14143 - Probing the nature and evolution of the oldest known planetary system through Lyman-alpha observations

Cycle: 23, Proposal Category: GO

(UV Initiative)

(Availability Mode: AVAILABLE)

INVESTIGATORS

Name	*Institution*	*E-Mail*
Dr. Vincent Bourrier (PI) (ESA Member) (Contact)	**Observatoire de Geneve**	**bourrier@iap.fr**
Dr. David Ehrenreich (CoI) (ESA Member)	Observatoire de Geneve	david.ehrenreich@unige.ch
Dr. Stephane Udry (CoI) (ESA Member)	Observatoire de Geneve	stephane.udry@unige.ch
Dr. Francesco Pepe (CoI) (ESA Member)	Observatoire de Geneve	francesco.pepe@unige.ch
Dr. Christophe Lovis (CoI) (ESA Member)	Observatoire de Geneve	christophe.lovis@unige.ch
Mr. Aurelien Wyttenbach (CoI) (ESA Member)	Observatoire de Geneve	aurelien.wyttenbach@unige.ch
Prof. Nicolas Thomas (CoI) (ESA Member)	University of Bern	nicolas.thomas@space.unibe.ch
Dr. Antonio Gracia Berna (CoI) (ESA Member)	University of Bern	antonio.gracia@space.unibe.ch

VISITS

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
01	(1) BD+41-3306 WAVE	STIS/CCD STIS/FUV-MAMA	5	19-Mar-2016 21:02:35.0	yes
02	(1) BD+41-3306 WAVE	STIS/CCD STIS/FUV-MAMA	5	19-Mar-2016 21:02:39.0	yes
03	(1) BD+41-3306 WAVE	STIS/CCD STIS/FUV-MAMA	4	19-Mar-2016 21:02:43.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
04	(1) BD+41-3306 WAVE	STIS/CCD STIS/FUV-MAMA	4	19-Mar-2016 21:02:46.0	yes

18 Total Orbits Used

ABSTRACT

Five planets smaller than the Earth were recently detected at close orbital distances in the oldest known planetary system, Kepler-444. Their inward migration from larger separations implies that these planets may have accreted large envelopes of molecular hydrogen or water during their formation. Later-on, stellar irradiation would have led to the photodissociation of this envelope, and the formation of a large, extended atmosphere of atomic hydrogen flowing beyond the Roche lobe. We estimate that the two outer and largest planets (Kepler 444 'e' and 'f') would not have completely lost their hydrogen envelop over the system lifetime, and that signatures of atmospheric escape could be detected with HST/STIS at Lyman-alpha. A bright and close star (V=8.9; d=35.7 pc), Kepler-444 has also a high proper motion (gamma=-120 km/s) that will allow for the first time to probe the entire blue wing and the core of the Lyman-alpha line, where absorption arises from the expanding flow of hydrogen in the thermosphere of the planets. Small planets show a large diversity in nature and composition, which can only be investigated through observations of their atmosphere. No such observations have ever been made for planets as old and small as the sub-Earths of the Kepler-444 system. Given the shallowness of their transit, the only part of their atmospheres that can be observed is an extended atmosphere of hydrogen.

OBSERVING DESCRIPTION

This program consists in 4 visits for a total of 18 HST orbits, dedicated to the observations of the transits of two exoplanets (Kepler 444 'e' and 'f') in front of their host-star. In 2 visits of 5 orbits each we will observe the transit of Kepler 444 'e'. In 2 visits of 4 orbits each we will observe the transit of the exoplanet Kepler 444 'f'. For planet 'e', transits occur every 7.74 days (the orbital period of the planet) and last for 2.84 hours. For planet 'f', transits occur every 9.74 days and last for 1.85 hours.

The instrumental setup is the same for all visits.

The timing requirements are set as phase constraints on the first ACQ exposure of the first orbit in a visit. For each visit, the goal is to observe the star during two HST orbits before the transit, one or two HST orbits during the transit, and one or two HST orbits after the transit. The allowed start phase range is ~33 min for Visit#1 and #2 (planet 'e'), and about ~21 min for Visit#3 and #4 (planet 'f')

Visit

Proposal 14143, Visit 01, completed Sun Mar 20 01:02:47 GMT 2016

Diagnostic Status: No Diagnostics

Scientific Instruments: STIS/CCD, STIS/FUV-MAMA

Special Requirements: SCHED 100%; Period 7.743493 D AND ZERO-PHASE HJD2454968.0927

Fixed Targets

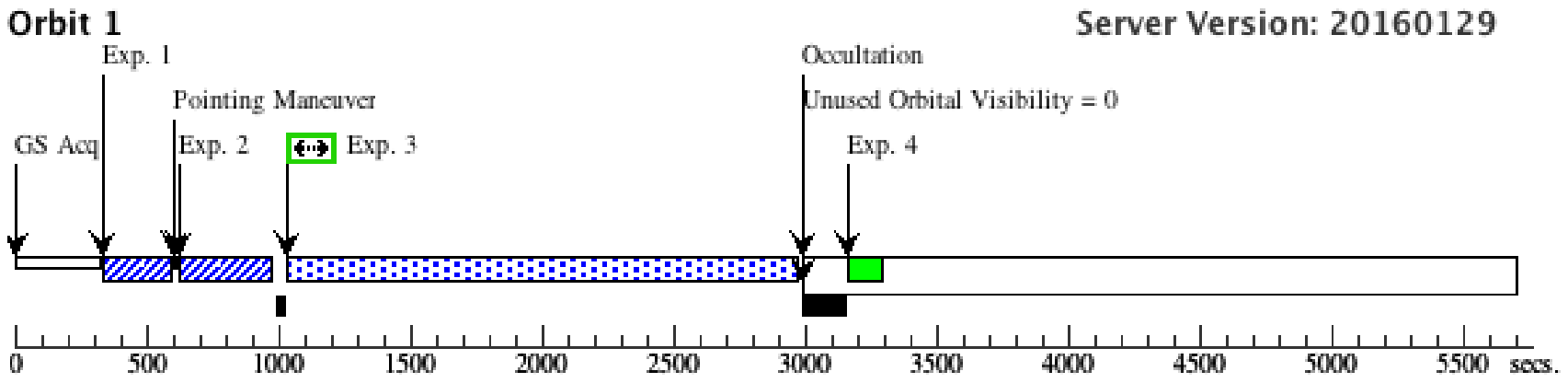
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	BD+41-3306 Alt Name1: KEPLER-444 Alt Name2: HIP94931	RA: 19 19 0.5491 (289.7522879d) Dec: +41 38 4.57 (41.63460d) Equinox: J2000	Proper Motion RA: 98.94 mas/yr Proper Motion Dec: -632.49 mas/yr Parallax: 0.02803" Epoch of Position: 2000 Radial Velocity: -121.19 km/sec	V=8.86 U=10.01, B=9.67	Reference Frame: ICRS

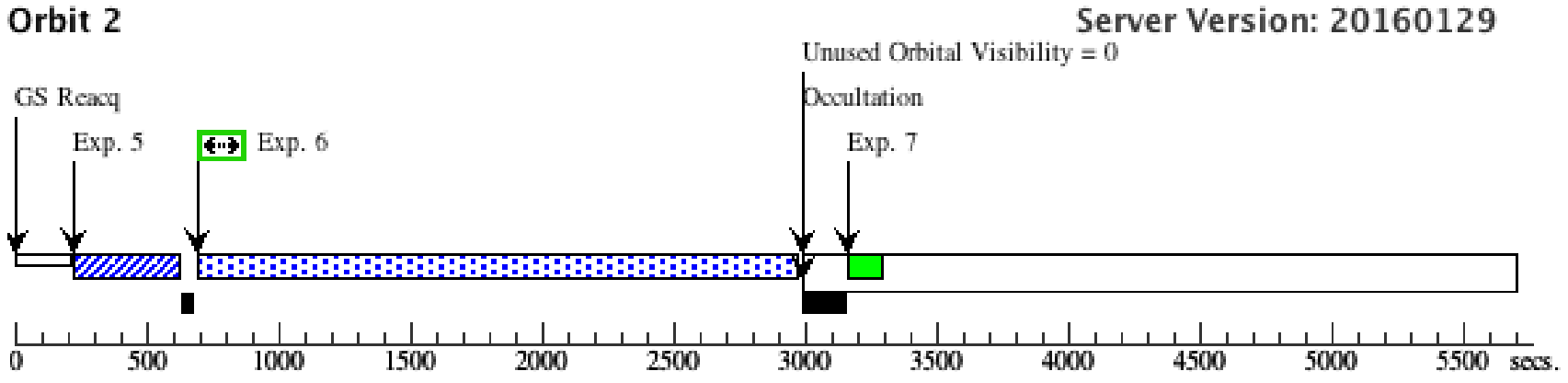
Comments: All target properties come from the SIMBAD database. The star has Hipparcos astrometric coordinates (HIP 94931). We used the confirmation charts to check that the coordinates and proper motion were correct.
This star is in a double (possibly triple) system with common proper motions. The secondary companion is a much fainter M dwarf (or two M dwarfs) with magnitude difference of 3.5, and located 1.9 arcsec away from the primary.
Extended=NO

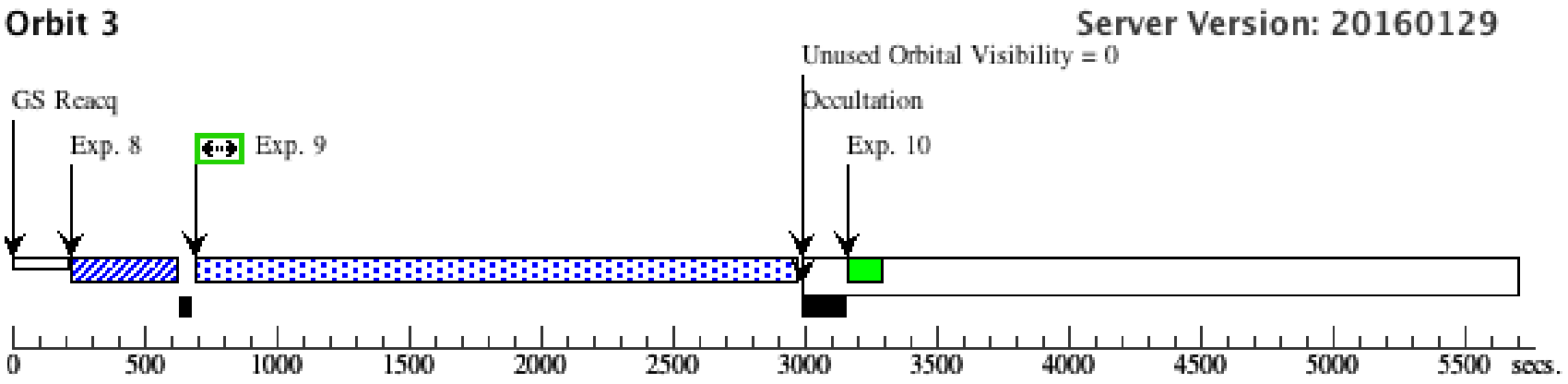
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	ACQ (STIS.ta.715 807)	(1) BD+41-3306	STIS/CCD, ACQ, F28X50OII	MIRROR		PHASE 0.9738 TO 0 .9774	Sequence 1-4 Non-In t in Visit 01	1 Secs (1 Secs) *[==>]*	 ***[1]***
Comments: The target is too bright for the longpass filter, and the F28X50OII was selected instead.									
2	ACQ/PEAK (STIS.sp.71 5819)	(1) BD+41-3306	STIS/CCD, ACQ/PEAK, 52X0.05	G430L 4300 A			Sequence 1-4 Non-In t in Visit 01	1 Secs (1 Secs) *[==>]*	 ***[1]***
3	SCI (STIS.sp.71 5827)	(1) BD+41-3306	STIS/FUV-MAMA, TIME-TAG, 52X0.05	G140M 1222 A	BUFFER-TIME=10 00; WAVECAL=NO		Sequence 1-4 Non-In t in Visit 01	1900 Secs (1792 Secs) *[==>1792.0 Secs]*	 ***[1]***
Comments: The ETC run was made with a user-defined spectrum, with a conservative estimation of the Lyman-alpha emission profile and high airglow emission. We are basically photon-starved and set the exposure t ime to the maximum possible value. The estimated count-rate (see ETC run) is 184 counts/s, which leads to define the buffer-time as Texp/2 for the orbits of all visits (rounded to 1000s for the first orbits, and 1200s for the others).									
4	GO-WAVE CAL	WAVE	STIS/FUV-MAMA, ACCUM, 52X0.05	G140M 1222 A			Sequence 1-4 Non-In t in Visit 01	*[==>]*	***[1]***
5	ACQ/PEAK	(1) BD+41-3306	STIS/CCD, ACQ/PEAK, 52X0.05	G430L 4300 A			Sequence 5-7 Non-In t in Visit 01	1 Secs (1 Secs) *[==>]*	 ***[2]***
6	SCI (STIS.sp.71 5517)	(1) BD+41-3306	STIS/FUV-MAMA, TIME-TAG, 52X0.05	G140M 1222 A	BUFFER-TIME=12 00		Sequence 5-7 Non-In t in Visit 01	2300 Secs (2145 Secs) *[==>2145.0 Secs]*	 ***[2]***
7	GO-WAVE CAL	WAVE	STIS/FUV-MAMA, ACCUM, 52X0.05	G140M 1222 A			Sequence 5-7 Non-In t in Visit 01	*[==>]*	***[2]***
8	ACQ/PEAK	(1) BD+41-3306	STIS/CCD, ACQ/PEAK, 52X0.05	G430L 4300 A			Sequence 8-10 Non-I nt in Visit 01	1 Secs (1 Secs) *[==>]*	 ***[3]***
9	SCI (STIS.sp.71 5517)	(1) BD+41-3306	STIS/FUV-MAMA, TIME-TAG, 52X0.05	G140M 1222 A	BUFFER-TIME=12 00		Sequence 8-10 Non-I nt in Visit 01	2300 Secs (2145 Secs) *[==>2145.0 Secs]*	 ***[3]***
10	GO-WAVE CAL	WAVE	STIS/FUV-MAMA, ACCUM, 52X0.05	G140M 1222 A			Sequence 8-10 Non-I nt in Visit 01	*[==>]*	***[3]***
11	ACQ/PEAK	(1) BD+41-3306	STIS/CCD, ACQ/PEAK, 52X0.05	G430L 4300 A			Sequence 11-13 Non -Int in Visit 01	1 Secs (1 Secs) *[==>]*	 ***[4]***
12	SCI (STIS.sp.71 5517)	(1) BD+41-3306	STIS/FUV-MAMA, TIME-TAG, 52X0.05	G140M 1222 A	BUFFER-TIME=12 00		Sequence 11-13 Non -Int in Visit 01	2300 Secs (2145 Secs) *[==>2145.0 Secs]*	 ***[4]***
13	GO-WAVE CAL	WAVE	STIS/FUV-MAMA, ACCUM, 52X0.05	G140M 1222 A			Sequence 11-13 Non -Int in Visit 01	*[==>]*	***[4]***
14	ACQ/PEAK	(1) BD+41-3306	STIS/CCD, ACQ/PEAK, 52X0.05	G430L 4300 A			Sequence 14-16 Non -Int in Visit 01	1 Secs (1 Secs) *[==>]*	 ***[5]***
15	SCI (STIS.sp.71 5517)	(1) BD+41-3306	STIS/FUV-MAMA, TIME-TAG, 52X0.05	G140M 1222 A	BUFFER-TIME=12 00		Sequence 14-16 Non -Int in Visit 01	2300 Secs (2145 Secs) *[==>2145.0 Secs]*	 ***[5]***
16	GO-WAVE CAL	WAVE	STIS/FUV-MAMA, ACCUM, 52X0.05	G140M 1222 A			Sequence 14-16 Non -Int in Visit 01	*[==>]*	***[5]***

