



13643 - Imaging the tenuous dusty atmosphere of edge-on protoplanetary disks

Cycle: 22, Proposal Category: GO

(Availability Mode: SUPPORTED)

INVESTIGATORS

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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) NAME-HK-TAU-B	WFC3/UVIS	1	17-Jun-2015 08:10:27.0	yes
02	(3) SSTTAUJ042021.4+281349	WFC3/UVIS	1	17-Jun-2015 08:10:28.0	yes
03	(4) SSTC2DJ163131.2-242627	WFC3/UVIS	1	17-Jun-2015 08:10:29.0	yes
04	(5) SSTGBSJ111110.7-764157	WFC3/UVIS	1	17-Jun-2015 08:10:30.0	yes
05	(6) 2MASSJ11160287-7624533	WFC3/UVIS	1	17-Jun-2015 08:10:31.0	yes
06	(7) 2MASS-J16281370-2431391	WFC3/UVIS	1	17-Jun-2015 08:10:32.0	yes
56	(7) 2MASS-J16281370-2431391	WFC3/UVIS	1	17-Jun-2015 08:10:33.0	yes

7 Total Orbits Used

ABSTRACT

In a successful Cycle 19 survey for edge-on protoplanetary disks, we have discovered that some, but not all, protoplanetary disks present a tenuous atmosphere detected in scattered light, thus containing dust grains, located well above the optically thick disk surface. This atmosphere could be direct evidence for the super-heated region above the disk surface due to direct illumination from the central star or for a disk wind that carries along the smallest dust grains from the disk surface. Here we propose to obtain the first F475W images of a sample of six edge-on protoplanetary disks, four of which were discovered in our Cycle 19 survey, in order to constrain the characteristic grain size in the disk atmosphere and establish whether the presence of this atmosphere correlates with other disk properties. With our carefully selected sample, we will correlate the properties of the disk atmosphere with other properties of the system, such as presence of a collimated jet, dust settling and grain growth, thus providing a first empirical analysis of the nature of this phenomenon.

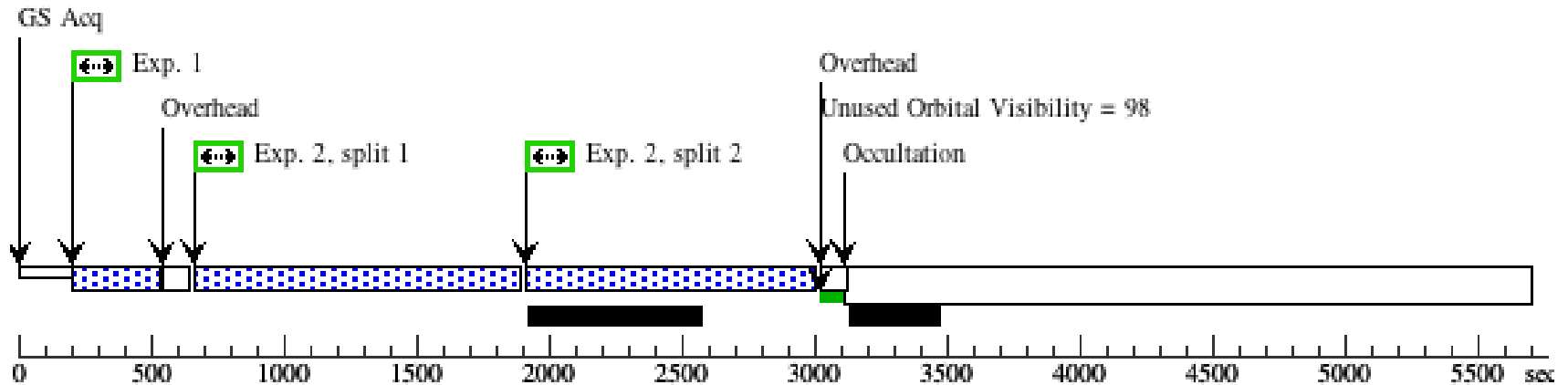
Proposal 13643 - HK Tau B (01) - Imaging the tenuous dusty atmosphere of edge-on protoplanetary disks

