12984 - Probing the evaporation of HD189733b atmosphere

Cycle: 20, 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) HD-189733	COS/FUV COS/NUV	5	11-Jul-2013 11:24:54.0	yes

5 Total Orbits Used

ABSTRACT

We propose to observe in the FUV the star HD189733, which hosts a transiting hot Jupiter, in order to study the dynamics of the evaporation of the planet's atmosphere. The inflated planet is exposed to high irradiation and it plays a key role in determining the overall activity of the parent star. To date, HD189733 is one of the few cases where star-planet interaction (SPI) is at work. We have strong suggestion that SPI is enhancing the stellar X-ray activity and variability in a systematic way. HST is the best facility to accomplish our scientific program. It can effectively probe the amount of mass evaporating from the planet, and determining the dynamics of the gas around the planet, confirming or disproving currenct state-of-art MHD models of this system.

OBSERVING DESCRIPTION

We aim to obtain time resolved spectroscopy of the planet bearing star HD189733A, at phases 0.5-0.65 of the planet with COS/G130M. We require five consecutive orbits to observe the egress of the planet from secondary transit. We observe in TIME-TAG mode to follow any changes in the line profiles in 1100-1400 Angstroms range.

Visit

Proposal 12984, visit1 (01), implementation Thu Jul 11 15:25:08 GMT 2013

Diagnostic Status: Warning

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: Period 2.21857312 D AND ZERO-PHASE HJD2453988.80336

Diagnostics

(visit1 (01)) Warning (Orbit Planner): INEFFICIENT ORDERING OF FP-POS POSITIONS

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(visit1 (01)) Warning (Orbit Planner): INEFFICIENT ORDERING OF FP-POS POSITIONS

Fixed Targets

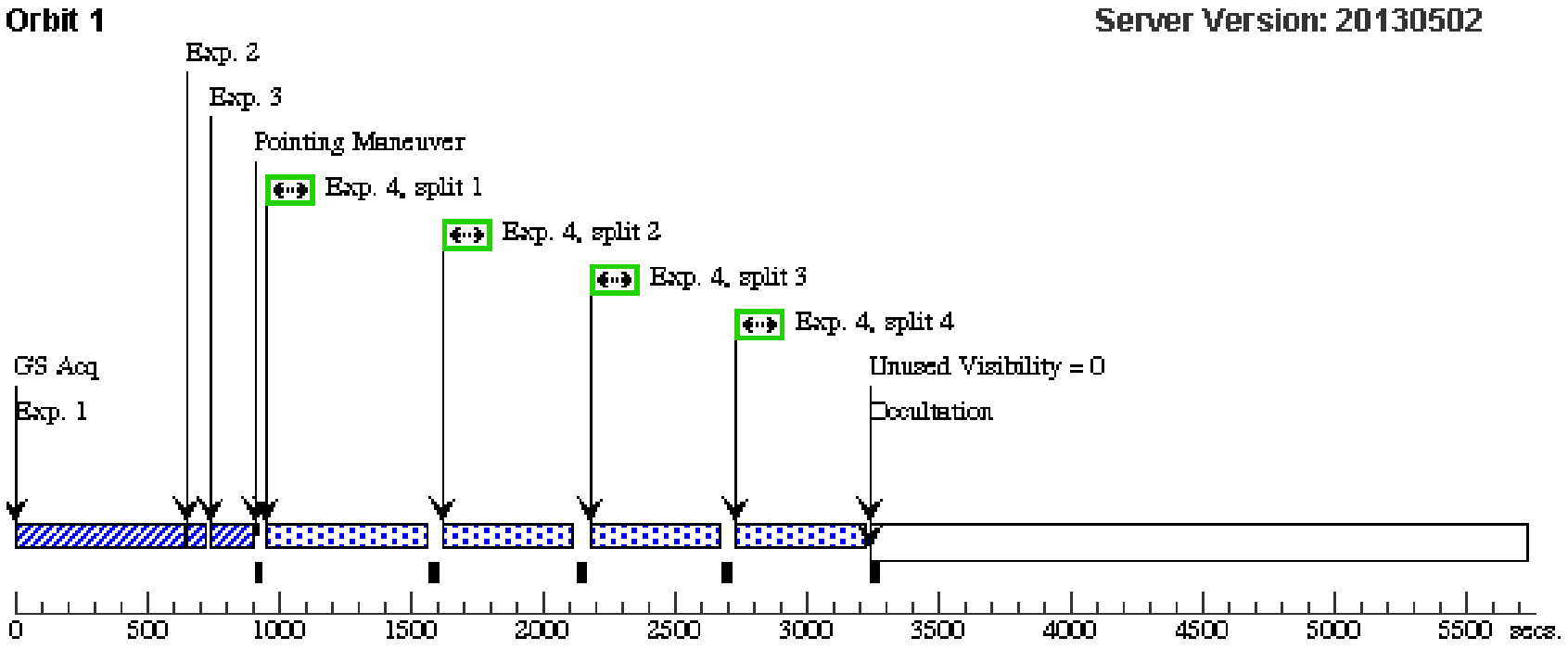
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	HD-189733	RA: 20 00 43.7000 (300.1820833d)	Proper Motion RA: -2.49 mas/yr	V=7.68	Reference Frame: ICRS
		Dec: +22 42 39.10 (22.71086d)	Proper Motion Dec: -250.81 mas/yr		
		Equinox: J2000	Epoch of Position: 2000		

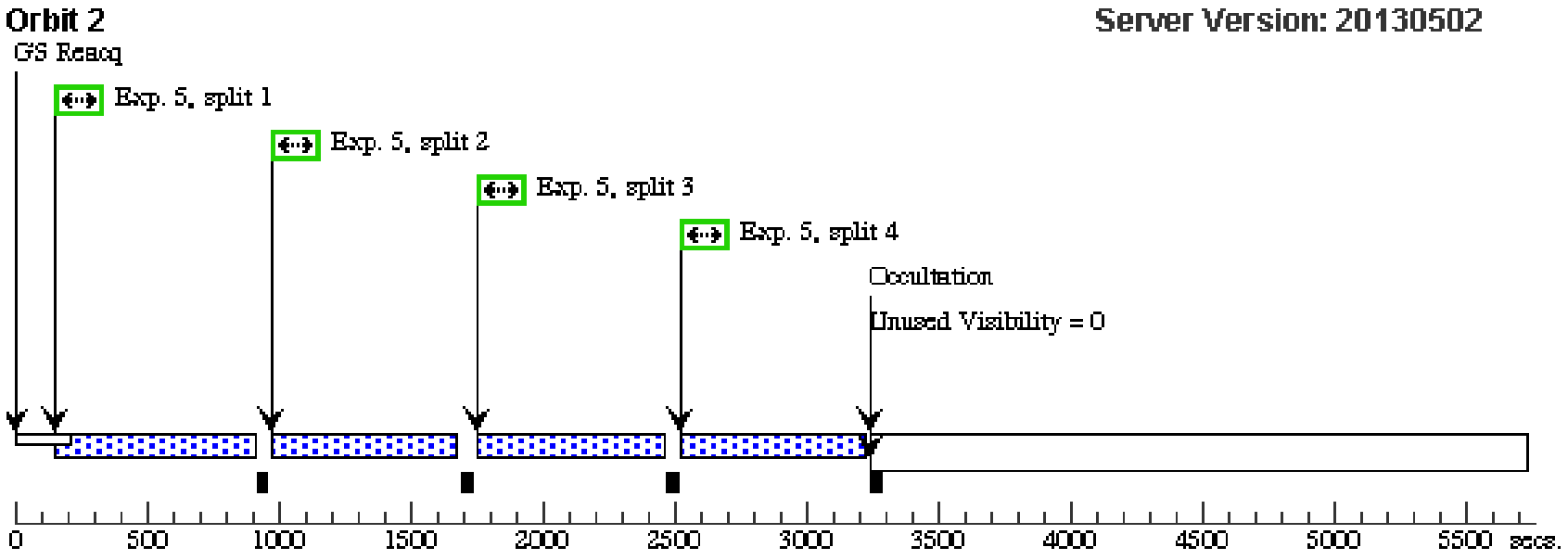
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

