



17270 - The Effects of the Merger Process on Extranuclear Star Formation in LIRGs

Cycle: 30, Proposal Category: GO
(Availability Mode: SUPPORTED)

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VISITS

<i>Visit</i>	<i>Targets used in Visit</i>	<i>Configurations used in Visit</i>	<i>Orbits Used</i>	<i>Last Orbit Planner Run</i>	<i>OP Current with Visit?</i>
01	(1) UGC-3410 (7) UGC-3405	WFC3/IR	1	08-Dec-2022 09:00:57.0	yes
02	(2) NGC-3221	WFC3/IR	1	08-Dec-2022 09:00:58.0	yes
03	(3) NGC-6052	WFC3/IR	1	08-Dec-2022 09:00:59.0	yes
04	(4) NGC-7752 (6) NGC-7753	WFC3/IR	1	08-Dec-2022 09:01:00.0	yes
05	(5) NGC-2342	WFC3/IR	1	08-Dec-2022 09:01:01.0	yes

5 Total Orbits Used

ABSTRACT

We propose high-resolution S-, Ku- and Ka-band, A-configuration observations of 37 high declination ($> +20$ degrees) luminous IR galaxies (LIRGs) in GOALS in order to characterize the effect of merger-driven activity on extranuclear star formation. Far-IR and optical studies of LIRGs have indicated a nuclear/extranuclear dichotomy in the processes associated with star formation in these extreme starburst systems. The sample has been selected to have extended Herschel 70 micron emission to ensure that each LIRG has extranuclear substructure which contributes significantly to their overall energy output and thus will be detected by the VLA. Given the nature of the selection criteria, the strength of this survey over prior surveys is its ability to examine the properties of a statistically large sample (> 135) of extra-nuclear star-forming regions. Sizes and spectral indices

Proposal 17270 (STScI Edit Number: 0, Created: Thursday, December 8, 2022 at 9:01:02 AM Eastern Standard Time) - Overview will be estimated for each star-forming region, and both thermal and non-thermal star formation rates (SFRs) and SFR surface densities will be derived. HST 1.6 μ m observations will enable estimates of the specific SFR to establish which regions raise LIRGs above the main sequence. With the completion of the proposed study, more than half of the GOALS sample will have been observed with the VLA at these frequencies in A-configuration.

