Proposal Abstract:

OH megamasers are primarily found in targeted observations of (U)LIRGs. Despite their discovery nearly four decades ago, extragalactic OH masers remain relatively uncommon, particularly at high redshift. High-sensitivity \HI surveys can serve as blind surveys for OH megamasers, potentially detecting tens to thousands of new OHM galaxies. However, estimating their numbers comes with significant uncertainties because they are based on known OHMs, which currently extend only to the highest redshift of z=0.264. Roberts et al. (2021) predicted a higher abundance of OHMs at higher redshifts, but GBT surveys (Willett 2012) of high-redshift OHM galaxies yielded a much lower detection rate and no detections beyond the highest known redshift of OHM galaxies. It could be due to the low sensitivity of GBT observations, and it could also be caused by high-redshift ULIRGs potentially having different characteristics compared to local (U)LIRGs. In this project, we propose to observe nine ULIRGs with redshifts ranging from 0.265 to 0.5 to detect OH emission in these galaxies. The main objective is to achieve the first detection of OHM galaxies within the specified redshift range, which will serve as a reference for further blind surveys and enhance our understanding of ULIRG properties at these redshifts.