



## 13343 - Probing Dark Matter with a New Class of Merging Clusters

Cycle: 21, Proposal Category: GO

(Availability Mode: SUPPORTED)

### INVESTIGATORS

<i>Name</i>	<i>Institution</i>	<i>E-Mail</i>
<b>Dr. David Wittman (PI) (Contact)</b>	<b>University of California - Davis</b>	<b>dwittman@physics.ucdavis.edu</b>
Dr. William Anthony Dawson (CoI) (Contact)	Lawrence Livermore National Laboratory	wadawson@ucdavis.edu
Prof. Marusa Bradac (CoI)	University of California - Davis	marusa@physics.ucdavis.edu
Dr. Myungkook J. Jee (CoI)	University of California - Davis	jee.james@gmail.com
Dr. Julian Merten (CoI)	Jet Propulsion Laboratory	jmerten@caltech.edu
Dr. Reinout Johannes van Weeren (CoI)	Smithsonian Institution Astrophysical Observatory	rvanweeren@cfa.harvard.edu
Prof. Marcus Bruggen (CoI) (ESA Member)	Universitat Hamburg, Hamburger Sternwarte	mbrueggen@hs.uni-hamburg.de
Dr. Huub Rottgering (CoI) (ESA Member)	Sterrewacht Leiden	rottgeri@strw.leidenuniv.nl
Prof. James S. Bullock (CoI)	University of California - Irvine	bullock@uci.edu
Prof. Annika Peter (CoI)	The Ohio State University	peter.33@osu.edu
Mr. Miguel Rocha (CoI)	University of California - Irvine	rocham@uci.edu

### 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) 1RXSJ0603.3+4214NORTH	ACS/WFC WFC3/UVIS	2	04-Aug-2014 21:00:44.0	yes
02	(2) 1RXSJ0603.3+4214SOUTH	ACS/WFC WFC3/UVIS	2	04-Aug-2014 21:00:46.0	yes
03	(3) ZWCLJ0008.8+5212EAST	ACS/WFC WFC3/UVIS	2	04-Aug-2014 21:00:48.0	yes

Proposal 13343 (STScI Edit Number: 1, Created: Monday, August 4, 2014 8:01:00 PM EST) - Overview

<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>
04	(4) ZWCLJ0008.8+5212WEST	ACS/WFC WFC3/UVIS	2	04-Aug-2014 21:00:50.0	yes
05	(5) CIZAJ2242.8+5301NORTH	ACS/WFC WFC3/UVIS	2	04-Aug-2014 21:00:51.0	yes
06	(6) CIZAJ2242.8+5301SOUTH	ACS/WFC WFC3/UVIS	2	04-Aug-2014 21:00:53.0	yes
07	(7) MACS- J1752.0+4440NORTHEAST	ACS/WFC WFC3/UVIS	3	04-Aug-2014 21:00:55.0	yes
08	(8) MACS- J1752.0+4440SOUTHWEST	ACS/WFC WFC3/UVIS	1	04-Aug-2014 21:00:59.0	yes

16 Total Orbits Used

**ABSTRACT**

We will obtain multiband imaging in support of a weak lensing analysis of a new radio-selected sample of merging galaxy clusters. After first pericenter passage, merging clusters exhibit a dissociation between gas (which remains in the center of the system due to its collisional nature) and galaxies and dark matter (which are collisionless or nearly so, and continue outbound). Self-interaction of dark matter (DM) will cause the DM to lag the galaxies slightly. Weak lensing analyses with the proposed imaging (using multiband photometry to exclude foreground and cluster member galaxies) will yield measurements of the DM-galaxy offset accurate to  $\sim 5''$ , sufficient to test current suggestions that the self-interaction cross section of dark matter may be in the range 0.1-0.5 cm<sup>2</sup>/gm. Only HST can provide this level of weak lensing precision.

Other merging systems are being studied with similar goals in mind, but this sample is unique in being radio-selected. The "radio relics" represent shocks which are vital in constraining the dynamics of the systems; only a few other mergers have clear evidence of shocks. A further key strength of this proposal is the ensemble approach: each system's unique set of dynamical properties (merger velocity, time since pericenter, etc) provides a unique test of the self-interacting DM (SIDM) hypothesis, so the constraints from the ensemble are powerful. We will derive constraints from the ensemble of these three clusters plus the Musket Ball Cluster (observed by us in a previous cycle), which shows a DM-galaxy offset at a level detectable only by HST.

## **OBSERVING DESCRIPTION**

The goal is to determine the weak lensing centroid of each subcluster as accurately as possible. For this goal, the most efficient strategy is to focus the observations on the area nearest the presumed centroid, ie, near the galaxy centroid. Going deep in this area is essential, but covering a wider area is not. We also require multiband photometry to adequately exclude cluster members and foreground sources.

Required filters: F814W is the best filter for deep weak-lensing observations, and this is our primary filter. We need at least one other filter to exclude cluster members and foreground sources from the weak-lensing analysis. The F390W (or F435W) and F606W filters straddle the 4000Å break at the relevant redshifts (0.10, 0.19, 0.23, 0.366), and so are obvious candidates. This makes for three filters total, and in our experience that provides far superior source selection compared to two filters. Furthermore, because of the geometry our systems (explained below), in a majority (3/4) of the systems we can use source-selection filters in parallel with the lensing filter, so the use of two source-selection filters comes at very little cost.

Required area and pointings: We only need one ACS pointing per subcluster because we know the location of the mass centroid to within a fraction of an ACS field. In three of our four targets the subcluster separations are roughly the same as the ACS-WFC3 offset, so we can very efficiently image one subcluster with ACS+F814W while we image the other with WFC3 and the source-selection filters. Because two orbits with ACS+F814W are ideal for lensing, this nicely provides one orbit with WFC3+F390W and one orbit with WFC3+F606W. The slightly smaller WFC3/UVIS field means that the intersection of the lensing and source selection data covers only a WFC3 field, but this is still easily large enough for our purposes. Of course, we will dither to fill in gaps so that the final field size will be slightly larger than stated here.

In the fourth target (MACS J1752.0+4440), the angular separation of the subclusters is smaller than the ACS/WFC3 separation, so we cannot parallelize the observations to simultaneously observe the second subcluster. Thus we have adopted a more traditional two-pointing ACS mosaic (one pointing per subcluster). The parallel WFC3 observations will target the periphery of the cluster merger and be used to study galaxies ejected during the merger as well as improve the weak lensing signal through additional source galaxies. Because the southwest subcluster of MACS J1752.0+4440 was previously observed with 1 orbit ACS/WFC+F606W (Cycle 18 SNAP-12166) and 1 orbit ACS/WFC+F814W (Cycle 20 SNAP-12884) we only need to observe the southwest subcluster with one ACS/WFC+F435W orbit to provide the necessary color information to perform the weak lensing dependent science.

Required depth: Our experience with the Musket Ball and other clusters is that two orbits with ACS+F814W is sufficient to obtain a weak-lensing

Proposal 13343 (STScI Edit Number: 1, Created: Monday, August 4, 2014 8:01:00 PM EST) - Overview

centroid accuracy of 7-9 arcsec. These clusters are at lower redshift than the previously observed clusters, thus potentially providing more background sources per square arcmin, but this potential advantage is largely canceled out by the greater Galactic extinction in the directions of these radio-selected systems. Therefore for most systems we will use two orbits with ACS+F814W. In the case of MACS J1752+4440, it was added to the sample list after we found that we could save 4 orbits on the original CIZA J2242 plan. With only 4 orbits we found it better to obtain 3 band photometry and only 1 orbit of F814W rather than 2 band photometry and 2 orbits of F814W. As stated above, the source-selection filters need not be as deep as the lensing filter, which works well with the parallel scheme outlined above.

----- Realtime Justification -----

N/A

----- Calibration Justification -----

N/A

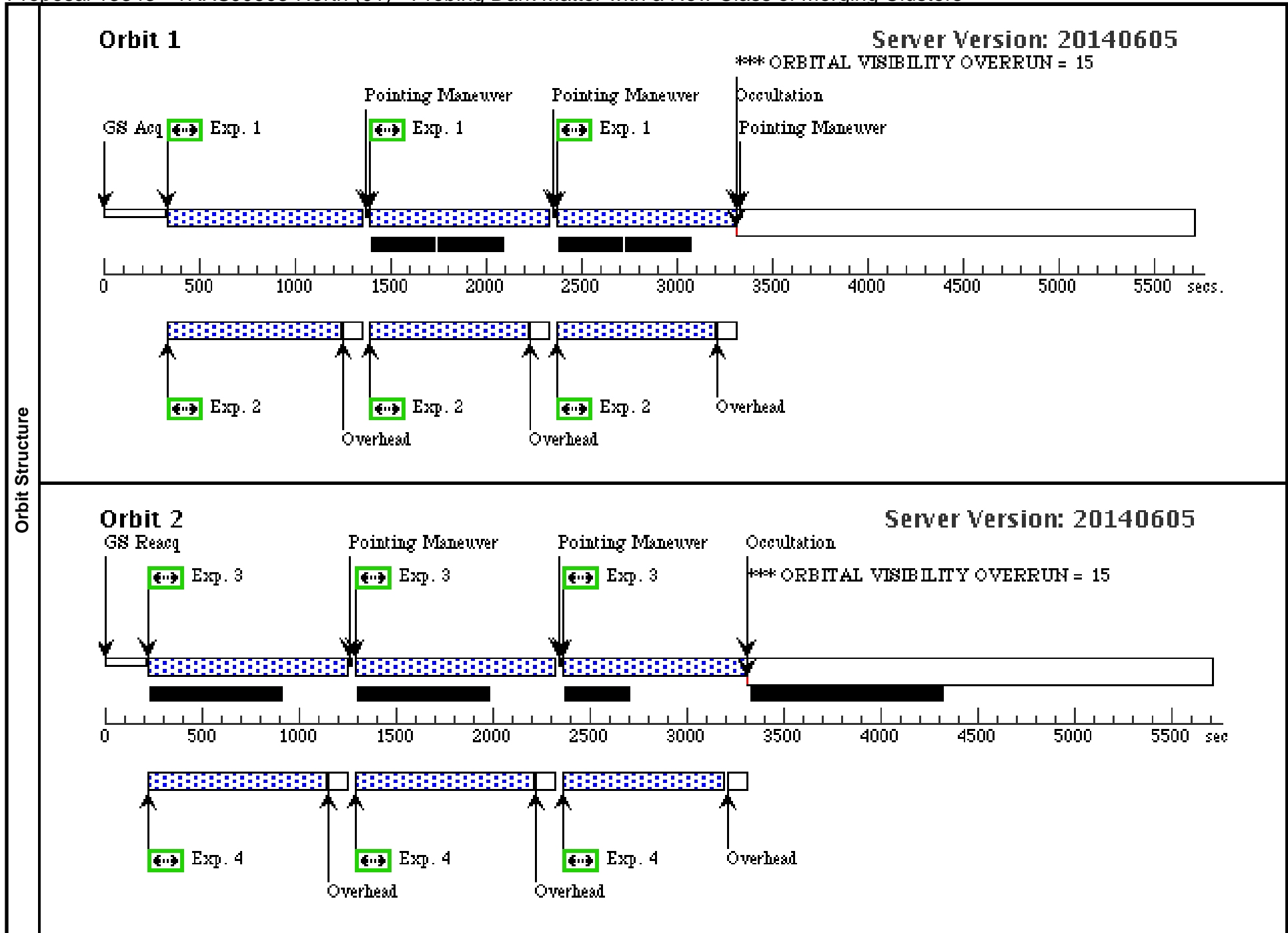
# Proposal 13343 - 1RXSJ0603-North (01) - Probing Dark Matter with a New Class of Merging Clusters