OBSERVING DESCRIPTION

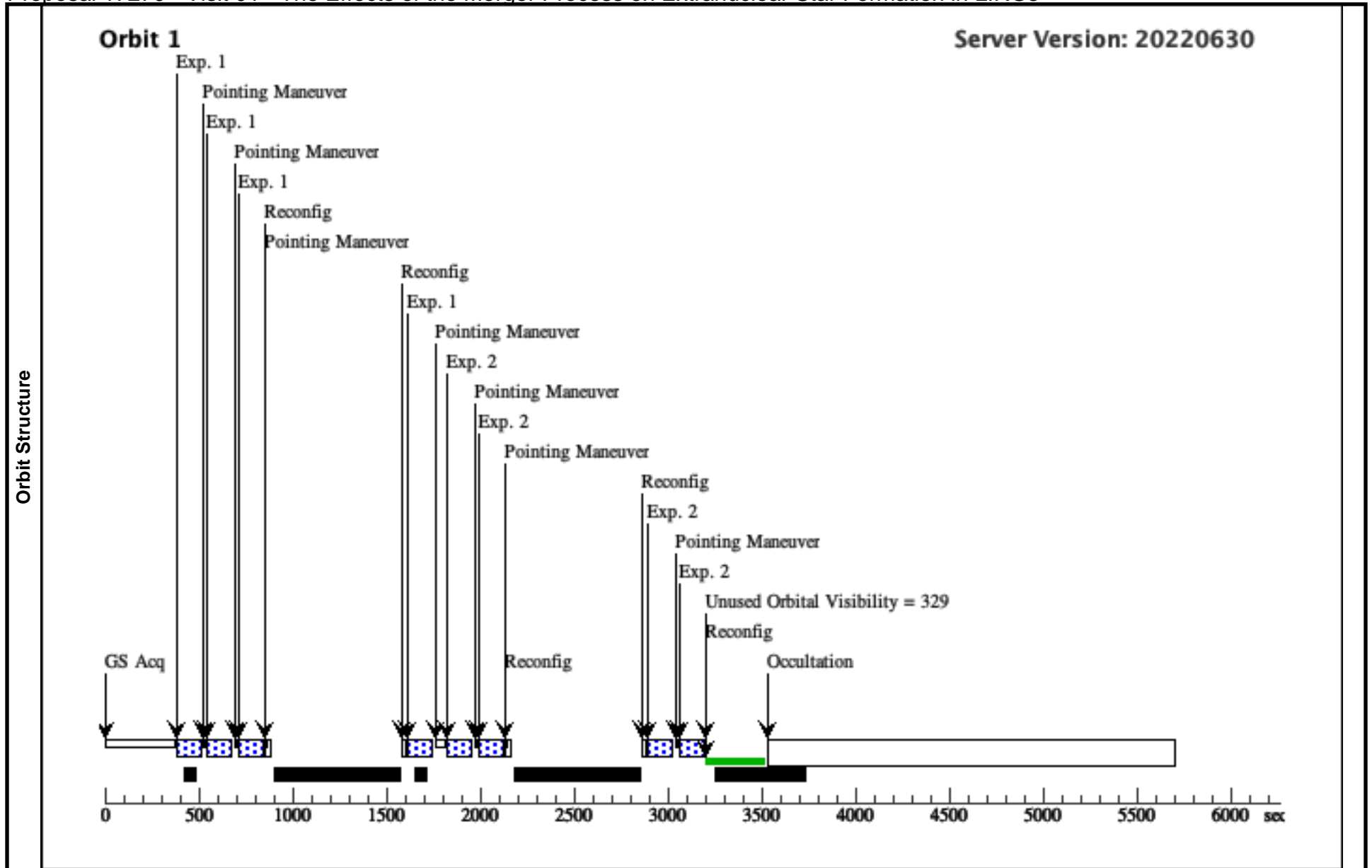
Our proposal aims to obtain WFC3/IR F160W images for 5 luminous infrared galaxies (LIRGs) being observed with the VLA. These LIRGs are UGC 03410/05, NGC 3221, NGC 6052, NGC 7752/3 and NGC 2342. Two of these LIRGs (NGC 7752 and NGC 7753; UGC 3410 and UGC 3405) are galaxy pairs which are far enough apart such that two pointings in one orbit are required (we note that the Phase I for this VLA+HST program had NGC 7752 and UGC 03410 listed as targets, so the additional targets NGC 7753 and UGC 03405, which are the interacting companions of NGC 7752 and UGC 03410, respectively, have been added). The total orbits for this program are 5.

For each galaxy (or galaxy pair), two 4-point dither boxes are executed per orbit. Multiaccum mode is adopted with the instrument parameters NSAMP = 10 and SAMP-SEQ=SPARS10 - these parameters are similar to our PID 15241 WFC3/IR F160W observations.

Proposal 17270 - Visit 01 - The Effects of the Merger Process on Extranuclear Star Formation in LIRGs

Thu Dec 08 14:01:02 GMT 2022

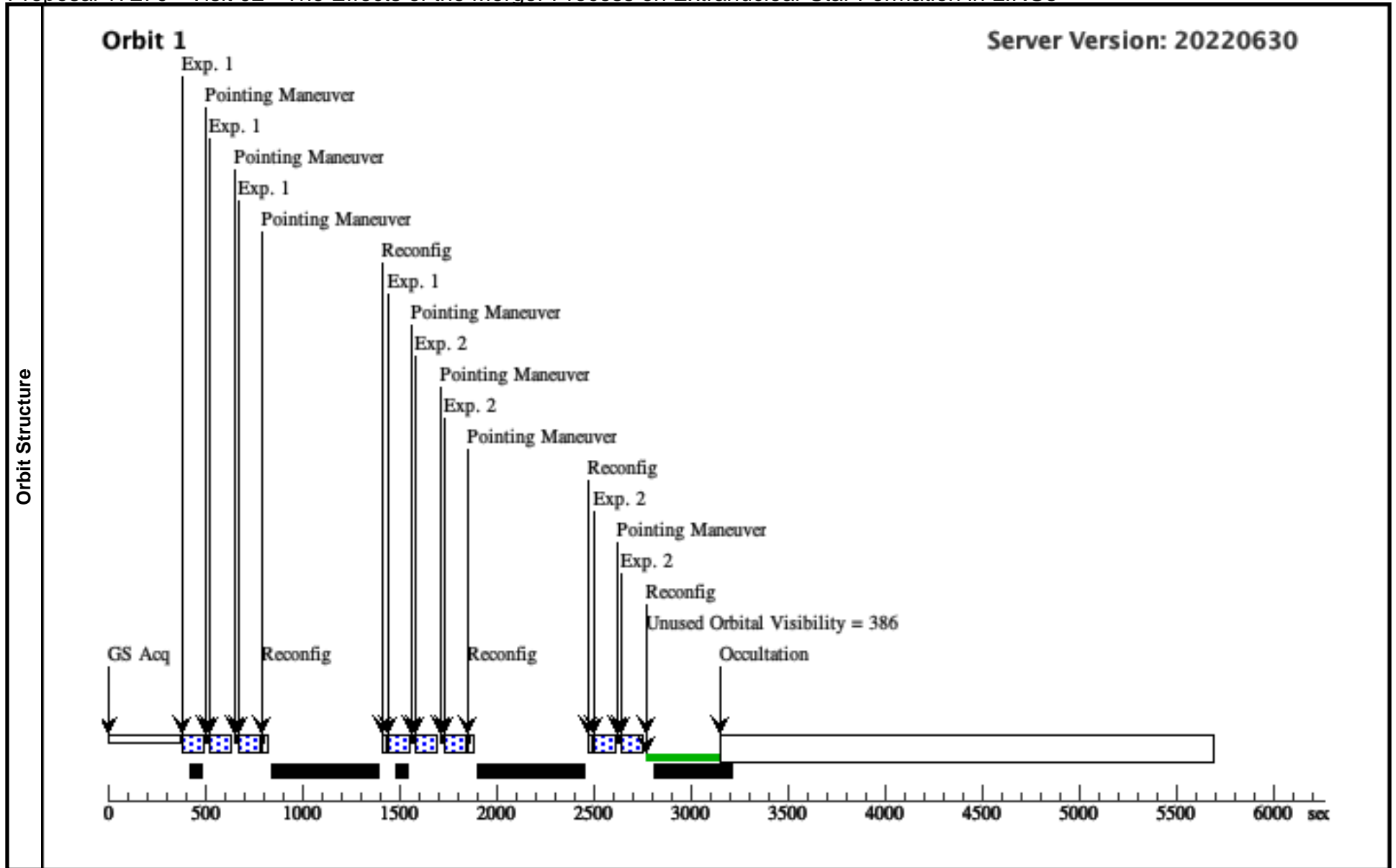
Visit	Proposal 17270, Visit 01 Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR Special Requirements: (none)										
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures						
	(1)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=0.572 Line Spacing=0.365	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false		(1), (2)						
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous					
	(1)	UGC-3410	RA: 06 14 29.6190 (93.6234125d) Dec: +80 26 59.47 (80.44985d) Equinox: J2000	Epoch of Position: 2015.5	V=13.17	Reference Frame: SIMBAD					
	<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i> Category=GALAXY Description=[STARBURST]										
	(7)	UGC-3405	RA: 06 13 57.6000 (93.4900000d) Dec: +80 28 34.80 (80.47633d) Equinox: J2000		V=13.0	Reference Frame: NED					
	<i>Comments:</i> Category=GALAXY Description=[STARBURST]										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit	
	1		(1) UGC-3410	WFC3/IR, MULTIACCUM, IR-FIX	F160W	NSAMP=11; SAMP-SEQ=SPAR S10			Pattern 1, Exps 1-1 in Visit 01 (1)	102.941921 Secs (411.768 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)]	[1]
	2		(7) UGC-3405	WFC3/IR, MULTIACCUM, IR-FIX	F160W	NSAMP=11; SAMP-SEQ=SPAR S10			Pattern 1, Exps 2-2 in Visit 01 (1)	102.941921 Secs (411.768 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)]	[1]



Proposal 17270 - Visit 02 - The Effects of the Merger Process on Extranuclear Star Formation in LIRGs

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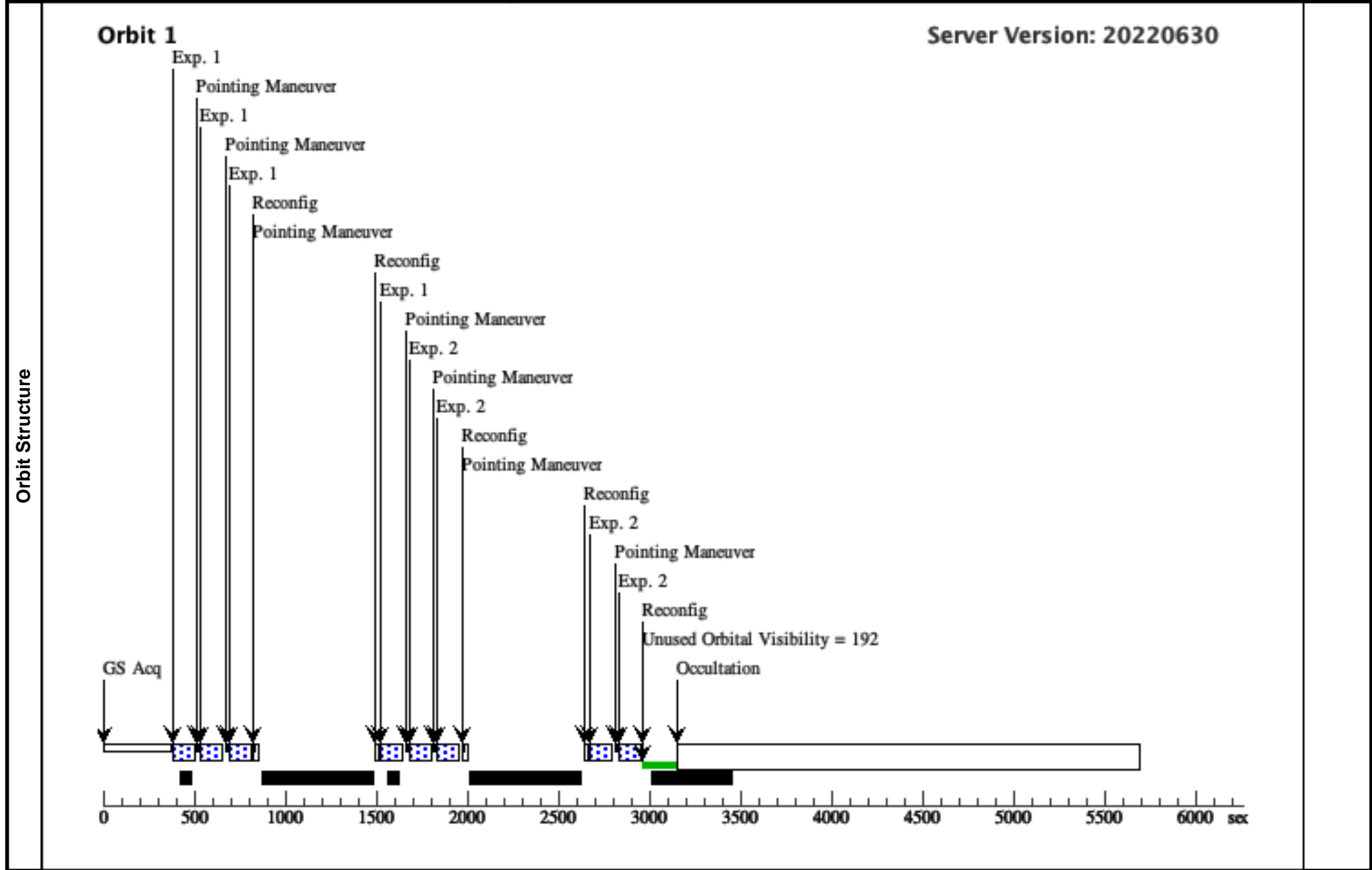
Visit	Proposal 17270, Visit 02 Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR Special Requirements: (none)									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
	(1)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=0.572 Line Spacing=0.365	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false		(1), (2)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(2)	NGC-3221	RA: 10 22 19.9880 (155.5832833d) Dec: +21 34 10.56 (21.56960d) Equinox: J2000	Epoch of Position: 2015.5	V=13.0	Reference Frame: SIMBAD				
	<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i> Category=GALAXY Description=[STARBURST]									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(2) NGC-3221	WFC3/IR, MULTIACCUM, IR-FIX	F160W	NSAMP=9; SAMP-SEQ=SPAR S10		Pattern 1, Exps 1-1 in Visit 02 (1)	82.939995 Secs (331.76 Secs)	
									[==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[1]
	2		(2) NGC-3221	WFC3/IR, MULTIACCUM, IR-FIX	F160W	NSAMP=9; SAMP-SEQ=SPAR S10		Pattern 1, Exps 2-2 in Visit 02 (1)	82.939995 Secs (331.76 Secs)	
									[==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[1]



