# 12595 - Unraveling the LINER Conspiracy

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) NGC1052 | STIS/CCD | 2 | 01-Jul-2011 21:31:20.0 | yes |
| 02 | (1) NGC1052 | STIS/CCD<br>STIS/NUV-MAMA | 4 | 01-Jul-2011 21:31:29.0 | yes |
| 03 | (4) NGC4278 | STIS/CCD<br>STIS/NUV-MAMA | 4 | 01-Jul-2011 21:31:40.0 | yes |
| 04 | (2) NGC4579 | STIS/CCD<br>STIS/NUV-MAMA | 4 | 01-Jul-2011 21:31:50.0 | yes |

14 Total Orbits Used

**ABSTRACT**

LINER nuclei, the low-accretion-rate states in which SMBHs spend most of their lifetimes, are critical for understanding the AGN phenomenon in the context of galaxy evolution as a whole. Observations have clearly established the presence of BH-related activity in many LINERs. However, it has also become clear that the line emission on ~1" (~100 pc) scales, used for LINER classification in ground-based data, is unbalanced by the energy output of the nucleus alone. An unknown additional power source conspires with the nucleus to produce the observed LINER spectrum and luminosity. Our understanding of LINERs is thus fundamentally incomplete. We propose UV/optical spectroscopy, spatially resolving the 0"-1" scale, for three bright, nearby, and prototypical LINERs. All three have multiple AGN indications, but ionizing photon deficits, and all three have archival HST data with radial emission-line profiles in the H-alpha region. Complementing these with similar H-beta region data, we will probe for the first time, using standard line diagnostics, the gas excitation with increasing distance from the photoinizing sphere of influence of the nucleus with a resolution of ~10 pc. Similar data in the near UV will reveal or place limits on the nature of the additional power sources: shocks, or young or old stars.

**OBSERVING DESCRIPTION**

Our plan is to complement the three LINERs in our sample, that already have deep archival STIS long-slit data of the H-alpha region, with similar data for the H$\beta$ region, using the G430L grating. This will allow us, for the first time, to place nuclear and extra-nuclear regions, resolved on scales of tens of parsecs, together on diagnostic line-ratio diagrams. These three objects are also strong UV sources (in lines and continuum; based on FOS UV spectroscopy and STIS and FOC UV imaging), which allows us to extend our study of the radial structure and of the sources of excitation to cover the NUV-optical range, using G230L+NUV-MAMA. Our goals are to (a) measure the strengths of optical emission lines to 10% so as to discriminate between excitation mechanisms in standard diagnostic diagrams, and (b) measure the UV line ratio [Ne IV] 2423 / C II] 2326 that is very sensitive to fast shocks (with a value of approximately 1 for fast shocks and approximately 0 otherwise), and also search for localized enhancements of other high-excitation lines that are diagnostics of fast shocks, such as [Fe XIV] 5303.

The archival optical spectra have a higher spectral resolution and more pointings than we need because the goal of those observations was to map the gas kinematics around the nuclei of the targets. For our purposes, we need one additional pointing per setting per object with the slit passing through the nucleus (at the same P.A. as the existing observations) so that we can measure the line fluxes. The resolution of the G430L and G230L gratings is adequate since we do not have to deal with closely separated lines.

We will follow closely the observing strategy of program 7403, which observed our three targets before with STIS. We will use the same slit width (0.2 arcsec) and slit orientations, but with only a single slit position centered on the nucleus of each galaxy. The required P.A.s (measured E of N)

are: 13.8 degrees for NGC 1052, 88.0 degrees for NGC 4278, and 95.4 degrees for NGC 4579. The tolerance about these values is +/- 3 degrees and 180 degree rotations from these P.A.s are also acceptable.

We adopt the same acquisition exposure times as program 7403 for our three targets. To mitigate charge transfer inefficiency in the CCD, we will place the object at the position of the 52 x 0.2 E1 slit, which is close to the read-out end of the chip. Our acquisition strategy is to carry out a diffuse source acquisition first, followed by a short imaging exposure for verification, and then a peakup with the 52 x 0.1 E1 slit. Finally we will switch to the 52 x 0.2 E1 aperture for the science exposures. To deal with cosmic rays and bad pixels in the CCD observations, we will carry out a 3-step dither pattern (3 pix = 0.15 arcsec per step) along the slit (sub-exposures of approximately 550 seconds in the first orbit of each object and and 930 seconds in the scond orbit). Similarly, we will use a 2-step dither pattern along the slit in order to offset pairs NUV-MAMA exposures by 0.1 arcsec (= 4 pix) relative to each other. These dither patterns are meant to mitigate data any losses due to bad pixels.

We will use exposure times of approximately 4500-5000 seconds per object but with the G430L grating, to cover the H-beta+[O III] 4595,5007 region. Our objects have comparable H-alpha fluxes, within an 0,2 arcsec aperture, of approximately 1e-14 erg/s/cm2. As these objects are LINERs, by definition, the fluxes of narrow H-alpha, [N II] 6583, H-beta, and [O III] 5007 are all similar, within factors of 1-3. Since the system photon throughputs of G750M, used in the archival observations, and of G430L, which we will use, are similar, we will obtain the same quality of spatially resolved data for the H-beta region. In order to detect weak emission lines in the G430L setting and measure their fluxes, we will fit and subtract the starlight using multi-age stellar population models. This will permit accurate measurement of the run of line ratios with radius.

We have verified using the STIS ETC that a G430L exposure of 5000 seconds (requiring 2 orbits, after accounting for overheads) will provide integrated line flux S/N in excess of 200 in the spectrum of the nucleus itself (as in the archival G750M spectra), for all the diagnostic lines of interest in the this spectral region. Based on the radial brightness profiles of the lines in the archival spectra, we expect all line fluxes to drop by a factor of about 10-100 between the nucleus and a radius of 1 arcsec. The S/N in these extended regions will therefore scale down by about 10, at most, permitting us to measure line fluxes with better than 10% precision. We note that considerably shorter exposures would not be sufficient to detect the ~2x variations in line ratios seen in the archival spectra.

For planning the UV spectroscopy, we used the published nuclear FOS data for NGC 4579 and NGC 1052, as well as broad-band ACS HRC UV imaging. NGC 4278 was imaged in the UV with the FOC at 2200 and 2750 Angstroms (programs 4071 and 5154). These archival images reveal a bright unresolved UV nucleus. Without previous UV spectroscopy, we have no way of knowing this galaxy's UV emission line strength, although based on the strength of the optical lines, we expect the UV lines to be comparable to those of NGC 4579.

NGC 4579 has a UV continuum flux density of about 1e-15 erg/s/cm2/Angstrom. The C II] 2326 line, which is a benchmark relative to which many models make predictions, has a flux of 4.4e-14 erg/s/cm2. NGC~1052 has a UV continuum flux density of 1e-16 erg/s/cm2/Angstrom and a C II] 2326 line flux of 1.5e-14 erg/s/cm2. The diagnostic emission lines we seek to detect, or place useful upper limits on, in the UV are predicted by shock models to have fluxes 2.5 to 4 times lower than C II] 2326. Thus, all the UV emission lines of interest are comparable in flux to the optical lines. System throughputs in the UV are several times lower than in the optical, and therefore we will integrate for longer. We have verified using the STIS-ETC that, for NGC 4579 a 5000 second exposure in the G230L grating will give a S/N of approximately 40 in the 2500 Angstrom continuum on the nucleus. The C II] 2326 line will be measured with a S/N of approximately 200 at the nucleus. Again, since the line fluxes will decrease by 10-100 going out to a radius of 1 arcsec, the S/N in the extended regions will scale down by about 100, at most. Thus, we will be able to measure line fluxes with better than 10% precision, or to rule out at the presence of shock excited lines with a significance of more than 2 sigma at levels 5x lower than C II] 2326. For NGC 1052, which has weaker lines and continuum than NGC 4579, we will increase the exposure time to 10,000 seconds (4 orbits) in G230L, and thus obtain comparable S/N for all observables.

