10843 - Deep Imaging of Extremely Metal-Poor Galaxies

Cycle: 15, Proposal Category: GO

(Availability Mode: SUPPORTED)

INVESTIGATORS

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VISITS

Visit	*Targets*	*Configurations*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
01	(1) CGCG269-049	ACS/HRC ACS/WFC	5	12-May-2006 21:13:41.0	yes

5 Total Orbits Used

ABSTRACT

Conflicting evidence exists regarding whether the most metal-poor and actively star-forming galaxies in the local universe such as I Zw 18 contain evolved stars. We propose to help settle this issue by obtaining deep ACS/HRC U, narrow-V, I, and H-alpha images of nine nearby ($z < 0.01$) extremely metal-poor ($12 + O/H < 7.65$) galaxies selected from the Sloan Digital Sky Survey. These objects are only marginally resolved from the ground and appear uniformly blue, strongly motivating HST imaging. The continuum images will establish: 1.) If underlying populations of evolved stars are present, by revealing the objects' colors on scales ~10 pc, and 2.) The presence of any faint tidal features, dust lanes, and globular or super star clusters, all of which constrain the objects' evolutionary states. The H-alpha images, in combination with ground-based echelle spectroscopy,

will reveal 1.) Whether the objects are producing "superwinds" that are depleting them of their metals; ground-based images of some of them indeed show large halos of ionized gas, and 2.) The correspondence of their nebular and stellar emission on scales of a few parsecs, which is important for understanding the "feedback" process by which supernovae and stellar winds regulate star formation. One of the sample objects, CGCG 269-049, lies only ~2 Mpc away, allowing the detection of individual red giant stars in it if any are present. We have recently obtained Spitzer images and spectra of this galaxy to determine its dust content and star formation history, which will complement the proposed HST observations. [NOTE: THIS PROPOSAL WAS REDUCED TO FIVE ORBITS, AND ONLY ONE OF THE ORIGINAL TARGETS, CGCG 269-049, AFTER THE PHASE I REVIEW]

OBSERVING DESCRIPTION

We have been awarded five orbits to image the galaxy CGCG 269-049 using the Advanced Camera for Surveys. We will image the galaxy in the broad-band filters F330W, F550M, and F814W with the High Resolution Channel, and with the F658N filter using the Wide Field Channel. This is because the H-alpha emission of the galaxy may extend further than the HRC field of view.

Visit

Proposal 10843, Visit 01 Sat May 13 01:13:47 GMT 2006

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/WFC, ACS/HRC

Special Requirements: (none)

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-HRC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.198 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=44.3 Angle Between Sides= Center Pattern=false		(1-3)
(2)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=3.011 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.3 Angle Between Sides= Center Pattern=false		(4)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	CGCG269-049 Alt Name1: SDSSJ121546.56+522313.9	RA: 12 15 46.8900 (183.9453750d) Dec: +52 23 13.90 (52.38719d) Equinox: J2000		V=(?) Sloan g = 15.87	Reference Frame: ICRS

