

1. Project level: Honours
2. Primary supervisor: Dr Kenda Knowles
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7. Project title: Studying the radio properties of an MGCLS galaxy cluster
8. Project description:

Galaxy clusters are rich environments, with radio observations able to uniquely probe the non-thermal components, as well as provide independent measures of star formation and galaxy activity. The MeerKAT Galaxy Cluster Legacy Survey (MGCLS; [Knowles et al. 2022](#)) is a set of observations of 115 galaxy clusters throughout the Southern sky, with the first data release providing processed L-band images of all cluster targets. In this project, a student will study the radio properties of one of the MGCLS clusters for which I have additional frequency data (UHF image shown below). The student will use processed images from MeerKAT's L- and UHF-bands to create a spectral index map and extract observational properties for the hosted diffuse emission and the radio galaxies within the projected cluster region. A stretch goal will be to identify which radio galaxies are likely to belong to the cluster using photometric redshift information from the Dark Energy Survey. Depending on the student progress, this work may contribute to a paper on the system. Familiarity with Python is required.