**ADDITIONAL COMMENTS**

We re-iterate the requirement for specific P.A.s (measured E of N): 13.8 degrees for NGC 1052, 88.0 degrees for NGC 4278, and 95.4 degrees for NGC 4579. 180 degree rotations from these P.A.s are also acceptable.

## Visit

**Proposal 12595, Visit 01, implementation** Sat Jul 02 01:31:55 GMT 2011

**Diagnostic Status: No Diagnostics**

Scientific Instruments: STIS/CCD

Special Requirements: ORIENT 55.8D TO 61.8 D; ORIENT 235.8D TO 241.8 D

*Comments: For this visit we wish to have a slit P.A. of 13.8 degrees, from which we calculate an ORIENT value of 58.8 degrees. The tolerance about this value is +/- 3 degrees and 180 degree rotations are acceptable.*

## Patterns

| # | Primary Pattern | | Secondary Pattern | Exposures |
|---|---|---|---|---|
| (1) | Pattern Type=STIS-ALONG-SLIT | Coordinate Frame=POS-TARG | | (4), (5) |
| | Purpose=DITHER | Pattern Orientation=90.0 | | |
| | Number Of Points=3 | Angle Between Sides= | | |
| | Point Spacing=0.15 | Center Pattern=false | | |
| | Line Spacing= | | | |

## Fixed Targets

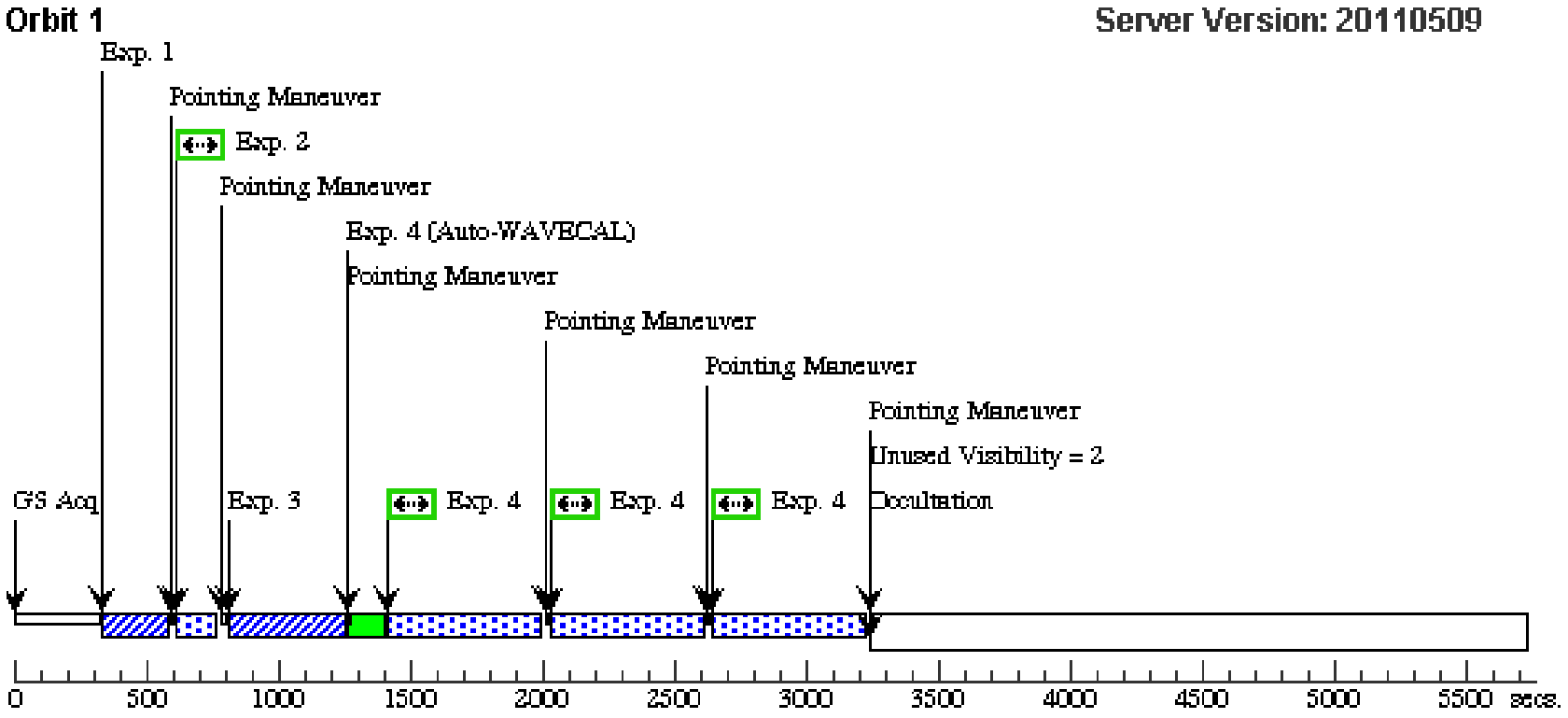
| # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous |
|---|---|---|---|---|---|
| (1) | NGC1052 | RA: 02 41 4.7985 (40.2699938d) | Radial Velocity: 1470 km/sec | V=10.47 | Reference Frame: ICRS |
| | | Dec: -08 15 20.75 (-8.25576d) | | SURF(V) = 14.5+/-0.3 | |
| | | Equinox: J2000 | | | |

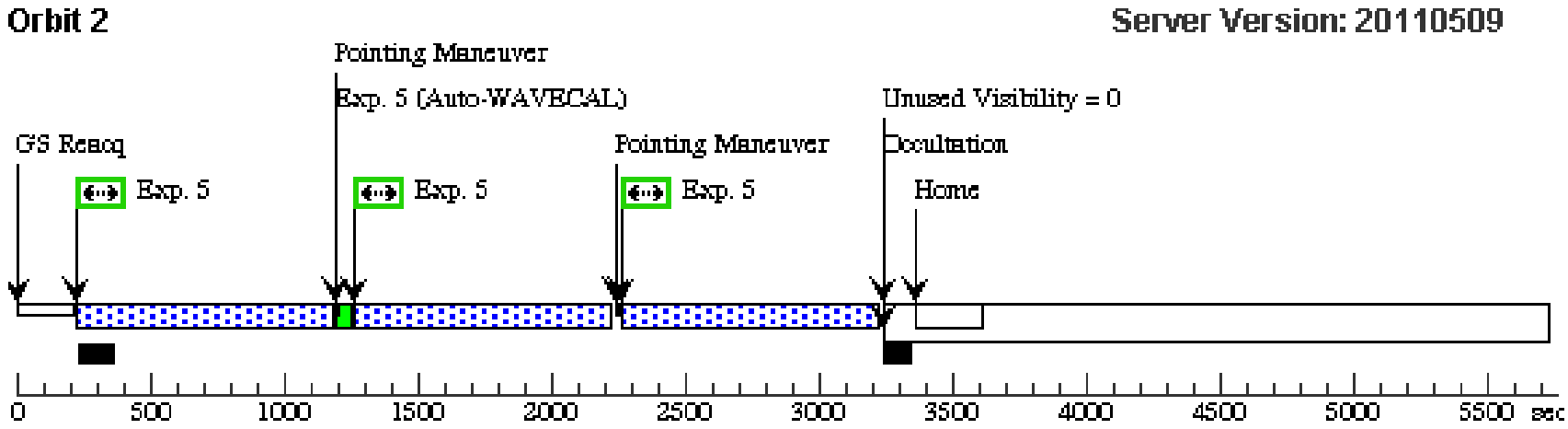
*Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.*
*Peak central surface brightness measured from a WFPC1/PC F555W image.*