Orbit Structure



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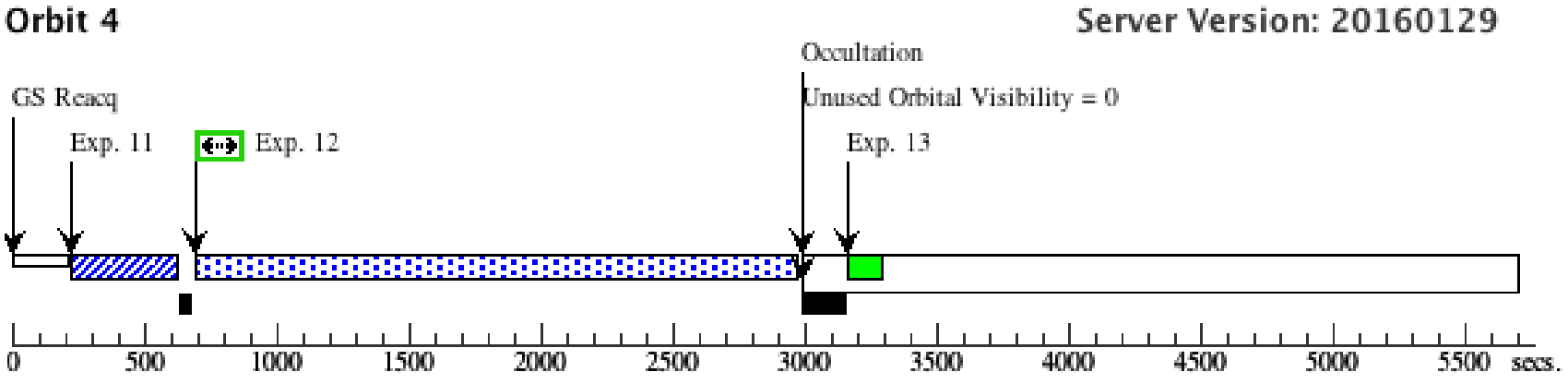
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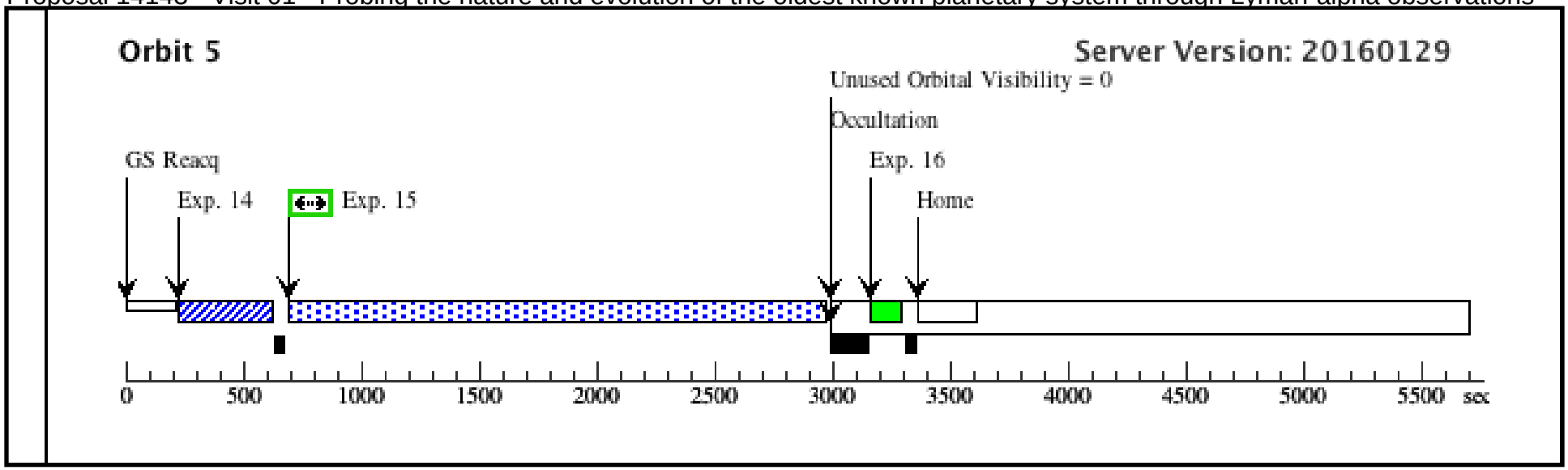
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sec

Visit

Proposal 14143, Visit 02, implementation Sun Mar 20 01:02:48 GMT 2016

Diagnostic Status: No Diagnostics

Scientific Instruments: STIS/CCD, STIS/FUV-MAMA

Special Requirements: SCHED 100%; BETWEEN 05-MAY-2016:01:45:00 AND 05-MAY-2016:17:40:00; Period 9.740486 D AND ZERO-PHASE HJD2457510.146

Fixed Targets

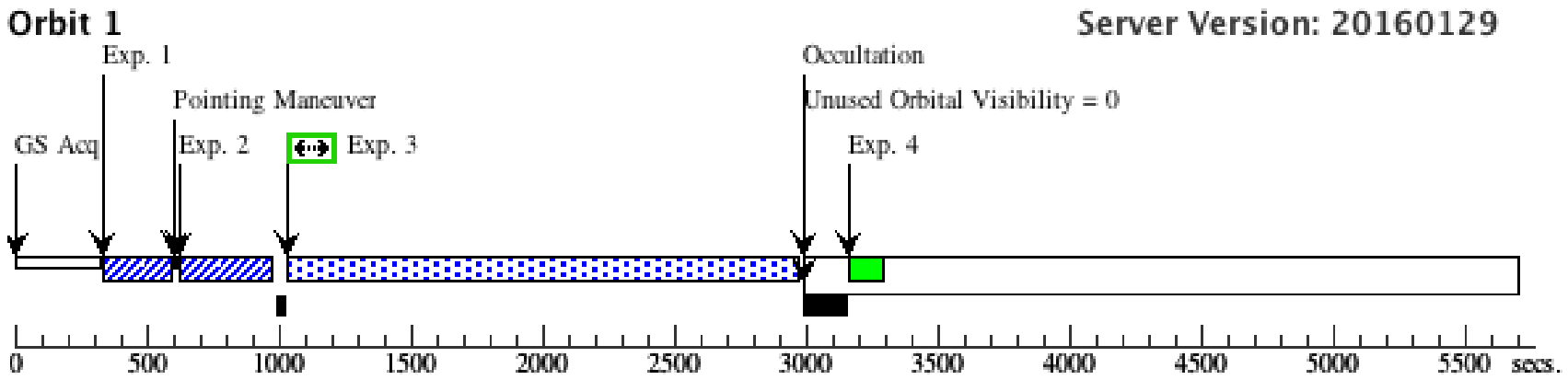
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	BD+41-3306 Alt Name1: KEPLER-444 Alt Name2: HIP94931	RA: 19 19 0.5491 (289.7522879d) Dec: +41 38 4.57 (41.63460d) Equinox: J2000	Proper Motion RA: 98.94 mas/yr Proper Motion Dec: -632.49 mas/yr Parallax: 0.02803" Epoch of Position: 2000 Radial Velocity: -121.19 km/sec	V=8.86 U=10.01, B=9.67	Reference Frame: ICRS

