

ASTRONOMICAL TRIPLETS: ALMA OBSERVATIONS OF C₂H₄O₂ ISOMERS IN SGR B2 (N)

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The C₂H₄O₂ triplet found in the interstellar medium (ISM) consists of glycolaldehyde (CH₂OHCHO), acetic acid (CH₃COOH) and methyl formate (HCOOCH₃). The forming mechanism of their HCO-bearing component involves both gas-phase and grain-surface processes whose relative roles plays into fundamental questions within the fields of astrochemistry and astrobiology. Glycolaldehyde is closely related to ribose and deoxyribose, the primary components of genetic materials. The first detection of Glycolaldehyde was toward Sgr B2 with using NRAO 12 m telescope in 2000 (J. M. Hollis et al). A new careful search for glycolaldehyde toward the hot dense core Sgr B2 (N) is needed. While methyl formate has a large number of detected transitions throughout the ISM, the detection of acetic acid, the least abundant of these isomers, is more tentative. Mehringer et al. (1997) reported only 4 lines of acetic acid toward Sgr B2 Large Molecule Heimat source. Here, we confirm these detections of each species toward Sgr B2 (N) with the more sensitive and larger bandwidth from ALMA Band 3 observations (A. Belloche, 2012), providing us more transitions and more accurate continuum subtraction. Based on these results, the abundances and spatial distributions of the C₂H₄O₂ triplet species would be obtained and compared.