

En route to the SKA era: MeerKAT's sharp new view on galaxy clusters

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Radio observations of galaxy clusters are powerful tools for detecting diffuse cluster-scale synchrotron emission, which carries information about the cluster formation history. Observations using Square Kilometre Array (SKA) precursor and pathfinder instruments are nowadays opening up a new window on diffuse cluster radio sources and challenge our simple classification scheme (radio halos, mini-halos, and radio relics), making clear the need for an update of our current knowledge. Towards this direction, the unique combination of the MeerKAT radio telescope's unprecedented high sensitivity to low surface brightness emission, dense uv-coverage, and high resolution is key to the re-discovery of galaxy clusters and in-depth comprehension of the diffuse structures formation mechanism. In this talk, I will summarize the results from MeerKAT's Galaxy Cluster Legacy Survey (MGCLS) diffuse radio emission catalogue, a program of long-track observations of 115 galaxy clusters at 1.28 GHz spread out over the Southern sky focusing on the statistics and properties of the various diffuse radio emission structures detected in MGCLS galaxy clusters. New results on individual systems will also be highlighted to reveal both the much-improved radio images compared to previous radio observations and the discoveries that open up new areas of investigation in cluster formation and evolution that set the path to the SKA era.

keywords

galaxy clusters, diffuse radio emission, survey overview

In-person or online?

in-person

Career level

Mid-Senior

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