Section I - General Information

Submitted for Sep 1, 2014.

This proposal has not been submitted before.

Proposal Type: Regular
General Category: Astronomy
Observation Category: Extragalactic
Time Requested this semester: 30
Hours already used for this project:
Additional Hours required to complete project:
Minimum Useful Time: 2 hours
Expected Data Storage: less than 100 GB

Proposal Title: The HI Properties of Dwarf Galaxies Hosting Massive Black Holes

ABSTRACT:

While black hole (BHs) inhabit the centers of essentially all massive bulge-dominated galaxies, the prevalence of BHs in dwarf galaxies is still unknown. Based on SDSS optical spectroscopy, we recently assembled the largest sample of low mass galaxies hosting central BHs. These galaxies have stellar masses comparable to the Magellanic Clouds and contain some of the least-massive BHs known in galaxy nuclei. BHs power active galactic nuclei (AGN) and AGN feedback is likely responsible for quenching star formation in massive galaxies. We propose to explore the role of AGN feedback on the HI content of low mass galaxies. We request 30 hours of Arecibo L-band 21cm observations to characterize HI emission of 27 low mass systems. Determining the impact of AGN on their low-mass host galaxies will constrain BH feedback and galaxy formation models at all mass scales.

Outreach Abstract:

Supermassive black holes are thought reside at the centers of all large galaxies. As matter falls onto a supermassive black hole, we observe powerful radiation. This radiation can affect the properties and gas content of the host galaxy. Until recently it was unknown whether black holes reside at the centers of lower mass galaxies at masses less than 1/10th that of our Galaxy. We have recently assembled the largest sample of such low mass galaxies with evidence for a central black hole. Using Arecibo, we will measure the gas content of these low mass galaxies and study the effects that supermassive black holes have on their host galaxy.

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<tr>
<th>Name</th>
<th>Institution</th>
<th>E-mail</th>
<th>Phone</th>
<th>Student</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marla Geha</td>
<td>Yale University</td>
<td><a href="mailto:marla.geha@yale.edu">marla.geha@yale.edu</a></td>
<td>203-432-5796</td>
<td>no</td>
</tr>
<tr>
<td>Jeremy Bradford</td>
<td>Yale University</td>
<td><a href="mailto:jeremy.bradford@yale.edu">jeremy.bradford@yale.edu</a></td>
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Remote Observing Request

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

Section II - Time Request

The following times are in LST.

For these observations night-time is required.

<table>
<thead>
<tr>
<th>Begin – End Interval–Interval</th>
<th>Days Needed at This Interval</th>
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<td>7:00 – 17:00</td>
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Time Constraints (Must Be Justified in the Proposal Text)

Section III - Instruments Needed

L-wide

Atmospheric Observation Instruments:

Special Equipment or setup: none

Section IV - RFI Considerations

Frequency Ranges Planned
Section V - Observing List

Target List

Target List is included in the proposal.