

## Technical Page

This proposal has not been submitted before.

Proposal Type:           Urgent  
 General Category:       Astronomy  
 Sub-Category:           Radar  
 Observation Category:   Thermosphere  
 Total Time Requested:   8 Hours  
 Minimum Useful Time:

**Proposal Title:** Test for excitation of Lower Hybrid resonance effects by HF heating at Arecibo Observatory

**ABSTRACT:**

We propose a new HF experiment to extend the theory [Sagdeev et al., 1977, Sotnikov et al., 1978, 1980, 2012; Huba and Papadopoulos, 1978] to significantly advance understanding of Lower Hybrid [LH] wave excitation in space plasmas at low latitudes. Recent advances in theory [Sotnikov et al., 2012] and experiment [Carlson et al., 2015, Djuth et al., 1994] enable this opportunity to explore genuinely qualitative and quantitative advances. The goals are to bridge gaps in understanding in this under explored area of space plasma physics, by testing state of the art experiment against developing theory. It will be a qualitatively significant discovery if AO detects LH waves despite the geometry of HF propagation relative to B the magnetic field orientation-order similar impact of the Blogoveshchenskaya et al (2011) excitation of O Mode only instabilities at Tromso with X mode. OA is uniquely suited to diagnose resultant LH-excited suprathermal electron fluxes.

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### Remote Observing Request

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

### Instrument Setup

430 CH receiver

**Atmospheric Observation Instruments:**

Ionosonde

**Special Equipment or setup:** none

**RFI Considerations**

**Frequency Ranges Planned**