Proposal 17270 - Visit 03 - The Effects of the Merger Process on Extranuclear Star Formation in LIRGs

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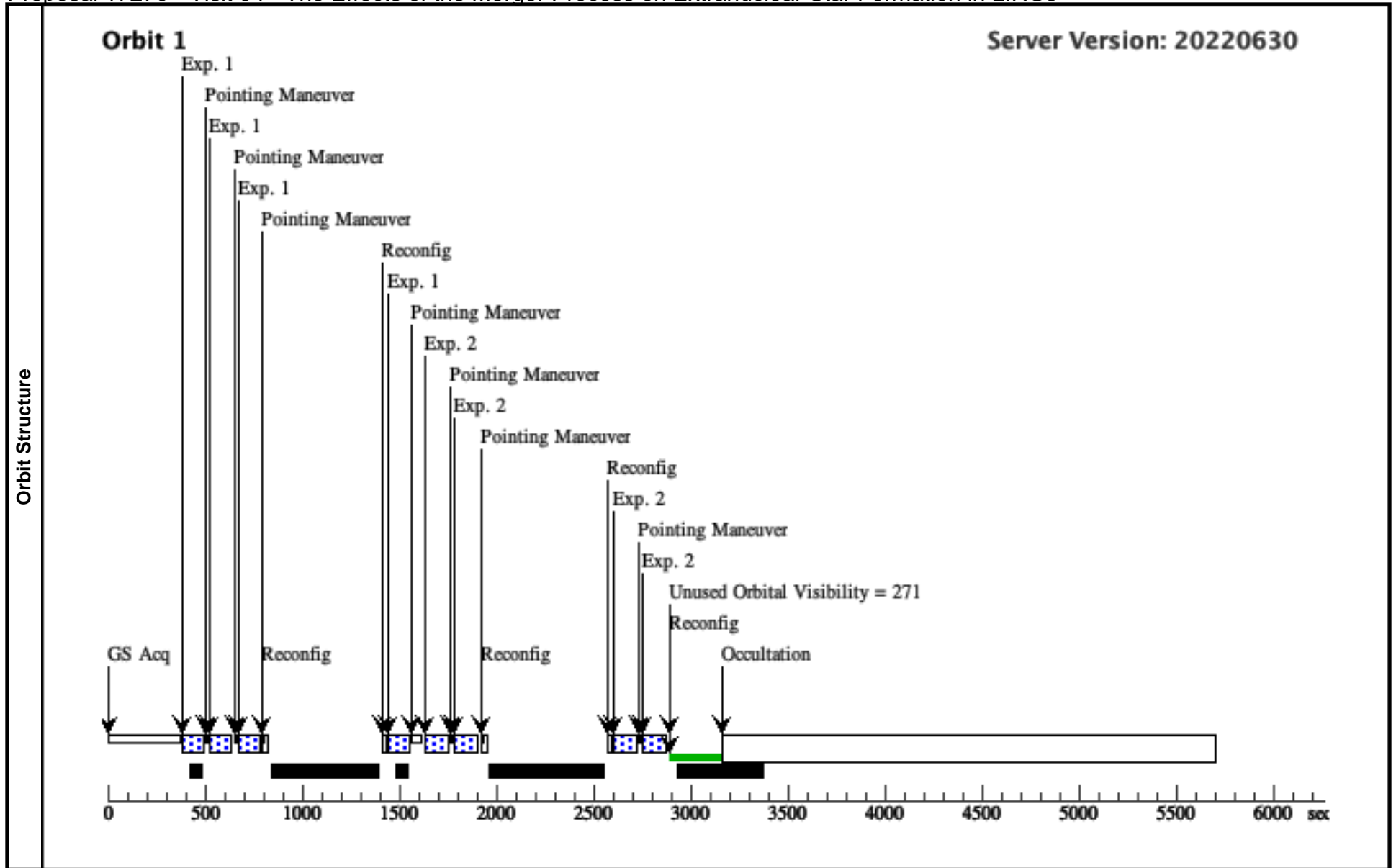
Visit	Proposal 17270, Visit 03 Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR Special Requirements: (none)									
	Patterns	#	Primary Pattern			Secondary Pattern			Exposures	
		(1)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=0.572 Line Spacing=0.365	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false					(1), (2)	
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(3)	NGC-6052	RA: 16 05 12.8715 (241.3036312d) Dec: +20 32 32.61 (20.54239d) Equinox: J2000	Epoch of Position: 2015.5	V=13.0	Reference Frame: SIMBAD				
	<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i> Category=GALAXY Description=[STARBURST]									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(3) NGC-6052	WFC3/IR, MULTIACCUM, IR-FIX	F160W	NSAMP=10; SAMP-SEQ=SPAR S10		Pattern 1, Exps 1-1 in Visit 03 (1)	92.940958 Secs (371.764 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[1]
2		(3) NGC-6052	WFC3/IR, MULTIACCUM, IR-FIX	F160W	NSAMP=10; SAMP-SEQ=SPAR S10		Pattern 1, Exps 2-2 in Visit 03 (1)	92.940958 Secs (371.764 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[1]	



