

MeerKAT open time call 3 December - Proposal summary

HI intensity mapping with MeerKAT: cross-correlations with WiggleZ and SDSS	
Proposal number 38	Thu Jan 31 2019 12:37:09 GMT+0200 (SAST)
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Abstract:

The current specifications of MeerKAT make it a great fit for science applications that require large survey speeds. In particular, for cosmology, a large sky survey will potentially provide the first ever measurements of the baryon acoustic oscillations using the 21cm intensity mapping technique, with enough accuracy to impose constraints on the nature of dark energy. In here, we propose a pilot survey aimed at testing the HI intensity mapping technique with MeerKAT using its auto-correlations. This will provide crucial results in our goal towards probing cosmology with MeerKAT and the future SKA. From a technical side, we will be able to test the calibration approach and foreground cleaning. Moreover, this survey will overlap with WiggleZ/SDSS and will have enough signal to noise to make a detection of the cross-correlation power spectrum between HI intensity mapping and galaxies, which we know is very robust to systematics. It can also provide the first detection of the 21cm power spectrum and measure the cosmological HI mass density up to redshift $z \sim 0.5$.

Observation parameters:

Targets	Patch centred at RA=162.5 deg and Dec=+3.5 deg		
Total time	14.7 in 1 epochs	Dump rate	2 s
Daytime	Nighttime required	Variable/Transient	No
Baselines	Single dish survey. 60 dishes assumed. No baseline requirement.		

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=1j6FzPisp561ZG8EFMI1KbFucAOWywoIT> .

File comments: