

## Technical Page

This proposal has not been submitted before.

Proposal Type: Urgent  
 General Category: Planetary Radar  
 Observation Category: spacecraft  
 Total Time Requested: 4.25 Hours  
 Minimum Useful Time: 2 hours

**Proposal Title:** Bistatic Arecibo and GBT Radar observations of spacecraft Chandrayaan-1 and Ouna

*ABSTRACT:*

Maintaining the orbital knowledge of old spacecraft that are still orbiting the Moon is important because these spacecraft pose a potential impact hazard for the future human missions. In particular, the Orion spacecraft will be using Moon's gravity assist on its way to the cis-lunar space. Chandrayaan-1 and Ouna were considered lost along their respective tracks until we detected Chandrayaan-1 with Goldstone and GBT in early July of 2016. We now seek to re-observe Chandrayaan-1 and to detect Ouna for the first time with radar.

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### Remote Observing Request

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

### Instrument Setup

S-Band radar                                  S-band receiver

### Atmospheric Observation Instruments:

Special Equipment or setup: none

### RFI Considerations

## Frequency Ranges Planned