

Technical Page

Proposal Type: Urgent
 General Category: Terrestrial Aeronomy
 Sub-Category: Radar
 Observation Category: Mesosphere
 Total Time Requested: 24 Hours
 Minimum Useful Time: 2

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

ABSTRACT:

While typical incoherent scatter (IS) measurements focus on the ion contributions to the IS spectrum, which provide sensitivity to parameters like the electron density, ion composition, electron and ion temperatures, ion-neutral interactions, electric fields, more recent measurements have made use of Arecibo’s extreme sensitivity combined with advances in electronics and computational capabilities to detect and study electron components of the incoherent scatter spectrum, such as the gyro line and plasma line. In this proposal, we attempt to measure an additional feature of the incoherent scatter 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 applicable to future ionospheric heating campaigns at Arecibo.

Name	Institution	E-mail	Phone	Student
Michael J Nicolls	SRI International	michael.nicolls@sri.com	6508594813	no

Remote Observing Request

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

Instrument Setup

430 CH receiver 430 CH radar

Atmospheric Observation Instruments:

Ionosonde

Special Equipment or setup: none

RFI Considerations

Frequency Ranges Planned