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## The Milky Way Imaging Scroll Painting (MWISP) Survey Project: New Molecular Line Data along the Northern Galactic Plane

*Monday, 29 May 2023 17:30 (20 minutes)*

Molecular clouds are the cold and dense part ( $n \geq 10^2 \text{ cm}^{-3}$ ) of hierarchical interstellar medium concentrated toward the Galactic disk. A number of wide-field surveys in molecular lines have been made to investigate the gas distribution and physical processes. Significant progresses have been made over the last 50 years. However, further improvement of our understanding of interstellar molecular gas was hampered by sensitivity, sky coverage, spatial resolution, velocity coverage, spectral or velocity resolution, and line tracers. The Milky Way Imaging Scroll Painting (MWISP) project was initiated to map the northern galactic plane in 12CO/13CO/C18O J=1-0 lines using the Superconducting Spectroscopic Array Receiver (SSAR), a sideband-separation superconducting SIS focal plane array receiver system at the 13.7m millimeter-wave radio telescope of Purple Mountain Observatory Qinghai Station. An area of  $2400 \text{ deg}^2$  within  $L=10^{\circ}250 \text{ deg}$ ,  $B=+/-5 \text{ deg}$  was fully covered in its first phase by 11 observing seasons over the period of 2011-2021. MWISP survey is characteristic of high sensitivity, wide sky coverage, and most importantly, multi-line tracers for the first time of its kind. In this talk, I will introduce the general features of the survey, presenting the large-scale CO data and images of molecular emission, examples of discoveries and statistics, followed by illustration of Galactic targets or areas which may be of potential interests to the study of high-energy gamma-rays and cosmic-ray phenomena.

### Summary

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