

## Technical Page

This proposal has not been submitted before.

Proposal Type: Regular  
 General Category: Terrestrial Aeronomy  
 Observation Category: Ionosphere  
 Total Time Requested: 41.5 Hours  
 Minimum Useful Time:

**Proposal Title:** Wave Interaction Observations of D Region Using Arecibos New Ionospheric Heater

*ABSTRACT:*

We propose an experiment to observe HF-heating effects on the D region of the ionosphere using a radar technique called wave interaction (cross modulation) that will utilize Arecibo s new HF heater. The mid latitude D region is known to be weakly ionized;however, the D region ionization is additionally perturbed by external effects such as transient luminous effects, solar flares, bolides, etc. The wave interaction technique, which was one of the earliest techniques developed to study the D region, proved to be a sensitive technique especially when the D region was subjected to a high power-density disturbing (heating) wave (pulse) which causes changes in electron concentration, electron-neutral collision frequency, and ion chemistry of the D region. In this proposed wave interaction experiment we will take full advantage of modern control and receiver developments in addition to the Arecibo HF heater facility.We also hope to detect external induced effects (TLEs etc.)on the D region

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### Remote Observing Request

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

### Instrument Setup

Heating Facility

### Atmospheric Observation Instruments:

Ionosonde

**Special Equipment or setup:** none

**RFI Considerations**

**Frequency Ranges Planned**