

MeerLIRGs: A MeerKAT 1.28 GHz study of local Luminous Infrared galaxies in the southern hemisphere

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Luminous Infrared galaxies (LIRGs) are rare in the local universe but play a crucial role in our understanding of galaxy evolution, as they account for over 50% of the cosmic-infrared background and most of the stars formed at $z > 1$. They are often associated with interacting and merging systems, whose complexity requires high spatial imaging to disentangle Star Formation (SF) and any Active Galactic Nuclei (AGN) that may be hidden in their dusty shrouds. Infrared Astronomical Satellite (IRAS; Neugebauer 1984) observations revealed the existence of numerous galaxies that emit the bulk of their energy in the infrared regime, with LIRGs being one of the most powerful ($L_{\text{IR}} > 10^{11} L_{\odot}$) populations. There is a tight correlation observed between the infrared and radio continuum of star-forming galaxies which makes the MeerKAT L-band observations an excellent complimentary tracer of SF and delineator of AGN. In this work, we study the properties of 298 galaxies with $S > 5.24$ Jy selected from the IRAS Revised Bright Galaxy Sample (RBGS; Sanders 2003) located in the southern hemisphere, observed with MeerKAT at 1.28 GHz using the L-band; dubbed as the “MeerLIRGs”. The MeerKAT snapshots have a 7.5” FWHM resolution and sensitivity of $\sigma \approx 20 \mu\text{Jy/beam}$. We obtain the activity type classification from the literature and classify them based on their mid-infrared WISE colours; then study their properties. We further compare our results with those of galaxies drawn from the same sample but observed with the VLA (by Condon (1990, 1996 and 1998) and are located in the northern hemisphere. A combination of this MeerKAT data and the above-mentioned VLA catalogues encompass the full radio catalogue of the RBGS sample. Thus in my contribution, I will present this sample’s Infrared and radio correlation, the global properties of our galaxies and the entire associated radio catalogue of the RBGS.

keywords

local galaxies, star-forming galaxies, AGN

In-person or online?

in-person

Career level

Student

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