## Exposures

| # | Label | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time/[Actual Dur.] | Orbit |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | (1) NGC1052 | STIS/CCD, ACQ, F28X50LP | MIRROR | DIFFUSE-CENTER=FLUX-CENTROID; ACQTYPE=DIFFUSE; CHECKBOX=5 | GS ACQ SCENARIO BASE1B3 | | 5 Secs<br>*[==>]* | <br>***[1]*** |
| 2 | | (1) NGC1052 | STIS/CCD, ACCUM, F28X50LP | MIRROR | CR-SPLIT=NO | | | 60 Secs<br>*[==>]* | <br>***[1]*** |
| 3 | | (1) NGC1052 | STIS/CCD, ACQ/PEAK, 52X0.1E1 | MIRROR | | | | 15 Secs<br>*[==>]* | <br>***[1]*** |
| 4 | | (1) NGC1052 | STIS/CCD, ACCUM, 52X0.2E1 | G430L 4300 A | CR-SPLIT=NO; GAIN=1 | | Pattern 1, Exps 4-4 in Visit 01 (1) | 300 Secs<br>*[==>544.0 Secs (Pattern 1)]*<br>*[==>544.0 Secs (Pattern 2)]*<br>*[==>544.0 Secs (Pattern 3)]* | <br>***[1]*** |
| 5 | | (1) NGC1052 | STIS/CCD, ACCUM, 52X0.2E1 | G430L 4300 A | CR-SPLIT=NO; GAIN=1 | | Pattern 1, Exps 5-5 in Visit 01 (1) | 700 Secs<br>*[==>925.0 Secs (Pattern 1)]*<br>*[==>925.0 Secs (Pattern 2)]*<br>*[==>925.0 Secs (Pattern 3)]* | <br>***[2]*** |

Orbit Structure



## Visit

**Proposal 12595, Visit 02, implementation** Sat Jul 02 01:31:56 GMT 2011

**Diagnostic Status: No Diagnostics**

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

Special Requirements: SAME ORIENT AS 01

*Comments: For this visit we wish to have a slit P.A. of 13.8 degrees, from which we calculate an ORIENT value of 58.8 degrees. The tolerance about this value is +/- 3 degrees and 180 degree rotations are acceptable.*

## Patterns

| # | Primary Pattern | | Secondary Pattern | Exposures |
|---|---|---|---|---|
| (2) | Pattern Type=STIS-ALONG-SLIT | Coordinate Frame=POS-TARG | | (4), (5) |
| | Purpose=DITHER | Pattern Orientation=90.0 | | |
| | Number Of Points=2 | Angle Between Sides= | | |
| | Point Spacing=0.1 | Center Pattern=false | | |
| | Line Spacing= | | | |

## Fixed Targets

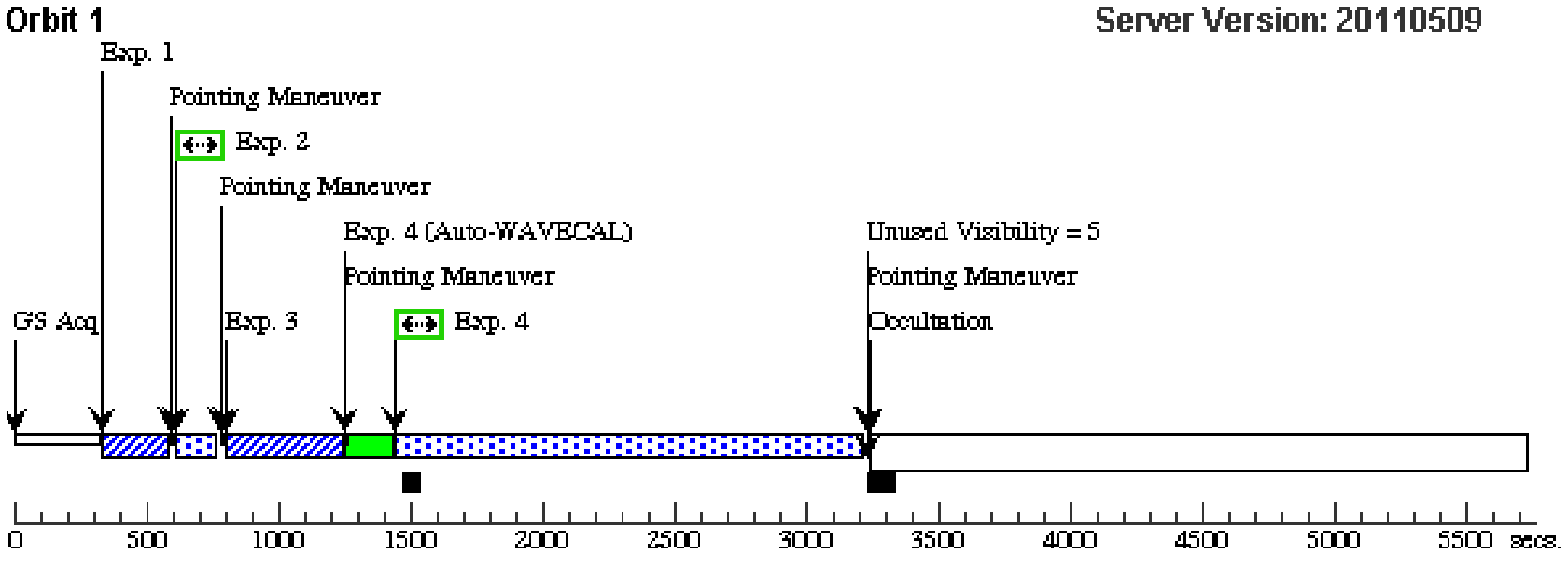
| # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous |
|---|---|---|---|---|---|
| (1) | NGC1052 | RA: 02 41 4.7985 (40.2699938d) | Radial Velocity: 1470 km/sec | V=10.47 | Reference Frame: ICRS |
| | | Dec: -08 15 20.75 (-8.25576d) | | SURF(V) = 14.5+/-0.3 | |
| | | Equinox: J2000 | | | |

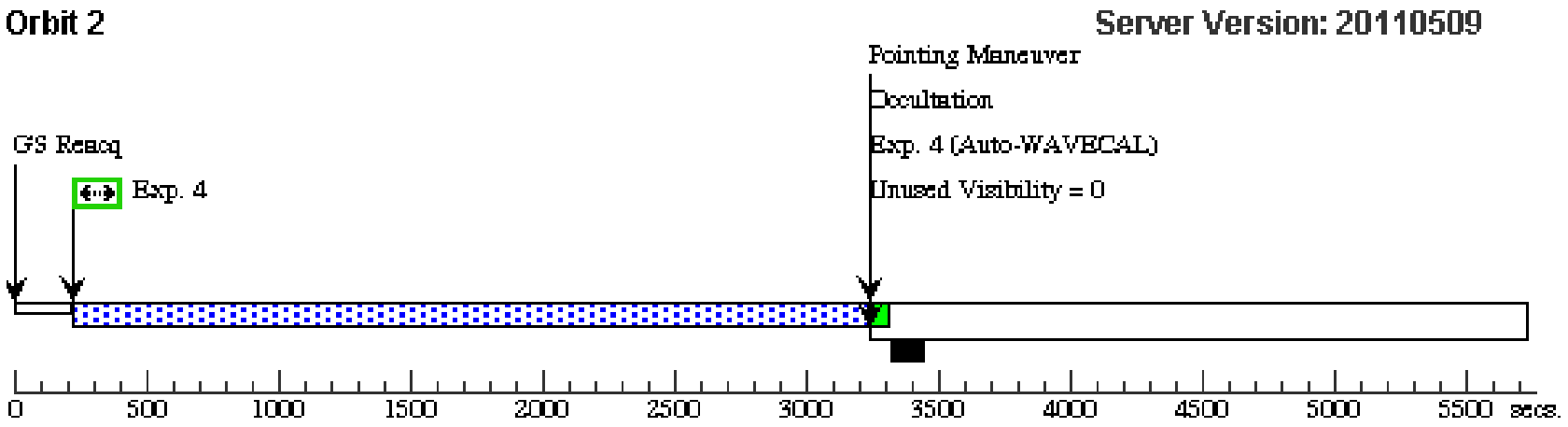
*Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.*
*Peak central surface brightness measured from a WFPC1/PC F555W image.*

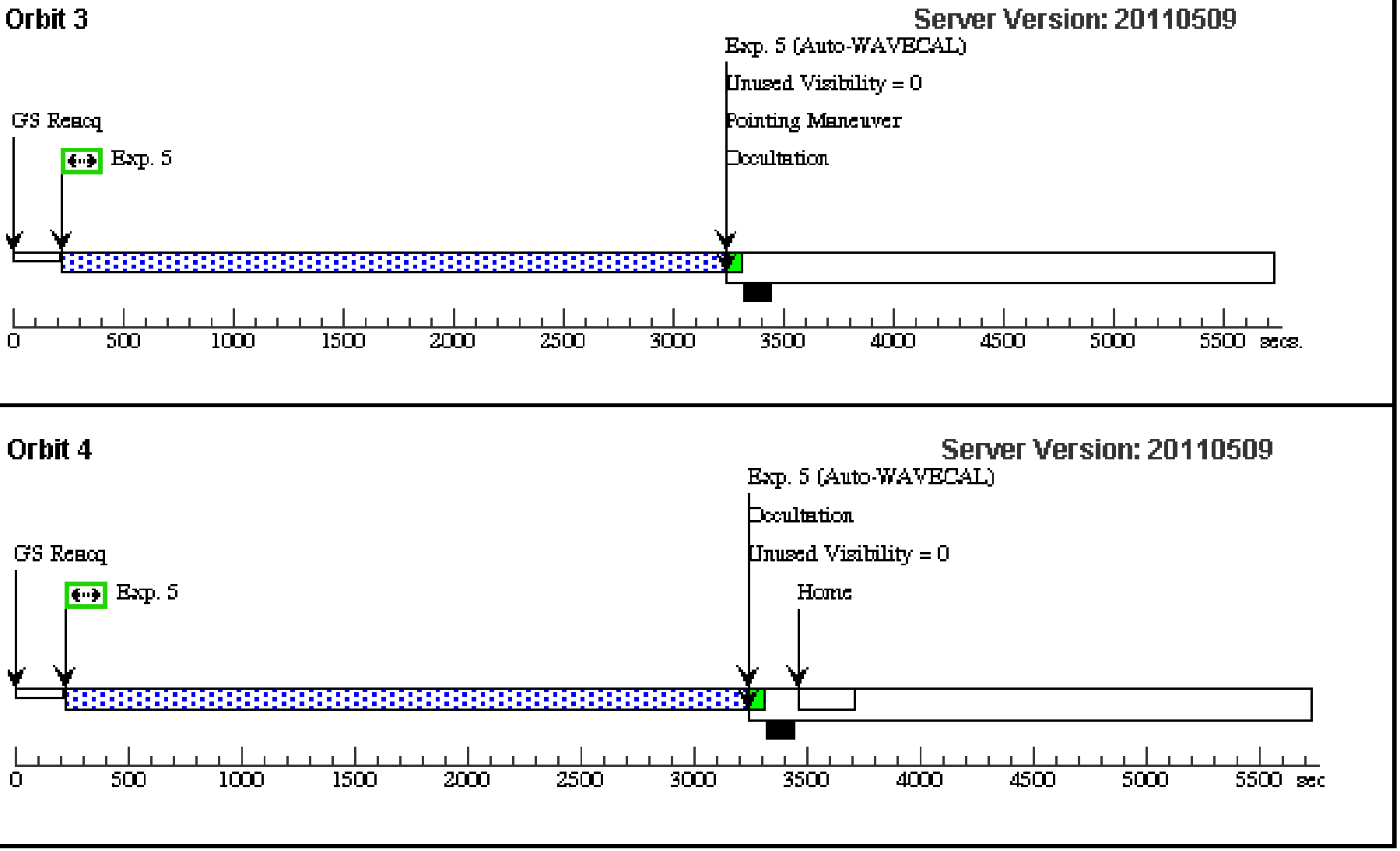
## Exposures

| # | Label (ETC Run) | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time/[Actual Dur.] | Orbit |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | (1) NGC1052 | STIS/CCD, ACQ, F28X50LP | MIRROR | ACQTYPE=DIFFUSE; DIFFUSE-CENTER=FLUX-CENTROID; CHECKBOX=5 | GS ACQ SCENARIO BASE1B3 | | 5 Secs | |
| | | | | | | | | *[==>]* | ***[1]*** |
| 2 | | (1) NGC1052 | STIS/CCD, ACCUM, F28X50LP | MIRROR | CR-SPLIT=NO; GAIN=1 | | | 60 Secs | |
| | | | | | | | | *[==>]* | ***[1]*** |
| 3 | | (1) NGC1052 | STIS/CCD, ACQ/PEAK, 52X0.1 | MIRROR | | | | 15 Secs | |
| | | | | | | | | *[==>]* | ***[1]*** |
| 4 | (183337) | (1) NGC1052 | STIS/NUV-MAMA, ACCUM, 52X0.2 | G230L 2376 A | | | Pattern 2, Exps 4-4 in Visit 02 (2) | 1760 Secs | |
| | | | | | | | | *[==>(Pattern 1)]* | ***[1]*** |
| | | | | | | | | *[==>2992.0 Secs (Pattern 2)]* | ***[2]*** |
| 5 | (183337) | (1) NGC1052 | STIS/NUV-MAMA, ACCUM, 52X0.2 | G230L 2376 A | | | Pattern 2, Exps 5-5 in Visit 02 (2) | 3000 Secs | |
| | | | | | | | | *[==>2992.0 Secs (Pattern 1)]* | ***[3]*** |
| | | | | | | | | *[==>2992.0 Secs (Pattern 2)]* | ***[4]*** |

Orbit Structure




Orbit 3
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Exp. 5 (Auto-WAVECAL)
Unused Visibility = 0
Pointing Maneuver
Occultation
GS Reacq
Exp. 5
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
secs.
Orbit 4
Server Version: 20110509
Exp. 5 (Auto-WAVECAL)
Occultation
Unused Visibility = 0
Home
GS Reacq
Exp. 5
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

## Visit

**Proposal 12595, Visit 03, implementation** Sat Jul 02 01:31:57 GMT 2011

**Diagnostic Status: No Diagnostics**

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

Special Requirements: ORIENT 130.0D TO 136.0 D; ORIENT 310.0D TO 316.0 D

*Comments: For this visit we wish to have a slit P.A. of 88.0 degrees, from which we calculate an ORIENT value of 133.0 degrees. The tolerance about this value is +/- 3 degrees and 180 degree rotations are acceptable.*

## Patterns

| # | Primary Pattern | | Secondary Pattern | Exposures |
|---|---|---|---|---|
| (1) | Pattern Type=STIS-ALONG-SLIT<br>Purpose=DITHER<br>Number Of Points=3<br>Point Spacing=0.15<br>Line Spacing= | Coordinate Frame=POS-TARG<br>Pattern Orientation=90.0<br>Angle Between Sides=<br>Center Pattern=false | | (4), (5) |
| (2) | Pattern Type=STIS-ALONG-SLIT<br>Purpose=DITHER<br>Number Of Points=2<br>Point Spacing=0.1<br>Line Spacing= | Coordinate Frame=POS-TARG<br>Pattern Orientation=90.0<br>Angle Between Sides=<br>Center Pattern=false | | (6) |

## Fixed Targets

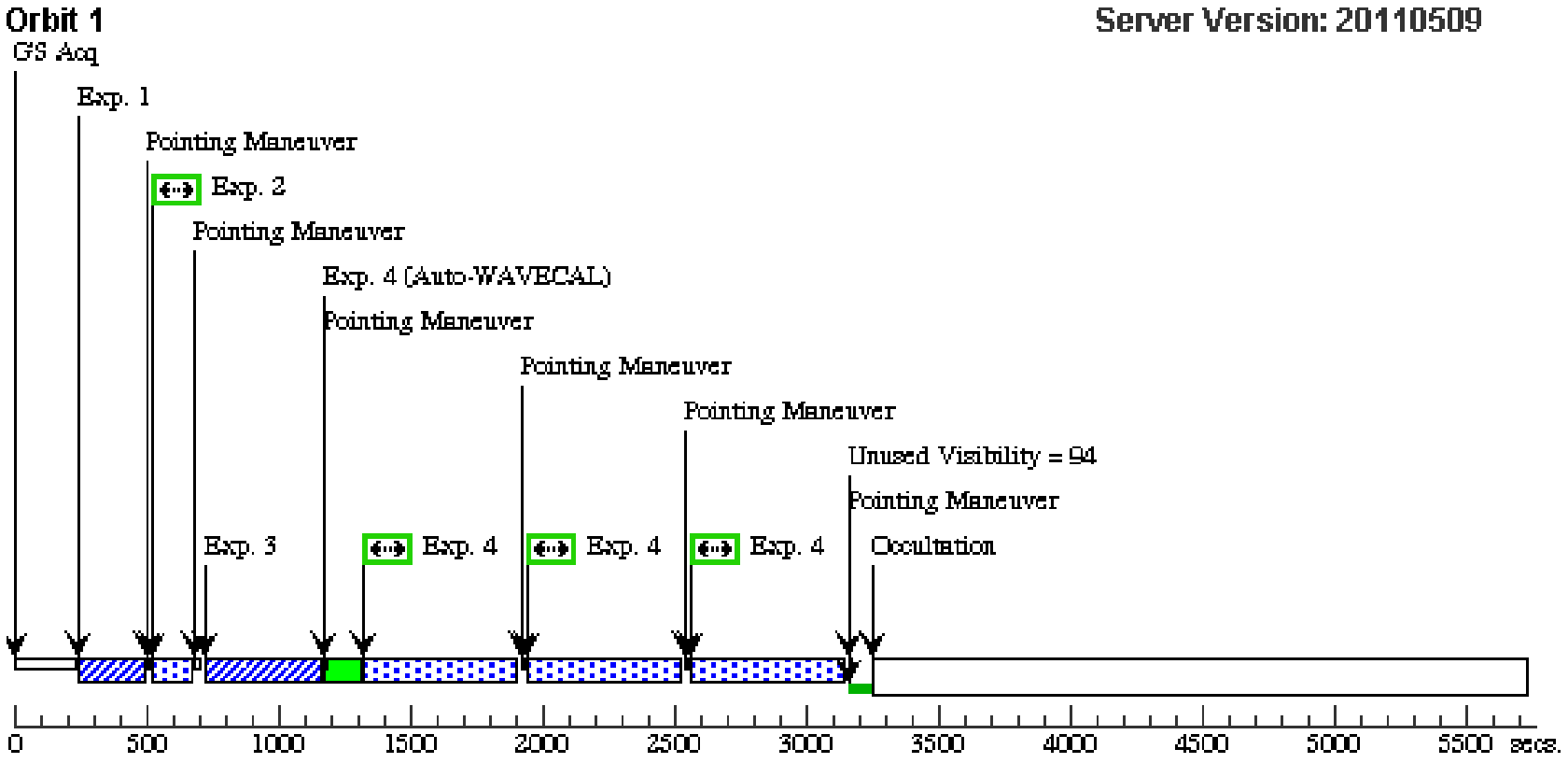
| # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous |
|---|---|---|---|---|---|
| (4) | NGC4278 | RA: 12 20 6.8256 (185.0284400d)<br>Dec: +29 16 50.71 (29.28075d)<br>Equinox: J2000 | Radial Velocity: 649 km/sec | V=10.16<br>SURF(V) = 15.1+/-0.3 | Reference Frame: ICRS |

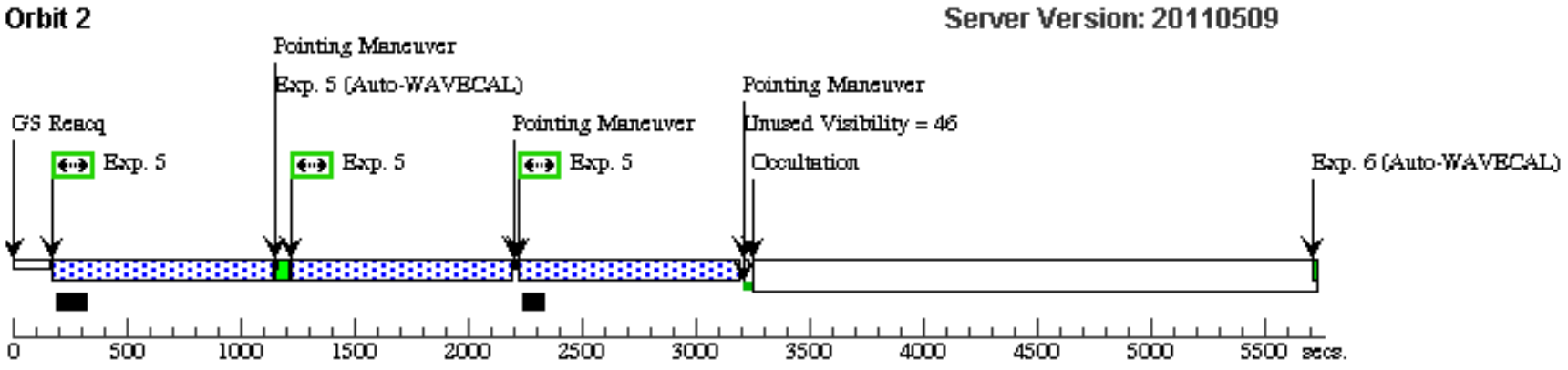
*Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.*
*Surface brightness measured from a WFPC2/PC F555W image, and is the average over a region of 0.2"x0.2" centered on the nucleus.*

