

Title

Tracing galaxy evolution in the Shapley supercluster with HI

Abstract

With the present proposal we aim to study the role of the environment on the evolution of galaxies by mapping the HI content of galaxies in the Shapley supercluster (Ss hereinafter). The Ss includes filaments, groups, relaxed and merging rich clusters, and is the ideal structure to perform such investigation. The proposed HI dataset will be complemented by a wealth of multi-band data from radio to X-ray and will soon benefit from the spectroscopic coverage of the CHANCES-4MOST survey. The basis of the proposed study are the readily available HI data cubes from the MeerKAT Galaxy Cluster Legacy Survey (MGCLS) pointed on the cluster A 3558 and on the poor cluster SC 1329-313 in the Ss core. Our goal is to survey the two filaments departing north and south from the Ss core, including some groups with 5 pointings. We aim at a column density $N_{\text{HI}} \sim 4.7 \times 10^{19} \text{ cm}^{-2}$, which can be reached with a total of 45 hours (including overhead for calibration). Together with the MGCLS information, this will allow us to compare the HI content of the supercluster galaxies in a range of environments going from the densest cluster centres to the groups and filaments where pre-processing occurs transforming galaxies prior to their arrival into the clusters themselves.