

Proposal Abstract:

We propose 15 hours to observe the HI emission line of 45 star-forming S0 galaxies (SFSOs) by FAST. Previous studies on the Tully-Fisher relation (TFR) of S0 galaxies only included a small portion of S0 galaxies, and most of them come from high-density environments. Therefore, we are still unclear about the TFR of S0 galaxies in low-density environments. This sample covers a wide range of environmental densities and has SDSS-IV MaNGA IFU observations. We will measure the HI line profile and HI flux density from their spectra to obtain their rotation velocity. The above information will let us to explore the following questions: i) Supplement to TFR data points of S0 galaxies; ii) Our sample contains S0 galaxies from low-density environments, which enables us to connect the TFR with S0 formation pathways; iii) By combining observations of other molecular emission lines (e.g., CO), we can test the validity of Kennicutt-Schmidt law for SFSOs.