Tue Aug 05 01:01:00 GMT 2014

<b>Visit</b>	<p><b>Proposal 13343, 1RXSJ0603-North (01), completed</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Scientific Instruments: WFC3/UVIS, ACS/WFC                  Special Requirements: ORIENT 110D TO 114 D</p> <p><i>Comments: Parrallel observations of the dissociative galaxy cluster merger 1RXSJ0603.3+4214 with ACS/WFC and WFC3/UVIS. ACS is centered on the northern subcluster while WFC3 is centered on the southern subcluster. There will be 6 exposures with ACS/WFC+F814W, 3 exposures with WFC3/UVIS+F606W, and 3 exposures with WFC3/UVIS+F390W.</i></p> <p><i>The orientation requirements are necessary to target each subcluster, any orientations outside this range will cause a significant portion of the southern subcluster to fall outside the WFC3 field-of-view.</i></p>					
	<p>(1RXSJ0603-North (01)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN                  (1RXSJ0603-North (01)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN</p>					
<b>Diagnosics</b>						
<b>Patterns</b>	<b>#</b>	<b>Primary Pattern</b>	<b>Secondary Pattern</b>	<b>Exposures</b>		
	(3)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=3.393 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=298.006 Angle Between Sides= Center Pattern=false		(1-2)	
(4)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=4.226 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=250.364 Angle Between Sides= Center Pattern=false		(3-4)		
<b>Fixed Targets</b>	<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>	<b>Targ. Coord. Corrections</b>	<b>Fluxes</b>	<b>Miscellaneous</b>
	(1)	1RXSJ0603.3+4214NORTH	RA: 06 03 13.4194 (90.8059142d) Dec: +42 15 52.97 (42.26471d) Equinox: J2000	Redshift: 0.225	V=20+/-2	Reference Frame: ICRS
<p><i>Comments: This pointing is centered on the northern subcluster of 1RXS J0603.3+4214.</i></p> <p><i>Note that there is a bright star (BD+42 1474; V=8.6 magnitude) between the ACS and WFC3 fields-of-view. Approximately 80 arcsec outside the edge of the ACS field-of-view, and approximately 80 arcsec outside the edge of the WFC3 field-of-view.</i></p>						

Proposal 13343 - 1RXSJ0603-North (01) - Probing Dark Matter with a New Class of Merging Clusters

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
<b>Exposures</b>	1	(1) 1RXSJ0603.3+42 14NORTH	ACS/WFC, ACCUM, WFCENTER	F814W			Pattern 3, Exps 1-2 in 1RXSJ0603-North (01) (3) Prime + Parallel Group 1-2 in Pattern 3, Exps 1-2 in 1RXSJ0603-North (01)	800 Secs (2454 Secs) [=>818.0 Secs (Pattern 1)] [=>818.0 Secs (Pattern 2)] [=>818.0 Secs (Pattern 3)]	[1]
	2	(1) 1RXSJ0603.3+42 14NORTH	WFC3/UVIS, ACCUM, UVIS	F606W			Pattern 3, Exps 1-2 in 1RXSJ0603-North (01) (3) Prime + Parallel Group 1-2 in Pattern 3, Exps 1-2 in 1RXSJ0603-North (01)	800 Secs (2534 Secs) [=>878.0 Secs (Pattern 1)] [=>828.0 Secs (Pattern 2)] [=>828.0 Secs (Pattern 3)]	[1]
	3	(1) 1RXSJ0603.3+42 14NORTH	ACS/WFC, ACCUM, WFCENTER	F814W		POS TARG 1.766,-9.972	Pattern 4, Exps 3-4 in 1RXSJ0603-North (01) (4) Prime + Parallel Group 3-4 in Pattern 4, Exps 3-4 in 1RXSJ0603-North (01)	800 Secs (2643 Secs) [=>908.0 Secs (Pattern 1)] [=>908.0 Secs (Pattern 2)] [=>827.0 Secs (Pattern 3)]	[2]
	4	(1) 1RXSJ0603.3+42 14NORTH	WFC3/UVIS, ACCUM, UVIS	F390W			Pattern 4, Exps 3-4 in 1RXSJ0603-North (01) (4) Prime + Parallel Group 3-4 in Pattern 4, Exps 3-4 in 1RXSJ0603-North (01)	800 Secs (2647 Secs) [=>892.0 Secs (Pattern 1)] [=>918.0 Secs (Pattern 2)] [=>837.0 Secs (Pattern 3)]	[2]



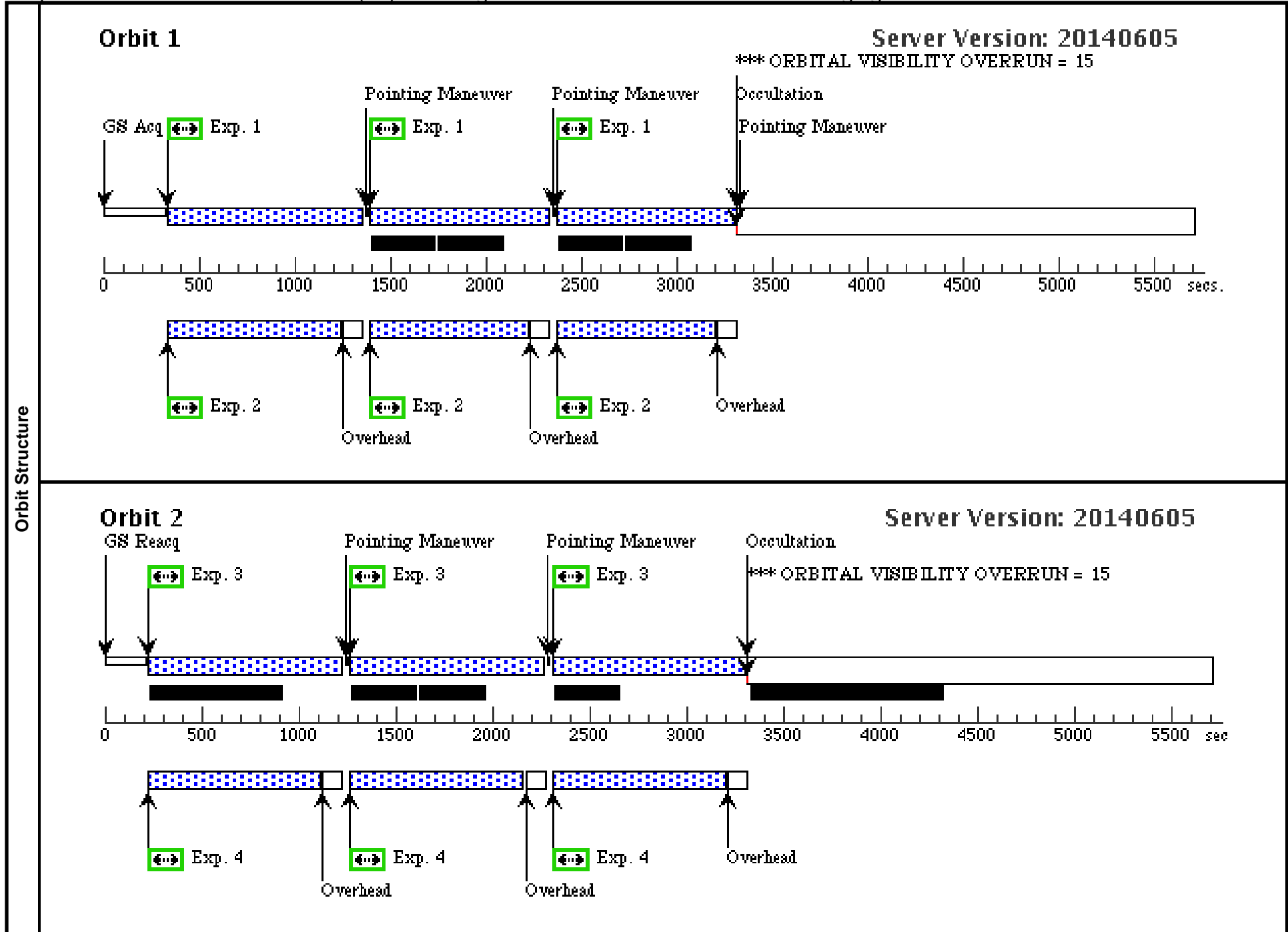
Proposal 13343 - 1RXSJ0603-South (02) - Probing Dark Matter with a New Class of Merging Clusters

Tue Aug 05 01:01:00 GMT 2014

<b>Visit</b>	<p><b>Proposal 13343, 1RXSJ0603-South (02), completed</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Scientific Instruments: WFC3/UVIS, ACS/WFC                  Special Requirements: ORIENT 288D TO 292 D  <i>Comments: Parrallel observations of the dissociative galaxy cluster merger 1RXSJ0603.3+4214 with ACS/WFC and WFC3/UVIS. ACS is centered on the southern subcluster while WFC3 is centered on the northern subcluster. There will be 6 exposures with ACS/WFC+F814W, 3 exposures with WFC3/UVIS+F606W, and 3 exposures with WFC3/UVIS+F390W.</i></p> <p><i>The orientation requirements are necessary to target each subcluster, any orientations outside this range will cause a significant portion of the northern subcluster to fall outside the WFC3 field-of-view.</i></p>					
	<p>(1RXSJ0603-South (02)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN                  (1RXSJ0603-South (02)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN</p>					
<b>Diagnosics</b>						
<b>Patterns</b>	<b>#</b>	<b>Primary Pattern</b>	<b>Secondary Pattern</b>	<b>Exposures</b>		
	(3)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=3.393 Line Spacing= Coordinate Frame=POS-TARG Pattern Orientation=298.006 Angle Between Sides= Center Pattern=false		(1-2)		
(4)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=4.226 Line Spacing= Coordinate Frame=POS-TARG Pattern Orientation=250.364 Angle Between Sides= Center Pattern=false		(3-4)			
<b>Fixed Targets</b>	<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>	<b>Targ. Coord. Corrections</b>	<b>Fluxes</b>	<b>Miscellaneous</b>
	(2)	1RXSJ0603.3+4214SOUTH	RA: 06 03 27.2524 (90.8635517d) Dec: +42 09 51.27 (42.16424d) Equinox: J2000	Redshift: 0.225	V=20+/-2	Reference Frame: ICRS
<p><i>Comments: This pointing is centered on the southern subcluster of 1RXS J0603.3+4214.</i></p> <p><i>Note that there is a bright star (BD+42 1474; V=8.6 magnitude) between the ACS and WFC3 fields-of-view. Approximately 40 arcsec outside the edge of the ACS field-of-view, and approximately 100 arcsec outside the edge of the WFC3 field-of-view.</i></p>						

Proposal 13343 - 1RXSJ0603-South (02) - Probing Dark Matter with a New Class of Merging Clusters

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
<b>Exposures</b>	1	(2) 1RXSJ0603.3+42 14SOUTH	ACS/WFC, ACCUM, WFCENTER	F814W			Pattern 3, Exps 1-2 in 1RXSJ0603-South (02) (3) Prime + Parallel Group 1-2 in Pattern 3, Exps 1-2 in 1RXSJ0603-South (02)	800 Secs (2454 Secs) [=>818.0 Secs (Pattern 1)] [=>818.0 Secs (Pattern 2)] [=>818.0 Secs (Pattern 3)]	[1]
	2	(2) 1RXSJ0603.3+42 14SOUTH	WFC3/UVIS, ACCUM, UVIS	F606W			Pattern 3, Exps 1-2 in 1RXSJ0603-South (02) (3) Prime + Parallel Group 1-2 in Pattern 3, Exps 1-2 in 1RXSJ0603-South (02)	800 Secs (2534 Secs) [=>878.0 Secs (Pattern 1)] [=>828.0 Secs (Pattern 2)] [=>828.0 Secs (Pattern 3)]	[1]
	3	(2) 1RXSJ0603.3+42 14SOUTH	ACS/WFC, ACCUM, WFCENTER	F814W		POS TARG 1.766,-9.972	Pattern 4, Exps 3-4 in 1RXSJ0603-South (02) (4) Prime + Parallel Group 3-4 in Pattern 4, Exps 3-4 in 1RXSJ0603-South (02)	800 Secs (2643 Secs) [=>881.0 Secs (Pattern 1)] [=>881.0 Secs (Pattern 2)] [=>881.0 Secs (Pattern 3)]	[2]
	4	(2) 1RXSJ0603.3+42 14SOUTH	WFC3/UVIS, ACCUM, UVIS	F390W			Pattern 4, Exps 3-4 in 1RXSJ0603-South (02) (4) Prime + Parallel Group 3-4 in Pattern 4, Exps 3-4 in 1RXSJ0603-South (02)	800 Secs (2647 Secs) [=>865.0 Secs (Pattern 1)] [=>891.0 Secs (Pattern 2)] [=>891.0 Secs (Pattern 3)]	[2]



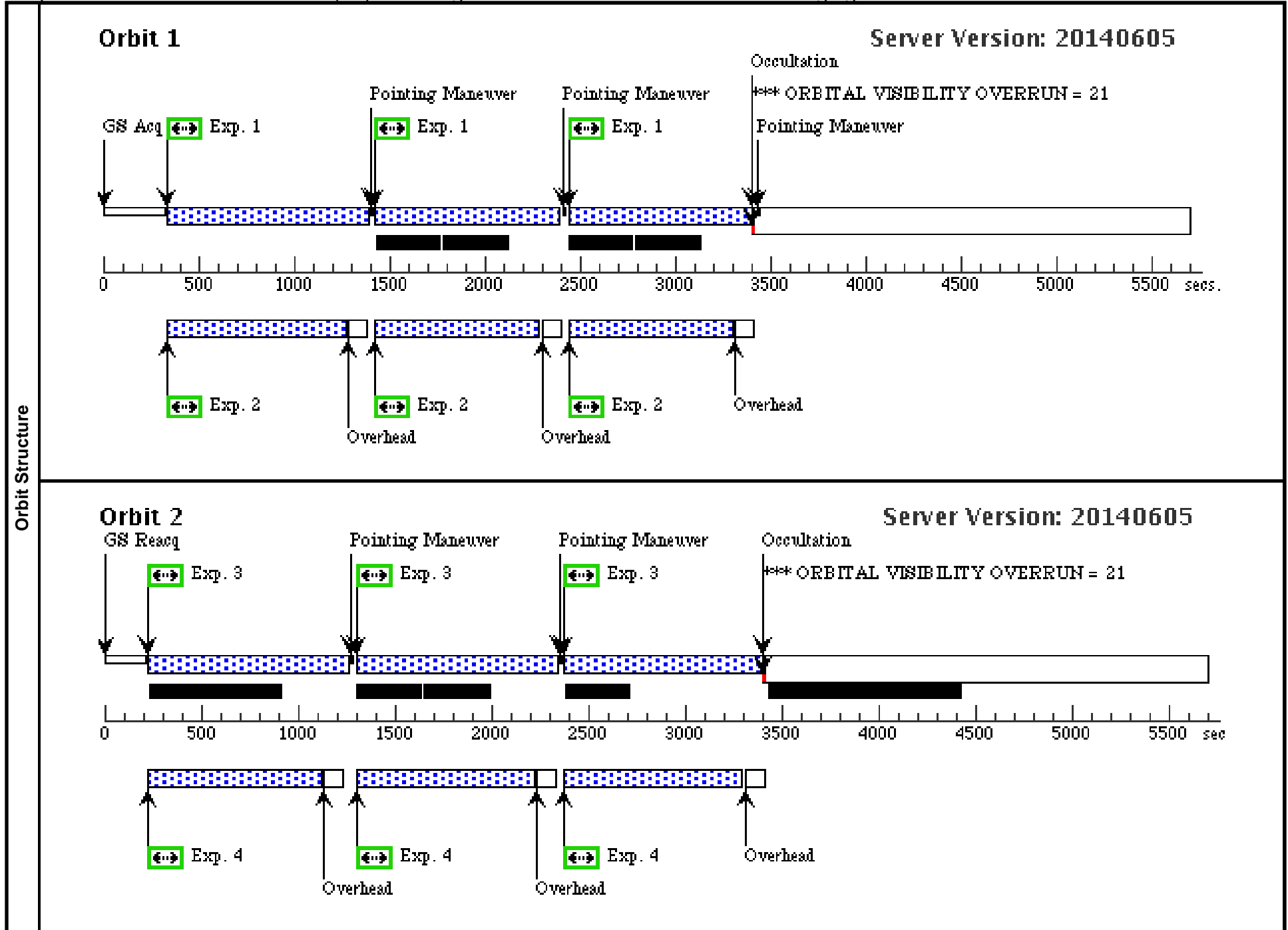
Proposal 13343 - ZwCL0008-East (03) - Probing Dark Matter with a New Class of Merging Clusters

Tue Aug 05 01:01:01 GMT 2014

<b>Visit</b>	<p><b>Proposal 13343, ZwCL0008-East (03), scheduling</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Scientific Instruments: WFC3/UVIS, ACS/WFC                  Special Requirements: ORIENT 203D TO 207 D</p> <p><i>Comments: Parrallel observations of the dissociative galaxy cluster merger ZWCLJ0008.8+5212 with ACS/WFC and WFC3/UVIS. ACS is centered on the eastern subcluster while WCF3 is centered on the western subcluster. There will be 6 exposures with ACS/WFC+F814W, 3 exposures with WFC3/UVIS+F606W, and 3 exposures with WFC3/UVIS+F390W.</i></p> <p><i>The orientation requirements are necessary to target each subcluster, any orientations outside this range will cause a significant portion of the eastern subcluster to fall outside the WFC3 field-of-view.</i></p>					
	<p>(ZwCL0008-East (03)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN                  (ZwCL0008-East (03)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN</p>					
<b>Diagnosics</b>						
<b>Patterns</b>	<b>#</b>	<b>Primary Pattern</b>	<b>Secondary Pattern</b>	<b>Exposures</b>		
	(3)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=3.393 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=298.006 Angle Between Sides= Center Pattern=false		(1-2)	
(4)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=4.226 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=250.364 Angle Between Sides= Center Pattern=false		(3-4)		
<b>Fixed Targets</b>	<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>	<b>Targ. Coord. Corrections</b>	<b>Fluxes</b>	<b>Miscellaneous</b>
	(3)	ZWCLJ0008.8+5212EAS T	RA: 00 12 4.2626 (3.0177608d) Dec: +52 34 8.93 (52.56915d) Equinox: J2000	Redshift: 0.1	V=19+/-3	Reference Frame: ICRS
<p><i>Comments: This pointing is centered on the eastern subcluster of ZwCL J0008.8+5212.</i></p>						

Proposal 13343 - ZwCL0008-East (03) - Probing Dark Matter with a New Class of Merging Clusters

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
Exposures	1	(3) ZWCLJ0008.8+5 212EAST	ACS/WFC, ACCUM, WFCENTER	F814W			Pattern 3, Exps 1-2 in ZwCL0008-East (03) (3)  Prime + Parallel Group 1-2 in Pattern 3, Exps 1-2 in ZwCL0008-East (03)	800 Secs (2553 Secs) [==>851.0 Secs (Pattern 1)] [==>851.0 Secs (Pattern 2)] [==>851.0 Secs (Pattern 3)]	[1]
	2	(3) ZWCLJ0008.8+5 212EAST	WFC3/UVIS, ACCUM, UVIS	F606W			Pattern 3, Exps 1-2 in ZwCL0008-East (03) (3)  Prime + Parallel Group 1-2 in Pattern 3, Exps 1-2 in ZwCL0008-East (03)	800 Secs (2633 Secs) [==>911.0 Secs (Pattern 1)] [==>861.0 Secs (Pattern 2)] [==>861.0 Secs (Pattern 3)]	[1]
	3	(3) ZWCLJ0008.8+5 212EAST	ACS/WFC, ACCUM, WFCENTER	F814W		POS TARG 1.766,-9 .972	Pattern 4, Exps 3-4 in ZwCL0008-East (03) (4)  Prime + Parallel Group 3-4 in Pattern 4, Exps 3-4 in ZwCL0008-East (03)	800 Secs (2742 Secs) [==>914.0 Secs (Pattern 1)] [==>914.0 Secs (Pattern 2)] [==>914.0 Secs (Pattern 3)]	[2]
	4	(3) ZWCLJ0008.8+5 212EAST	WFC3/UVIS, ACCUM, UVIS	F606W			Pattern 4, Exps 3-4 in ZwCL0008-East (03) (4)  Prime + Parallel Group 3-4 in Pattern 4, Exps 3-4 in ZwCL0008-East (03)	800 Secs (2746 Secs) [==>898.0 Secs (Pattern 1)] [==>924.0 Secs (Pattern 2)] [==>924.0 Secs (Pattern 3)]	[2]



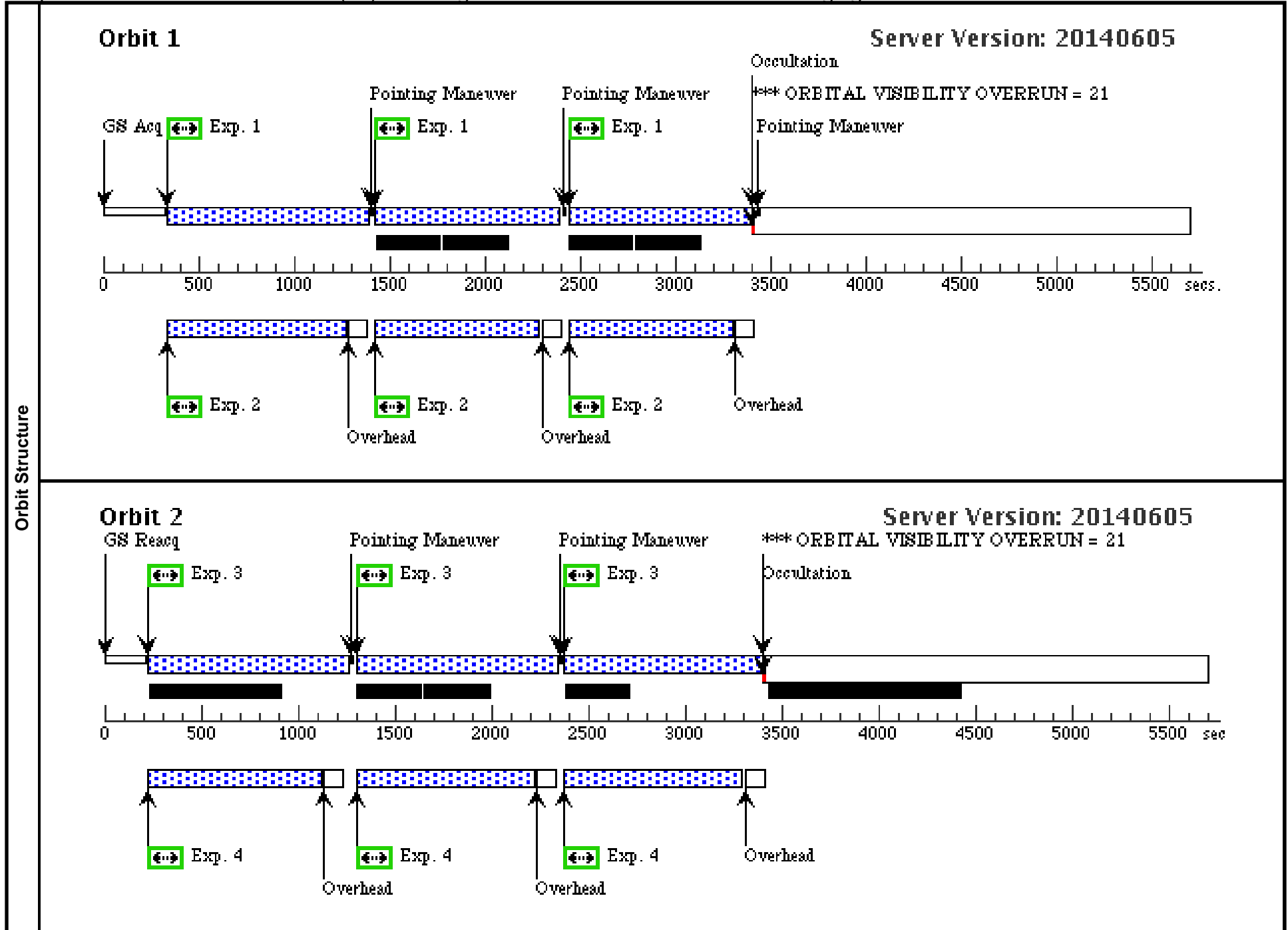
Proposal 13343 - ZwCL0008-West (04) - Probing Dark Matter with a New Class of Merging Clusters

Tue Aug 05 01:01:01 GMT 2014

<b>Visit</b>	<p><b>Proposal 13343, ZwCL0008-West (04), completed</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Scientific Instruments: WFC3/UVIS, ACS/WFC</p> <p>Special Requirements: ORIENT 23D TO 27 D</p> <p><i>Comments: Parrallel observations of the dissociative galaxy cluster merger ZWCLJ0008.8+5212 with ACS/WFC and WFC3/UVIS. ACS is centered on the western subcluster while WCF3 is centered on the eastern subcluster. There will be 6 exposures with ACS/WFC+F814W, 3 exposures with WFC3/UVIS+F606W, and 3 exposures with WFC3/UVIS+F390W.</i></p> <p><i>The orientation requirements are necessary to target each subcluster, any orientations outside this range will cause a significant portion of the western subcluster to fall outside the WFC3 field-of-view.</i></p>					
	<p>(ZwCL0008-West (04)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN</p> <p>(ZwCL0008-West (04)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN</p>					
<b>Diagnosics</b>						
<b>Patterns</b>	<b>#</b>	<b>Primary Pattern</b>	<b>Secondary Pattern</b>	<b>Exposures</b>		
	(3)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=3.393 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=298.006 Angle Between Sides= Center Pattern=false		(1-2)	
	(4)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=4.226 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=250.364 Angle Between Sides= Center Pattern=false		(3-4)	
<b>Fixed Targets</b>	<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>	<b>Targ. Coord. Corrections</b>	<b>Fluxes</b>	<b>Miscellaneous</b>
	(4)	ZWCLJ0008.8+5212WE ST	RA: 00 11 24.6652 (2.8527717d) Dec: +52 32 3.51 (52.53431d) Equinox: J2000	Redshift: 0.1	V=19+/-3	Reference Frame: ICRS
	<p><i>Comments: This pointing is centered on the western subcluster of ZwCL J0008.8+5212.</i></p>					

Proposal 13343 - ZwCL0008-West (04) - Probing Dark Matter with a New Class of Merging Clusters

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
<b>Exposures</b>	1	(4) ZWCLJ0008.8+5 212WEST	ACS/WFC, ACCUM, WFCENTER	F814W			Pattern 3, Exps 1-2 in ZwCL0008-West (04) (3) Prime + Parallel Group 1-2 in Pattern 3, Exps 1-2 in ZwCL0008-West (04)	800 Secs (2553 Secs) [==>851.0 Secs (Pattern 1)] [==>851.0 Secs (Pattern 2)] [==>851.0 Secs (Pattern 3)]	[1]
	2	(4) ZWCLJ0008.8+5 212WEST	WFC3/UVIS, ACCUM, UVIS	F606W			Pattern 3, Exps 1-2 in ZwCL0008-West (04) (3) Prime + Parallel Group 1-2 in Pattern 3, Exps 1-2 in ZwCL0008-West (04)	800 Secs (2633 Secs) [==>911.0 Secs (Pattern 1)] [==>861.0 Secs (Pattern 2)] [==>861.0 Secs (Pattern 3)]	[1]
	3	(4) ZWCLJ0008.8+5 212WEST	ACS/WFC, ACCUM, WFCENTER	F814W		POS TARG 1.766,-9 .972	Pattern 4, Exps 3-4 in ZwCL0008-West (04) (4) Prime + Parallel Group 3-4 in Pattern 4, Exps 3-4 in ZwCL0008-West (04)	800 Secs (2742 Secs) [==>914.0 Secs (Pattern 1)] [==>914.0 Secs (Pattern 2)] [==>914.0 Secs (Pattern 3)]	[2]
	4	(4) ZWCLJ0008.8+5 212WEST	WFC3/UVIS, ACCUM, UVIS	F606W			Pattern 4, Exps 3-4 in ZwCL0008-West (04) (4) Prime + Parallel Group 3-4 in Pattern 4, Exps 3-4 in ZwCL0008-West (04)	800 Secs (2746 Secs) [==>898.0 Secs (Pattern 1)] [==>924.0 Secs (Pattern 2)] [==>924.0 Secs (Pattern 3)]	[2]



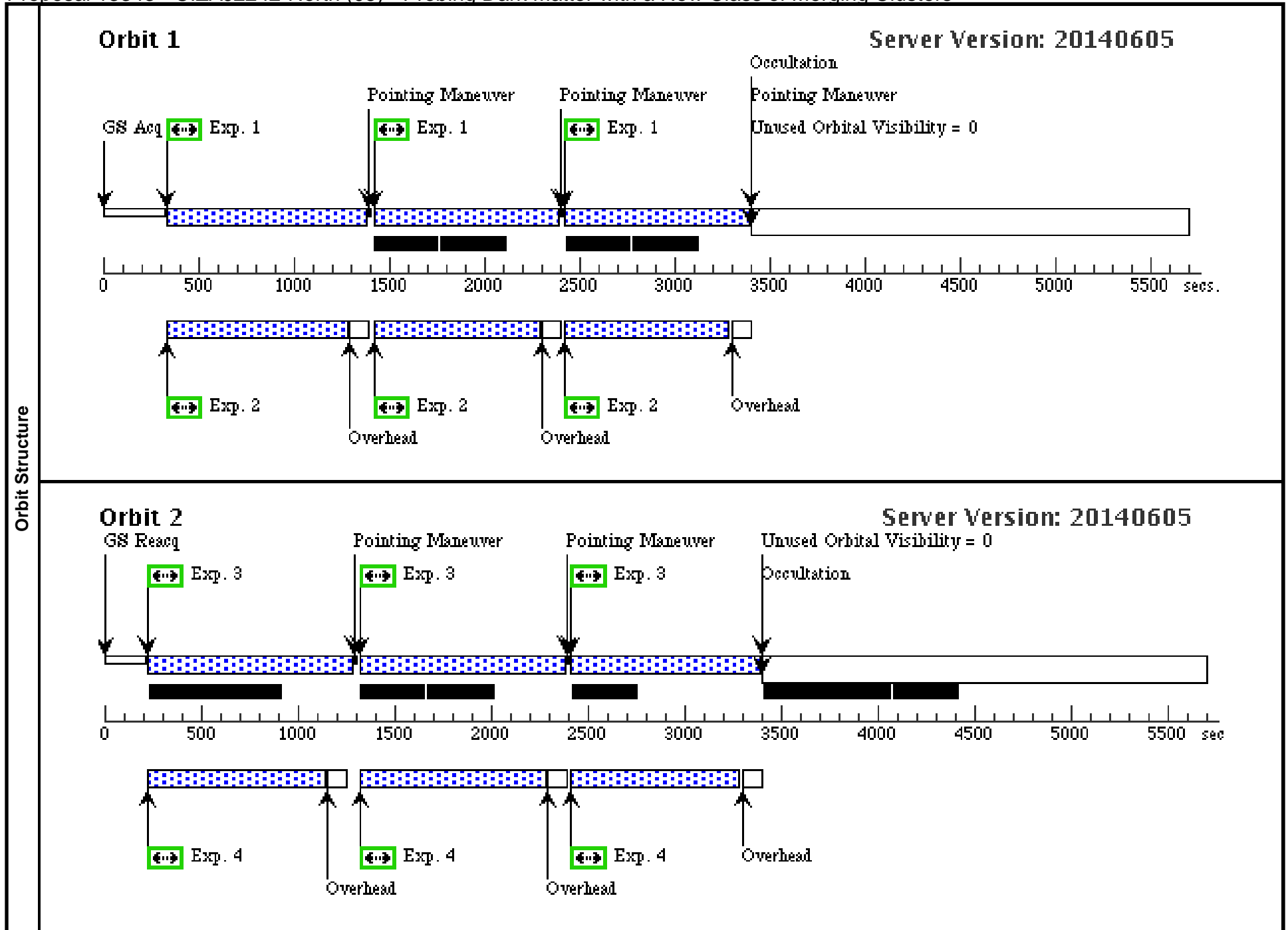
Proposal 13343 - CIZAJ2242-North (05) - Probing Dark Matter with a New Class of Merging Clusters

Tue Aug 05 01:01:01 GMT 2014

<b>Visit</b>	<p><b>Proposal 13343, CIZAJ2242-North (05), implementation</b></p> <p><b>Diagnostic Status: No Diagnostics</b></p> <p>Scientific Instruments: WFC3/UVIS, ACS/WFC</p> <p>Special Requirements: ORIENT 143D TO 147 D</p> <p><i>Comments: Parrallel observations of the dissociative galaxy cluster merger CIZAJ2242.8+5301 with ACS/WFC and WFC3/UVIS. ACS is centered on the northern subcluster while WCF3 is centered on the southern subcluster. There will be 6 exposures with ACS/WFC+F814W, 3 exposures with WFC3/UVIS+F606W, and 3 exposures with WFC3/UVIS+F390W.</i></p> <p><i>The orientation requirements are necessary to target each subcluster, any orientations outside this range will cause a significant portion of the southern subcluster to fall outside the WFC3 field-of-view.</i></p> <p><i>Revision 2014-08-01:</i>  <i>Change the pointing of Visit 05 slightly. We performed our weak lensing analysis of the existing HST observation focused on the southern subcluster of this merger (from Visit 06) and found that the weak lensing peak was offset from the well defined galaxy peak much more than expected. So much so that the weak lensing peak is near the edge of the detector on the existing image and may actually be just off it. Since this offset is exactly the measurement we want to accurately make to constrain the dark matter cross-section we have decided that it is more important to measure exactly where the southern weak lensing peak is rather than observe the northern subcluster, as previously planned. The plan now is to mosaic the Visit 05 ACS observations with the existing Visit 06 ACS observations. We believe that impact due the loss of color information can be mitigated by using our multi-band Subaru SuprimeCam observations to exclude cluster members for the lensing analysis.</i></p>					
	<b>Patterns</b>	<b>#</b>	<b>Primary Pattern</b>	<b>Secondary Pattern</b>	<b>Exposures</b>	
(3)		Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=3.393 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=298.006 Angle Between Sides= Center Pattern=false		(1-2)	
(4)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=4.226 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=250.364 Angle Between Sides= Center Pattern=false		(3-4)		
<b>Fixed Targets</b>	<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>	<b>Targ. Coord. Corrections</b>	<b>Fluxes</b>	<b>Miscellaneous</b>
	(5)	CIZAJ2242.8+5301NORTH	RA: 22 42 35.3337 (340.6472237d) Dec: +53 01 55.13 (53.03198d) Equinox: J2000	Redshift: 0.19	V=20+/-3	Reference Frame: ICRS

Proposal 13343 - CIZAJ2242-North (05) - Probing Dark Matter with a New Class of Merging Clusters

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
<b>Exposures</b>	1	(5) CIZAJ2242.8+53 01NORTH	ACS/WFC, ACCUM, WFCENTER	F814W			Pattern 3, Exps 1-2 in CIZAJ2242-North (05) (3) Prime + Parallel Group 1-2 in Pattern 3, Exps 1-2 in CIZAJ2242-North (05)	800 Secs (2532 Secs) [==>844.0 Secs (Pattern 1)] [==>844.0 Secs (Pattern 2)] [==>844.0 Secs (Pattern 3)]	[1]
	2	(5) CIZAJ2242.8+53 01NORTH	WFC3/UVIS, ACCUM, UVIS	F606W			Pattern 3, Exps 1-2 in CIZAJ2242-North (05) (3) Prime + Parallel Group 1-2 in Pattern 3, Exps 1-2 in CIZAJ2242-North (05)	800 Secs (2653 Secs) [==>921.0 Secs (Pattern 1)] [==>871.0 Secs (Pattern 2)] [==>861.0 Secs (Pattern 3)]	[1]
	3	(5) CIZAJ2242.8+53 01NORTH	ACS/WFC, ACCUM, WFCENTER	F814W		POS TARG 1.766,-9 .972	Pattern 4, Exps 3-4 in CIZAJ2242-North (05) (4) Prime + Parallel Group 3-4 in Pattern 4, Exps 3-4 in CIZAJ2242-North (05)	800 Secs (2721 Secs) [==>934.0 Secs (Pattern 1)] [==>934.0 Secs (Pattern 2)] [==>853.0 Secs (Pattern 3)]	[2]
	4	(5) CIZAJ2242.8+53 01NORTH	WFC3/UVIS, ACCUM, UVIS	F606W			Pattern 4, Exps 3-4 in CIZAJ2242-North (05) (4) Prime + Parallel Group 3-4 in Pattern 4, Exps 3-4 in CIZAJ2242-North (05)	800 Secs (2756 Secs) [==>925.0 Secs (Pattern 1)] [==>961.0 Secs (Pattern 2)] [==>870.0 Secs (Pattern 3)]	[2]