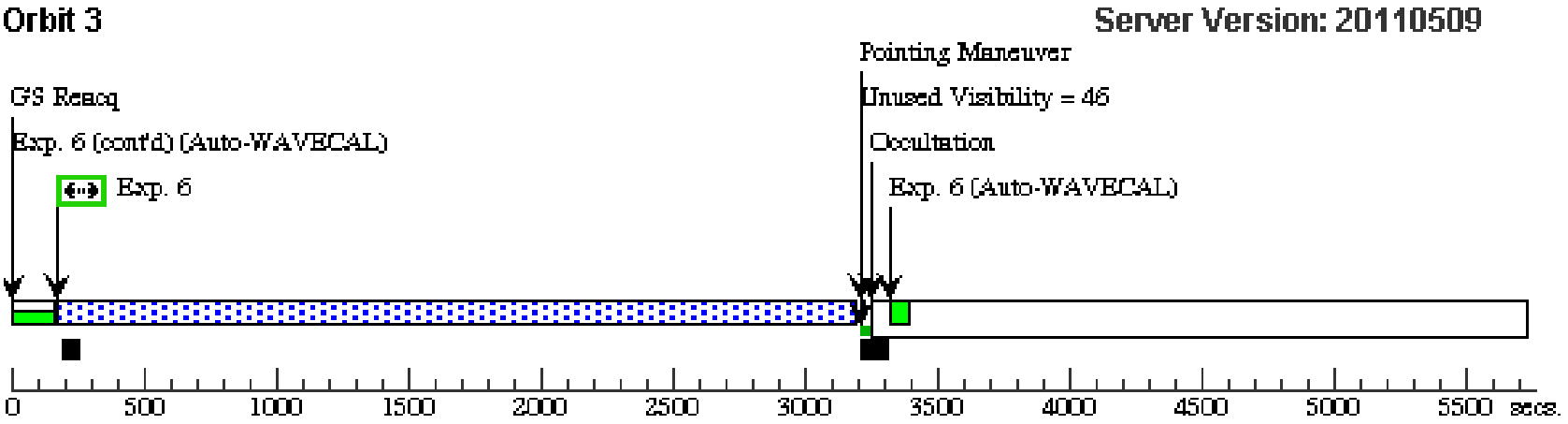
## Exposures

| # | Label (ETC Run) | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time/[Actual Dur.] | Orbit |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | (4) NGC4278 | STIS/CCD, ACQ, F28X50LP | MIRROR | DIFFUSE-CENTER=FLUX-CENTROID;<br>ACQTYPE=DIFFUSE;<br>CHECKBOX=5 | GS ACQ SCENARIO SINGLE | | 5 Secs<br>*[==>]* | ***[1]*** |
| 2 | | (4) NGC4278 | STIS/CCD, ACCUM, F28X50LP | MIRROR | CR-SPLIT=NO | | | 60 Secs<br>*[==>]* | ***[1]*** |
| 3 | | (4) NGC4278 | STIS/CCD, ACQ/PEAK, 52X0.1E1 | MIRROR | | | | 15 Secs<br>*[==>]* | ***[1]*** |
| 4 | | (4) NGC4278 | STIS/CCD, ACCUM, 52X0.2E1 | G430L<br>4300 A | CR-SPLIT=NO;<br>GAIN=1 | | Pattern 1, Exps 4-4 in Visit 03 (1) | 500 Secs<br>*[==>549.0 Secs (Pattern 1)]*<br>*[==>549.0 Secs (Pattern 2)]*<br>*[==>549.0 Secs (Pattern 3)]* | ***[1]*** |
| 5 | | (4) NGC4278 | STIS/CCD, ACCUM, 52X0.2E1 | G430L<br>4300 A | CR-SPLIT=NO;<br>GAIN=1 | | Pattern 1, Exps 5-5 in Visit 03 (1) | 900 Secs<br>*[==>930.0 Secs (Pattern 1)]*<br>*[==>930.0 Secs (Pattern 2)]*<br>*[==>930.0 Secs (Pattern 3)]* | ***[2]*** |
| 6 | (183337) | (4) NGC4278 | STIS/NUV-MAMA, ACCUM, 52X0.2 | G230L<br>2376 A | | | Pattern 2, Exps 6-6 in Visit 03 (2) | 2300 Secs<br>*[==>3007.0 Secs (Pattern 1)]*<br>*[==>3007.0 Secs (Pattern 2)]* | ***[3]***<br>***[4]*** |

Orbit Structure




Orbit 3
Server Version: 20110509
Pointing Maneuver
GS Reacq
Unused Visibility = 46
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Exp. 6
Exp. 6 (Auto-WAVECAL)
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1500
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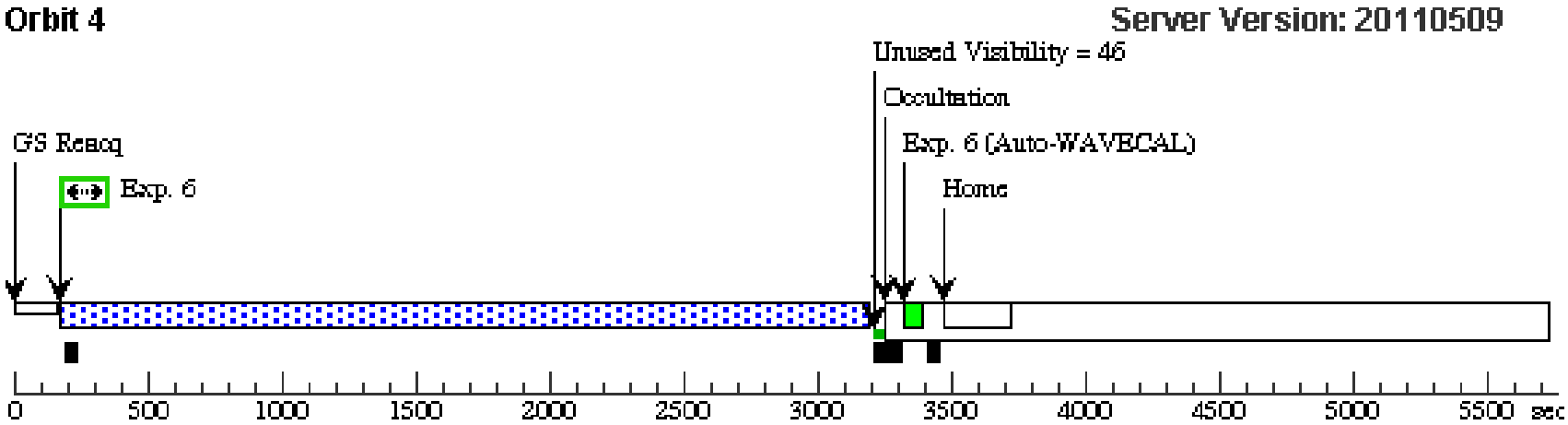
3000
3500
4000
4500
5000
5500
secs.


