

MeerKAT open time call 3 December - Proposal summary

Mapping HI in Abell 2626 and the tentacles of 'jellyfish' JW100	
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Email address	juliahealyza@gmail.com
Principal Investigator	Julia Healy*, University of Cape Town & University of Groningen
Lead technical contact	Mpati Ramatsoku, INAF-Osservatorio Astronomico di Cagliari (mpati.ramatsoku@inaf.it)
Authors	Sarah Blyth, University of Cape Town Jacinta Delhaize, University of Cape Town Marc Verheijen, University of Groningen *Tirna Deb, University of Groningen Benedetta Vulcani, INAF- Osservatorio astronomico di Padova Bianca Maria Poggianti, INAF- Osservatorio astronomico di Padova Mpati Ramatsoku, INAF-Osservatorio Astronomico di Cagliari Paolo Serra, INAF-Osservatorio Astronomico di Cagliari

Abstract:

A range of processes contribute to the evolution of galaxies as they fall into the denser environments of galaxy clusters. These processes include galaxy-galaxy interactions (e.g. mergers, harassment, tidal stripping), interactions of the galaxies' ISM with the intracluster medium (e.g. ram-pressure stripping) and mechanisms which stop cold gas accretion - resulting in the eventual quenching of star formation. We propose to make 21-cm HI observations of the galaxy cluster Abell 2626 to investigate the environmental effects on the evolution of infalling galaxies in the cluster and its surroundings, using both individual galaxy detections as well as HI stacking techniques. This cluster is an ideal laboratory to investigate collective galaxy trends along with compelling case studies such as the striking 'jellyfish' galaxy JW100, which is currently undergoing severe ram-pressure stripping of its ISM. By combining the MeerKAT HI data with the deep multi-wavelength ancillary datasets we already have in hand, we intend to study the various astrophysical processes that govern the transformation of galaxies as they migrate from the surrounding field to the cluster core. MeerKAT's exquisite sensitivity with 13h observing on source will result in a 3σ column density sensitivity of $3 \times 10^{19} \text{ cm}^{-2}$ necessary for imaging JW100 and a minimum directly detectable HI mass of $\sim 4 \times 10^8 M_{\odot}$ at the cluster redshift. MeerKAT is the ideal telescope to observe this target due to the large primary beam FWHM reaching beyond the virial radius of the cluster as well as its unparalleled RFI-quiet environment which will enable RFI-free observations of JW100.

Observation parameters:

Targets	Abell 2626 (23h36m31.0s +21d09m36s)		
Total time	16 in 3 epochs	Dump rate	8 s
Daytime	No preference	Variable/Transient	No
Baselines	Nothing worth mentioning at this time.		

List of files uploaded. Files in order of upload. Usually just revising their proposal, so click the last one, but some people attached several different files, so they may all be useful.
https://drive.google.com/open?id=1KWyd4VNsaft4_4pICsaSKFG6ghG1VXUi .

File comments: