Proposal Abstract:

We propose to map diffuse HI halo of two well-studied, nearby starbursts, NGC 5713 and NGC 3448. The mapped field is degree x 1 degree (~300 kpc x 300 kpc) centered around each starburst, reaching a depth of N_HI = 2 x 10^17/cm^2 at a significance level of 3 sigma.As analogs of NGC 4631, these gas-rich starbursts show multiple signatures including tidal bridges and/or kinematics misalignment that indicate they have extended HI halo that is accreting and fueling them NGC 5713, and NGC 3443 are a subset of our sample for which we acquired deep Keck KCWI IFU spectroscopy. Our goals are: (1) to measure halo gas content of and gas accretion rates onto the two starbursts and their neighbors; (2) Quantitatively compare the spatial distribution HI in observed and simulated starbursts. We will measure HI density profile, kinematics, clumpiness, asymmetry, and second order statistics of FAST observations and starbursts in IllustrisTNG. (3) Study the interplay between HI properties and properties such as environments and metallicity. The mapped areas have deep optical-NIR imaging and multi-wavelength data covering FUV-to-IR (Herschel), which are crucial for measuring reliable M*, SFR, substructural parameters, identifying dwarf neighbors or galaxy-free gas clumps.