

Technical Page

Proposal Type: Large
 General Category: Astronomy
 Sub-Category: Spectroscopy
 Observation Category: Extragalactic
 Total Time Requested: 980 Hours

Proposal Title: The Alfa Ultra-Deep Survey: Deep HI Observations at $0 < z < 0.16$

ABSTRACT:

The improved spatial and spectral survey capabilities available with ALFA opened a new era of high sensitivity observations for the Arecibo telescope. In a precursor experiment, we have demonstrated that it is possible to achieve noise of less than 50micro-Jy with integration times of about 40 hours per pointing, which translates into a HI mass sensitivity of a few $10E8$ Msun at a redshift of about 0.16. We propose to use the new 200 MHz spectrometer available in late 2005 to carry out a blind HI survey with unprecedented sensitivity of 50micro-Jy for the redshift range of $0 < z < 0.16$ over a total area of 0.36 square degrees. The ‘‘ALFA Ultra Deep Survey’’ (AUDS) survey is more than an order of magnitude more sensitive than other HI surveys currently being carried out at Arecibo. The main scientific goals of the survey are to investigate the evolution of HI gas in the universe and explore the low-density gas around the edges of galaxies. The survey will be the deepest ‘‘blind’’ HI survey ever conducted. It will provide for the first time a direct link between HI absorption line measurements at high and intermediate redshifts and 21-cm emission line measurements at low redshifts. The expected number of HI detections at $z > 0.1$ will be larger than that of all previous targeted and blind surveys combined.

Name	Institution	E-mail	Phone	Student
Wolfram Freudling	Space Telescope - European Coordinating Facility	wfreudli@eso.org	01149-89- 32006425	no

Service Observing Request

- None
- All of the observing run.
- Part of the observing run.
- Queue Observing

Remote Observing Request

- No
- Maybe
- Yes

Instrument Setup

Atmospheric Observation Instruments:

Description of Observer Equipment: We request to use the new 200 MHz spectrometer for ALFA when it becomes available.

Special Equipment or setup: none

RFI Considerations

Frequency Ranges Planned

1222-1422

This proposal requires coordination with Punta Salinas radar within the band 1222-1381 MHz..

This proposal requires coordination with GPS L3 at 1381 MHz.