

Proposal Abstract:

The growth of galaxies is thought to be closely linked to accretion of cold gas from the intergalactic filamentary streams. This stream-feeding scenario is unambiguously predicted by cosmological simulations and are indirectly supported by many observations, but direct observational evidence is largely missing. Isolated low-mass starburst galaxies with abnormally low metallicities are thought to be the ideal target to search for cosmic cold streams in the local Universe. We propose to obtain FAST HI emission line mapping of the iconic prototype of the extremely metal-poor dwarf starburst galaxies - Izw 18, from the galaxy center out to 2 times the virial radius of the halo, in order to put definite constraint on the intergalactic cold gas accretion process. We will compare the FAST HI map with the latest cosmological simulations to gain insight into the cold-mode accretion process. We will also combine the FAST data with existing interferometer HI observations to probe the feedback-driven gas recycling process near the halo-disk interface and to explore the feeding process near the interface of circumgalactic and intergalactic medium. This program will be the first attempt to map the cold stream accretion process in a nearby low-mass galaxy.