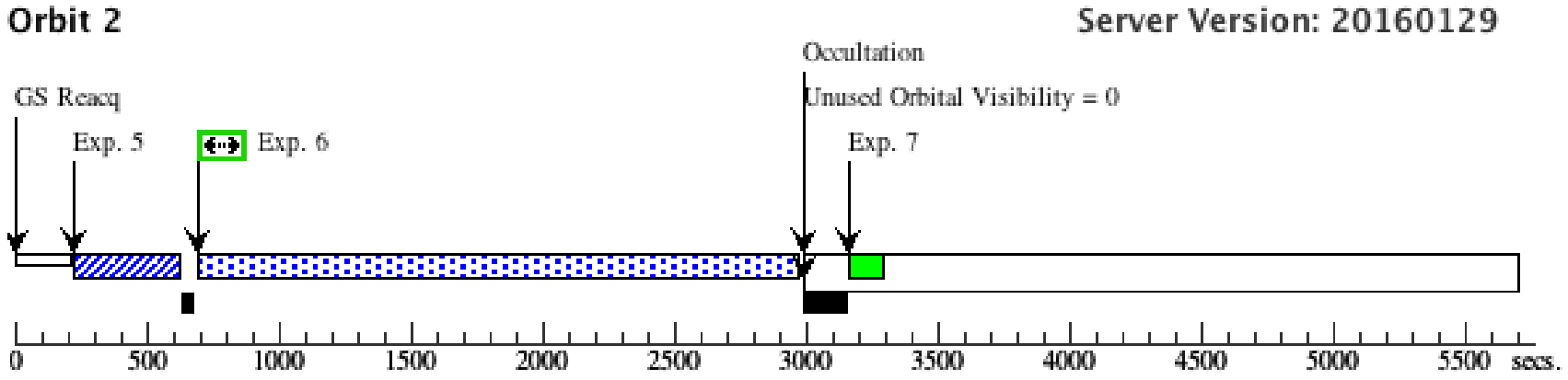
Comments: All target properties come from the SIMBAD database. The star has Hipparcos astrometric coordinates (HIP 94931). We used the confirmation charts to check that the coordinates and proper motion were correct.
This star is in a double (possibly triple) system with common proper motions. The secondary companion is a much fainter M dwarf (or two M dwarfs) with magnitude difference of 3.5, and located 1.9 arcsec away from the primary.
Extended=NO

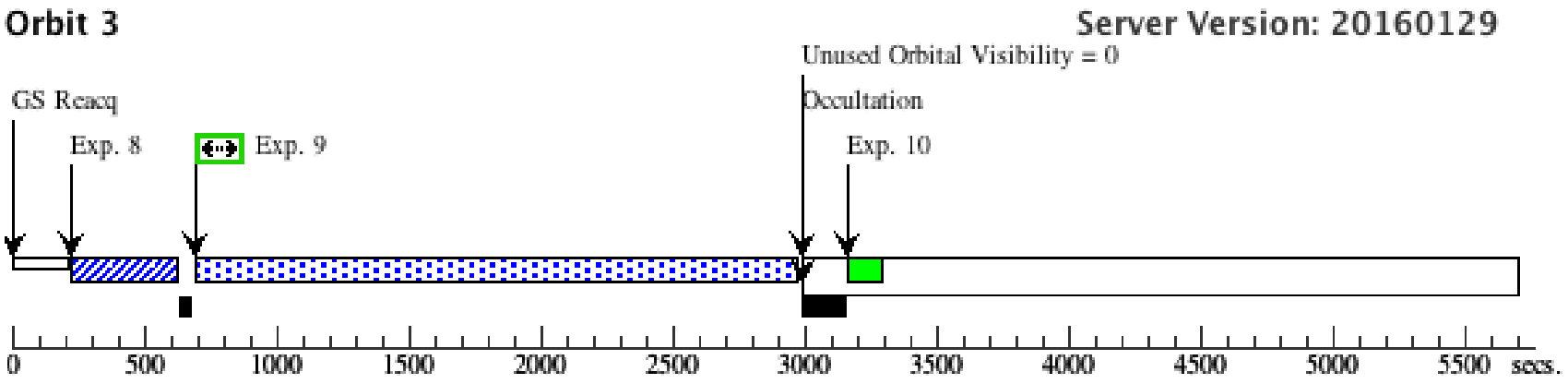
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	ACQ (STIS.ta.715 807)	(1) BD+41-3306	STIS/CCD, ACQ, F28X50OII	MIRROR		PHASE 0.35167229 TO 0.39068522	Sequence 1-4 Non-In t in Visit 02	1 Secs (1 Secs) *[==>]*	***[1]***
Comments: The target is too bright for the longpass filter, and the F28X50OII was selected instead.									
2	ACQ/PEAK (STIS.sp.71 5819)	(1) BD+41-3306	STIS/CCD, ACQ/PEAK, 52X0.05	G430L 4300 A			Sequence 1-4 Non-In t in Visit 02	1 Secs (1 Secs) *[==>]*	***[1]***
3	SCI (STIS.sp.71 5827)	(1) BD+41-3306	STIS/FUV-MAMA, TIME-TAG, 52X0.05	G140M 1222 A	BUFFER-TIME=10 00; WAVECAL=NO		Sequence 1-4 Non-In t in Visit 02	1900 Secs (1792 Secs) *[==>1792.0 Secs]*	***[1]***
Comments: The ETC run was made with a user-defined spectrum, with a conservative estimation of the Lyman-alpha emission profile and high airglow emission. We are basically photon-starved and set the exposure t ime to the maximum possible value. The estimated count-rate (see ETC run) is 184 counts/s, which leads to define the buffer-time as Texp/2 for the orbits of all visits (rounded to 1000s for the first orbits, and 1200s for the others).									
4	GO-WAVE CAL	WAVE	STIS/FUV-MAMA, ACCUM, 52X0.05	G140M 1222 A			Sequence 1-4 Non-In t in Visit 02	*[==>]*	***[1]***
5	ACQ/PEAK	(1) BD+41-3306	STIS/CCD, ACQ/PEAK, 52X0.05	G430L 4300 A			Sequence 5-7 Non-In t in Visit 02	1 Secs (1 Secs) *[==>]*	***[2]***
6	SCI (STIS.sp.71 5517)	(1) BD+41-3306	STIS/FUV-MAMA, TIME-TAG, 52X0.05	G140M 1222 A	BUFFER-TIME=12 00		Sequence 5-7 Non-In t in Visit 02	2300 Secs (2145 Secs) *[==>2145.0 Secs]*	***[2]***
7	GO-WAVE CAL	WAVE	STIS/FUV-MAMA, ACCUM, 52X0.05	G140M 1222 A			Sequence 5-7 Non-In t in Visit 02	*[==>]*	***[2]***
8	ACQ/PEAK	(1) BD+41-3306	STIS/CCD, ACQ/PEAK, 52X0.05	G430L 4300 A			Sequence 8-10 Non-I nt in Visit 02	1 Secs (1 Secs) *[==>]*	***[3]***
9	SCI (STIS.sp.71 5517)	(1) BD+41-3306	STIS/FUV-MAMA, TIME-TAG, 52X0.05	G140M 1222 A	BUFFER-TIME=12 00		Sequence 8-10 Non-I nt in Visit 02	2300 Secs (2145 Secs) *[==>2145.0 Secs]*	***[3]***
10	GO-WAVE CAL	WAVE	STIS/FUV-MAMA, ACCUM, 52X0.05	G140M 1222 A			Sequence 8-10 Non-I nt in Visit 02	*[==>]*	***[3]***
11	ACQ/PEAK	(1) BD+41-3306	STIS/CCD, ACQ/PEAK, 52X0.05	G430L 4300 A			Sequence 11-13 Non -Int in Visit 02	1 Secs (1 Secs) *[==>]*	***[4]***
12	SCI (STIS.sp.71 5517)	(1) BD+41-3306	STIS/FUV-MAMA, TIME-TAG, 52X0.05	G140M 1222 A	BUFFER-TIME=12 00		Sequence 11-13 Non -Int in Visit 02	2300 Secs (2145 Secs) *[==>2145.0 Secs]*	***[4]***
13	GO-WAVE CAL	WAVE	STIS/FUV-MAMA, ACCUM, 52X0.05	G140M 1222 A			Sequence 11-13 Non -Int in Visit 02	*[==>]*	***[4]***
14	ACQ/PEAK	(1) BD+41-3306	STIS/CCD, ACQ/PEAK, 52X0.05	G430L 4300 A			Sequence 14-16 Non -Int in Visit 02	1 Secs (1 Secs) *[==>]*	***[5]***
15	SCI (STIS.sp.71 5517)	(1) BD+41-3306	STIS/FUV-MAMA, TIME-TAG, 52X0.05	G140M 1222 A	BUFFER-TIME=12 00		Sequence 14-16 Non -Int in Visit 02	2300 Secs (2145 Secs) *[==>2145.0 Secs]*	***[5]***
16	GO-WAVE CAL	WAVE	STIS/FUV-MAMA, ACCUM, 52X0.05	G140M 1222 A			Sequence 14-16 Non -Int in Visit 02	*[==>]*	***[5]***

Orbit Structure



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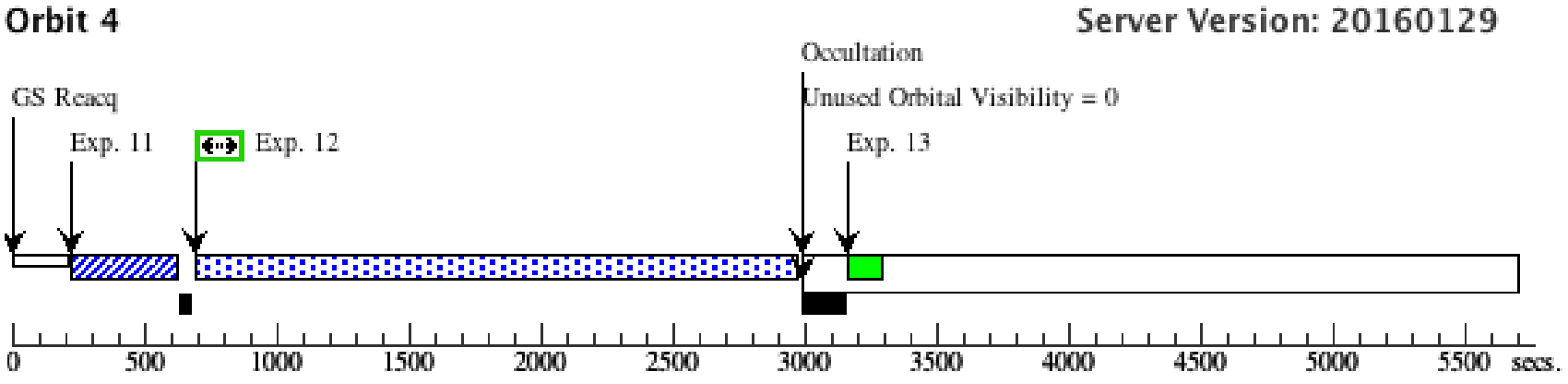
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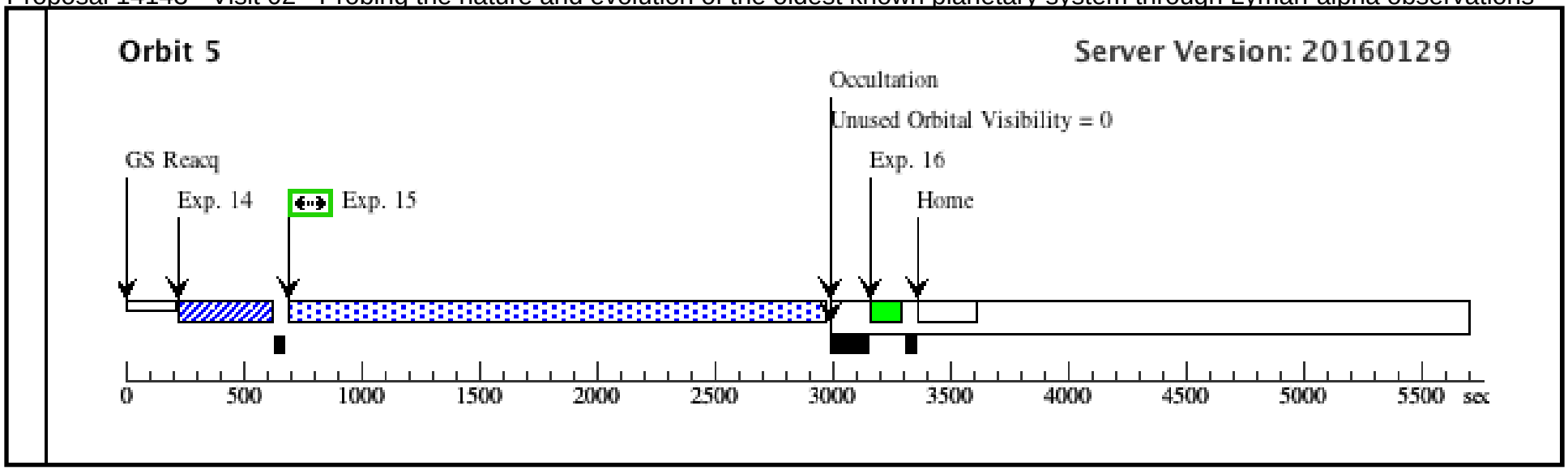
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sec

Visit

Proposal 14143, Visit 03, completed Sun Mar 20 01:02:48 GMT 2016

Diagnostic Status: No Diagnostics

Scientific Instruments: STIS/CCD, STIS/FUV-MAMA

Special Requirements: SCHED 100%; Period 9.740486 D AND ZERO-PHASE HJD2454967.8791

Fixed Targets

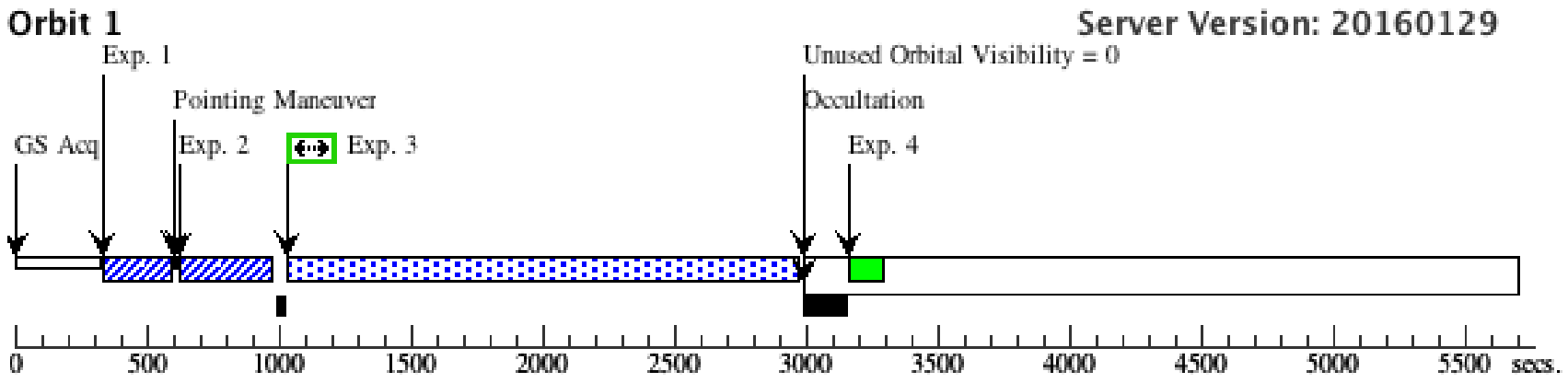
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	BD+41-3306 Alt Name1: KEPLER-444 Alt Name2: HIP94931	RA: 19 19 0.5491 (289.7522879d) Dec: +41 38 4.57 (41.63460d) Equinox: J2000	Proper Motion RA: 98.94 mas/yr Proper Motion Dec: -632.49 mas/yr Parallax: 0.02803" Epoch of Position: 2000 Radial Velocity: -121.19 km/sec	V=8.86 U=10.01, B=9.67	Reference Frame: ICRS

