Technical Page

This proposal has not been submitted before.

Proposal Type: Short
General Category: Astronomy
Sub-Category: Spectroscopy
Observation Category: Extragalactic
Total Time Requested: 3 Hours
Minimum Useful Time: 1.5 hours

Proposal Title: Investigating the restless supermassive black hole in the galaxy J0437+2456

ABSTRACT:

H2O megamasers residing in the AGN accretion disk in the galaxy J0437+2456 provide an excellent tracer of the SMBH velocity, which we have measured to be offset by 70 km/s from the host galaxy recession velocity. Such an offset is only expected if the black hole is either participating in a SMBH binary system or if it is experiencing a gravitational wave "kick" resulting from a recent SMBH merger event. However, the galaxy recession velocity has currently been measured using only an optical SDSS spectrum, which is subject to considerable systematic uncertainty. HI emission provides a much more reliable tracer of the galaxy recession velocity, as it doesn’t suffer from extinction/reddening effects and it is completely independent of the SMBH’s motion. We request 3 hours of Arecibo time to observe the HI profile in J0437+2456, thereby confirming or refuting the presence of a kinematically offset SMBH in this galaxy.

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<tr>
<th>Name</th>
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Remote Observing Request

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

Instrument Setup

L-wide

Atmospheric Observation Instruments:
Special Equipment or setup: none

RFI Considerations

Frequency Ranges Planned

1392 - 1402