12579 - AGN feedback in young, radio-loud AGN

Cycle: 19, 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) PKS-0023-26	ACS/WFC	1	14-Jul-2011 21:22:15.0	yes
02	(4) PKS-1306-09	ACS/WFC	1	14-Jul-2011 21:22:21.0	yes

2 Total Orbits Used

ABSTRACT

AGN feedback is now routinely included in both galaxy evolution models and cosmological simulations yet large uncertainties remain about the most important parameters, such as the mass outflow rates, bulk kinetic powers and the dominant outflow driving mechanisms. In order to address this issue, we propose to make HST ACS/WFC observations of a small, complete sample of compact (young) radio sources which have clear evidence for strong emission line outflows. Compact radio sources are ideal sources for studying AGN feedback as in addition to begin young, recently triggered AGN, all potential outflow drivers are present in these sources (AGN winds/starbursts/radio jets). We will use the unique capablilities of HST ACS/WFC to map the outflowing regions with high spatial resolution to determine the dominant outflow driving mechanism. Furthermore, the morphological information, in combination with our new high resolution VLT/X-Shooter spectra (which cover the entire optical - near-IR

wavelength range simultaneously), will allow us to accurately calculate the outflow energetics in these sources. Such studies are crucial for determining whether AGN feedback in real galaxies can achieve the requirements made by simulations.

OBSERVING DESCRIPTION

We will use the ramp filters to observe the [O III]4959,5007 emission line and a corresponding line free continuum region in two powerful compact radio sources. The main science goal of the proposal is to map the regions of line emission in order to determine the locations, sizes and structures relative to the host galaxies and their radio emission in these sources. The size information will be combined with our existing spectroscopy results to calculate the energetics of the AGN feedback. The morphology and location of the emission line region in relation to the radio source will help us to understand what the dominant gas ionisation mech anism is. We will use th standard ACS 4-point dither to ensure the best possible sampling and resolve the compact emission line regions.

CALIBRATION JUSTIFICATION

Biases for subarrays required.

Visit

Proposal 12579, Visit 01, implementation Fri Jul 15 01:22:26 GMT 2011

Diagnostic Status: Warning

Scientific Instruments: ACS/WFC

Special Requirements: (none)

Diagnostics

(PKS0023-26_OIII_line (01.001)) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp or WFC3 quad filters as central wavelengths & transmission efficiencies vary within the apertures.

(PKS0023-26_continuum (01.002)) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp or WFC3 quad filters as central wavelengths & transmission efficiencies vary within the apertures.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-WFC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.265 Line Spacing=0.187	Coordinate Frame=POS-TARG Pattern Orientation=20.67 Angle Between Sides=69.05 Center Pattern=false		(1), (2)

