

# The Third National Workshop on the SKA Project - The Italian Route to the SKAO Revolution



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## The MeerKAT Fornax Survey: Rapid HI removal in dwarf galaxies

*Thursday, 7 October 2021 11:20 (20 minutes)*

I will present some of the first results from the MeerKAT Fornax Survey (MFS), that show that dwarf galaxies rapidly lose their cool gas once they have entered into the cluster. The MFS is now 25% complete, and thanks to the exquisite sensitivity and resolution of the MeerKAT telescope, we are exploring a new observational parameter space and have detected HI in a population of dwarf ( $M_r > -18.5$ ) galaxies down to a HI mass of  $10^6 M_{\odot}$ . Only 14 out of 300 dwarfs in the current mosaic are detected in HI, showing that the majority of dwarfs in the Fornax cluster have already lost their HI. For the dwarfs with HI, a dichotomy exists - either the dwarf has a regular amount of HI or the dwarf is extremely HI poor given its luminosity. As we do not detect dwarf galaxies in between (i.e. transitioning from HI-normal to HI-poor) these two HI mass-to-luminosity ratios, this suggests that a dwarf galaxy with HI will very rapidly lose its HI, even before the first pericentric passage. We also find that the majority of dwarfs with HI are at least 80 kpc away from the closest, massive galaxy. This may be evidence that pre-processing assists in the removal of HI from dwarf satellites, accelerating the loss of HI while infalling to and within the cluster.

### Research area

HI galaxy science

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