved Ion BEam Spectroscopy) instrument under development by the McCall group (see Mills et al. and Widicus Weaver et al. at this meeting), we will be able to determine accurate microwave frequencies for $CH_3OH_2^+$. These will be used for systematic astronomical searches of important hot core sources including (but not restricted to) Sgr B2N(LMH), Orion, and W51. We are reducing BIMA archival data to prepare for these searches, and will extend these techniques to data from the new CARMA interferometer. We will outline this data reduction process, which can be implemented to aid searches for other molecules.
We acknowledge support from the Laboratory for Astronomical Imaging and from the Critical Research Initiative program at the University of Illinois, and from NSF grants AST-0540459 and CHE-0449592.