

MULTI-WAVELENGTH INVESTIGATION ON NEW MOLECULAR MASERS TOWARD THE GALACTIC CENTER

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At the centimeter wavelength, the single-dish observation has suggested that the Sgr B2 molecular cloud at the Galactic center hosts weak maser emission from complex molecules, including CH₂NH, HNCNH, and HCOOCH₃ (McGuire et al., 2012; Faure et al., 2014, 2018). Because molecular masers often trace specific conditions within the massive star-forming regions, finding new maser transitions and species provides critical insights into the physical structures hidden behind the thick dust. However, the lack of distribution information of these new maser species had prevented us from not only quantitatively assessing the observed spectral profiles but also constraining their pumping mechanisms. In this talk, we present a rigorous mapping study toward the galactic center to resolve the region where the complex maser emission originates. By comparing the distribution of several maser emissions, it is revealed that the new maser species have a close spatial relationship with the CH₃OH Class I masers. This relationship serves as observational evidence to suggest a similar collisional pumping mechanism for these maser transitions.