## 279.02 — The Arecibo Pisces-Perseus Supercluster Survey: Exploring the Large Scale Structure of the Local Universe

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The Pisces-Perseus Supercluster is one of the most massive and cosmologically significant structures in the local universe. The Arecibo Pisces-Perseus Supercluster Survey (APPSS) will provide observational constraints as to the mass-infall rate onto the main filament of the Supercluster through a detailed analysis of the mass and motion of galaxies within and around the cluster. The APPSS galaxy sample consists of over 2,000 galaxies detected during the ALFALFA survey (a blind, HI 21-cm emission line survey of the local universe) combined with galaxies identified through our recent targeted observing campaign - designed to probe below the HI mass cutoff of the ALFALFA survey. These APPSS-candidates were observed using the L-band Wide receiver at the Arecibo Observatory over the last 4 years; to date the APPSS targeted observing has led to an HI 21-cm emission line detection rate of ~70% - corresponding to ~500 galaxies with cz < 9,000 km/s. Combining these new observations with the ALFALFA galaxies gives a total of ~2,500 galaxies in the current APPSS sample. Here, we describe and demonstrate the methods used by the APPSS team to reduce and analyze these targeted observations and explore the properties of the entire APPSS galaxy sample (while comparing the properties of the ALFALFA galaxies with the detections from the APPSS targeted observing campaign). This work has been supported by NSF AST-1637339.

## 279.03 — Quantifying the performance of BAO reconstruction methods

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The baryon acoustic oscillation (BAO) technique is one of the most prominent probes of dark energy and will play a pivotal role in obtaining the tightest constraints on cosmology with the use of the large galaxy surveys in the next decade. Reconstructing the BAO peak reverses the effects of non-linear evolution and reduces redshift-space distortions, increasing the precision and accuracy of these measurements. Recently, there have been a number of alternative reconstruction algorithms proposed. We present a comparison of these algorithms, quantifying their performance on simulated data, from the aspects of the reconstructed field, power spectrum, correlation function, and BAO fitting.

## 279.04 — The Arecibo Pisces-Perseus Supercluster Survey: Characteristics of the APPSS Galaxy Population

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The Arecibo Pisces-Perseus Supercluster Survey(APPSS) aims to measure the infall and mass density along the PPS filament using red-shift independent distances obtained from the Baryonic Tully-Fisher Relation (BTFR). We will combine photometric data from the Sloan Digital Sky Survey with HI line spectroscopy obtained with the Arecibo telescope to derive BTFR distances and peculiar velocities over the PPS volume and its immediate foreground and background. To supplement the ALFALFA detections in the PPS volume, we have conducted new HI line observations with the Arecibo L-band Wide receiver system of blue, low surface brightness galaxies identified by their photometric properties in the Sloan Digital Sky Survey (SDSS). These targets are predicted to lie in the PPS volume but with HI masses of $8.0 < \log HI mass < 9.0$, putting them below the ALFALFA detection limit at that distance. We compare a preliminary sample of 634 galaxies detected as part from the APPSS survey with the main ALFALFA survey and other public catalogs of local galaxies, confirming that the new APPSS HI line detections are rotation-dominated, HI bearing galaxies with low stellar mass. Nearly all are star-forming, bluer, and of lower surface brightness, extinction and metallicity than optically selected samples. Preliminary BTFRs were calculated for both APPSS and ALFALFA galaxies and compared with BTFRs of simulated galaxies similar to those found in APPSS and ALFALFA using simulations such as IllustrisTNG (see poster by J. Borden). This work has been supported by NSF/AST-1714828 and the Brinson Foundation.

## 279.05 — The Arecibo Pisces-Perseus Supercluster Survey: Applying the Baryonic Tully-Fisher Relation

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