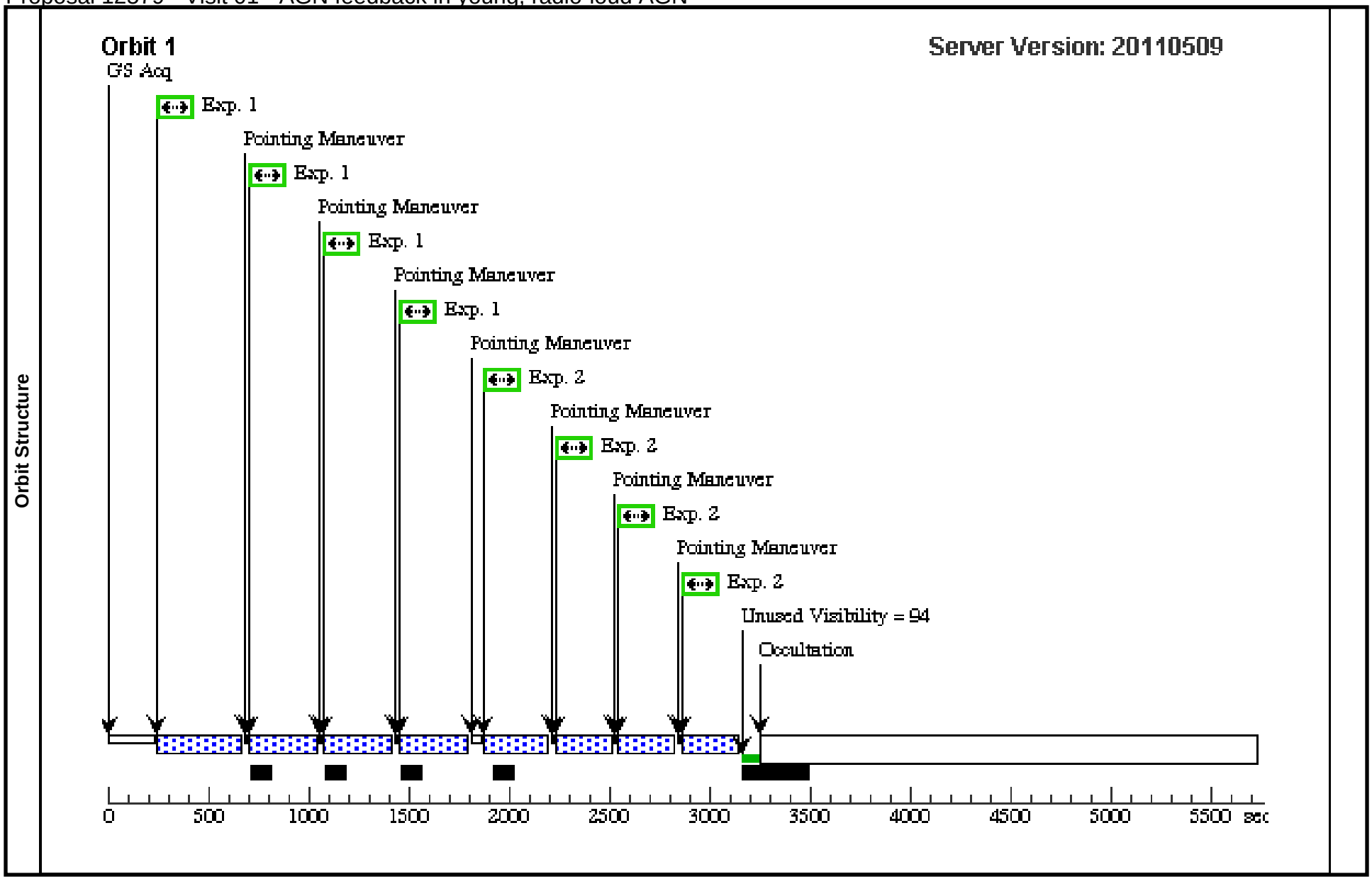
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	PKS-0023-26	RA: 00 25 49.1563 (6.4548179d) Dec: -26 02 12.62 (-26.03684d) Equinox: J2000	Redshift: 0.322	V=18.0	Reference Frame: ICRS

Comments: Radio source size = 0.68 arcsec
object coordinates retrieved from SIMBAD

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	PKS0023-26_OIII_line	(1) PKS-0023-26	ACS/WFC, ACCUM, WFC1-MRAMPQ	FR656N 6582 A	CR-SPLIT=NO	GS ACQ SCENARIO ONEB1B3	Pattern 1, Exps 1-1 in Visit 01 (1)	165 Secs *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	*[1]*
2	PKS0023-26_continuum	(1) PKS-0023-26	ACS/WFC, ACCUM, WFC1-IRAMPQ	FR647M 6065 A	CR-SPLIT=NO		Pattern 1, Exps 2-2 in Visit 01 (1)	105 Secs *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	*[1]*


Orbit Structure
Orbit 1
Server Version: 20110509
GS Acq
Exp. 1
Pointing Maneuver
Exp. 1
Pointing Maneuver
Exp. 1
Pointing Maneuver
Exp. 1
Pointing Maneuver
Exp. 2
Pointing Maneuver
Exp. 2
Pointing Maneuver
Exp. 2
Pointing Maneuver
Exp. 2
Unused Visibility = 94
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 12579, Visit 02, implementation Fri Jul 15 01:22:27 GMT 2011

Diagnostic Status: Warning

Scientific Instruments: ACS/WFC

Special Requirements: (none)

Diagnostics

(PKS1306-09_OIII_line (02.001)) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp or WFC3 quad filters as central wavelengths & transmission efficiencies vary within the apertures.

(PKS1306-09_continuum (02.002)) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp or WFC3 quad filters as central wavelengths & transmission efficiencies vary within the apertures.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-WFC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.265 Line Spacing=0.187	Coordinate Frame=POS-TARG Pattern Orientation=20.67 Angle Between Sides=69.05 Center Pattern=false		(1), (2)

