The Arecibo Pisces-Perseus Survey: Goals, data reduction, and initial results from declination strips 23 and 33 ()

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The Arecibo Pisces-Perseus Supercluster Survey (APPSS) attempts to detect the infall of galaxies onto the Pisces-Perseus Supercluster (PPS). The ALFALFA survey has greatly augmented the known redshifts across the region. APPSS sources will complement the ALFALFA sources, with the goal of building a large enough sample to make a high confidence measurement of infall and backflow onto the PSS filament via peculiar velocity estimates from the Tully-Fisher (TFR) and Baryonic Tully-Fisher (BTFR) relations. APPSS galaxies are selected using photometric data from the Sloan Digital Sky Survey (SDSS), aimed to detect low-mass, nearby gas-rich objects below the ALFALFA detection limit. The L-band wide receiver at Arecibo Observatory in Puerto Rico is used to obtain a five-minute ON-OFF measurement for each galaxy. Since the candidate galaxy redshifts are unknown, the receiver and spectrograph system are used in a search mode that spans the expected frequencies of HI emission from PPS galaxies. We will describe the goals, target selection, and data reduction process for the survey. Our collaboration has divided the PPS into two-degree wide declination strips for data reduction; we report preliminary results for strips 23 and 33. We have made the initial data reduction on more than 200 targets, and determined the systemic velocity, line width, integrated flux density, and HI mass for each candidate detection. We will compare results on our two declination strips, and point out interesting detections found along the way as examples of the data reduction process. This work has been supported by NSF grants AST-1211005 and AST-1637339.