

Technical Page

This proposal has not been submitted before.

Proposal Type: Regular
 General Category: Terrestrial Aeronomy
 Sub-Category: Radar
 Observation Category: Middle-Lower Atmosphere
 Total Time Requested: 24 Hours
 Minimum Useful Time: 4 hours

Proposal Title: Electron Line Measurements at Arecibo: Electron Temperature and Collision Frequency

ABSTRACT:

Incoherent scatter (IS) is the basis for the Arecibo IS radar’s measurements of the upper atmosphere and ionosphere, from the lower D-region to the topside ionosphere. While typical measurements focus on the ion contributions to the IS spectrum, more recent measurements have made use of Arecibo’s extreme sensitivity to detect and study electron components of the IS spectrum, such as the gyro line and plasma line. Here, we attempt to measure additional feature of the IS spectrum in the lower ionosphere associated with collisional effects on the electrons. If successful, these measurements may lead to a diagnostic tool to assess the electron temperature and-or electron collision frequency in the lower ionosphere, where such effects are particularly hard to diagnose. Such measurements would be particularly applicable to future ionospheric heating campaigns at Arecibo.

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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

420 - 440