

Technical Page

Proposal Type: Regular
 General Category: Terrestrial Aeronomy
 Sub-Category: Radar
 Observation Category: Thermosphere
 Total Time Requested: 102 hours Hours

Proposal Title: The Natural Plasma Line Revisited as an Aeronomical Diagnostic
ABSTRACT:

The proposed observing program focuses on three unresolved aeronomy problems that entail diagnostic measurements with the natural plasma line. With recent improvements in the Arecibo radar transmitter and the introduction of the Gregorian feed, it is now possible to perform detailed experiments to solve the following ancient problems: 1) inconsistencies in observations of electron thermal balance in the ionosphere and observed depletions in the photoelectron spectrum of unknown origin, 2) frequency difference measurements between the upshifted and downshifted plasma line are inconsistent with the Bohm-Gross dispersion relation. This prevents one from measuring currents in the Arecibo ionosphere, and 3) the nighttime "thermal" plasma line is an order of magnitude larger than that predicted by theory.

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Service Observing Request

- None
- All of the observing run.
- Part of the observing run.
- Queue Observing

Remote Observing Request

- No
- Maybe
- Yes

Instrument Setup

430 CH radar

Atmospheric Observation Instruments:

Ionosonde

Special Equipment or setup: None.

RFI Considerations

Frequency Ranges Planned

422 MHz - 438 MHz