Technical Page

This proposal has not been submitted before.

Proposal Type:	Director Discretionary Time
General Category:	Astronomy
Sub-Category:	Spectroscopy
Observation Category:	
Total Time Requested:	3hr Hours
Minimum Useful Time:	1hr

Proposal Title: An Arecibo Search for Water Maser Emission in a High-z Ultraluminous Lensed Galaxy with CO Emission

ABSTRACT:

We propose observations of the IR/sub-mm/radio luminous source, J020941.3+001559, at a redshift of 2.5536. It is a distant example of an Einstein ring gravitationally-lensed system, making this source a strong candidate in which to observe water maser emission lines. High-z H_2O masers have only been discovered in lensed systems, e.g. the Impellizzeri et al (2008) discovery of the H_2O maser at a redshift of 2.64. The high sensitivity of Arecibo' s WAPP spectrometers, combined with the lensing amplification of the apparent source intensity, will enable us to probe our lensed source for water maser emission lines and as a byproduct confirm the redshift measurement derived from a CO detection with the Large Millimeter Telescope. Using the C-Band High receiver we will simultaneously search for NH_3 and OH absorption and emission features. Another detection of water in the early universe will constrain the evolution of the H_2O luminosity function throughout cosmic time.

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Remote Observing Request

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

Instrument Setup

C-high

Atmospheric Observation Instruments:

Special Equipment or setup: none

RFI Considerations

Frequency Ranges Planned