Wed Jun 17 12:10:34 GMT 2015

Visit	Proposal 13643, HK Tau B (01), completed Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: SCHED 70%; ORIENT 10D TO 55 D; ORIENT 100D TO 145 D; ORIENT 190D TO 235 D; ORIENT 280D TO 325 D Comments: Orientation constraint is set by the presence of the bright companion HK Tau A, 2.5" away from the target. The orientation range is selected to ensure that the diffraction spider off of HK Tau A does not overlap with the science target.									
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	NAME-HK-TAU-B	RA: 04 31 50.5800 (67.9607500d) Dec: +24 24 16.40 (24.40456d) Equinox: J2000		V=17.6 B=19.5, I=15.1	Reference Frame: SIMBAD				
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(1) NAME-HK-TAU -B	(1) NAME-HK-TAU -B	WFC3/UVIS, ACCUM, UVIS1	F814W		GS ACQ SCENARI O SINGLE		300 Secs (300 Secs)	
									[==>]	[1]
	2	(1) NAME-HK-TAU -B	(1) NAME-HK-TAU -B	WFC3/UVIS, ACCUM, UVIS1	F475W	CR-SPLIT=2			2190 Secs (2190 Secs)	
								[==>(Split 1)]		
								[==>(Split 2)]	[1]	

Orbit 1

Server Version: 20150417



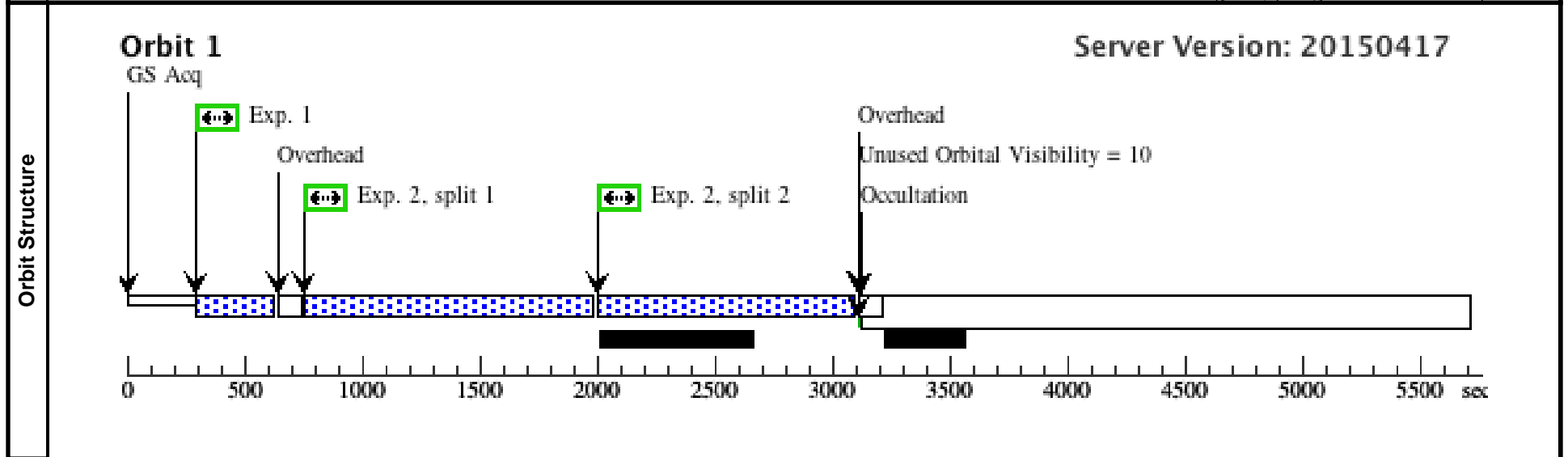
Proposal 13643 - SSTTau J042021.4+281349 (02) - Imaging the tenuous dusty atmosphere of edge-on protoplanetary disks

Wed Jun 17 12:10:34 GMT 2015

Visit	Proposal 13643, SSTTau J042021.4+281349 (02), completed				
	Diagnostic Status: No Diagnostics				
	Scientific Instruments: WFC3/UVIS				
	Special Requirements: SCHED 70%				

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(3)	SSTTAUJ042021.4+281349	RA: 04 20 21.4000 (65.0891667d) Dec: +28 13 49.00 (28.23028d) Equinox: J2000		V=18.5 B=19.2, I= 17.4	Reference Frame: ICRS

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(3) SSTTAUJ042021.4+281349	WFC3/UVIS, ACCUM, UVIS1	F814W				300 Secs (300 Secs) [==>]	[1]
	2		(3) SSTTAUJ042021.4+281349	WFC3/UVIS, ACCUM, UVIS1	F475W	CR-SPLIT=2			2190 Secs (2190 Secs) [==>(Split 1)] [==>(Split 2)]	[1]



Proposal 13643 - SSTC2D J163131.2-242627 (03) - Imaging the tenuous dusty atmosphere of edge-on protoplanetary disks