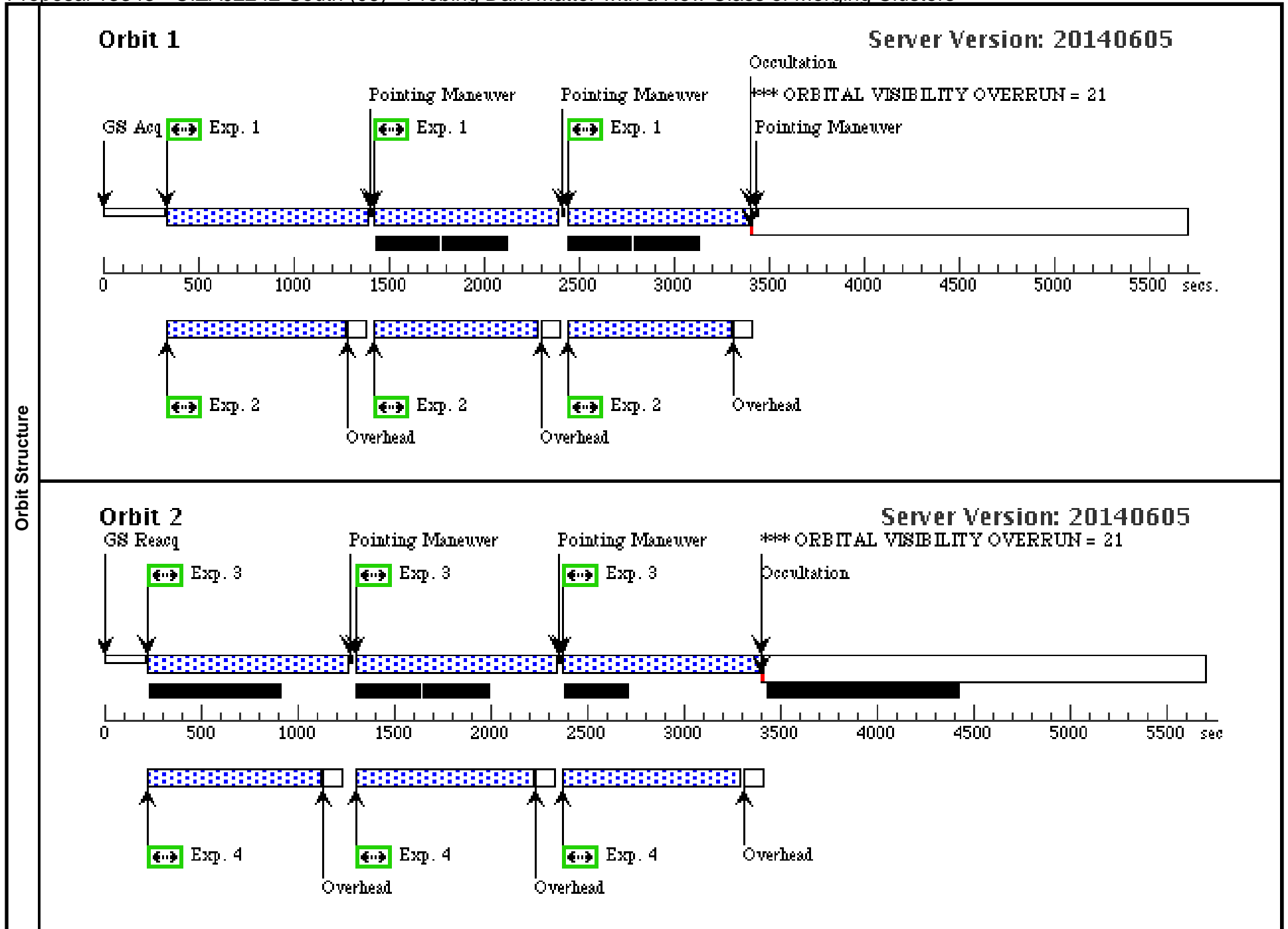
Proposal 13343 - CIZAJ2242-South (06) - Probing Dark Matter with a New Class of Merging Clusters

Tue Aug 05 01:01:01 GMT 2014

<b>Visit</b>	<p><b>Proposal 13343, CIZAJ2242-South (06), completed</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Scientific Instruments: WFC3/UVIS, ACS/WFC</p> <p>Special Requirements: ORIENT 318D TO 330 D</p> <p><i>Comments: Parrallel observations of the dissociative galaxy cluster merger CIZA J2242+5301 with ACS/WFC and WFC3/UVIS. ACS is centered on the southern subcluster while WCF3 is centered on the northern subcluster. There will be 6 exposures with ACS/WFC+F814W, 3 exposures with WFC3/UVIS+F606W, and 3 exposures with WFC3/UVIS+F390W.</i></p> <p><i>We realize the orientation requirements place stringent schedule constraints on the planning of this observation but they are necessary to make the most efficient use of HST time and target each subcluster in parallel. Any orientations outside this range will cause a significant portion of the northern subcluster to fall outside the WFC3 field-of-view.</i></p>					
	<p>(CIZAJ2242-South (06)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN</p> <p>(CIZAJ2242-South (06)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN</p>					
<b>Diagnosics</b>						
<b>Patterns</b>	<b>#</b>	<b>Primary Pattern</b>	<b>Secondary Pattern</b>	<b>Exposures</b>		
	(3)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=3.393 Line Spacing= Coordinate Frame=POS-TARG Pattern Orientation=298.006 Angle Between Sides= Center Pattern=false		(1-2)		
(4)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=4.226 Line Spacing= Coordinate Frame=POS-TARG Pattern Orientation=250.364 Angle Between Sides= Center Pattern=false		(3-4)			
<b>Fixed Targets</b>	<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>	<b>Targ. Coord. Corrections</b>	<b>Fluxes</b>	<b>Miscellaneous</b>
	(6)	CIZAJ2242.8+5301SOUTH	RA: 22 42 42.5107 (340.6771279d) Dec: +52 59 1.40 (52.98372d) Equinox: J2000	Redshift: 0.19	V=20+/-3	Reference Frame: ICRS

Proposal 13343 - CIZAJ2242-South (06) - Probing Dark Matter with a New Class of Merging Clusters

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(6) CIZAJ2242.8+53 01SOUTH	ACS/WFC, ACCUM, WFCENTER	F814W			Pattern 3, Exps 1-2 in CIZAJ2242-South (06) (3) Prime + Parallel Group 1-2 in Pattern 3, Exps 1-2 in CIZAJ2242-South (06)	800 Secs (2553 Secs) [==>851.0 Secs (Pattern 1)] [==>851.0 Secs (Pattern 2)] [==>851.0 Secs (Pattern 3)]	[1]
	2		(6) CIZAJ2242.8+53 01SOUTH	WFC3/UVIS, ACCUM, UVIS	F606W			Pattern 3, Exps 1-2 in CIZAJ2242-South (06) (3) Prime + Parallel Group 1-2 in Pattern 3, Exps 1-2 in CIZAJ2242-South (06)	800 Secs (2633 Secs) [==>911.0 Secs (Pattern 1)] [==>861.0 Secs (Pattern 2)] [==>861.0 Secs (Pattern 3)]	[1]
	3		(6) CIZAJ2242.8+53 01SOUTH	ACS/WFC, ACCUM, WFCENTER	F814W		POS TARG 1.766,-9 .972	Pattern 4, Exps 3-4 in CIZAJ2242-South (06) (4) Prime + Parallel Group 3-4 in Pattern 4, Exps 3-4 in CIZAJ2242-South (06)	800 Secs (2742 Secs) [==>914.0 Secs (Pattern 1)] [==>914.0 Secs (Pattern 2)] [==>914.0 Secs (Pattern 3)]	[2]
	4		(6) CIZAJ2242.8+53 01SOUTH	WFC3/UVIS, ACCUM, UVIS	F606W			Pattern 4, Exps 3-4 in CIZAJ2242-South (06) (4) Prime + Parallel Group 3-4 in Pattern 4, Exps 3-4 in CIZAJ2242-South (06)	800 Secs (2746 Secs) [==>898.0 Secs (Pattern 1)] [==>924.0 Secs (Pattern 2)] [==>924.0 Secs (Pattern 3)]	[2]



