

Technical Page

Proposal Type: Regular
 General Category: Terrestrial Aeronomy
 Sub-Category: Radar
 Observation Category: Ionosphere
 Total Time Requested: 112 Hours

Proposal Title: Optical and Radar Diagnostics of Energetic Electron Precipitation over Arecibo, Puerto Rico.

ABSTRACT:

We propose to conduct experiments for the further optical and radar diagnostics of energetic electron precipitation over Arecibo, caused by 40.75 kHz radio signals from the Naval transmitter (NAU) in Aquadilla, Puerto Rico. The proposed work is based on the evidence that NAU 40.75 kHz signals had caused electron precipitation from radiation belts over Arecibo, acquired from our experiments carried out from December 27, 2005 to January 3, 2006. In brief, on the night of January 1, 2006, the 40.75 kHz NAU signals monitored by MIT VLF receiving system were found to be absent for about 4 hours from 9 PM of January 1 to 1 AM of January 2. Very few events of E region plasma line enhancement were seen. In contrast, when the 40.75 kHz signals were present after 1 AM of January 2, E region plasma line enhancement was frequently recorded (see attached proposal for details). Six (6) MIT graduate and undergraduate students will participate in proposed experiments for their thesis research.

Name	Institution	E-mail	Phone	Student
Min Chang Lee	M.I.T.	mclee@mit.edu	671 253 5956	no

Service Observing Request

Remote Observing Request

- | | |
|---|--|
| <input checked="" type="checkbox"/> None
<input type="checkbox"/> All of the observing run.
<input type="checkbox"/> Part of the observing run.
<input type="checkbox"/> Queue Observing | <input checked="" type="checkbox"/> No
<input type="checkbox"/> Maybe
<input type="checkbox"/> Yes |
|---|--|

Instrument Setup

430 CH radar

Atmospheric Observation Instruments:

Fabry-Perot Ionosonde

Description of Observer Equipment: MIT All Sky Imaging System (ASIS) MIT VLF receiving

system

Special Equipment or setup: None

RFI Considerations

Frequency Ranges Planned

None