Visit	Proposal 13643, SSTC2D J163131.2-242627 (03), completed					Wed Jun 17 12:10:35 GMT 2015				
	Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: SCHED 70%									
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(4)	SSTC2DJ163131.2-242627	RA: 16 31 31.3000 (247.8804167d) Dec: -24 26 27.00 (-24.44083d) Equinox: J2000		V=17.3 B=20.3, I= 16.0	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(4) SSTC2DJ163131.2-242627	(4) SSTC2DJ163131.2-242627	WFC3/UVIS, ACCUM, UVIS1	F814W		GS ACQ SCENARI O SINGLE		300 Secs (300 Secs)	
	2	(4) SSTC2DJ163131.2-242627	(4) SSTC2DJ163131.2-242627	WFC3/UVIS, ACCUM, UVIS1	F475W	CR-SPLIT=2			2190 Secs (2190 Secs)	[1]
									[=>]	[1]
									[=>(Split 1)]	[1]
									[=>(Split 2)]	[1]
Orbit Structure	Orbit 1 GS Acq					Server Version: 20150417				
	<p>The diagram illustrates the timing of observations within a single orbit. The x-axis represents time in seconds, ranging from 0 to 5500. Key events are marked with arrows and labels: 'GS Acq' at the start, 'Exp. 1' (a green box with a double-headed arrow) from 0 to 300s, 'Overhead' from 300 to 600s, 'Exp. 2, split 1' (a green box with a double-headed arrow) from 600 to 1900s, 'Exp. 2, split 2' (a green box with a double-headed arrow) from 1900 to 3000s, another 'Overhead' from 3000 to 3100s, 'Occultation' (a black bar) from 3100 to 3500s, and 'Unused Orbital Visibility = 98' (a long black bar) from 3500 to 5500s. The observation periods are shown as blue checkered bars.</p>									

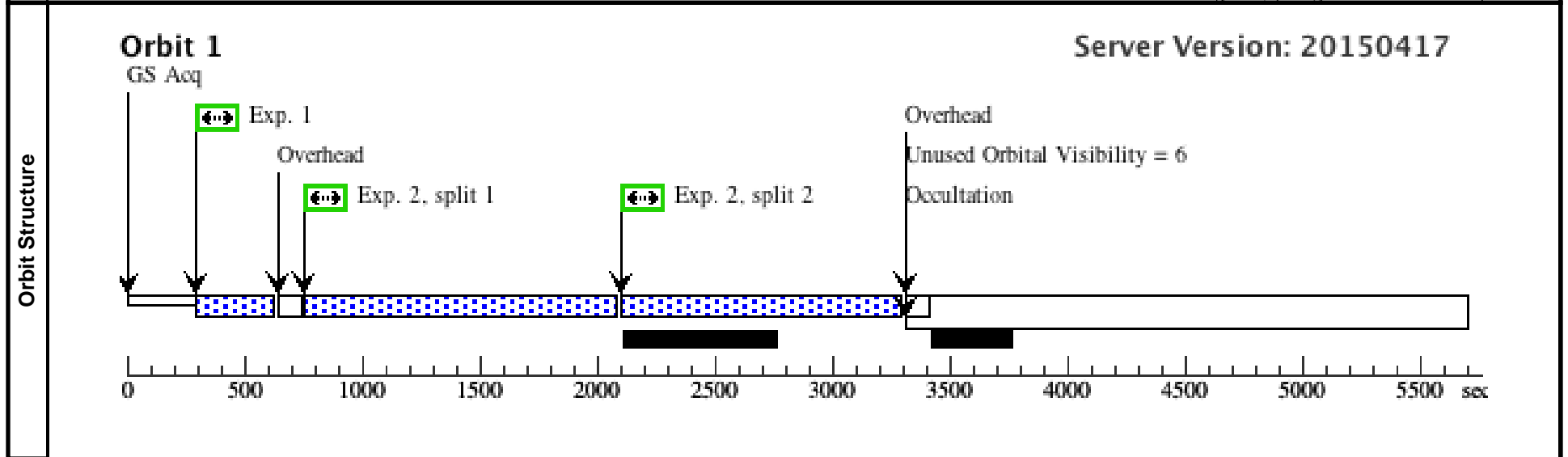
Proposal 13643 - SSTGBS J111110.7-764157 (04) - Imaging the tenuous dusty atmosphere of edge-on protoplanetary disks