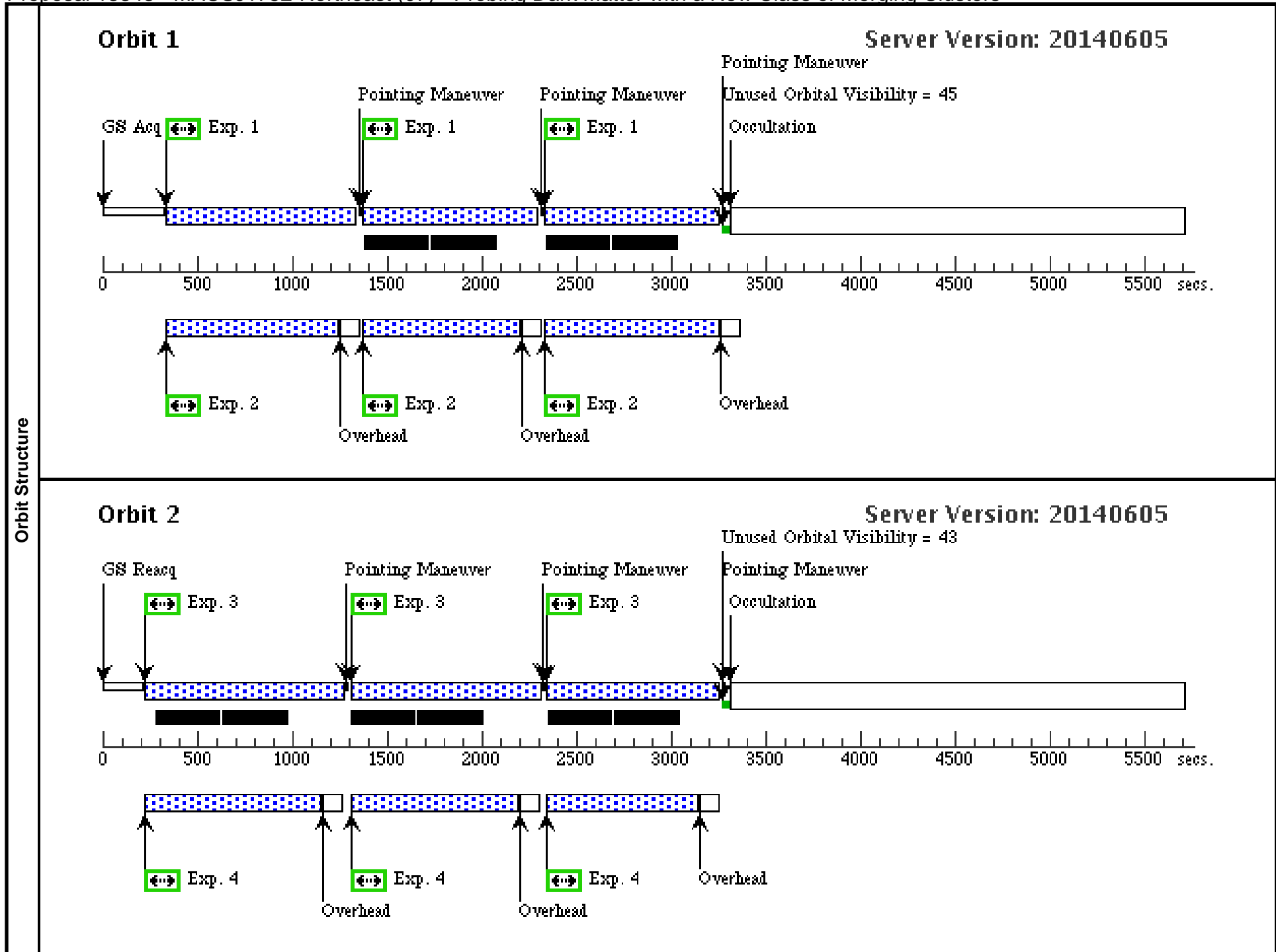
Proposal 13343 - MACSJ1752-Northeast (07) - Probing Dark Matter with a New Class of Merging Clusters

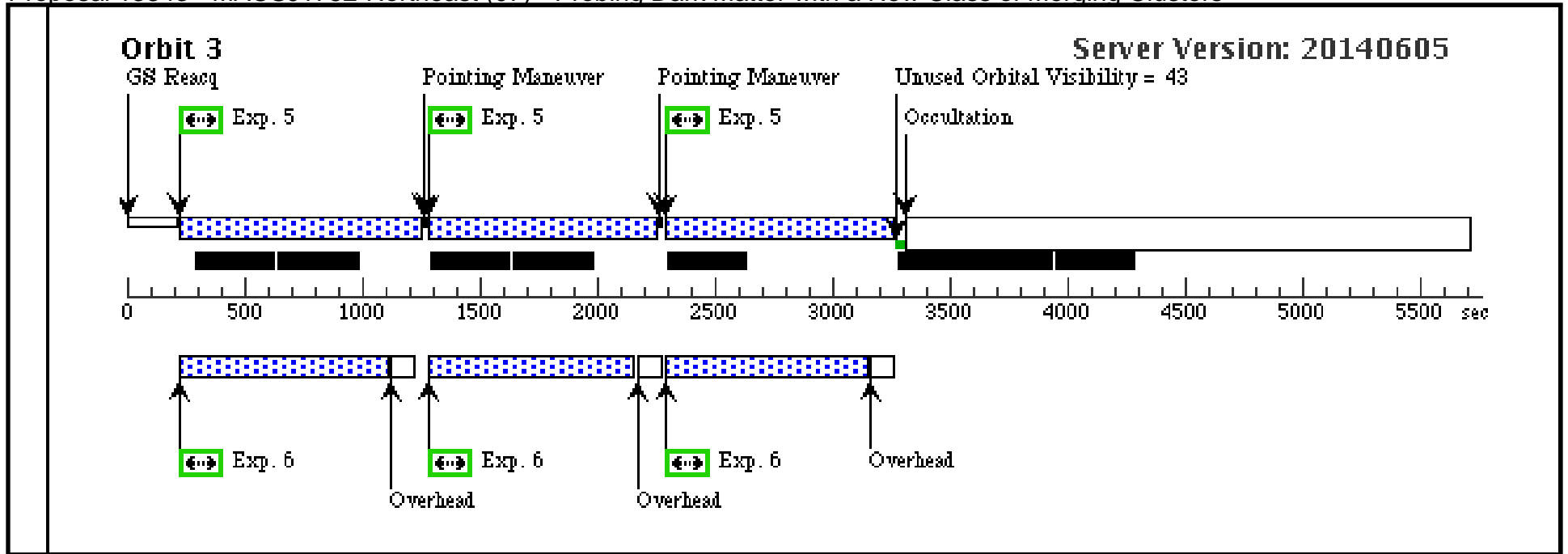
Tue Aug 05 01:01:01 GMT 2014

<b>Visit</b>	<p><b>Proposal 13343, MACSJ1752-Northeast (07), completed</b></p> <p><b>Diagnostic Status: No Diagnostics</b></p> <p>Scientific Instruments: WFC3/UVIS, ACS/WFC</p> <p>Special Requirements: ORIENT 225D TO 235 D; ORIENT 45D TO 55 D</p> <p><i>Comments: Parallel observations of the dissociative galaxy cluster merger MACS J1752.0+4440 with ACS/WFC and WFC3/UVIS. ACS is centered on the northeastern subcluster while WFC3 will observe the periphery of the cluster merger and be used to study galaxies ejected during the merger as well as improve the weak lensing signal through additional source galaxies. There will be 3 exposures with ACS/WFC+F814W, 3 exposures with ACS/WFC+F606W, and 3 exposures with ACS/WFC+F435W of the northeast subcluster. Similarly the peripheral field will be observed with 3 exposures of WFC3/UVIS+F814W, 3 exposures of WFC3/UVIS+F606W, and 3 exposures of WFC3/UVIS+F390W.</i></p> <p><i>The orientation requirements are necessary to provide a contiguous mosaic of the cluster merger with two ACS pointings.</i></p> <p><i>Note (8/22/2013): Following review of this target by STScI it was recommended that we move the pointing away from the bright star. We have implemented a move of ~20" from the original pointing which should enable us to reduce the effects of the bright star while maintaining our primary science. Additionally it was suggested that we either shorten each orbit by a minute or increase the roll constraint from 235 to 257 degrees. We have chosen to shorten the orbit exposure time so that we can maintain a nice mosaic of the northeast and southwest subclusters.</i></p>					
	<b>Patterns</b>	<b>#</b>	<b>Primary Pattern</b>	<b>Secondary Pattern</b>	<b>Exposures</b>	
(5)		Pattern Type=LINE Purpose=DITHER Number Of Points=3 Point Spacing=3.406 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=255.440 Angle Between Sides= Center Pattern=false	(1-2), (3-4), (5-6)		
<b>Fixed Targets</b>	<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>	<b>Targ. Coord. Corrections</b>	<b>Fluxes</b>	<b>Miscellaneous</b>
	(7)	MACS-J1752.0+4440NORTHEAST	RA: 17 52 9.3440 (268.0389333d) Dec: +44 42 7.80 (44.70217d) Equinox: J2000	Redshift: 0.366	V=20+/-3	Reference Frame: ICRS

Proposal 13343 - MACSJ1752-Northeast (07) - Probing Dark Matter with a New Class of Merging Clusters

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
Exposures	1	(7) MACS-J1752.0+4440NORTHEAST	ACS/WFC, ACCUM, WFCENTER	F814W			Pattern 5, Exps 1-2 in MACSJ1752-Northeast (07) (5) Prime + Parallel Group 1-2 in Pattern 5, Exps 1-2 in MACSJ1752-Northeast (07)	600 Secs (2394 Secs) [==>798.0 Secs (Pattern 1)] [==>798.0 Secs (Pattern 2)] [==>798.0 Secs (Pattern 3)]	[1]
	2	(7) MACS-J1752.0+4440NORTHEAST	WFC3/UVIS, ACCUM, UVIS	F814W			Pattern 5, Exps 1-2 in MACSJ1752-Northeast (07) (5) Prime + Parallel Group 1-2 in Pattern 5, Exps 1-2 in MACSJ1752-Northeast (07)	600 Secs (2632 Secs) [==>880.0 Secs (Pattern 1)] [==>830.0 Secs (Pattern 2)] [==>922.0 Secs (Pattern 3)]	[1]
	3	(7) MACS-J1752.0+4440NORTHEAST	ACS/WFC, ACCUM, WFCENTER	F606W			Pattern 5, Exps 3-4 in MACSJ1752-Northeast (07) (5) Prime + Parallel Group 3-4 in Pattern 5, Exps 3-4 in MACSJ1752-Northeast (07)	800 Secs (2534 Secs) [==>872.0 Secs (Pattern 1)] [==>872.0 Secs (Pattern 2)] [==>790.0 Secs (Pattern 3)]	[2]
	4	(7) MACS-J1752.0+4440NORTHEAST	WFC3/UVIS, ACCUM, UVIS	F606W			Pattern 5, Exps 3-4 in MACSJ1752-Northeast (07) (5) Prime + Parallel Group 3-4 in Pattern 5, Exps 3-4 in MACSJ1752-Northeast (07)	800 Secs (2588 Secs) [==>906.0 Secs (Pattern 1)] [==>882.0 Secs (Pattern 2)] [==>800.0 Secs (Pattern 3)]	[2]
	5	(7) MACS-J1752.0+4440NORTHEAST	ACS/WFC, ACCUM, WFCENTER	F435W			Pattern 5, Exps 5-6 in MACSJ1752-Northeast (07) (5) Prime + Parallel Group 5-6 in Pattern 5, Exps 5-6 in MACSJ1752-Northeast (07)	800 Secs (2526 Secs) [==>842.0 Secs (Pattern 1)] [==>842.0 Secs (Pattern 2)] [==>842.0 Secs (Pattern 3)]	[3]
	6	(7) MACS-J1752.0+4440NORTHEAST	WFC3/UVIS, ACCUM, UVIS	F390W			Pattern 5, Exps 5-6 in MACSJ1752-Northeast (07) (5) Prime + Parallel Group 5-6 in Pattern 5, Exps 5-6 in MACSJ1752-Northeast (07)	800 Secs (2599 Secs) [==>863.0 Secs (Pattern 1)] [==>873.0 Secs (Pattern 2)] [==>863.0 Secs (Pattern 3)]	[3]





