Technical Page

Proposal Type:	Regular
General Category:	Astronomy
Sub-Category:	Spectroscopy
Observation Category:	Extragalactic
Total Time Requested:	3 Hours

Proposal Title: A search for HI absorption in a high metallicity DLA at $z = 2.462$

ABSTRACT:

We propose to use the 430 MHz Gregorian receiver of the Arecibo Telescope to search for redshifted 21cm absorption in the $z = 2.462$ damped Lyman-α system (DLA) towards QSO0201+365. This absorber is the highest metallicity DLA known at high redshift and is thus an exceedingly interesting system, since it is one of very few known DLAs to have undergone significant chemical evolution. The observations have been designed to be sensitive to a wide range of spin temperatures and will thus directly test the hypothesis that low spin temperatures in DLAs correlate with high metallicity (Kanekar and Chengalur 2001). Since low T_s values have so far only been found in large spirals, the measurement of a low spin temperature in the DLA (as predicted by the temperature - metallicity anti-correlation) would imply that the absorber is an excellent candidate for the first detection of a large spiral galaxy at high redshift.

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Service Observing Request

- [X] None
- [ ] All of the observing run.
- [ ] Part of the observing run.
- [ ] Queue Observing

Remot e Observing Request

- [X] No
- [ ] Maybe
- [ ] Yes

Instrument Setup

430 G

Atmospheric Observation Instruments:

Special Equipment or setup: The observations require a new filter covering the observing frequency of 410 MHz.

RFI Considerations

Frequency Ranges Planned

409 - 411

This proposal requires coordination with AFTWF within the band 425-435 MHz.