Wed Jun 17 12:10:35 GMT 2015

Visit	Proposal 13643, SSTGBS J111110.7-764157 (04), completed				
	Diagnostic Status: No Diagnostics				
	Scientific Instruments: WFC3/UVIS				
	Special Requirements: SCHED 70%				

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(5)	SSTGBSJ111110.7-764157	RA: 11 11 10.7000 (167.7945833d) Dec: -76 41 57.00 (-76.69917d) Equinox: J2000		V=19.7 B=20.3, I= 18.2	Reference Frame: ICRS

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(5) SSTGBSJ111110.7-764157	WFC3/UVIS, ACCUM, UVIS1	F814W				300 Secs (300 Secs) [==>]	[1]
	2		(5) SSTGBSJ111110.7-764157	WFC3/UVIS, ACCUM, UVIS1	F475W	CR-SPLIT=2			2390 Secs (2390 Secs) [==>(Split 1)] [==>(Split 2)]	[1]



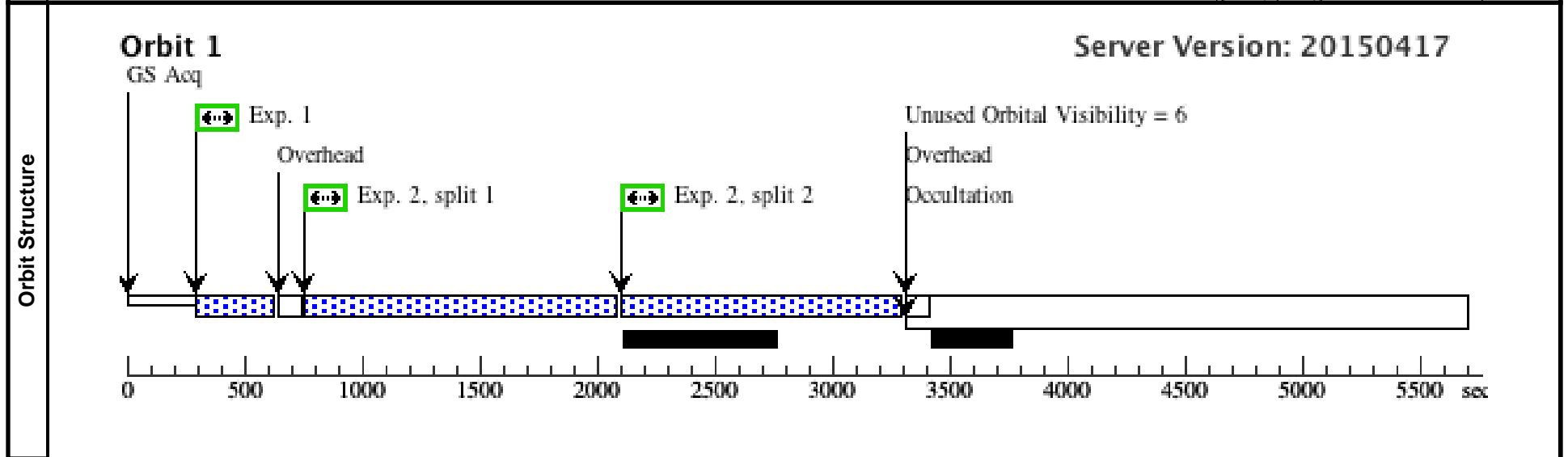
Proposal 13643 - 2MASS J11160287-7624533 (05) - Imaging the tenuous dusty atmosphere of edge-on protoplanetary disks

Wed Jun 17 12:10:35 GMT 2015

Visit	Proposal 13643, 2MASS J11160287-7624533 (05), completed				
	Diagnostic Status: No Diagnostics				
	Scientific Instruments: WFC3/UVIS				
	Special Requirements: SCHED 70%				

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(6)	2MASSJ11160287-7624533	RA: 11 16 2.8800 (169.0120000d) Dec: -76 24 53.30 (-76.41481d) Equinox: J2000		V=18.9 B=19.9, I= 17.9	Reference Frame: ICRS

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(6) 2MASSJ11160287-7624533	WFC3/UVIS, ACCUM, UVIS1	F814W				300 Secs (300 Secs) [==>]	[1]
	2		(6) 2MASSJ11160287-7624533	WFC3/UVIS, ACCUM, UVIS1	F475W	CR-SPLIT=2			2390 Secs (2390 Secs) [==>(Split 1)] [==>(Split 2)]	[1]