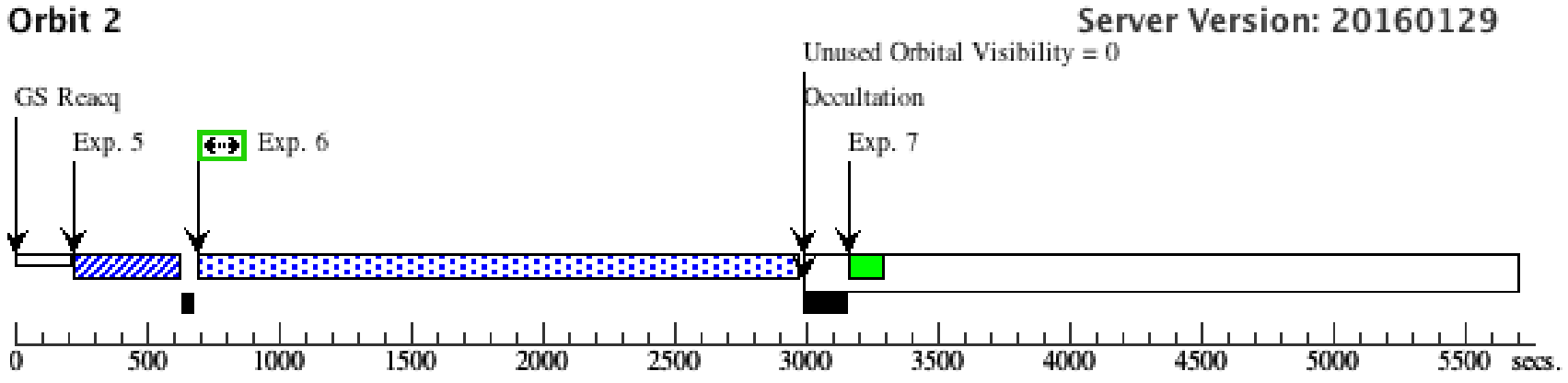
Comments: All target properties come from the SIMBAD database. The star has Hipparcos astrometric coordinates (HIP 94931). We used the confirmation charts to check that the coordinates and proper motion were correct.
This star is in a double (possibly triple) system with common proper motions. The secondary companion is a much fainter M dwarf (or two M dwarfs) with magnitude difference of 3.5, and located 1.9 arcsec away from the primary.
Extended=NO

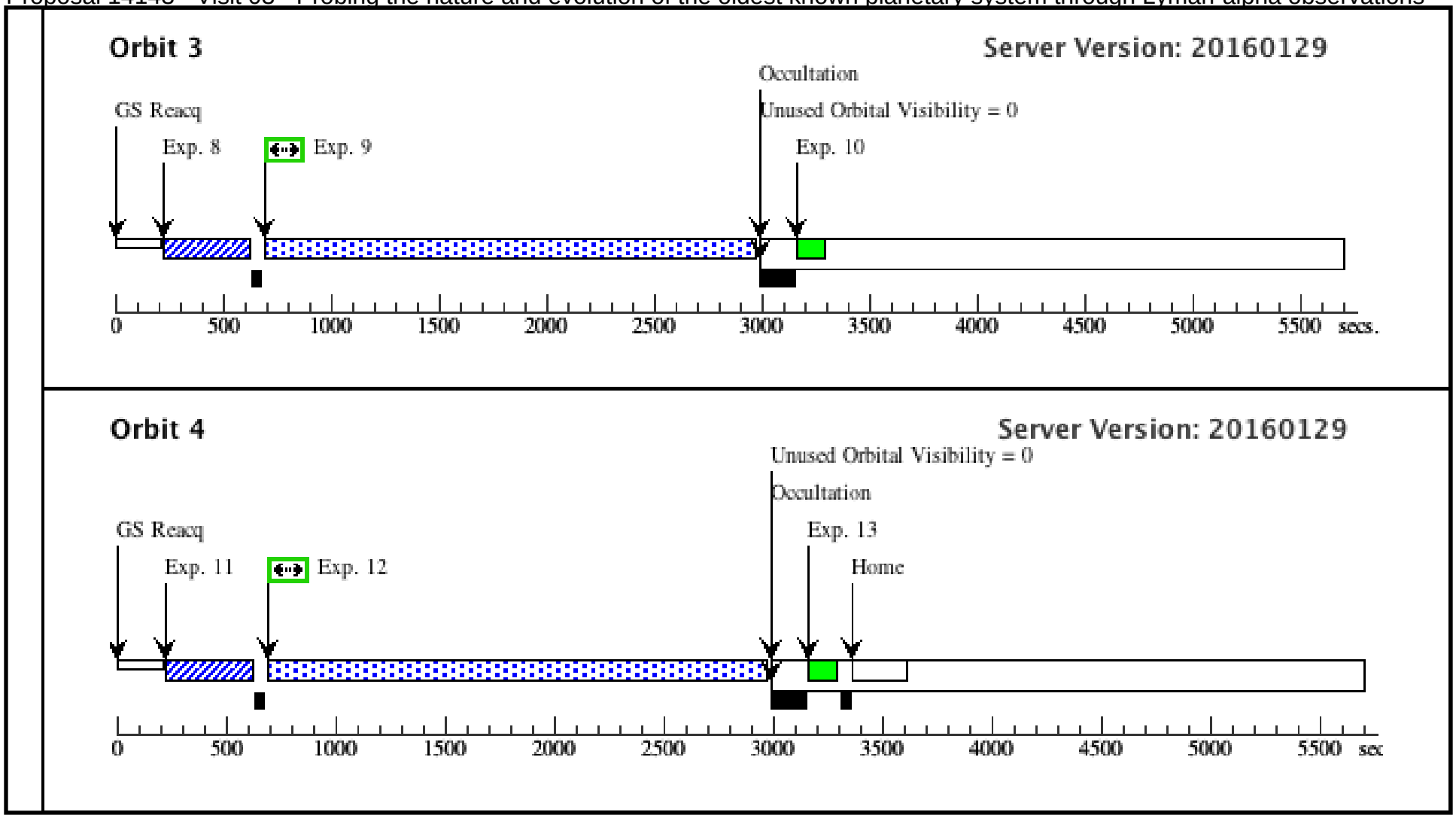
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	ACQ (STIS.ta.715807)	(1) BD+41-3306	STIS/CCD, ACQ, F28X50OII	MIRROR		PHASE 0.9848 TO 0.9868	Sequence 1-4 Non-Int in Visit 03	1 Secs (1 Secs) *[==>]*	***[1]***
Comments: The target is too bright for the longpass filter, and the F28X50OII was selected instead.									
2	ACQ/PEAK (STIS.sp.715819)	(1) BD+41-3306	STIS/CCD, ACQ/PEAK, 52X0.05	G430L 4300 A			Sequence 1-4 Non-Int in Visit 03	1 Secs (1 Secs) *[==>]*	***[1]***
3	SCI (STIS.sp.715827)	(1) BD+41-3306	STIS/FUV-MAMA, TIME-TAG, 52X0.05	G140M 1222 A	BUFFER-TIME=1000; WAVECAL=NO		Sequence 1-4 Non-Int in Visit 03	1900 Secs (1792 Secs) *[==>1792.0 Secs]*	***[1]***
Comments: The ETC run was made with a user-defined spectrum, with a conservative estimation of the Lyman-alpha emission profile and high airglow emission. We are basically photon-starved and set the exposure time to the maximum possible value. The estimated count-rate (see ETC run) is 184 counts/s, which leads to define the buffer-time as Texp/2 for the orbits of all visits (rounded to 1000s for the first orbits, and 1200s for the others).									
4	GO-WAVE CAL	WAVE	STIS/FUV-MAMA, ACCUM, 52X0.05	G140M 1222 A			Sequence 1-4 Non-Int in Visit 03	*[==>]*	***[1]***
5	ACQ/PEAK	(1) BD+41-3306	STIS/CCD, ACQ/PEAK, 52X0.05	G430L 4300 A			Sequence 5-7 Non-Int in Visit 03	1 Secs (1 Secs) *[==>]*	***[2]***
6	SCI (STIS.sp.715517)	(1) BD+41-3306	STIS/FUV-MAMA, TIME-TAG, 52X0.05	G140M 1222 A	BUFFER-TIME=1200		Sequence 5-7 Non-Int in Visit 03	2300 Secs (2145 Secs) *[==>2145.0 Secs]*	***[2]***
7	GO-WAVE CAL	WAVE	STIS/FUV-MAMA, ACCUM, 52X0.05	G140M 1222 A			Sequence 5-7 Non-Int in Visit 03	*[==>]*	***[2]***
8	ACQ/PEAK	(1) BD+41-3306	STIS/CCD, ACQ/PEAK, 52X0.05	G430L 4300 A			Sequence 8-10 Non-Int in Visit 03	1 Secs (1 Secs) *[==>]*	***[3]***
9	SCI (STIS.sp.715517)	(1) BD+41-3306	STIS/FUV-MAMA, TIME-TAG, 52X0.05	G140M 1222 A	BUFFER-TIME=1200		Sequence 8-10 Non-Int in Visit 03	2300 Secs (2145 Secs) *[==>2145.0 Secs]*	***[3]***
10	GO-WAVE CAL	WAVE	STIS/FUV-MAMA, ACCUM, 52X0.05	G140M 1222 A			Sequence 8-10 Non-Int in Visit 03	*[==>]*	***[3]***
11	ACQ/PEAK	(1) BD+41-3306	STIS/CCD, ACQ/PEAK, 52X0.05	G430L 4300 A			Sequence 11-13 Non-Int in Visit 03	1 Secs (1 Secs) *[==>]*	***[4]***
12	SCI (STIS.sp.715517)	(1) BD+41-3306	STIS/FUV-MAMA, TIME-TAG, 52X0.05	G140M 1222 A	BUFFER-TIME=1200		Sequence 11-13 Non-Int in Visit 03	2300 Secs (2145 Secs) *[==>2145.0 Secs]*	***[4]***
13	GO-WAVE CAL	WAVE	STIS/FUV-MAMA, ACCUM, 52X0.05	G140M 1222 A			Sequence 11-13 Non-Int in Visit 03	*[==>]*	***[4]***