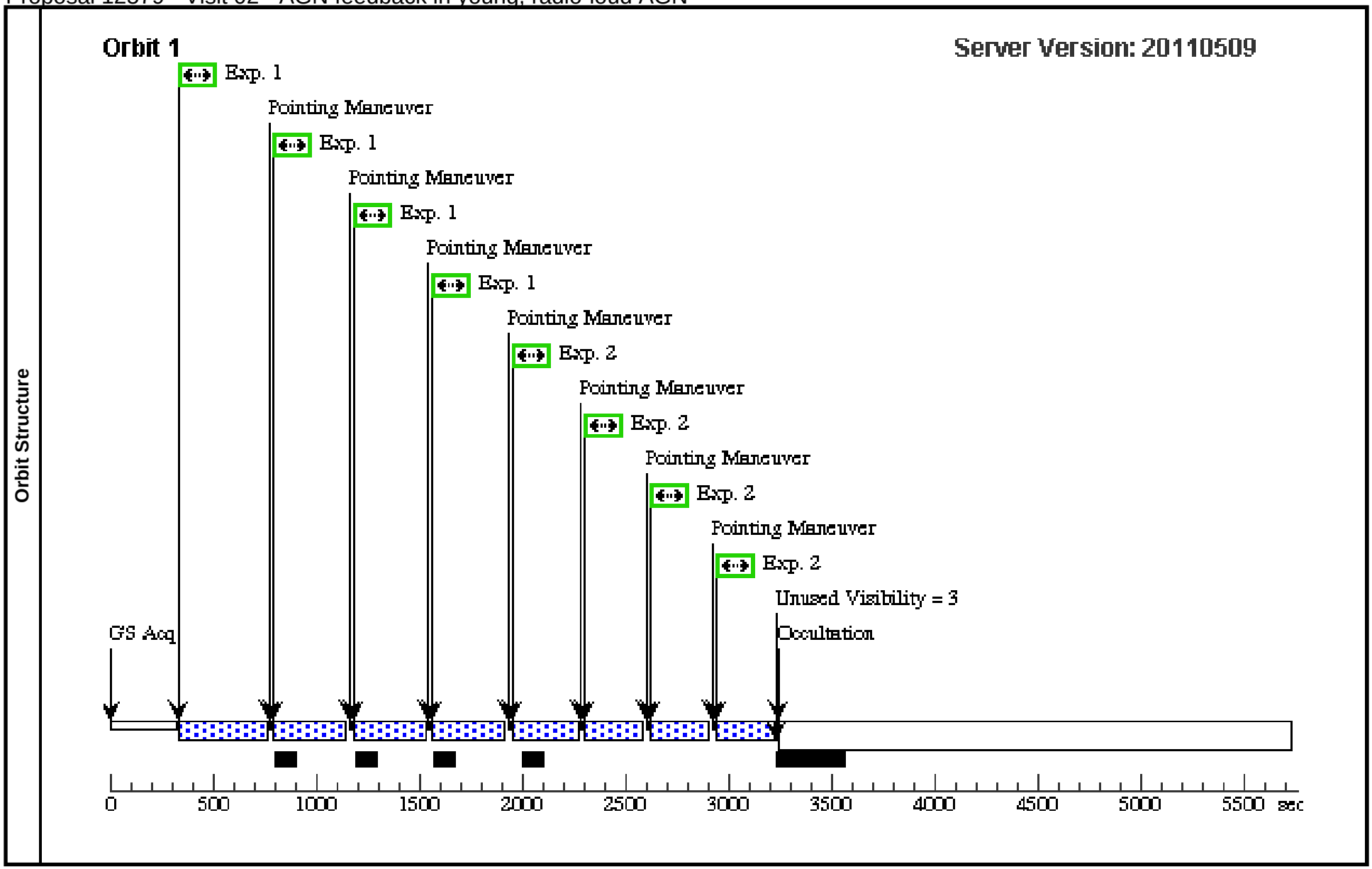
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(4)	PKS-1306-09	RA: 13 08 39.1200 (197.1630000d) Dec: -09 50 32.50 (-9.84236d) Equinox: J2000	Redshift: 0.464	V=20.5	Reference Frame: ICRS

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. Radio source size = 0.46 arcsec; object retrieved from SIMBAD

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	PKS1306-09_OIII_line	(4) PKS-1306-09	ACS/WFC, ACCUM, WFC1-IRAMPQ	FR716N 7305 A	CR-SPLIT=NO		Pattern 1, Exps 1-1 in Visit 02 (1)	172 Secs *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***
2	PKS1306-09_continuum	(4) PKS-1306-09	ACS/WFC, ACCUM, WFC1-IRAMPQ	FR647M 6755 A	CR-SPLIT=NO		Pattern 1, Exps 2-2 in Visit 02 (1)	105 Secs *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[1]***


Orbit 1
Server Version: 20110509
Orbit Structure
Exp. 1
Pointing Maneuver
Exp. 1
Pointing Maneuver
Exp. 1
Pointing Maneuver
Exp. 1
Pointing Maneuver
Exp. 2
Pointing Maneuver
Exp. 2
Pointing Maneuver
Exp. 2
Pointing Maneuver
Exp. 2
Unused Visibility = 3
Occultation
GS Acq
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec