The Arecibo Legacy Fast ALFA HI Survey: The Rich Galaxy Group Zwicky 1400+0949

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Summary

The Zwicky Cluster 1400+0949 (also known as the NGC 5416 group, one of the richest nearby galaxy groups) has been mapped as part of the Arecibo Legacy Fast ALFA (ALFALFA) extragalactic HI survey. This blind survey will map 7074 square degrees of the high galactic latitude sky visible from Arecibo, generating a HI line spectral database covering the redshift range -1600 to 18,000 km/s with about 5 km/s resolution. We present a preliminary catalog and atlas of ALFALFA HI detections in the region surrounding Zw 1400+0949, cz ~6000 km/s. Using the observed HI velocities, and optical redshifts from the NASA Extragalactic Database (NED) for non-detected galaxies, we determine group membership and study the relationship of this group to surrounding structures. This work has been partially supported by NSF grants AST-0307661, and AST-0607007, by a grant from the Binson Foundation, by Colgate University (the Faculty Research Council and the Division of Natural Sciences and Mathematics), and by the National Astronomy and Ionosphere Center (NAIC).

NED & AGC Galaxies

Data from HI detections, supplemented by NASA Extragalactic Database (NED) and the Arecibo General Catalog (AGC) catalog. The galaxy classifications are defined as below. The dotted box shows the 2º x 2º tile of HI observations used in this project.

Optical image created with Palomar Observatory Sky Survey blue prints. Member galaxies have been labeled with their index number as listed in Table I. Non-detected galaxies are indicated by “n” after the index number. The map covers the same area as the HI data studied for this project.

Some of the ALFALFA Consortium members at Cornell University, Fall 2006:
(Bottom left) Noah Brosch, Sabrina Stierwalt, Martha Haynes, Jamie Lomax, (Back left) Oded Spector, Riccardo Giovanelli, Tom Balonek, Melanie Saintonge, Ann Martin, Brian Kent, Becky Koopmann

Optical Image from the Sloan Digital Sky Survey (SDSS)

Two sample ALFALFA HI spectra from the edge-on and face-on galaxies shown in the optical image above.