Orbit Structure



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Exp. 10
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3000
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4000
4500
5000
5500
secs.
Orbit 4
Server Version: 20160129
Unused Orbital Visibility = 0
Occultation
GS Reacq
Exp. 13
Exp. 11
Exp. 12
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1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Proposal 14143 - Visit 04 - Probing the nature and evolution of the oldest known planetary system through Lyman-alpha observations

Visit

Proposal 14143, Visit 04, completed Sun Mar 20 01:02:48 GMT 2016

Diagnostic Status: No Diagnostics

Scientific Instruments: STIS/CCD, STIS/FUV-MAMA

Special Requirements: SCHED 100%; Period 9.740486 D AND ZERO-PHASE HJD2454967.8791

Fixed Targets

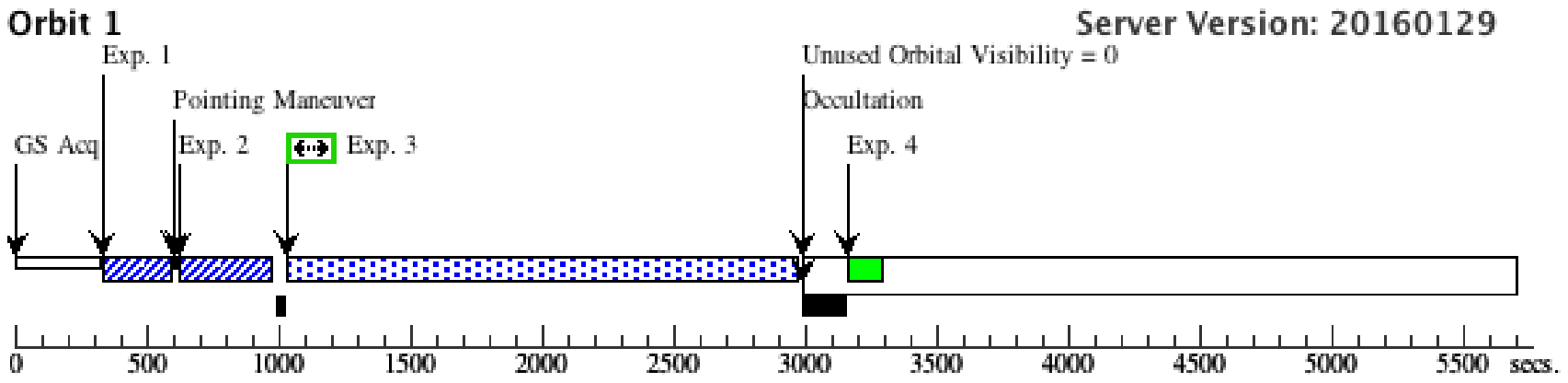
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	BD+41-3306 Alt Name1: KEPLER-444 Alt Name2: HIP94931	RA: 19 19 0.5491 (289.7522879d) Dec: +41 38 4.57 (41.63460d) Equinox: J2000	Proper Motion RA: 98.94 mas/yr Proper Motion Dec: -632.49 mas/yr Parallax: 0.02803" Epoch of Position: 2000 Radial Velocity: -121.19 km/sec	V=8.86 U=10.01, B=9.67	Reference Frame: ICRS

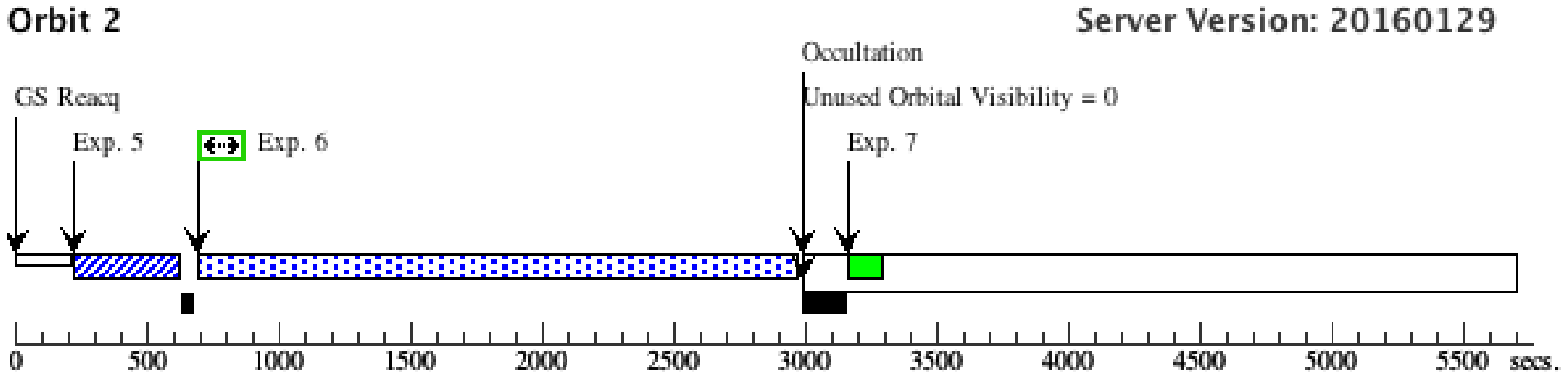
Comments: All target properties come from the SIMBAD database. The star has Hipparcos astrometric coordinates (HIP 94931). We used the confirmation charts to check that the coordinates and proper motion were correct.
This star is in a double (possibly triple) system with common proper motions. The secondary companion is a much fainter M dwarf (or two M dwarfs) with magnitude difference of 3.5, and located 1.9 arcsec away from the primary.
Extended=NO

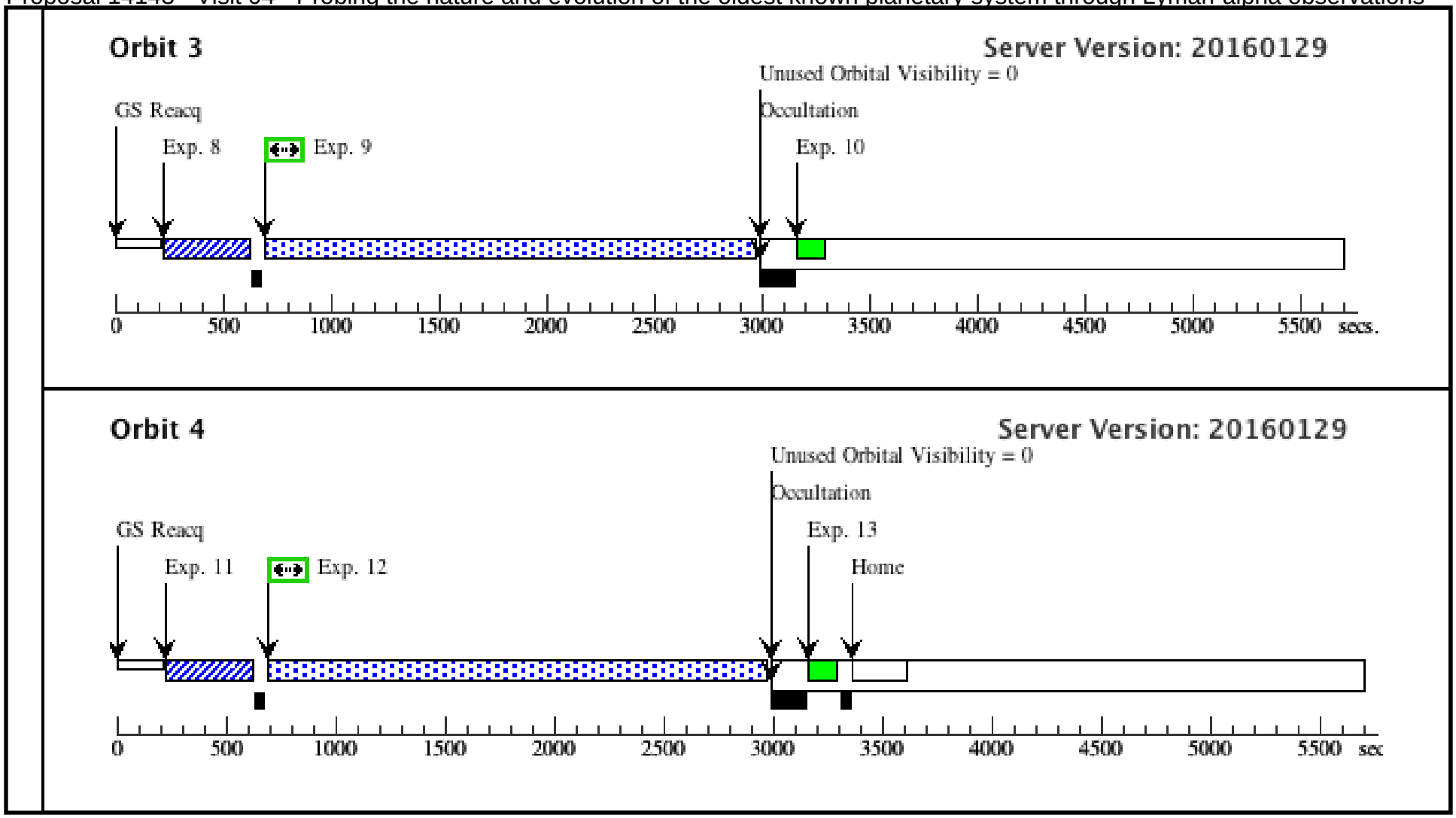
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	ACQ (STIS.ta.715807)	(1) BD+41-3306	STIS/CCD, ACQ, F28X50OII	MIRROR		PHASE 0.9848 TO 0.9868	Sequence 1-4 Non-Int in Visit 04	1 Secs (1 Secs) *[==>]*	***[1]***
	Comments: The target is too bright for the longpass filter, and the F28X50OII was selected instead.								
2	ACQ/PEAK (STIS.sp.715819)	(1) BD+41-3306	STIS/CCD, ACQ/PEAK, 52X0.05	G430L 4300 A			Sequence 1-4 Non-Int in Visit 04	1 Secs (1 Secs) *[==>]*	***[1]***
3	SCI (STIS.sp.715827)	(1) BD+41-3306	STIS/FUV-MAMA, TIME-TAG, 52X0.05	G140M 1222 A	BUFFER-TIME=1000; WAVECAL=NO		Sequence 1-4 Non-Int in Visit 04	1900 Secs (1792 Secs) *[==>1792.0 Secs]*	***[1]***
	Comments: The ETC run was made with a user-defined spectrum, with a conservative estimation of the Lyman-alpha emission profile and high airglow emission. We are basically photon-starved and set the exposure time to the maximum possible value. The estimated count-rate (see ETC run) is 184 counts/s, which leads to define the buffer-time as Texp/2 for the orbits of all visits (rounded to 1000s for the first orbits, and 1200s for the others).								
4	GO-WAVE CAL	WAVE	STIS/FUV-MAMA, ACCUM, 52X0.05	G140M 1222 A			Sequence 1-4 Non-Int in Visit 04	*[==>]*	***[1]***
5	ACQ/PEAK	(1) BD+41-3306	STIS/CCD, ACQ/PEAK, 52X0.05	G430L 4300 A			Sequence 5-7 Non-Int in Visit 04	1 Secs (1 Secs) *[==>]*	***[2]***
6	SCI (STIS.sp.715517)	(1) BD+41-3306	STIS/FUV-MAMA, TIME-TAG, 52X0.05	G140M 1222 A	BUFFER-TIME=1200		Sequence 5-7 Non-Int in Visit 04	2300 Secs (2145 Secs) *[==>2145.0 Secs]*	***[2]***
7	GO-WAVE CAL	WAVE	STIS/FUV-MAMA, ACCUM, 52X0.05	G140M 1222 A			Sequence 5-7 Non-Int in Visit 04	*[==>]*	***[2]***
8	ACQ/PEAK	(1) BD+41-3306	STIS/CCD, ACQ/PEAK, 52X0.05	G430L 4300 A			Sequence 8-10 Non-Int in Visit 04	1 Secs (1 Secs) *[==>]*	***[3]***
9	SCI (STIS.sp.715517)	(1) BD+41-3306	STIS/FUV-MAMA, TIME-TAG, 52X0.05	G140M 1222 A	BUFFER-TIME=1200		Sequence 8-10 Non-Int in Visit 04	2300 Secs (2145 Secs) *[==>2145.0 Secs]*	***[3]***
10	GO-WAVE CAL	WAVE	STIS/FUV-MAMA, ACCUM, 52X0.05	G140M 1222 A			Sequence 8-10 Non-Int in Visit 04	*[==>]*	***[3]***
11	ACQ/PEAK	(1) BD+41-3306	STIS/CCD, ACQ/PEAK, 52X0.05	G430L 4300 A			Sequence 11-13 Non-Int in Visit 04	1 Secs (1 Secs) *[==>]*	***[4]***
12	SCI (STIS.sp.715517)	(1) BD+41-3306	STIS/FUV-MAMA, TIME-TAG, 52X0.05	G140M 1222 A	BUFFER-TIME=1200		Sequence 11-13 Non-Int in Visit 04	2300 Secs (2145 Secs) *[==>2145.0 Secs]*	***[4]***
13	GO-WAVE CAL	WAVE	STIS/FUV-MAMA, ACCUM, 52X0.05	G140M 1222 A			Sequence 11-13 Non-Int in Visit 04	*[==>]*	***[4]***

Orbit Structure



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GS Reacq
Occultation
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Exp. 9
Exp. 10
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1500
2000
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3000
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4000
4500
5000
5500
secs.
Orbit 4
Server Version: 20160129
Unused Orbital Visibility = 0
Occultation
GS Reacq
Exp. 13
Exp. 11
Exp. 12
Home
0
500
1000
1500
2000
2500
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3500
4000
4500
5000
5500
sec