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HI mapping capabilities using the Arecibo Observatory telescope

AMY SARDONE, D.J. PISANO, West Virginia University — Current HI mapping using the Arecibo Observatory telescope, the worlds largest single-dish radio telescope, has not produced images at its full capability, producing images with lower sensitivity and resolution. In order to search for possible signatures of gas accretion or debris from past gravitational interactions, we are attempting to produce images with the Arecibo Observatory telescope at its full capability, with the best resolution available for studies of faint, diffuse emission.Using data taken with the Arecibo Observatory telescope mapping HI in NGC 925, we were able to remove some of the artifacts from the initial reduction. These artifacts are a result of the non-Gaussian nature of the beam shape, produced by the unique optics of Arecibo. We are continuing to optimize the deconvolution of the beams. If we compare the HI mapping of the same galaxy using the Green Bank Telescope, we will be able to quantify the differences.With this method, we will be able to produce images at unprecedented sensitivity and resolution. This work serves as a demonstration of how astronomers will map HI using the Five hundred meter Aperture Spherical Telescope (FAST), being built in China.

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