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Abstract

The "Survey of HI in Extremely Low-mass Dwarfs" (SHIELD) is a multiwavelength study of local volume low-mass galaxies. Using the now-complete Arecibo Legacy Fast ALFA (ALFALFA) source catalog, 82 systems are identified that meet distance, line width, and HI flux criteria for being gas-rich, low-mass galaxies. These systems harbor neutral gas reservoirs smaller than $3 \times 10^7 M_{\odot}$, thus populating the faint end of the HI mass function with statistical confidence for the first time. Here we present new Karl G. Jansky Very Large Array D-configuration HI spectral line observations of 32 previously unobserved galaxies. These low angular resolution ($\sim 40''$ beam) images localize the HI gas; with a few exceptions, the HI gas is co-spatial with the optical centers of the galaxies. These images provide the first glimpse of the neutral interstellar medium in these systems. Support for this work was provided by NSF grant 1211683 to JMC at Macalester College.

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