

PID:PT2022\_0005

Abstract:

Mergers of dwarf galaxies in galaxy clusters are among the smallest infalling sub-structures during the hierarchical assembly of galaxy clusters. Understanding the combined effect of environment and merger on the evolution of dwarf galaxies will shed light on the morphology-density relation in the low mass regime. We propose to obtain FAST HI emission line mapping of 16 dwarf-dwarf galaxy mergers discovered based on our deep optical imaging survey of the Virgo Cluster. High-resolution HI line mapping of the 16 mergers has been obtained recently through a 176-hr observational campaign on VLA (AVID). The FAST observations proposed here will push down column density detection limit of VLA by over 2 orders of magnitude and enable a relatively complete census of gas-rich companions and tenuous gaseous features resulted from tidal interactions and ram pressure stripping around the mergers. Together with the multi-frequency datasets at our disposal, the FAST observations will help uncover the environmental influence on the smallest infalling sub-structures of galaxies in clusters.