Deep HI mapping of two interacting galaxies

Abstract

A full understanding of the processes involved in galaxy interactions is crucial for galaxy formation and evolution. Tidal interaction features, e.g. tails and bridges, provide a fossil record of the interaction history and pose constraints on dynamical models. It is especially important to measure the atomic hydrogen (HI) distribution in these systems because it is the most easily disrupted component of a galaxy during interactions thus providing a morphological and kinematical fingerprint of its history. ESO245-010 and ESO199-012 are two exemplary HI-rich galaxies, showing striking tidal features, which are not yet understood. We propose to obtain the first high-resolution MeerKAT HI deep maps of these two interacting galaxy systems. The maps will represent the best spatial and velocity resolution HI data, covering a wide range of linear scales, also for searching for possible nearby systems causing the tidal features. The proposed maps will provide detailed information on the morphologies and kinematics of the tidal gas, allowing us to constrain the interaction history and the origin of the tidal features.