An unbiased view of the ionized emission in the IV Quadrant of the Milky Way

Abstract

The massive star formation process is still far from being understood, although huge progress is being made mostly thanks to millimeter surveys carried out with the ALMA interferometer. However, little can be done in the mm to investigate the stage when the first ionized emission arises from the youngest massive star, corresponding to the formation of Hyper-Compact and Ultra-Compact HII regions. While a complete view of this type of sources will only be possible once the superb sensitivity and resolution provided by MeerKAT+ will be available, in this project we propose to carry out the first continuum survey at 3.1 GHz of a specific portion of the IV quadrant of the Milky Way, where several already observed ALMA star-forming sites are located. This region of the Plane also covers several supernovae remnants and planetary nebulae. This survey has the potential to characterize the radio emission associated with well known young massive stars as well as that from end-of-life objects, allowing us to explore the entire lifecycle of stars. Finally, the proposed survey will provide useful insights for a future unbiased survey of the Galactic Plane with MeerKAT+.