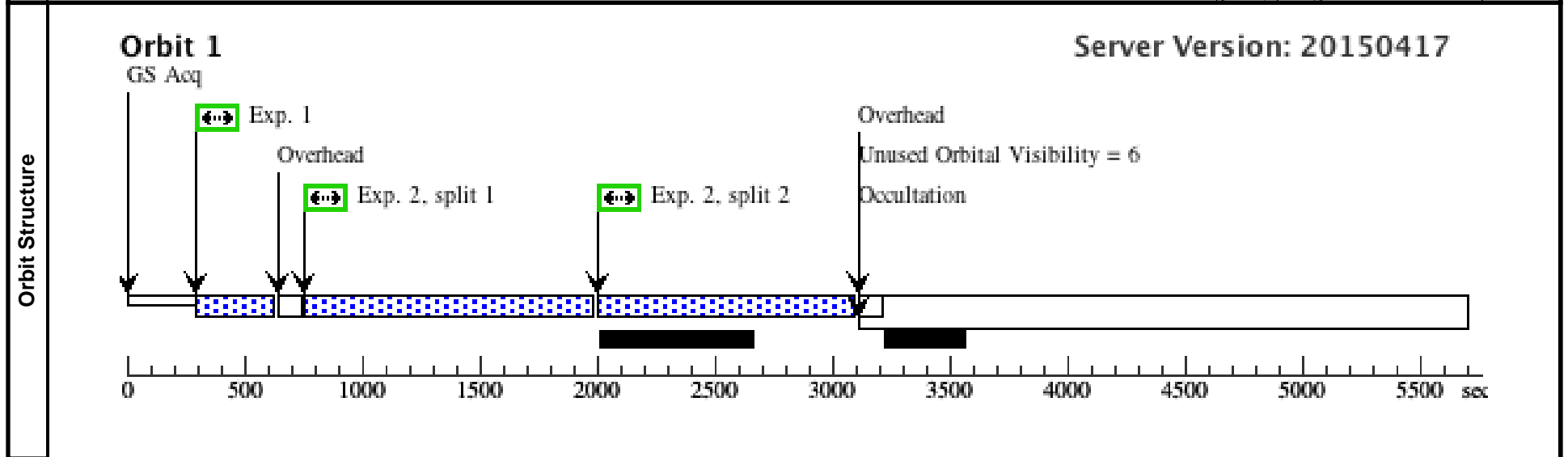
Proposal 13643 - 2MASS J16281370-2431391 (06) - Imaging the tenuous dusty atmosphere of edge-on protoplanetary disks

Wed Jun 17 12:10:35 GMT 2015

Visit	Proposal 13643, 2MASS J16281370-2431391 (06), failed				
	Diagnostic Status: No Diagnostics				
	Scientific Instruments: WFC3/UVIS				
	Special Requirements: SCHED 70%				

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(7)	2MASS-J16281370-2431391	RA: 16 28 13.7100 (247.0571250d) Dec: -24 31 39.10 (-24.52753d) Equinox: J2000		V=19.2 B=20.0, I=17.5	Reference Frame: SIMBAD
	<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>					

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(7) 2MASS-J16281370-2431391	WFC3/UVIS, ACCUM, UVIS1	F814W				300 Secs (300 Secs) [==>]	[1]
	2		(7) 2MASS-J16281370-2431391	WFC3/UVIS, ACCUM, UVIS1	F475W	CR-SPLIT=2			2190 Secs (2190 Secs) [==>(Split 1)] [==>(Split 2)]	[1]



Proposal 13643 - 2MASS J16281370-2431391 (56) - Imaging the tenuous dusty atmosphere of edge-on protoplanetary disks

Wed Jun 17 12:10:35 GMT 2015

Visit	Proposal 13643, 2MASS J16281370-2431391 (56)				
	Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: SCHED 70% Comments: This is a copy of visit 6, which was lost due to a HST safing event.				

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(7)	2MASS-J16281370-2431391	RA: 16 28 13.7100 (247.0571250d) Dec: -24 31 39.10 (-24.52753d) Equinox: J2000		V=19.2 B=20.0, I=17.5	Reference Frame: SIMBAD
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.						

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(7) 2MASS-J16281370-2431391	(7) 2MASS-J16281370-2431391	WFC3/UVIS, ACCUM, UVIS1	F814W				300 Secs (300 Secs)	
									[==>]	[1]
2	(7) 2MASS-J16281370-2431391	(7) 2MASS-J16281370-2431391	WFC3/UVIS, ACCUM, UVIS1	F475W	CR-SPLIT=2			2190 Secs (2190 Secs)		
								[==>(Split 1)]		
								[==>(Split 2)]	[1]	

