

An HI perspective on galaxy evolution in and around A2626

Abstract

We propose HI observations of 9 pointings in and around the A2626 galaxy cluster at $z=0.0545$, extending from the cluster core out to $>3R_{200}$. Our principal goal is to investigate the multi-phase ISM of galaxies in the context of the various gas removal processes and the star formation (SF) quenching that galaxies experience on their cluster infall trajectories, as well as the importance of 'pre-processing' of galaxies and the gas content of so-called 'back-splash' galaxies that were once inside R_{200} . Our goal is to image the morphologies and kinematics of the HI disks of galaxies, as they are sensitive diagnostic tracers of various gas removal processes at play. With an HI mass limit of $3 \times 10^8 M_{\text{sun}}$ and an uniform sensitivity out to $2 \times R_{200}$, we expect 100's of HI detections in this over-dense region. The scientific return of our MeerKAT data will be enhanced by available and forthcoming ancillary data from coordinated observing campaigns with ALMA, SMA, WHT/WEAVE, LOFAR and INT/WFC, supported by information from the Hydrangea hydro-dynamical simulations. The synergy of these observations will provide unprecedented insights in galaxy transformations as they migrate from cosmic filaments into cluster cores.