

Arecibo Observatory  
 William E. Gordon Telescope  
 Observing Time Request  
 COVER SHEET

**Section I - General Information**

Submitted for Sep 1 2016.

This proposal has been submitted before.

The previous proposal number is A3022.

Proposal Type:	Regular
General Category:	Astronomy
Sub-Category:	Spectroscopy
Observation Category:	Extragalactic
Time Requested this semester:	210
Hours already used for this project:	6.25
Additional Hours required to complete project:	
Minimum Useful Time:	
Expected Data Storage:	less than 100 GB

**Proposal Title:** The Widefield Arecibo Virgo Extragalactic Survey

*ABSTRACT:*

The Widefield Arecibo Virgo Extragalactic Survey (WAVES) is a neutral hydrogen (HI) survey using the Arecibo L-band Feed Array (ALFA) that will cover the Virgo cluster from declination +9:00:00 to +11:00:00 to the depth reached by the Arecibo Galaxy Environment Survey (AGES). Based on results from the AGES field covering the Virgo cluster from +7:00:00 to +9:00:00, we expect to detect numerous clouds without apparent optical counterparts that are below the detection threshold of the Arecibo Legacy Fast ALFA (ALFALFA) survey. These will add to our statistics on these objects, which is vital for testing models of their formation and thus enhancing our knowledge of the baryon cycle in the cluster environment.

*Outreach Abstract:*

Neutral hydrogen is the life blood of galaxies - it enables them to continue forming stars, and galaxies that have lost their hydrogen are frequently described as 'dead'. Our radio telescope can see this hydrogen, and we can use this to find galaxies. In this new survey, we will be looking at the Virgo cluster - our nearest galaxy cluster. This is a 'galaxy city' - lots of galaxies are crowded together and interact with each other, often violently. We act like forensic scientists trying to piece together what happened from the small bits of evidence we can find: 'wounded' galaxies that are in the process of turning into 'dead' elliptical galaxies and dark clouds of hydrogen lying around outside of their original galaxies, like pools of blood at a murder scene. These clues allow us to peer deeper into the violent world of the Virgo cluster and trace the fate of its denizens.

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This work is not part of a thesis.

**Remote Observing Request**

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

**Section II - Time Request**

The following times are in LST.

For these observations night-time is required.

Begin – End Interval–Interval	Days Needed at This Interval
1055 – 1355	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**

1225 - 1525 MHz (full ALFA range)

1390 - 1420 MHz (most important range for primary science objectives)

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**

Virgo Cluster field covering (J2000)

12:09 - 12:49, +09:00 - +11:00