

## Technical Page

Proposal Type: Regular  
 General Category: Astronomy  
 Sub-Category: Spectroscopy  
 Observation Category: Extragalactic  
 Total Time Requested: 10 Hours

**Proposal Title:** H I Envelopes and the Impact Parameters of Low Surface Brightness Galaxies  
**ABSTRACT:**

Lyman- $\alpha$  absorption lines are potentially extremely powerful probes of gas in and around galaxies, yet no general connection has been conclusively made between these lines and physical objects. Recent computer simulations have indicated that a significant fraction of low-redshift Lyman- $\alpha$  absorption lines can be attributed to nearby low surface brightness galaxies. If this scenario is correct, Lyman- $\alpha$  lines could be used not only to probe the exceptionally diffuse outer regions of these galaxies but could potentially result in the discovery of new, exceptionally diffuse stellar systems. For the simulations to be correct, though, it must be shown that the gaseous component of low surface brightness galaxies extend well beyond their optical diameters. We propose to test this by probing a 7.2' diameter region around four low surface brightness galaxies in the nearby universe for extended H I emission. To do this, we request a total of 10 hours observation time using the L-narrow receiver on the the Arecibo Gregorian system. This project will be undertaken as a REU student summer project.

Name	Institution	E-mail	Phone	Student
Karen L O'Neil	Arecibo Observatory	koneil@naic.edu	(787) 878-2612, x326	no

### Instrument Setup

L-narrow

### Atmospheric Optical Instruments:

**Special Equipment or setup:** none

### RFI Considerations

### Frequency Ranges Planned

1390 – 1420 Mhz