

[7ST-07] Observational Study of Late-Type Stars using KVN_Yonsei Radio Telescope

Se-Hyung Cho¹, Jaeheon Kim^{1,2}, Chung Sik Oh¹, and Do-Young Byun¹
¹*Korea Astronomy and Space Science Institute, ²KyungHeeUniversity*

We present the interim results of simultaneous observations of SiO and H₂O masers toward 401 known stellar SiO and/or H₂O maser sources (166 both SiO and H₂O maser sources, 83 only SiO maser sources, and 152 only H₂O maser sources) using KVN_Yonsei telescope. The results of 166 known SiO/H₂O maser sources will be presented by Kim et al. and the results of 83 only SiO maser sources and 152 only H₂O maser sources presented here. Both SiO and H₂O maser emission were detected from 30 sources giving a detection rate of 36 % toward known 83 only SiO maser sources, while they were detected from 66 sources giving a detection rate of 43 % toward known 152 only H₂O maser sources at one epoch observation. Only SiO masers were detected from 42 sources toward 83 only SiO sources, while they were detected from 28 sources toward 152 only H₂O sources. Characteristics of these observed sources in the IRAS two-color diagram is investigated including mutual relations between SiO and H₂O maser emission.

In addition, these results will be useful for statistical study of late-type stars and future VLBI observations.

[7ST-08] Simultaneous Observations of SiO and H₂O Masers toward Known Stellar SiO and H₂O Maser Sources.II. Statistical Study

Jaeheon Kim^{1,2}, Se-Hyung Cho¹, Sang Joon Kim²
¹*Korean VLBI Network, KASI*
²*Department of Astronomy and Space Science, Kyung Hee University*

We have carried out an extensive statistical analysis based on the results of simultaneous observations of SiO and H₂O masers toward 166 known SiO and H₂O maser sources using KVN_Yonsei radio telescope (Kim et al.2010, ApJS submitted). We investigate the distributions of the mean velocities and the intensity ratios between SiO and H₂O maser emission including those between SiO $\nu=1$ and $\nu=2, J=1-0$ transitions according to type of evolved stars. We also investigate mutual relations between SiO and H₂O maser properties (total flux densities and velocity structures etc.) according to stellar pulsation phases. Most of SiO masers appear around the stellar velocity (80 % within ± 5 km s⁻¹), while H₂O masers show a different characteristic compared with SiO masers (69% within ± 5 km s⁻¹). In addition, we investigate a correlation between SiO/H₂O maser emission and AKARIFIS flux density as well as the AKARI color characteristics of SiO and H₂O observational results in the AKARIFIS two-color diagram.