Proposal Identification No.: A2196 Date Received: 2006-Jan-30_13:17:10

Technical Page

Proposal Type:	Regular
General Category:	Astronomy
Sub-Category:	Spectroscopy
Observation Category:	Extragalactic
Total Time Requested:	96 Hours

Proposal Title: HI Emission Profiles in AGN Hosts: A New Strategy to Test the Black Hole-Host Galaxy Paradigm

ABSTRACT:

Recent surveys of black holes in the centers of nearby galaxies strongly suggest a close connection between black hole growth and galaxy formation. Current research on this problem has been closely guided by the discovery of a tight empirical correlation between black hole mass and the stellar velocity dispersion of the bulge of the host galaxy. However, we do not know how and when this $M_{\rm BH} - \sigma_*$ relation was established. As a first step toward addressing this fundamental problem, we must establish whether the $M_{\rm BH} - \sigma_*$ relation holds in active galaxies (i.e., in systems whose black holes are actively accreting) and whether it depends systematically on black hole mass and accretion rate. To bypass the significant difficulties of detecting the AGN host in the optical, we propose an alternative strategy of measuring H I linewidths, taking advantage of the well-established fact that the bulge velocity dispersion correlates well with the rotational velocity of the disk. We propose to obtain sensitive H I measuments (fluxes and linewidths) for a sample of 97 broad-line AGNs (Seyfert 1s and quasars) selected from SDSS, for which we have estimates of black hole masses and accretion rates from optical spectroscopy and host galaxy sizes and inclination angles from optical imaging. This survey will allow us to study, comprehensively for the first time, the $M_{\rm BH} - \sigma_*$ relation in AGNs. The H I data will additionally yield very useful information on the gas content of these systems, which is relevant to understanding AGN fueling. *The feasibility of this project has already been demonstrated on a subset of 22 objects observed during the last semester. Here we request time to complete the rest of the survey.*

Name	Institution	E-mail	Phone	Student
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Service Observing Request

- [ ] None
- [ ] All of the observing run.
- [ ] Part of the observing run.
- [X] Queue Observing

Remot e Observing Request

- [ ] No
- [X] Maybe
- [ ] Yes

Instrument Setup

L-wide

Atmospheric Observation Instruments:

Special Equipment or setup: none

RFI Considerations

Frequency Ranges Planned

1220-1420

This proposal requires coordination with Punta Salinas radar within the band 1222-1381 MHz..

This proposal requires coordination with GPS L3 at 1381 MHz.