

Technical Page

Proposal Type: Long-term
 General Category: Astronomy
 Sub-Category: Spectroscopy
 Observation Category: Extragalactic
 Total Time Requested: 100 (30 spread over 2 yr + 70) Hours
 Minimum Useful Time: 2.5 hr

Proposal Title: A Remarkable Spectral Line/Continuum Outburst in LIRG NGC 660

ABSTRACT:

Arecibo observations have detected a radio continuum and spectral-line outburst in the nearby peculiar galaxy, NGC 660. A new continuum component with GHz-Peaked Spectrum (GPS) emission ($S_{\text{peak}} \sim 0.5 \tilde{\text{Jy}}$ at 5 GHz) has emerged between 2008.0 and 2012.0. This outburst has been mimicked by the parallel development of excited-OH maser emission/absorption in the 4660-, 4750- and 4765-MHz transitions. H₂CO absorption is also detected against the new continuum component. The likely nature of this event is either a SN explosion, or an outburst in nucleus of NGC660. Here we request observing time for two follow-up projects, (a) to monitor the line and continuum development of the outburst and, b) to make a full 1.1 to 10GHz spectral scan of NGC660 to explore its currently rich molecular spectrum, and its recombination-line emission. This is effectively a “Target-of-Opportunity” experiment.

Name	Institution	E-mail	Phone	Student
Christopher J Salter	Arecibo Observatory	csalter@naic.edu	7878782612 ext 281	no

Remote Observing Request

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

Instrument Setup

L-wide C S-low X-band S-high C-high

Atmospheric Observation Instruments:

Special Equipment or setup: (1) We need as many of the listed receivers as possible to be available for each monitoring session (every 2 months). (2) For the spectral scans, the listed receivers will be used

in turn. While no single receiver has higher priority, not all need to be available for a given observing session.

RFI Considerations

Frequency Ranges Planned

1100 - 10000

This proposal requires Iridium RFI protection at 1612 MHz between 10pm and 6am EST.

This proposal requires coordination with Punta Salinas radar within the band 1222-1381 MHz..

This proposal requires coordination with GPS L3 at 1381 MHz.