

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



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MeerKAT and ASKAP synergies: the discovery of a depolarizing HI tail in the western lobe of Fornax A

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The MeerKAT Fornax survey (MFS, P.I. Paolo Serra) will observe the galaxy cluster Fornax including the in-falling group of Fornax A. This project has two primary goals: to study the evolution of galaxies throughout the associated HI emission and to determine the intracluster magnetic field thanks to the polarization properties of cluster-embedded and background radio sources.

In the context of the MFS activities, we found a spatial coincidence between tidal HI material, T_N in Kleiner et al. 2021, detected with MeerKAT in the western lobe of Fornax A and a depolarized structure observed with the Australian Square Kilometre Array Pathfinder (ASKAP) at 1.2 GHz. We analyzed the properties of the rotation measure images obtained with ASKAP data along the HI tail location and in the neighborhoods. According to our analysis the HI tail is carrying its own magnetic field across the western Fornax A lobe with a strength of the order of $\sim 11 \mu\text{G}$. This is the first observed evidence of a magnetic field driven throughout a radio galaxy lobe.

Research area

Magnetism

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