Orbit 4
Server Version: 20110509
Unused Visibility = 46
Occultation
GS Reacq
Exp. 6 (Auto-WAVECAL)
Exp. 6
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

## Visit

**Proposal 12595, Visit 04, implementation** Sat Jul 02 01:31:58 GMT 2011

**Diagnostic Status: No Diagnostics**

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

Special Requirements: ORIENT 137.4D TO 143.4 D; ORIENT 317.4D TO 323.4 D

*Comments: For this visit we wish to have a slit P.A. of 95.4 degrees, from which we calculate an ORIENT value of 140.4 degrees. The tolerance about this value is +/- 3 degrees and 180 degree rotations are acceptable.*

## Patterns

| # | Primary Pattern | | Secondary Pattern | Exposures |
|---|---|---|---|---|
| (1) | Pattern Type=STIS-ALONG-SLIT | Coordinate Frame=POS-TARG | | (4), (5) |
| | Purpose=DITHER | Pattern Orientation=90.0 | | |
| | Number Of Points=3 | Angle Between Sides= | | |
| | Point Spacing=0.15 | Center Pattern=false | | |
| | Line Spacing= | | | |
| (2) | Pattern Type=STIS-ALONG-SLIT | Coordinate Frame=POS-TARG | | (6) |
| | Purpose=DITHER | Pattern Orientation=90.0 | | |
| | Number Of Points=2 | Angle Between Sides= | | |
| | Point Spacing=0.1 | Center Pattern=false | | |
| | Line Spacing= | | | |

## Fixed Targets

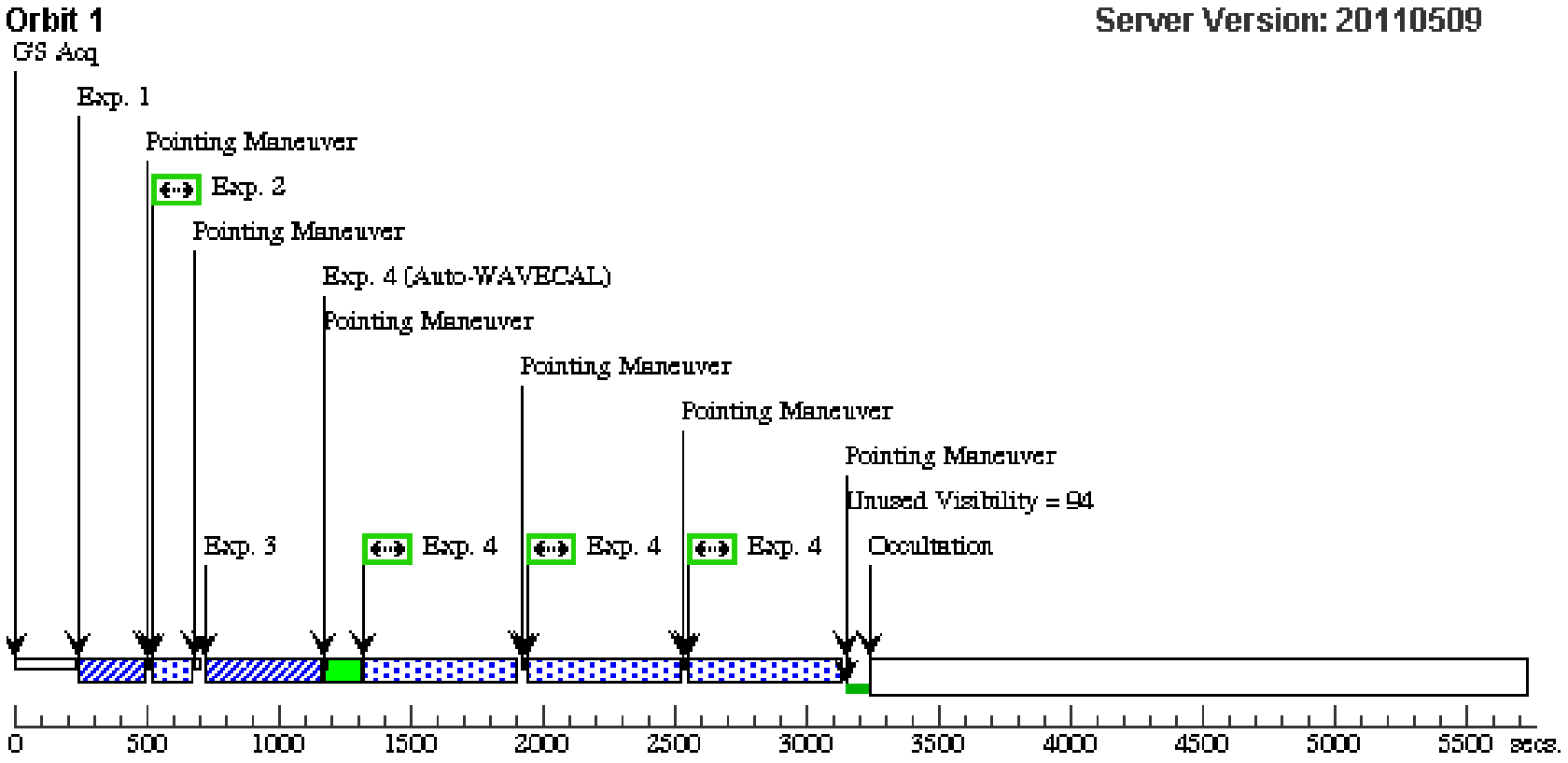
| # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous |
|---|---|---|---|---|---|
| (2) | NGC4579 | RA: 12 37 43.4800 (189.4311667d) | Radial Velocity: 1519 km/sec | V=9.66 | Reference Frame: ICRS |
| | | Dec: +11 49 4.40 (11.81789d) | | SURF(V) = 15.1+/-0.4 | |
| | | Equinox: J2000 | | | |

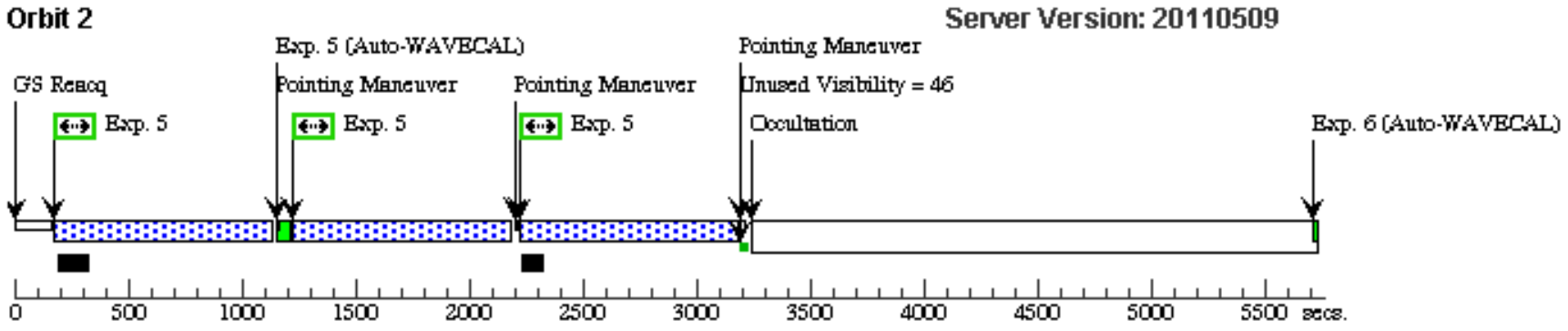
*Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.*
*Central surface brightness measured from a ground-based image.*