Proposal 17270 - Visit 04 - The Effects of the Merger Process on Extranuclear Star Formation in LIRGs

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Visit	Proposal 17270, Visit 04 Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR Special Requirements: (none)										
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures						
	(1)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=0.572 Line Spacing=0.365	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false		(1), (2)						
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous					
	(4)	NGC-7752	RA: 23 46 58.5600 (356.7440000d) Dec: +29 27 32.17 (29.45894d) Equinox: J2000	Epoch of Position: 2015.5	V=13.0	Reference Frame: SIMBAD					
	<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i> Category=GALAXY Description=[STARBURST]										
	(6)	NGC-7753	RA: 23 47 4.8300 (356.7701250d) Dec: +29 29 0.40 (29.48344d) Equinox: J2000		V=13.9	Reference Frame: NED					
	<i>Comments:</i> Category=GALAXY Description=[STARBURST]										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit	
	1		(6) NGC-7753	WFC3/IR, MULTIACCUM, IR-FIX	F160W	NSAMP=9; SAMP-SEQ=SPAR S10			Pattern 1, Exps 1-1 in Visit 04 (1)	82.939995 Secs (331.76 Secs)	
									[==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[1]	
	2		(4) NGC-7752	WFC3/IR, MULTIACCUM, IR-FIX	F160W	NSAMP=10; SAMP-SEQ=SPAR S10			Pattern 1, Exps 2-2 in Visit 04 (1)	92.940958 Secs (371.764 Secs)	
									[==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[1]	



Proposal 17270 - Visit 05 - The Effects of the Merger Process on Extranuclear Star Formation in LIRGs

Thu Dec 08 14:01:02 GMT 2022

Visit	Proposal 17270, Visit 05 Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR Special Requirements: (none)									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
	(1)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=0.572 Line Spacing=0.365	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false		(1), (2)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(5)	NGC-2342	RA: 07 09 18.0890 (107.3253708d) Dec: +20 38 9.22 (20.63589d) Equinox: J2000	Epoch of Position: 2015.5	V=12.15	Reference Frame: SIMBAD				
<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i> Category=GALAXY Description=[STARBURST]										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(5) NGC-2342	WFC3/IR, MULTIACCUM, IR-FIX	F160W	NSAMP=9; SAMP-SEQ=SPAR S10		Pattern 1, Exps 1-1 in Visit 05 (1)	82.939995 Secs (331.76 Secs)	
									[==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[1]
2		(5) NGC-2342	WFC3/IR, MULTIACCUM, IR-FIX	F160W	NSAMP=9; SAMP-SEQ=SPAR S10		Pattern 1, Exps 2-2 in Visit 05 (1)	82.939995 Secs (331.76 Secs)		
									[==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[1]

