

Technical Page

Proposal Type: Regular
 General Category: Astronomy
 Sub-Category: Spectroscopy
 Observation Category: Extragalactic
 Total Time Requested: 40 Hours
 Minimum Useful Time: 3 hours

Proposal Title: A Search for HI Absorption Toward Red AGN in Non-Elliptical Host Galaxies
ABSTRACT:

We propose to obtain redshifted HI spectra of highly-obscured quasars at $z=0.7-1$ which are strong candidates for possessing atomic and molecular absorption systems. The ultimate goals of this project are to: (1) discover new high- z molecular absorbers; (2) determine the physical conditions inside molecular clouds over the last half a Hubble time; (3) use molecular lines to determine whether fundamental constants have varied over cosmic time. Pursuant to these goals, we initiated a discovery program for these very rare obscured sightlines, which is made hard by rendering the AGN invisible shortward of 1-2 microns. Our new approach is to select strong radio sources with optical counterparts that are spiral galaxies, quite unusual (<5%) and unexpected for radio-loud AGN. Quite recently we obtained our first success with this sample as GBT exploratory time allowed us to discover our first new HI absorber at $z=0.207$, validating our new approach. This special Arecibo proposal-call allows us to further explore the HI absorption potential of this unique sample. Our targets are 300-700 mJy sources at $z=0.7-1$ and will require a total of 40 hours in six sessions to detect $N(HI) > 2 \times 10^{20} \text{ cm}^{-2}$ in 12 sources.

Name	Institution	E-mail	Phone	Student
John Stocke	University of Colorado	john.stocke@colorado.edu	303 492 1521	no

Remote Observing Request

- Observer will travel to AO
- Remote Observing
- In Absentia (instructions to operator)

Instrument Setup

705-825

Atmospheric Observation Instruments:

Special Equipment or setup: none

RFI Considerations

Frequency Ranges Planned

The maximum span of the new 700-800 MHz receiver.