

Technical Page

Proposal Type: Regular
 General Category: Astronomy
 Sub-Category: Spectroscopy
 Observation Category: Extragalactic
 Total Time Requested: 100 Hours
 Minimum Useful Time: 2.25 hrs

Proposal Title: Water in the distant Universe: An Arecibo survey for gravitationally lensed water masers

ABSTRACT:

Powerful extragalactic water masers are found in regions of dense gas within a few to a few tens of parsec from the central engine of AGN, providing valuable information on the properties of the supermassive black hole and its environment. To date, water masers have mainly been found in the local Universe only, due to the limited sensitivity of current radio telescopes. However, we have recently found the most distant water maser system known, at $z = 2.64$, in the gravitationally lensed quasar MG 0414+0534. This detection implies that powerful water masers are more abundant in the distant Universe than previously thought. Here we request observations with Arecibo to survey a sample of 25 distant gravitationally lensed quasars to i) confirm that water maser systems are more abundant at high redshift and ii) find further maser systems to study the properties of distant AGN.

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Remote Observing Request

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

Instrument Setup

C X-high C-high

Atmospheric Observation Instruments:

Special Equipment or setup: none

RFI Considerations

Frequency Ranges Planned

5097 - 5197
8704 - 8804
8809 - 8909
5356 - 5456
5801 - 5901
8763 - 8863
9876 - 9976
6033 - 6133
5958 - 6058
6905 - 7005
8721 - 8821
8119 - 8219
6410 - 6510
4582 - 4682
9070 - 9170
8602 - 8702
8408 - 8508
5200 - 5300
6213 - 6313
4763 - 4863
8773 - 8873
8065 - 8165
5154 - 5254
9702 - 9802
8200 - 8300