

PUSHING THE LIMITS OF MOLECULAR COMPLEXITY IN THE OUTER GALAXY - THE SEARCH FOR FORMAMIDE (NH₂CHO) AT VARIOUS GALACTOCENTRIC DISTANCES

MARYAM HAMI, *NAASC, National Radio Astronomy Observatory, Charlottesville, VA, USA*; ANTHONY REMIJAN, *ALMA, National Radio Astronomy Observatory, Charlottesville, VA, USA*.

Galactic Habitability is a concept of growing popularity. So far, research has been done in understanding the temporal and spatial evolution of a Galactic Habitable Zone (GHZ) based on parameters such as local SN rate, host star metallicity, and age of the system. However, the popular GHZ literature does not account for the potential influence of molecular complexity at different spatial locations in the Galaxy. With the high sensitivity of ALMA, we are interested in exploring molecular complexity of star-forming clumps in these different spatial locations of the Galaxy. In this work, we focus on one complex organic molecule - Formamide (NH₂CHO) - which recent literature has identified as a potential key precursor to prebiotic life. Using ALMA archival data, we examine the presence and abundance of formamide at various galactocentric distances in the Galaxy. Several archival surveys were utilized for the search. Most extensively, we used the ALMA Three-millimeter Observations of Massive Star-forming regions (ATOMS) survey, to search for 7(0,7) → 6(1,6) transition of Formamide.