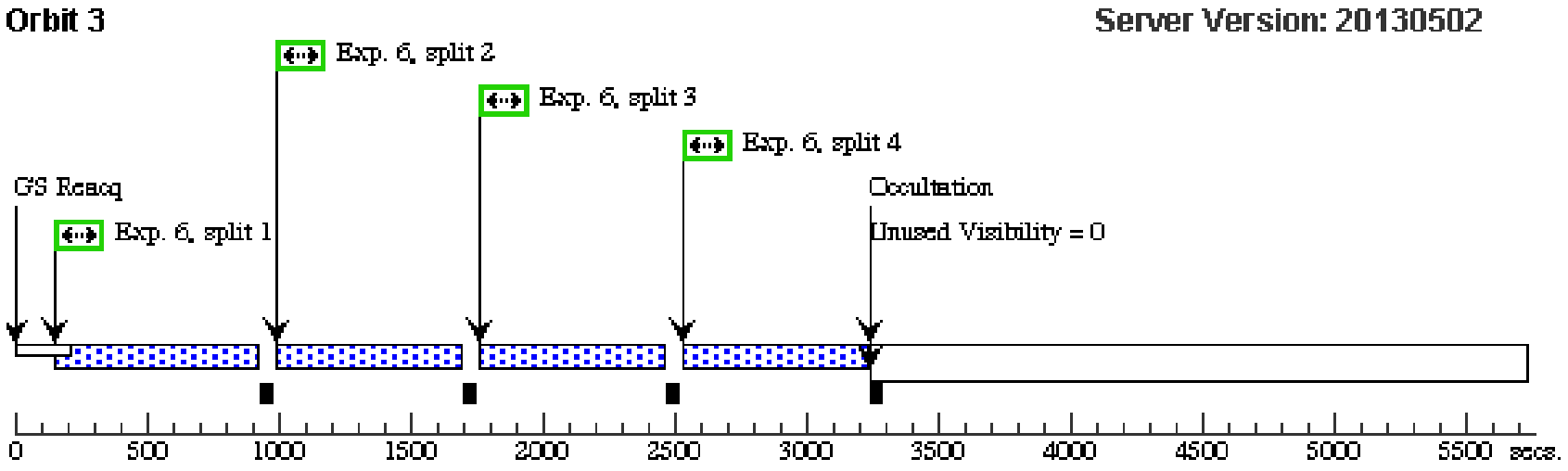
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(446098)	(1) HD-189733	COS/NUV, ACQ/SEARCH, PSA	G230L 3000 A	SCAN-SIZE=3; STEP-SIZE=1.767; CENTER=FLUX-WT-FLR	PHASE 0.49 TO 0.51		2 Secs (2 Secs) *[==>]*	***[1]***
2	(446099)	(1) HD-189733	COS/NUV, ACQ/PEAKXD, PSA	G230L 3000 A	STRIPE=MEDIUM			2 Secs (2 Secs) *[==>]*	***[1]***
3	(446100)	(1) HD-189733	COS/NUV, ACQ/PEAKD, PSA	G230L 3000 A	STEP-SIZE=0.9; NUM-POS=5; CENTER=FLUX-WT-FLR			2 Secs (2 Secs) *[==>]*	***[1]***
4	(414511)	(1) HD-189733	COS/FUV, TIME-TAG, PSA	G130M 1309 A	FP-POS=ALL; BUFFER-TIME=2155; FLASH=YES			2255 Secs (1751 Secs) *[==>431.0 Secs (Split 1)]* *[==>440.0 Secs (Split 2)]* *[==>440.0 Secs (Split 3)]* *[==>440.0 Secs (Split 4)]*	***[1]***
5	(414511)	(1) HD-189733	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=2900; FLASH=YES; FP-POS=ALL			2718 Secs (2595 Secs) *[==>640.0 Secs (Split 1)]* *[==>652.0 Secs (Split 2)]* *[==>654.0 Secs (Split 3)]* *[==>649.0 Secs (Split 4)]*	***[2]***
6	(414511)	(1) HD-189733	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=2900; FLASH=YES; FP-POS=ALL			2718 Secs (2586 Secs) *[==>648 Secs (Split 1)]* *[==>646 Secs (Split 2)]* *[==>646 Secs (Split 3)]* *[==>646 Secs (Split 4)]*	***[3]***
7	(414511)	(1) HD-189733	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=2900; FLASH=YES; FP-POS=ALL			2718 Secs (2586 Secs) *[==>648.0 Secs (Split 1)]* *[==>646 Secs (Split 2)]* *[==>646 Secs (Split 3)]* *[==>646 Secs (Split 4)]*	***[4]***
8	(414511)	(1) HD-189733	COS/FUV, TIME-TAG, PSA	G130M 1309 A	BUFFER-TIME=2900; FLASH=YES; FP-POS=ALL			2718 Secs (2586 Secs) *[==>648 Secs (Split 1)]* *[==>646 Secs (Split 2)]* *[==>646 Secs (Split 3)]* *[==>646 Secs (Split 4)]*	***[5]***

