

Title
A pioneer study of the broad-band properties of radio galaxies in Planck Clusters: Exploring MeerKAT synergies with LOFAR

Abstract
We propose MeerKAT multiband observations of extended radio galaxies located in four Planck-selected galaxy clusters, already observed by LOFAR. The goals of our project are to characterise radio galaxies in galaxy clusters by combining sensitive MeerKAT observations at UHF and L bands with existing LOFAR at lower frequencies, to produce wideband spectral index measurements and estimates of the spectral age and magnetic fields in these galaxies. MeerKAT observations are critical to the last goal in particular, as its relatively higher observing frequency will allow its observations to suffer less from depolarisation, and are thus more likely to recover the magnetic field alignment for our radio galaxies of interest. This is a necessary prerequisite to do the same with LOFAR, highlighting the great potential of MeerKAT-LOFAR synergies. To achieve these goals we request in total 10.55 hours of observations in the UHF band and a total of 13.78 hours of observations in the L band of four clusters in the declination range 0 to +25 which are included in the LoTSS survey DR2 but not yet observed with MeerKAT. Pending the successful conclusion of this project we will extend the this programme to other such clusters.