

Star formation and the ISM in Nearby Galaxies with MeerKAT

Abstract

We propose to obtain deep neutral hydrogen (HI) imaging for a sample of 5 nearby spiral galaxies which have existing, high-quality VLT/MUSE integral field spectroscopy and ALMA CO (2-1) data. Resolved observations of the HI content of a galaxy are a unique tracer of the host dark matter halo potential, and contain valuable insight about the ongoing and potential for star formation. Incorporating complementary observations of the molecular and ionised gas enhances the information gained from the HI data. The unique combination of neutral, molecular and ionised hydrogen observations will allow us to conduct a multi-phase study of the gas properties in spiral galaxies, to not only parameterise galaxy kinematics, but also the complete star formation process in unprecedented detail. MeerKAT's combination of a large field of view, unparalleled sensitivity, and excellent resolution perfectly complements the data from the next generation of facilities in the southern hemisphere.