Proposal 13343 - MACSJ1752-Southwest (08) - Probing Dark Matter with a New Class of Merging Clusters

Tue Aug 05 01:01:01 GMT 2014

<b>Visit</b>	<b>Proposal 13343, MACSJ1752-Southwest (08), implementation</b>																																							
	<b>Diagnostic Status: No Diagnostics</b>																																							
	Scientific Instruments: WFC3/UVIS, ACS/WFC Special Requirements: ORIENT 45D TO 55 D; ORIENT 225D TO 235 D <i>Comments: Because the southwest subcluster of MACS J1752.0+4440 was perviously observed with 1 orbit ACS/WFC+F606W (Cycle 18 SNAP-12166) and 1 orbit ACS/WFC+F814W (Cycle 20 SNAP-12884) we only need to observe the southwest subcluster with one orbit of ACS/WFC+F435W to provide the necessary color information to perform the weak lensing dependent science.</i>  <i>Parrallel observations of the dissociative galaxy cluster merger MACS J1752.0+4440 with ACS/WFC and WFC3/UVIS. ACS is centered on the southwestern subcluster while WCF3 will observe the periphery of the cluster merger and be used to study galaxies ejected during the merger as well as improve the weak lensing signal through additional source galaxies. There will be 3 exposures with ACS/WFC+F435W of the southwest subcluster. The peripheral field will be observed with 3 exposures of WFC3/UVIS+F814W.</i>  <i>The orientation requirements are necessary to provide a contiguous mosaic of the cluster merger with two ACS pointings.</i>  <i>Revision 2014-08-01: We were notified by Harald Ebeling that the existing ACS F814W observations of the southwest subcluster are actually only ~0.5 orbits deep rather than the origrainly believed 1 orbit deep. Since F814W is our lensing band and this is the most important aspect for our science, we have decide to use this orbit to observe the southwest with F814W rather than F435W. We considered the possibility of switching between the F435W and F814W filters half-way through the orbit but found that the overhead losses comprised the F814 depth and number of exposures to an unacceptable degree.</i>																																							
	<table border="1"> <thead> <tr> <th>#</th> <th>Primary Pattern</th> <th>Secondary Pattern</th> <th>Exposures</th> </tr> </thead> <tbody> <tr> <td>(5)</td> <td>                     Pattern Type=LINE                      Purpose=DITHER                      Number Of Points=3                      Point Spacing=3.406                      Line Spacing=                 </td> <td>                     Coordinate Frame=POS-TARG                      Pattern Orientation=255.440                      Angle Between Sides=                      Center Pattern=false                 </td> <td>(1-2)</td> </tr> </tbody> </table>										#	Primary Pattern	Secondary Pattern	Exposures	(5)	Pattern Type=LINE Purpose=DITHER Number Of Points=3 Point Spacing=3.406 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=255.440 Angle Between Sides= Center Pattern=false	(1-2)																						
#	Primary Pattern	Secondary Pattern	Exposures																																					
(5)	Pattern Type=LINE Purpose=DITHER Number Of Points=3 Point Spacing=3.406 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=255.440 Angle Between Sides= Center Pattern=false	(1-2)																																					
<b>Patterns</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th>Targ. Coord. Corrections</th> <th>Fluxes</th> <th>Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>(8)</td> <td>MACS-J1752.0+4440SOUTHWEST</td> <td>                     RA: 17 51 56.2092 (267.9842050d)                      Dec: +44 39 30.54 (44.65848d)                      Equinox: J2000                      Alt Name1: IRXS-J175201.5+444046                 </td> <td>Redshift: 0.366</td> <td>V=20+/-3</td> <td>Reference Frame: ICRS</td> </tr> </tbody> </table>										#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous	(8)	MACS-J1752.0+4440SOUTHWEST	RA: 17 51 56.2092 (267.9842050d) Dec: +44 39 30.54 (44.65848d) Equinox: J2000 Alt Name1: IRXS-J175201.5+444046	Redshift: 0.366	V=20+/-3	Reference Frame: ICRS																		
	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous																																		
(8)	MACS-J1752.0+4440SOUTHWEST	RA: 17 51 56.2092 (267.9842050d) Dec: +44 39 30.54 (44.65848d) Equinox: J2000 Alt Name1: IRXS-J175201.5+444046	Redshift: 0.366	V=20+/-3	Reference Frame: ICRS																																			
<i>Comments: The southwest subcluster of MACS J1752.0+4440 was perviously observed with 1 orbit ACS/WFC+F606W (Cycle 18 SNAP-12166) and 1 orbit ACS/WFC+F814W (Cycle 20 SNAP-12884), however we need to observe the southwest subcluster with one additional ACS/WFC+F435W orbit to provide the necessary color information to perform the weak lensing dependent science.</i>																																								
<b>Fixed Targets</b>	<table border="1"> <thead> <tr> <th>#</th> <th>Label</th> <th>Target</th> <th>Config,Mode,Aperture</th> <th>Spectral Els.</th> <th>Opt. Params.</th> <th>Special Reqs.</th> <th>Groups</th> <th>Exp. Time (Total)/[Actual Dur.]</th> <th>Orbit</th> </tr> </thead> <tbody> <tr> <td>1</td> <td></td> <td>(8) MACS-J1752.0+4440SOUTHWEST</td> <td>ACS/WFC, ACCUM, WFCENTER</td> <td>F814W</td> <td></td> <td></td> <td>                     Pattern 5, Exps 1-2 in MACSJ1752-Southwest (08) (5)                      Prime + Parallel Group 1-2 in Pattern 5, Exps 1-2 in MACSJ1752-Southwest (08)                 </td> <td>                     600 Secs (2439 Secs)                      [==&gt;813.0 Secs (Pattern 1)]                      [==&gt;813.0 Secs (Pattern 2)]                      [==&gt;813.0 Secs (Pattern 3)]                 </td> <td>[1]</td> </tr> <tr> <td>2</td> <td></td> <td>(8) MACS-J1752.0+4440SOUTHWEST</td> <td>WFC3/UVIS, ACCUM, UVIS</td> <td>F814W</td> <td></td> <td></td> <td>                     Pattern 5, Exps 1-2 in MACSJ1752-Southwest (08) (5)                      Prime + Parallel Group 1-2 in Pattern 5, Exps 1-2 in MACSJ1752-Southwest (08)                 </td> <td>                     600 Secs (2554 Secs)                      [==&gt;888.0 Secs (Pattern 1)]                      [==&gt;838.0 Secs (Pattern 2)]                      [==&gt;828.0 Secs (Pattern 3)]                 </td> <td>[1]</td> </tr> </tbody> </table>										#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit	1		(8) MACS-J1752.0+4440SOUTHWEST	ACS/WFC, ACCUM, WFCENTER	F814W			Pattern 5, Exps 1-2 in MACSJ1752-Southwest (08) (5) Prime + Parallel Group 1-2 in Pattern 5, Exps 1-2 in MACSJ1752-Southwest (08)	600 Secs (2439 Secs) [==>813.0 Secs (Pattern 1)] [==>813.0 Secs (Pattern 2)] [==>813.0 Secs (Pattern 3)]	[1]	2		(8) MACS-J1752.0+4440SOUTHWEST	WFC3/UVIS, ACCUM, UVIS	F814W			Pattern 5, Exps 1-2 in MACSJ1752-Southwest (08) (5) Prime + Parallel Group 1-2 in Pattern 5, Exps 1-2 in MACSJ1752-Southwest (08)	600 Secs (2554 Secs) [==>888.0 Secs (Pattern 1)] [==>838.0 Secs (Pattern 2)] [==>828.0 Secs (Pattern 3)]	[1]
	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit																														
	1		(8) MACS-J1752.0+4440SOUTHWEST	ACS/WFC, ACCUM, WFCENTER	F814W			Pattern 5, Exps 1-2 in MACSJ1752-Southwest (08) (5) Prime + Parallel Group 1-2 in Pattern 5, Exps 1-2 in MACSJ1752-Southwest (08)	600 Secs (2439 Secs) [==>813.0 Secs (Pattern 1)] [==>813.0 Secs (Pattern 2)] [==>813.0 Secs (Pattern 3)]	[1]																														
2		(8) MACS-J1752.0+4440SOUTHWEST	WFC3/UVIS, ACCUM, UVIS	F814W			Pattern 5, Exps 1-2 in MACSJ1752-Southwest (08) (5) Prime + Parallel Group 1-2 in Pattern 5, Exps 1-2 in MACSJ1752-Southwest (08)	600 Secs (2554 Secs) [==>888.0 Secs (Pattern 1)] [==>838.0 Secs (Pattern 2)] [==>828.0 Secs (Pattern 3)]	[1]																															
<b>Exposures</b>																																								

