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ARECIBO OBSERVATORY
NATIONAL ASTRONOMY AND
IONOSPHERE CENTER
OBSERVING TIME REQUEST
COVER SHEET

We are indebted to our user community for their continued support of the Arecibo Observatory, Puerto Rico.

Section I - General Information

Submitted for special 2004.

This proposal has been submitted before, and has been modified.

The previous proposal number is Freudling040217.

Proposal Type:	Regular
General Category:	Astronomy
Sub-Category:	Spectroscopy
Observation Category:	Extragalactic
Total Time Requested:	70 Hours

Proposal Title: Precursor Observations for the Alfa Ultra Deep Survey (AUDS)

ABSTRACT:

The improved spatial and spectral survey capabilities available with ALFA will open a new era of high sensitivity observations for the Arecibo telescope. In principle, it is possible to achieve noise of less than 50 μJy per with integration times of about 100 hours, which translates into a 1σ HI mass sensitivity of a few $10^8 M_\odot$ at a redshift of 0.16. Surveys of such sensitivity could be used to, e.g. investigate the evolution of HI gas in the universe, directly detect Lyman-limit systems, explore the low-density gas around the edges of galaxies and search for OH megamasers. Enabling ultra-sensitive observations at Arecibo would therefore open whole new fields of research to the observatory. In this proposal, we request observing time for a set of precursor observation to test the feasibility of such very deep ALFA observations and find the limitations of such observations. The proposed strategy is to obtain multiple drift scans over a field with known late-type disk galaxies close to the redshift limit and close to the optimal Arecibo declination at night. The total time request is 70 hours of observing time. The target field for this precursor proposal includes the low redshift target NGC$\tilde{7}$523. The observations will serve as a technical test for high redshift observations and simultaneously search for extended HI emission around NGC$\tilde{7}$523. If successful, this search will lead to the first detection of the unionized fraction of the low column-density hydrogen in emission outside the Local Group.

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I will not need financial support.

This work is not part of a thesis.

Service Observing Request		**Remote Observing Request**	
[X]	None	[ ]	No
[ ]	All of the observing run.	[X]	Maybe
[ ]	Part of the observing run.	[ ]	Yes
[ ]	Queue Observing		

Section II - Time Request

The following times are in AST.

Begin – End Interval–Interval	Days Needed at This Interval
23:45 – 00:45	70
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–	
–	

Time Constraints (Must Be Justified in the Proposal Text)

Section III - Instruments Needed

ALFA

Atmospheric Observation Instruments:

Special Equipment or setup: none

Section IV - RFI Considerations

Frequency Ranges Planned

1220-1420

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

This proposal requires coordination with GPS L3 at 1381 MHz.

Section V - Observing List

Target List

23:12:20 +14:03:41 galaxy field