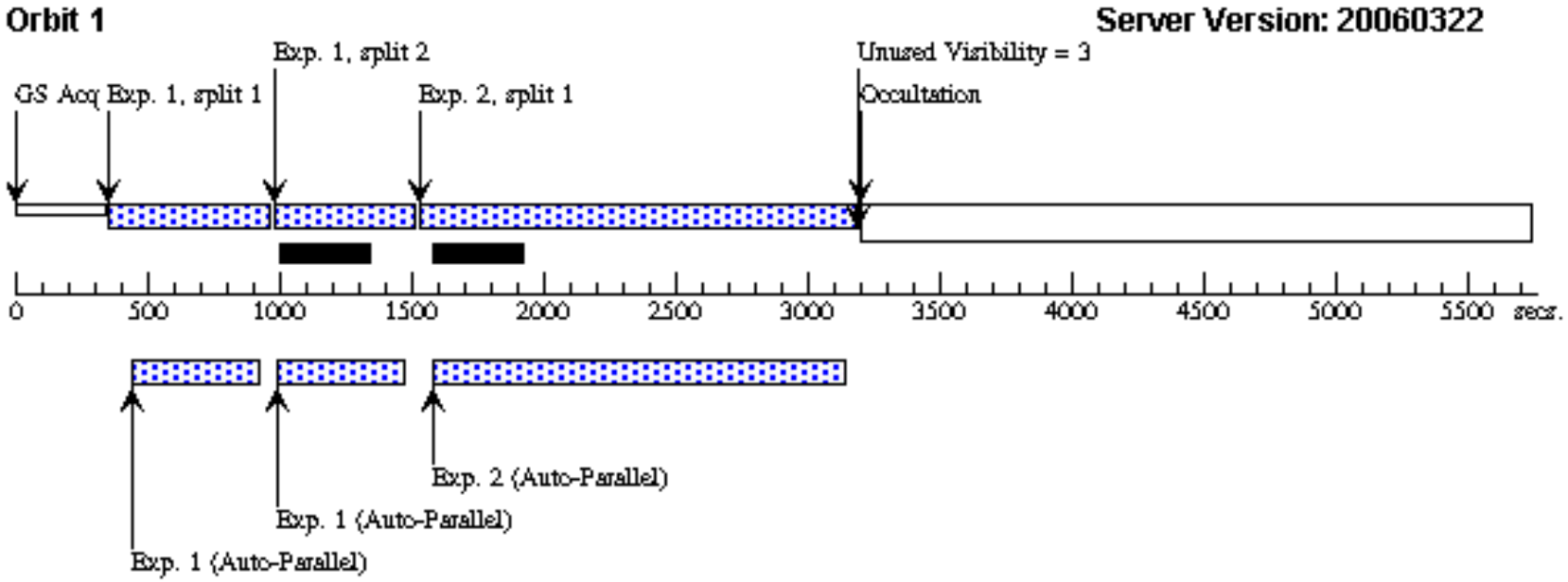
Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	F330W	(1) CGCG269-049	ACS/HRC, ACCUM, HRC	F330W			Pattern 1-3 (1)	1000.0 Secs	
								[==>(Pattern 1, Split 1)] *[==>(Pattern 1, Split 2)]*	***[1]***
								[==>(Pattern 2, Split 1)] *[==>(Pattern 2, Split 2)]*	***[3]***
2	F550M	(1) CGCG269-049	ACS/HRC, ACCUM, HRC	F550M			Pattern 1-3 (1)	3160.0 Secs	
								[==>(Pattern 1, Split 1)]	***[1]***
								[==>(Pattern 1, Split 2)]	***[2]***
								[==>(Pattern 2, Split 1)]	***[3]***
								[==>(Pattern 2, Split 2)]	***[4]***
3	F814W	(1) CGCG269-049	ACS/HRC, ACCUM, HRC	F814W			Pattern 1-3 (1)	1060.0 Secs	
								[==>(Pattern 1, Split 1)] *[==>(Pattern 1, Split 2)]*	***[2]***
								[==>(Pattern 2, Split 1)] *[==>(Pattern 2, Split 2)]*	***[4]***

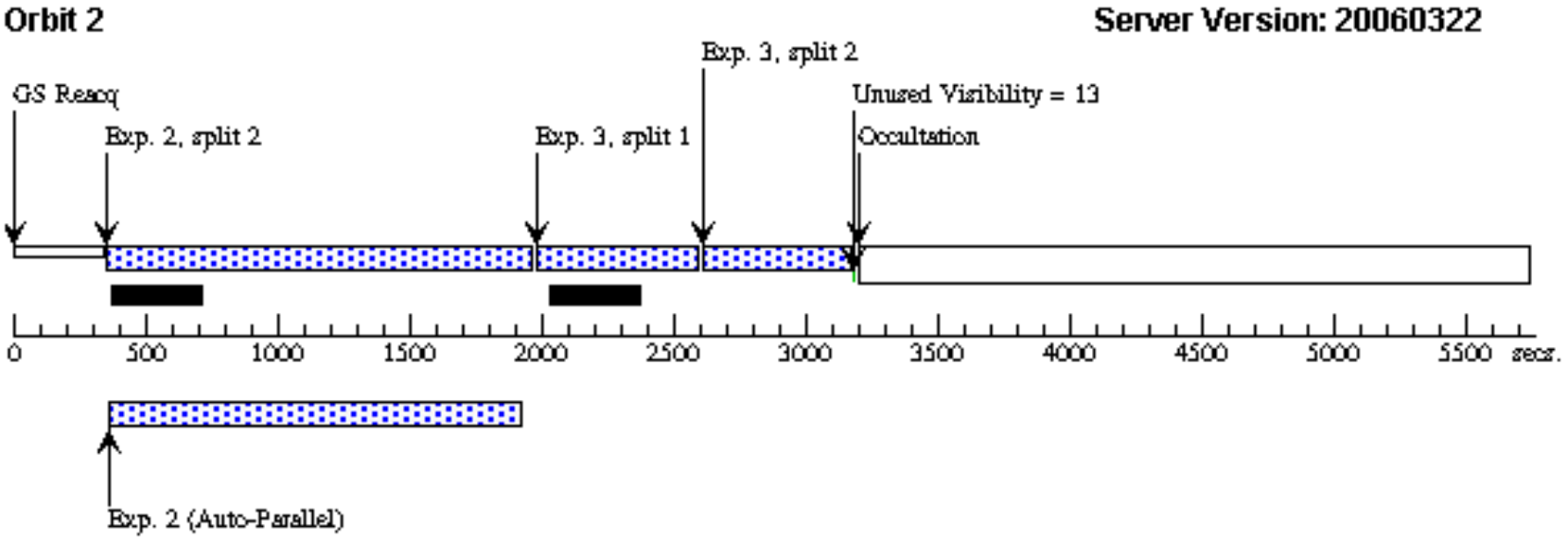
Exposures (continued)

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
4	F658N	(1) CGCG269-049	ACS/WFC, ACCUM, WFC	F658N			Pattern 4-4 (2)	500.0 Secs	
								[==>548.0 Secs (Pattern 1, Split 1)] *[==>548.0 Secs (Pattern 1, Split 2)]* *[==>548.0 Secs (Pattern 2, Split 1)]* *[==>548.0 Secs (Pattern 2, Split 2)]*	***[5]***

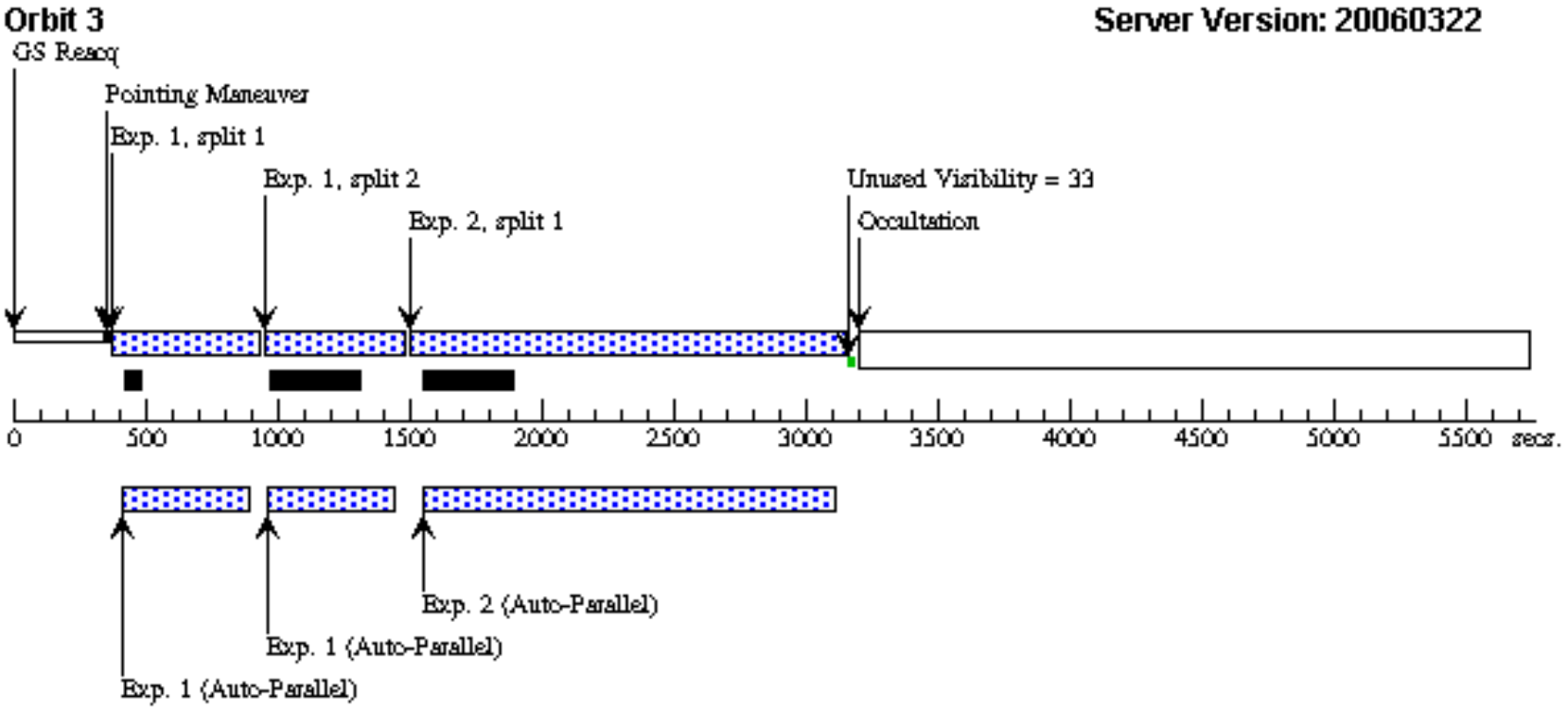
Orbit Structure



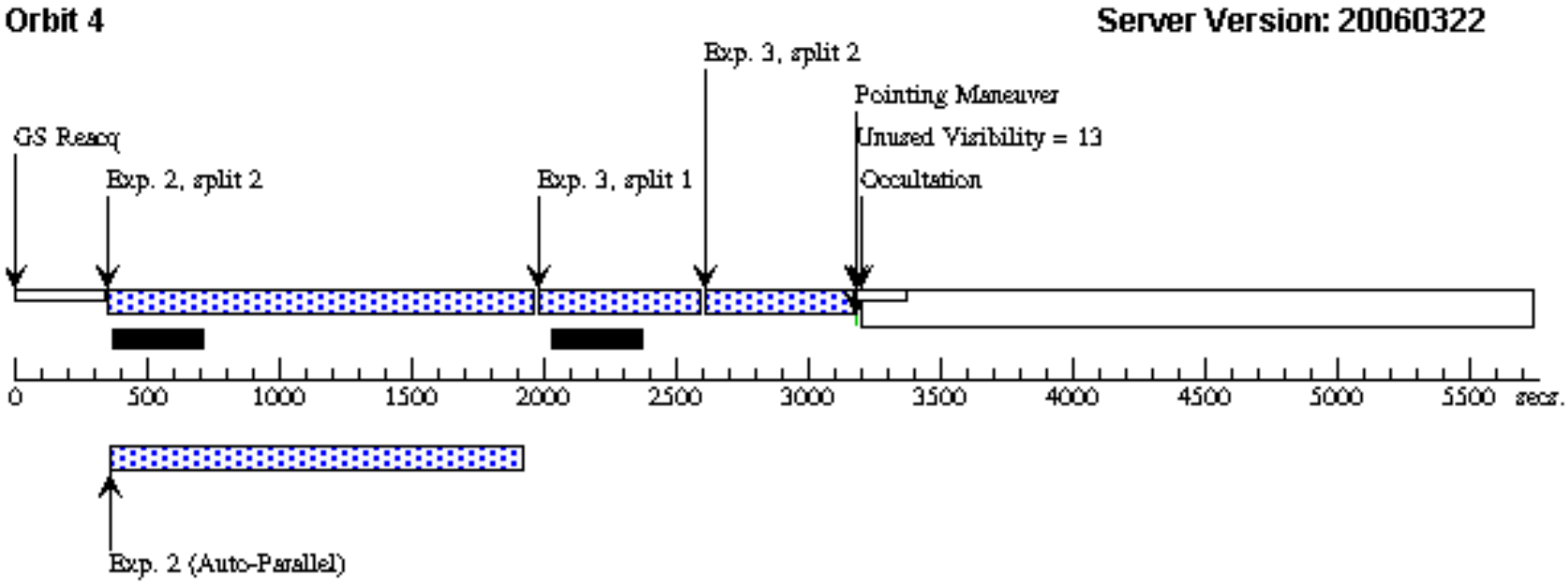
Orbit Structure (continued)



Orbit Structure (continued)



Orbit Structure (continued)



Orbit Structure (continued)