Orbit Structure




Orbit 2
Server Version: 20130502
GS Reacq
Exp. 5, split 1
Exp. 5, split 2
Exp. 5, split 3
Exp. 5, split 4
Occultation
Unused Visibility = 0
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
secs.


Orbit 3
Server Version: 20130502
Exp. 6, split 2
Exp. 6, split 3
Exp. 6, split 4
GS Reacq
Exp. 6, split 1
Occultation
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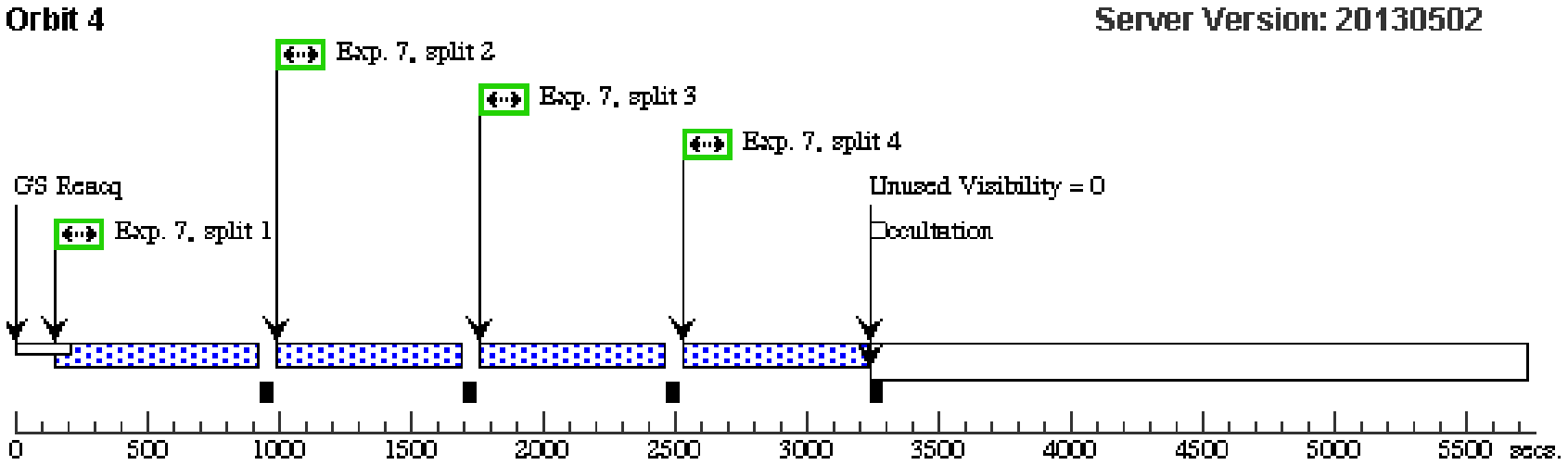
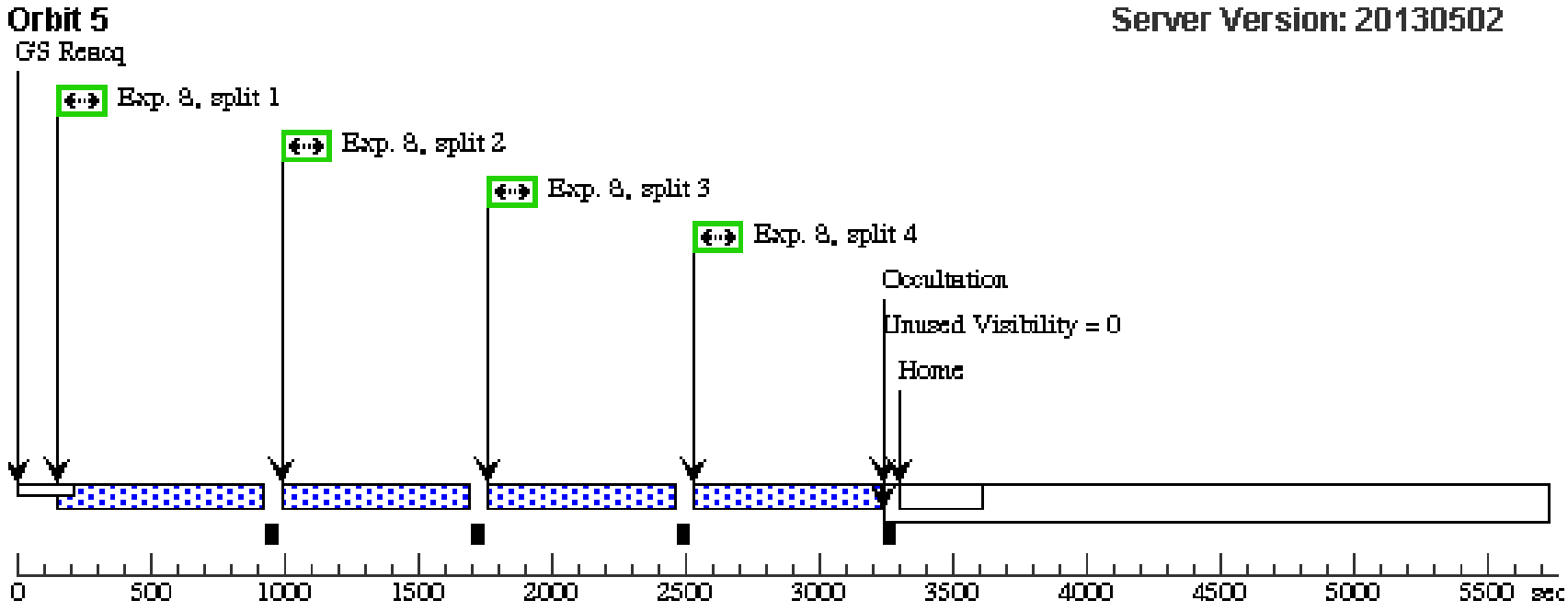
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
secs.


Orbit 4
Server Version: 20130502
Exp. 7, split 2
Exp. 7, split 3
Exp. 7, split 4
GS Reacq
Exp. 7, split 1
Unused Visibility = 0
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
secs.


Orbit 5
Server Version: 20130502
GS Reacq
Exp. 8, split 1
Exp. 8, split 2
Exp. 8, split 3
Exp. 8, split 4
Occultation
Unused Visibility = 0
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec