

FAST Proposal Coverpage

Project Name:

HI Content of Mid-IR Bright, Low-Metallicity Blue Compact Dwarf Galaxies

Project Summary:

We propose to measure the HI contents of 6 selected nearby metal-poor blue compact dwarf galaxies (BCDs) using FAST. This is an extension of our successful Arecibo observation programs in 2012 and 2013 (Chandola, Li, Tsai et al.). These BCDs, selected by their red and bright mid-infrared emission using WISE mid-infrared data, are undergoing a starburst phase in the low-metallicity environments, possibly their first major episode of star formation. It is a mystery why the gas in these systems has remained in a relatively pristine state with little metal enrichment in their early star formation cycles over the Hubble time, and only recently, began the intensive star formation that is consuming a large fraction of its gas and doubling its stellar mass in just a few couple of hundred Myr. The proposed observations will probe the neutral gas as the fuel resource for the current intensive star formation activity, and provide the essential first step toward further understanding of gas dynamics in these systems. We will also investigate if the Baryonic Tully-Fisher relation applies to these dwarf galaxies at a rapid transformation phase of their evolution.