

Draft report

Version 1.0

E-ALFA Working Group # (7)

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## 1 Synergies with other ALFA Surveys

Multiple backends make commensal observing an exciting possibility that will allow Arecibo to achieve multiple science goals while surveying the sky. The other two consortiums are aimed at discovering pulsars (P-ALFA) and surveying the Galaxy, primarily in HI (GALFA). All consortiums have the common goal of surveying the Galactic Plane ( $b = \pm 5^\circ$ ), as well as the entire Arecibo sky to a shallower level. P-ALFA would prefer as long of a dwell time as possible when observing, but they would consider a slow drift if it was shown to be productive for both sides. The Galactic Plane is their highest priority and so they will be the most flexible with observing methods out of the plane (i.e. commensal with the All-Arecibo-Sky E-ALFA survey and GALFA Galactic Halo survey). The preferred GALFA observing method is drift mode with Nyquist sampling and modest calibration. This is compatible with the preferred observing method of E-ALFA. Observing tests should be completed to determine the plausibility of using drift scanning for part of the P-ALFA survey. GALFA and E-ALFA should also work together in doing test observations to determine the best time of day to observe and the characteristics of the ALFA beam. The GALFA group is planning some preliminary observations to explore options for data reduction (e.g. frequency switching vs. position switching).

Both GALFA and E-ALFA are interested in online reduction of the data. Since these data reduction methods will have many similarities, these two groups should communicate and hopefully ease the software development burden. There will most likely be an overlap of velocity coverage for E-ALFA and GALFA which can be used to increase the sensitivity to local HI (after smoothing the GALFA data).

In order to maximize the usefulness and accesibility of the ALFA surveys, it will be desirable to coordinate efforts not only on data taking modes, backends, and reduction, but also on the definition of data products, the software that will be produced to access those products, data storage, etc. While the initial efforts of this group will aim at an optimal definition for E-ALFA purposes, at a later stage we will meet with the GALFA and P-ALFA groups, and a representative of the NAIC ad hoc committee for data handling and storage, to coordinate our efforts.

The synergies that E-ALFA will have with non-ALFA surveys depends upon the clear scientific goals which are developed by the first working group. We will await their first order report before investigating these external synergies.