

Technical Page

Proposal Type: Long-term
 General Category: Astronomy
 Sub-Category: Spectroscopy
 Observation Category: Extragalactic
 Total Time Requested: 42 Hours
 Minimum Useful Time:

Proposal Title: Investigating the origin of the high-redshift water maser in MGJ0414+0534.

ABSTRACT:

The water maser line from the gravitationally lensed quasar MGJ0414+0534 was monitored with Arecibo between October 2008 and January 2010 at 6 weeks intervals with the aim of shedding light on the origin of the maser emission. The great sensitivity of the Arecibo telescope allowed us to resolve the main line profile into a number of broad features, one of these showing an increase in the line of sight velocity that, if confirmed, might indicate a positive velocity drift. In addition, a new maser components was tentatively detected in October 2008, displaced by +800 km/s from the main line. While providing useful clues to determine the nature of the maser in MGJ0414+0534, our single-dish data alone are presently insufficient to confidently exclude either one of the two scenarios, jet vs. accretion disk. Therefore, here we propose to prolong the observations for two additional years, with higher sensitivity, in order to i) monitor the long-term behaviour of the individual velocity components in the main line; ii) confirm the presence of the redshifted line that is clearly seen in one epoch and is believed to be variable; and iii) be able to detect any possible serendipitous flare-up that can be followed-up with VLBI.

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Remote Observing Request

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

Instrument Setup

C C-high

Atmospheric Observation Instruments:

Special Equipment or setup: none

RFI Considerations

Frequency Ranges Planned

6060-6160