13508 - Resolved Spectroscopy of the Extended X-ray Emission in NGC 4151: New Insights into AGN-driven Outflows

Cycle: 21, Proposal Category: GO

(Availability Mode: SUPPORTED)

INVESTIGATORS

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VISITS

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
01	(1) NGC-4151	STIS/CCD STIS/FUV-MAMA	2	07-Jan-2014 00:21:24.0	yes

2 Total Orbits Used

ABSTRACT

AGN feedback, in the form of winds or jets, is likely the mechanism that connects the growth of galactic bulges and their super-massive black holes. AGN-driven winds are most directly studied at the spatial scale of the narrow line region (NLR), but little is known of NLR X-ray emitting gas, which may be the dominant component in mass outflows. Given its brightness and orientation, the Seyfert 1 galaxy NGC 4151 is one of the few AGN for which we can resolve the X-ray NLR. We will obtain a 250 ksec Chandra/HETG observation, at a roll angle which will permit us to map the kinematics and ionization structure of the high-ionization gas. We will use these data to determine the mass outflow rate and kinetic luminosity of the X-ray gas, and, thus, its role in AGN feedback.

OBSERVING DESCRIPTION

we will obtain {\it HST}/STIS spectra of the nucleus of NGC~4151 with the E140M grating to cover the important UV absorption lines in the range 1150 -- 1710 \AA~ at a velocity resolution of $\sim$7 km s^{-1} (NGC~4151 is the only Seyfert galaxy too bright to be observed by COS). Using the STIS exposure time calculator and the average continuum flux of 2.8 $\times$ 10^{-13} ergs s^{-1} cm^{-2} \AA^{-1}~ at 1345 \AA, we will obtain a S/N $\approx$ 5 per resolution element with an exposure time of 5100 s (2 orbits), similar to spectra we have obtained of this AGN over the years.

Visit

Proposal 13508, Visit 01, implementation Tue Jan 07 05:21:34 GMT 2014

Diagnostic Status: No Diagnostics

Scientific Instruments: STIS/CCD, STIS/FUV-MAMA

Special Requirements: (none)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	NGC-4151	RA: 12 10 32.5740 (182.6357250d) Dec: +39 24 20.63 (39.40573d) Equinox: J2000		V=11.48	Reference Frame: ICRS

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) NGC-4151	STIS/CCD, ACQ, F28X50LP	MIRROR				0.1 Secs (0.1 Secs)	
								[==>]	***[1]***
2	(535297)	(1) NGC-4151	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A				2260 Secs (2531 Secs)	
								[==>2531.0 Secs]	***[1]***
3	(535297)	(1) NGC-4151	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A				2710 Secs (3035 Secs)	
								[==>3035.0 Secs]	***[2]***

Orbit Structure