

The GLEAM 4-Jy Sample: The brightest radio-sources in the southern sky

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Abstract. Low-frequency radio emission allows powerful active galactic nuclei (AGN) to be selected in a way that is unaffected by dust obscuration and orientation of the jet axis. It also reveals past activity (e.g. radio lobes) that may not be evident at higher frequencies. Currently, there are too few “radio-loud” galaxies for robust studies in terms of redshift-evolution and/or environment. Hence our use of new observations from the Murchison Widefield Array (the SKA-Low precursor), over the southern sky, to construct the GLEAM 4-Jy Sample (1,860 sources at $S_{151MHz} > 4$ Jy). This sample is dominated by AGN and is 10 times larger than the heavily relied-upon 3CRR sample (173 sources at $S_{178MHz} > 10$ Jy) of the northern hemisphere. In order to understand how AGN influence their surroundings and the way galaxies evolve, we first need to correctly identify the galaxy hosting the radio emission. This has now been completed for the GLEAM 4-Jy Sample – through repeated visual inspection and extensive checks against the literature – forming a valuable, legacy dataset for investigating relativistic jets and their interplay with the environment.

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