R02a SiO Maser Survey of the Milky Way Nuclear Stellar Disk

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The Milky Way also has a similar stellar disk structure to that observed in the central regions of external spiral galaxies. This structure is known as the Nuclear Stellar Disk (NSD) and extends $\pm 2^\circ$ along the Galactic Plane. Although the NSD contains some young stellar clusters, it is mainly composed of old stars. The origin of the NSD remains obscure. Key information is expected to be obtained from the kinematics of these old stars. Mira variables, which are AGB stars, often exhibit SiO maser activity. The strength of the emission line makes it easy to measure the radial velocities of these stars. In addition, the long monitor of the positions of these stars can provide proper motion of these.

Survey data of the Central Molecular Zone (CMZ) obtained with ALMA has been released (2021.1.00172.L, P.I. Longmore Steven). Because this survey intends to image molecular clouds in the CMZ, the angular resolution is not so high ($\sim$ 2"). However, the frequency range contains the SiO $v = 1$ $J = 2 - 1$ maser line. The survey area covers most of the NSD. We searched SiO masers in the NSD using the data. Over 1000 objects had been detected and their LSR radial velocities were measured at the accuracy of 1 km s^{-1}. In this paper, we would discuss the distribution and kinematics of SiO masers in the NSD.