

Dissecting the darkest HI cloud to date

Abstract

Most HI in the universe is bound to galaxies, and so far only a few massive dark clouds containing a very low number of stars but a large amount of HI (> 1 billion solar masses), have been documented. However, only future large-scale surveys will reveal their true prevalence. Potentially being “dark” dark matter halos, without stars or transitional phenomena rendering removal or accretion of gas in cosmic potential wells, their study is of great interest. Here, we propose the re-observation of a dark cloud complex with an HI mass of 10 billion solar masses as has recently been detected in a shallow survey with the MeerKAT radio telescope. The proposed deeper observations at high frequency resolution allow us to detect additional low-column-density gas, and to resolve and characterise the dark cloud complex in both frequency and space, as the first necessary step to investigate its nature and origin.