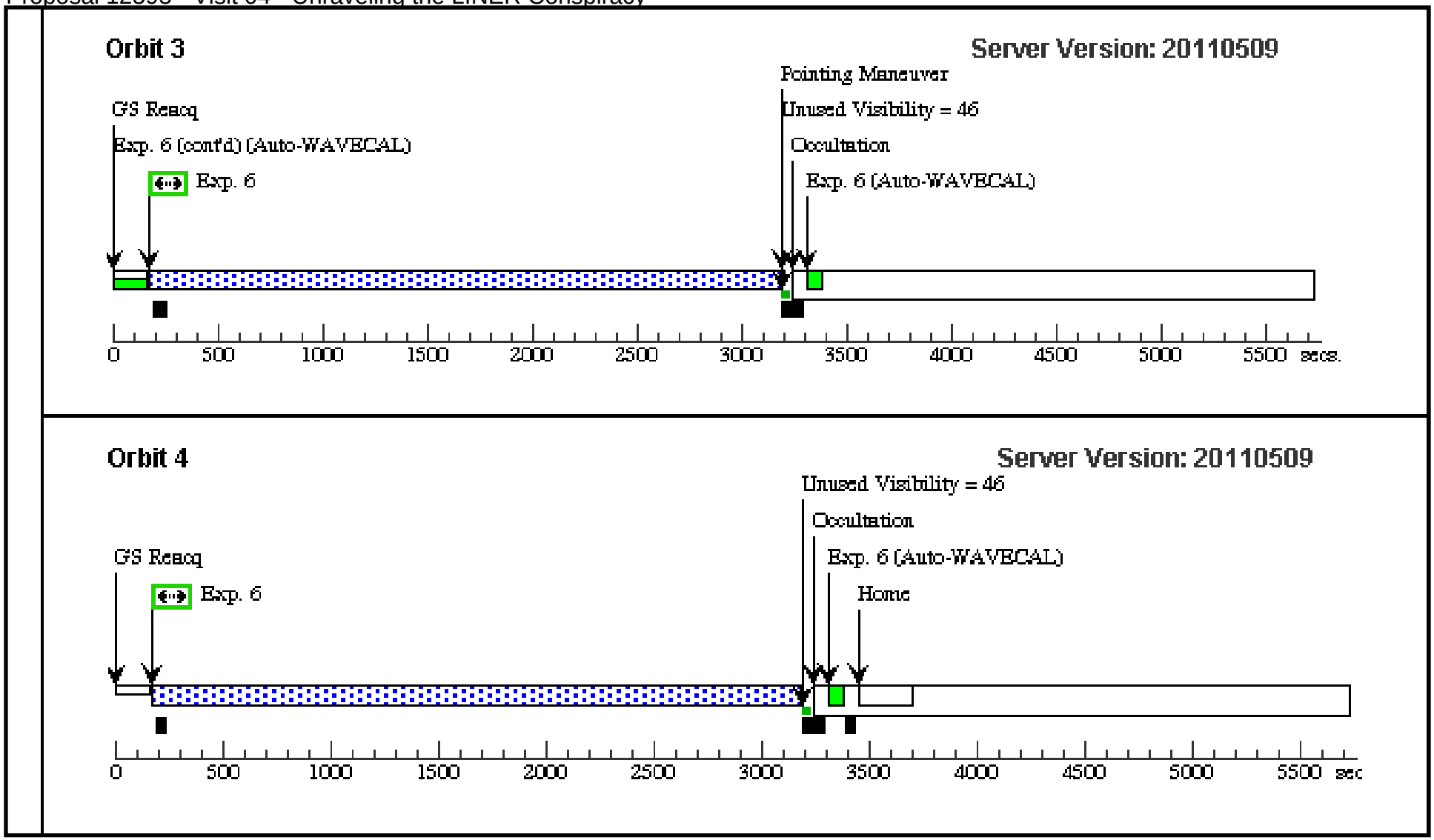
## Exposures

| # | Label (ETC Run) | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time/[Actual Dur.] | Orbit |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | (2) NGC4579 | STIS/CCD, ACQ, F28X50LP | MIRROR | DIFFUSE-CENTER =FLUX-CENTROID ; ACQTYPE=DIFFU SE; CHECKBOX=5 | GS ACQ SCENARI O SINGLE | | 5 Secs | |
| | | | | | | | | *[==>]* | ***[1]*** |
| 2 | | (2) NGC4579 | STIS/CCD, ACCUM, F28X50LP | MIRROR | CR-SPLIT=NO | | | 60 Secs | |
| | | | | | | | | *[==>]* | ***[1]*** |
| 3 | | (2) NGC4579 | STIS/CCD, ACQ/PEAK, 52X0.1E1 | MIRROR | | | | 15 Secs | |
| | | | | | | | | *[==>]* | ***[1]*** |
| 4 | | (2) NGC4579 | STIS/CCD, ACCUM, 52X0.2E1 | G430L 4300 A | CR-SPLIT=NO; GAIN=1 | | Pattern 1, Exps 4-4 i n Visit 04 (1) | 500 Secs | |
| | | | | | | | | *[==>545.0 Secs (Pattern 1)]* | |
| | | | | | | | | *[==>545.0 Secs (Pattern 2)]* | ***[1]*** |
| | | | | | | | | *[==>545.0 Secs (Pattern 3)]* | |
| 5 | | (2) NGC4579 | STIS/CCD, ACCUM, 52X0.2E1 | G430L 4300 A | CR-SPLIT=NO; GAIN=1 | | Pattern 1, Exps 5-5 i n Visit 04 (1) | 900 Secs | |
| | | | | | | | | *[==>926.0 Secs (Pattern 1)]* | |
| | | | | | | | | *[==>926.0 Secs (Pattern 2)]* | ***[2]*** |
| | | | | | | | | *[==>926.0 Secs (Pattern 3)]* | |
| 6 | (183374) | (2) NGC4579 | STIS/NUV-MAMA, ACCUM, 52X0.2 | G230L 2376 A | | | Pattern 2, Exps 6-6 i n Visit 04 (2) | 3000 Secs | |
| | | | | | | | | *[==>2995.0 Secs (Pattern 1)]* | ***[3]*** |
| | | | | | | | | *[==>2995.0 Secs (Pattern 2)]* | ***[4]*** |

Orbit Structure




Orbit 3
Server Version: 20110509
Pointing Maneuver
GS Reacq
Unused Visibility = 46
Exp. 6 (cont'd) (Auto-WAVECAL)
Occultation
Exp. 6
Exp. 6 (Auto-WAVECAL)
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
secs.
Orbit 4
Server Version: 20110509
Unused Visibility = 46
Occultation
GS Reacq
Exp. 6 (Auto-WAVECAL)
Exp. 6
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec