17196 - Identifying the Hydrogen Excess in the Stagnation Region at the Heliospheric Interface

Cycle: 30, Proposal Category: GO

(UV Initiative)

(Availability Mode: AVAILABLE)

INVESTIGATORS

Name	*Institution*
Prof. John T. Clarke (PI) (Contact)	**Boston University**
Dr. Jean-Loup C Bertaux (CoI) (ESA Member)	LATMOS
Dr. Vladislav V. Izmodenov (CoI)	Sternberg State Astronomical Institute
Dr. Olga Katushkina (CoI)	Self-employed
Dr. Rosine Lallement (CoI) (ESA Member)	Observatoire de Paris
Dr. Majd A Mayyasi (CoI)	Boston University
Prof. Merav Opher (CoI)	Boston University
Dr. Eric Quemerais (CoI) (ESA Member)	LATMOS

VISITS

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
01	(1) IPH-UPWIND-1 WAVE	STIS/FUV-MAMA	1	07-Sep-2023 17:00:17.0	yes
02	(2) IPH-UPWIND-2 WAVE	STIS/FUV-MAMA	1	07-Sep-2023 17:00:18.0	yes
03	(2) IPH-UPWIND-2 WAVE	STIS/FUV-MAMA	1	07-Sep-2023 17:00:18.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
04	(2) IPH-UPWIND-2 WAVE	STIS/FUV-MAMA	1	07-Sep-2023 17:00:18.0	yes
05	(2) IPH-UPWIND-2 WAVE	STIS/FUV-MAMA	1	07-Sep-2023 17:00:19.0	yes
06	(2) IPH-UPWIND-2 WAVE	STIS/FUV-MAMA	1	07-Sep-2023 17:00:19.0	yes
07	(2) IPH-UPWIND-2 WAVE	STIS/FUV-MAMA	1	07-Sep-2023 17:00:19.0	yes

7 Total Orbits Used

ABSTRACT

The nature of the interaction of the solar wind with the interstellar medium at the heliospheric interface has been the subject of much study with Voyagers 1 and 2, ground-based telescopes, and the IBEX mission. Theoretical models for the nature of the interaction still do not conform to the experimental data, including the presence of excess hydrogen Lyman-alpha emission in the interface region. One of the main puzzles is the nature of the so-called stagnation region at the boundary between the solar wind and interstellar medium, for which there is evidence in Voyager and New Horizons data. The indications are that this region is characterized by a population of high velocity H atoms, which can be used as a remote diagnostic. It is also possible that part of the excess emission is from galactic Lyman-alpha, as modeled for the Voyager UV data. This program will use STIS echelle line profiles of the interplanetary H Lyman-alpha emission to map the velocity distribution and either identify or rule out the presence of either a population of H atoms in the "stagnation" region of the heliospheric interface or diffuse emission from the galaxy. This is not possible in existing HST data sets due to the interference of geocoronal emission with the expected high velocity wings of the emission lines.

OBSERVING DESCRIPTION

This program will use STIS echelle line profiles of the interplanetary H Lyman-alpha emission to map the velocity distribution and either identify or rule out the presence of either a population of H atoms in the "stagnation" region of the heliospheric interface or diffuse emission from the galaxy. This is not possible in existing HST data sets due to the interference of geocoronal emission with the expected high velocity wings of the emission lines.

Visit

Proposal 17196, IPH-Upwind-1 (01), completed Thu Sep 07 21:00:20 GMT 2023

Diagnostic Status: Warning

Scientific Instruments: STIS/FUV-MAMA

Special Requirements: BETWEEN 24-MAR-2023:00:00:00 AND 04-APR-2023:00:00:00

Diagnostics

(IPH-Upwind-1 (01)) Warning (Form): A target acquisition should probably be performed before doing spectroscopy or coronography with STIS or COS.

(IPH-Upwind-1 (01)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

(IPH-Upwind-1 (01)) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

(IPH-Upwind-1 (01.001)) Warning (Form): Sensitive exposures should have an ETC run number provided.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	IPH-UPWIND-1	RA: 16 54 0.0000 (253.5000000d) Dec: -15 30 0.00 (-15.50000d) Equinox: J2000	Proper Motion RA: 0 Proper Motion Dec: 0 Parallax: 0" Epoch of Position: 2000	V=0+/-0 300-1000 Rayleighs	Reference Frame: Sky Background

Comments: STIS SPECTRA OF INTERPLANETARY HYDROGEN, I.E. OBSERVE SKY WITH NO STARS MV < 18 IN APERTURE LOOKING IN THE FLOW DIRECTION (UPWIND)

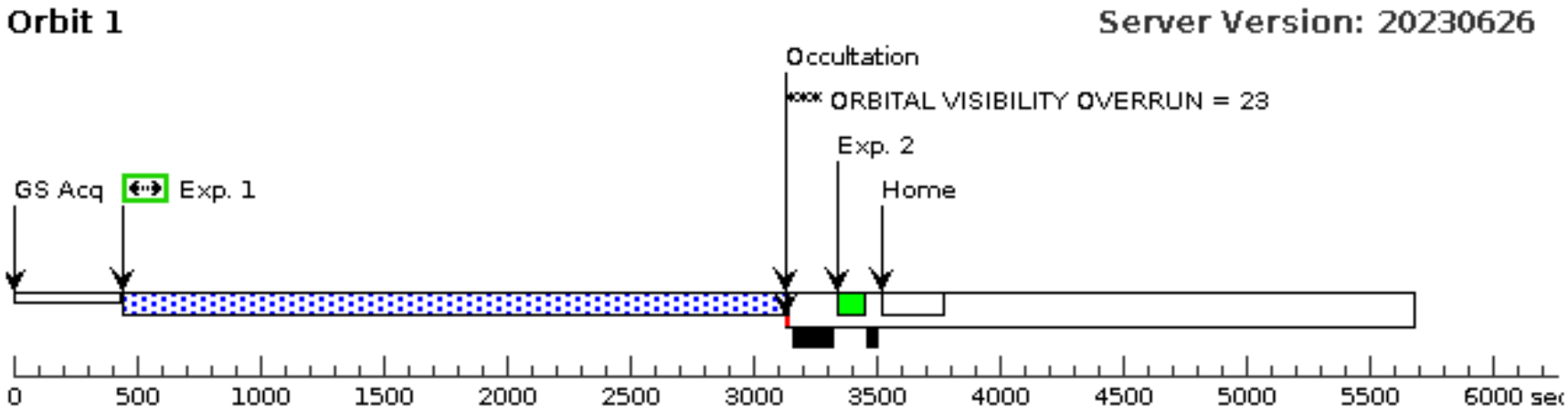
NOTE THAT EMISSION TO BE OBSERVED IS DIFFUSE ACROSS THE SKY - THUS TWO GYRO POINTING IS OK

Measured total count rate from prior observations in this mode (GO 8650) is 5 counts/sec per kilo-Rayleigh, and we expect about 1 kR from the IPH and 5-10 kR from the geocorona - so a total count rate of less than 100 counts per second
Category=ISM
Description=[UNDESIGNATED]
Extended=YES

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	IPH-Upwind-1	(1) IPH-UPWIND-1	STIS/FUV-MAMA, TIME-TAG, 52X0.5	E140H 1234 A	BUFFER-TIME=4000; WAVECAL=NO			2550 Secs (2550 Secs) *[==>]*	*[1]*
2	WaveCal for visit 1	WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.09	E140H 1234 A				*[==>]*	*[1]*

Orbit Structure



Visit

Proposal 17196, IPH-Upwind-2 (02), completed Thu Sep 07 21:00:20 GMT 2023

Diagnostic Status: Warning

Scientific Instruments: STIS/FUV-MAMA

Special Requirements: BETWEEN 22-AUG-2023:00:00:00 AND 08-SEP-2023:00:00:00

Comments: Visits 2-6 are all the same but entered as separate one-orbit visits to help with scheduling. If possible please schedule so that each visit takes place when STIS HV is firt turned on to limit thermal background on the MAMA.

Diagnostics

(IPH-Upwind-2 (02)) Warning (Form): A target acquisition should probably be performed before doing spectroscopy or coronography with STIS or COS.

(IPH-Upwind-2 (02)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

(IPH-Upwind-2 (02)) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

(IPH-Upwind-2 (02.001)) Warning (Form): Sensitive exposures should have an ETC run number provided.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	IPH-UPWIND-2	RA: 16 54 0.0000 (253.5000000d) Dec: -15 30 0.00 (-15.50000d) Equinox: J2000	Proper Motion RA: 0 Proper Motion Dec: 0 Parallax: 0" Epoch of Position: 2000	V=0+/-0 300-1000 Rayleighs	Reference Frame: Sky Background

Comments: STIS SPECTRA OF INTERPLANETARY HYDROGEN, I.E. OBSERVE SKY WITH NO STARS MV < 18 IN APERTURE LOOKING IN THE FLOW DIRECTION (UPWIND)

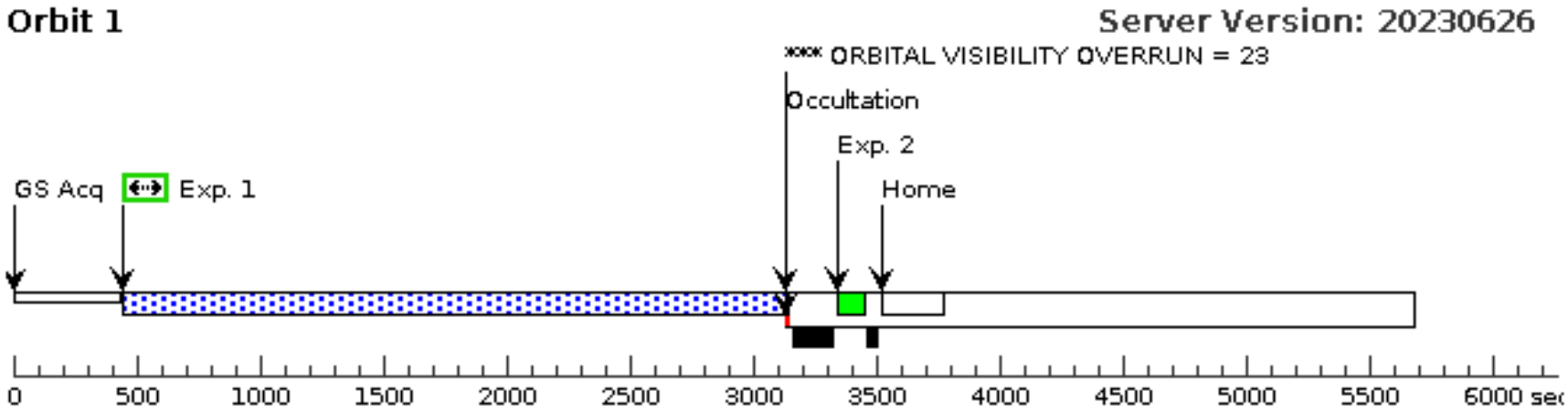
NOTE THAT EMISSION TO BE OBSERVED IS DIFFUSE ACROSS THE SKY - THUS TWO GYRO POINTING IS OK

Measured total count rate from prior observations in this mode (GO 8650) is 5 counts/sec per kilo-Rayleigh, and we expect about 1 kR from the IPH and 5-10 kR from the geocorona - so a total count rate of less than 100 counts per second
Category=ISM
Description=[UNDESIGNATED]
Extended=YES

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	IPH-Upwind-2	(2) IPH-UPWIND-2	STIS/FUV-MAMA, TIME-TAG, 52X0.5	E140H 1234 A	BUFFER-TIME=4000; WAVECAL=NO			2550 Secs (2550 Secs) *[==>]*	*[1]*
2	WaveCal for Visit 2	WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.09	E140H 1234 A				*[==>]*	*[1]*

Orbit Structure



Visit

Proposal 17196, IPH-Upwind-3 (03), completed Thu Sep 07 21:00:20 GMT 2023

Diagnostic Status: Warning

Scientific Instruments: STIS/FUV-MAMA

Special Requirements: BETWEEN 22-AUG-2023:00:00:00 AND 08-SEP-2023:00:00:00

Comments: Visits 2-6 are all the same but entered as separate one-orbit visits to help with scheduling. If possible please schedule so that each visit takes place when STIS HV is firt turned on to limit thermal background on the MAMA.

Diagnostics

(IPH-Upwind-3 (03)) Warning (Form): A target acquisition should probably be performed before doing spectroscopy or coronography with STIS or COS.

(IPH-Upwind-3 (03)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

(IPH-Upwind-3 (03)) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

(IPH-Upwind-2 (03.001)) Warning (Form): Sensitive exposures should have an ETC run number provided.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	IPH-UPWIND-2	RA: 16 54 0.0000 (253.5000000d) Dec: -15 30 0.00 (-15.50000d) Equinox: J2000	Proper Motion RA: 0 Proper Motion Dec: 0 Parallax: 0" Epoch of Position: 2000	V=0+/-0 300-1000 Rayleighs	Reference Frame: Sky Background

Comments: STIS SPECTRA OF INTERPLANETARY HYDROGEN, I.E. OBSERVE SKY WITH NO STARS MV < 18 IN APERTURE LOOKING IN THE FLOW DIRECTION (UPWIND)

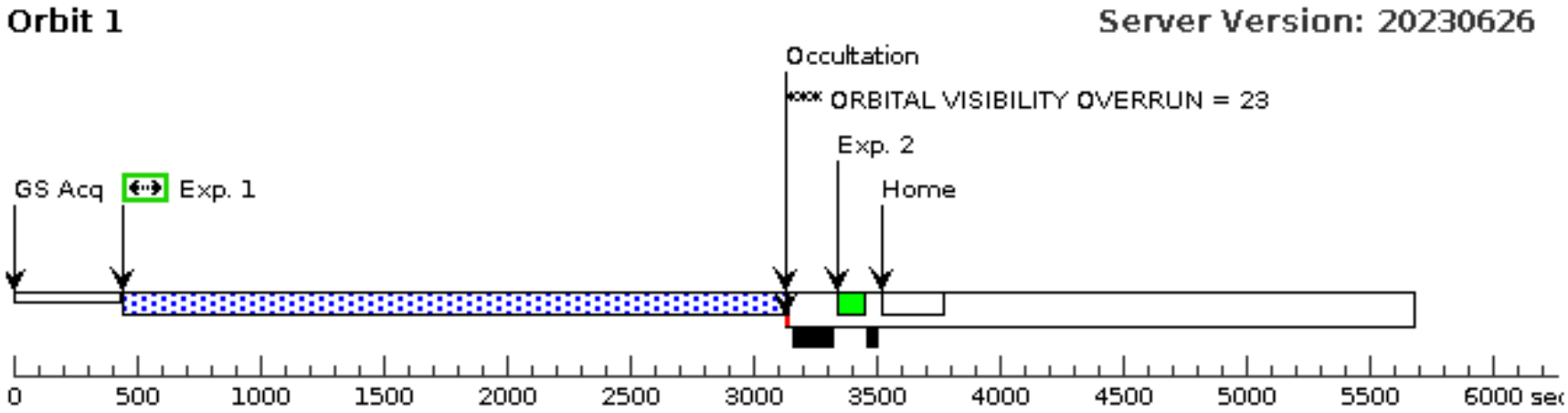
NOTE THAT EMISSION TO BE OBSERVED IS DIFFUSE ACROSS THE SKY - THUS TWO GYRO POINTING IS OK

Measured total count rate from prior observations in this mode (GO 8650) is 5 counts/sec per kilo-Rayleigh, and we expect about 1 kR from the IPH and 5-10 kR from the geocorona - so a total count rate of less than 100 counts per second
Category=ISM
Description=[UNDESIGNATED]
Extended=YES

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	IPH-Upwind-2	(2) IPH-UPWIND-2	STIS/FUV-MAMA, TIME-TAG, 52X0.5	E140H 1234 A	BUFFER-TIME=4000; WAVECAL=NO			2550 Secs (2550 Secs) *[==>]*	*[1]*
2	WaveCal for Visit 3	WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.09	E140H 1234 A				*[==>]*	*[1]*

Orbit Structure



Visit

Proposal 17196, IPH-Upwind-4 (04), completed Thu Sep 07 21:00:20 GMT 2023

Diagnostic Status: Warning

Scientific Instruments: STIS/FUV-MAMA

Special Requirements: BETWEEN 22-AUG-2023:00:00:00 AND 08-SEP-2023:00:00:00

Comments: Visits 2-6 are all the same but entered as separate one-orbit visits to help with scheduling. If possible please schedule so that each visit takes place when STIS HV is firt turned on to limit thermal background on the MAMA.

Diagnostics

(IPH-Upwind-4 (04)) Warning (Form): A target acquisition should probably be performed before doing spectroscopy or coronography with STIS or COS.

(IPH-Upwind-4 (04)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

(IPH-Upwind-4 (04)) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

(IPH-Upwind-2 (04.001)) Warning (Form): Sensitive exposures should have an ETC run number provided.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	IPH-UPWIND-2	RA: 16 54 0.0000 (253.5000000d) Dec: -15 30 0.00 (-15.50000d) Equinox: J2000	Proper Motion RA: 0 Proper Motion Dec: 0 Parallax: 0" Epoch of Position: 2000	V=0+/-0 300-1000 Rayleighs	Reference Frame: Sky Background

Comments: STIS SPECTRA OF INTERPLANETARY HYDROGEN, I.E. OBSERVE SKY WITH NO STARS MV < 18 IN APERTURE LOOKING IN THE FLOW DIRECTION (UPWIND)

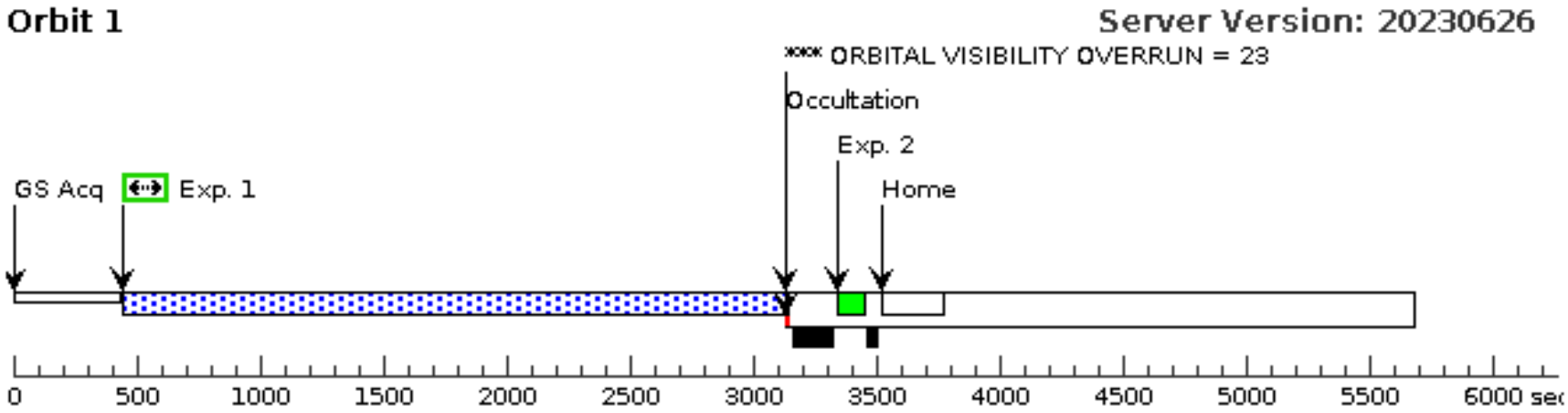
NOTE THAT EMISSION TO BE OBSERVED IS DIFFUSE ACROSS THE SKY - THUS TWO GYRO POINTING IS OK

Measured total count rate from prior observations in this mode (GO 8650) is 5 counts/sec per kilo-Rayleigh, and we expect about 1 kR from the IPH and 5-10 kR from the geocorona - so a total count rate of less than 100 counts per second
Category=ISM
Description=[UNDESIGNATED]
Extended=YES

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	IPH-Upwind-2	(2) IPH-UPWIND-2	STIS/FUV-MAMA, TIME-TAG, 52X0.5	E140H 1234 A	BUFFER-TIME=4000; WAVECAL=NO			2550 Secs (2550 Secs) *[==>]*	*[1]*
2	WaveCal for Visit 4	WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.09	E140H 1234 A				*[==>]*	*[1]*

Orbit Structure



Visit

Proposal 17196, IPH-Upwind-5 (05), completed Thu Sep 07 21:00:20 GMT 2023

Diagnostic Status: Warning

Scientific Instruments: STIS/FUV-MAMA

Special Requirements: BETWEEN 22-AUG-2023:00:00:00 AND 08-SEP-2023:00:00:00

Comments: Visits 2-6 are all the same but entered as separate one-orbit visits to help with scheduling. If possible please schedule so that each visit takes place when STIS HV is firt turned on to limit thermal background on the MAMA.

Diagnostics

(IPH-Upwind-5 (05)) Warning (Form): A target acquisition should probably be performed before doing spectroscopy or coronography with STIS or COS.

(IPH-Upwind-5 (05)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

(IPH-Upwind-5 (05)) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

(IPH-Upwind-2 (05.001)) Warning (Form): Sensitive exposures should have an ETC run number provided.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	IPH-UPWIND-2	RA: 16 54 0.0000 (253.5000000d) Dec: -15 30 0.00 (-15.50000d) Equinox: J2000	Proper Motion RA: 0 Proper Motion Dec: 0 Parallax: 0" Epoch of Position: 2000	V=0+/-0 300-1000 Rayleighs	Reference Frame: Sky Background

Comments: STIS SPECTRA OF INTERPLANETARY HYDROGEN, I.E. OBSERVE SKY WITH NO STARS MV < 18 IN APERTURE LOOKING IN THE FLOW DIRECTION (UPWIND)

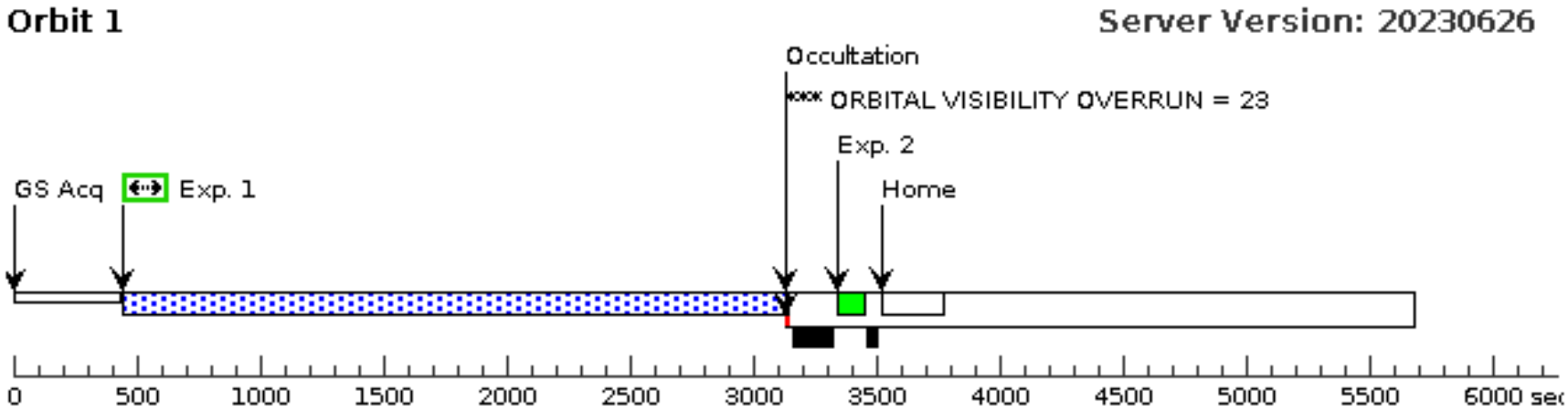
NOTE THAT EMISSION TO BE OBSERVED IS DIFFUSE ACROSS THE SKY - THUS TWO GYRO POINTING IS OK

Measured total count rate from prior observations in this mode (GO 8650) is 5 counts/sec per kilo-Rayleigh, and we expect about 1 kR from the IPH and 5-10 kR from the geocorona - so a total count rate of less than 100 counts per second
Category=ISM
Description=[UNDESIGNATED]
Extended=YES

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	IPH-Upwind-2	(2) IPH-UPWIND-2	STIS/FUV-MAMA, TIME-TAG, 52X0.5	E140H 1234 A	BUFFER-TIME=4000; WAVECAL=NO			2550 Secs (2550 Secs) *[==>]*	*[1]*
2	WaveCal for Visit 5	WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.09	E140H 1234 A				*[==>]*	*[1]*

Orbit Structure



Visit

Proposal 17196, IPH-Upwind-6 (06), scheduled Thu Sep 07 21:00:20 GMT 2023

Diagnostic Status: Warning

Scientific Instruments: STIS/FUV-MAMA

Special Requirements: BETWEEN 22-AUG-2023:00:00:00 AND 08-SEP-2023:00:00:00

Comments: Visits 2-6 are all the same but entered as separate one-orbit visits to help with scheduling. If possible please schedule so that each visit takes place when STIS HV is firt turned on to limit thermal background on the MAMA.

Diagnostics

(IPH-Upwind-6 (06)) Warning (Form): A target acquisition should probably be performed before doing spectroscopy or coronography with STIS or COS.

(IPH-Upwind-6 (06)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

(IPH-Upwind-6 (06)) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

(IPH-Upwind-2 (06.001)) Warning (Form): Sensitive exposures should have an ETC run number provided.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	IPH-UPWIND-2	RA: 16 54 0.0000 (253.5000000d) Dec: -15 30 0.00 (-15.50000d) Equinox: J2000	Proper Motion RA: 0 Proper Motion Dec: 0 Parallax: 0" Epoch of Position: 2000	V=0+/-0 300-1000 Rayleighs	Reference Frame: Sky Background

Comments: STIS SPECTRA OF INTERPLANETARY HYDROGEN, I.E. OBSERVE SKY WITH NO STARS MV < 18 IN APERTURE LOOKING IN THE FLOW DIRECTION (UPWIND)

NOTE THAT EMISSION TO BE OBSERVED IS DIFFUSE ACROSS THE SKY - THUS TWO GYRO POINTING IS OK

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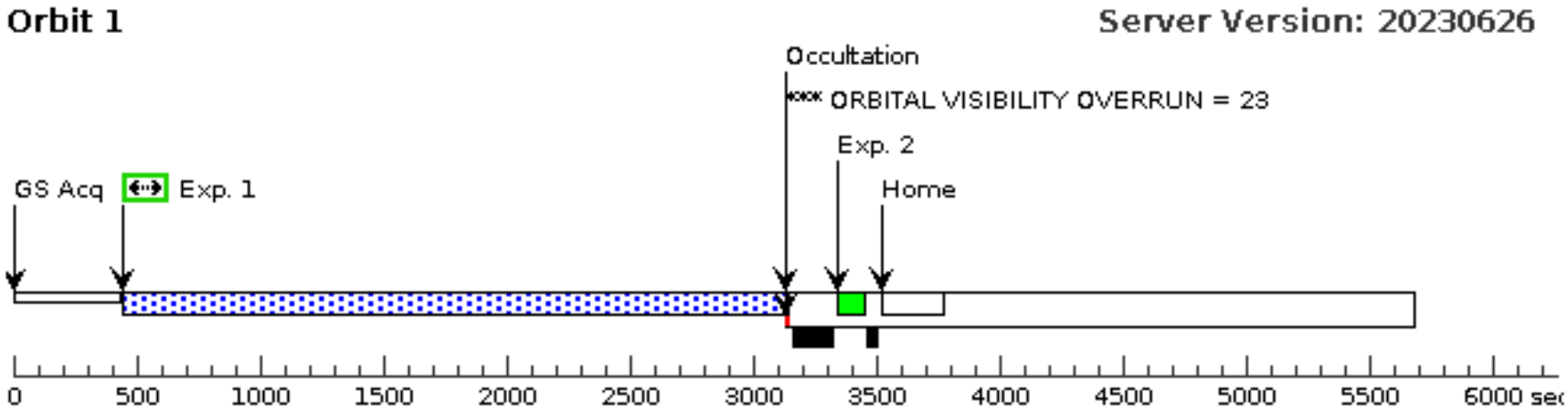
Category=ISM
Description=[UNDESIGNATED]
Extended=YES

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	IPH-Upwind-2	(2) IPH-UPWIND-2	STIS/FUV-MAMA, TIME-TAG, 52X0.5	E140H 1234 A	BUFFER-TIME=4000; WAVECAL=NO			2550 Secs (2550 Secs) *[==>]*	*[1]*
2	WaveCal for Visit 6	WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.09	E140H 1234 A				*[==>]*	*[1]*

Orbit Structure



Visit

Proposal 17196, IPH-Upwind-22 (07) Thu Sep 07 21:00:20 GMT 2023

Diagnostic Status: Warning

Scientific Instruments: STIS/FUV-MAMA

Special Requirements: BETWEEN 18-SEP-2023:00:00:00 AND 25-SEP-2023:00:00:00

Comments: Visits 2-6 are all the same but entered as separate one-orbit visits to help with scheduling. If possible please schedule so that each visit takes place when STIS HV is firt turned on to limit thermal background on the MAMA.

This visit (IPH-Upwind-22 or visit 7) is a repeat of visit 2 which was HOPR'd due to failed guide star acq.

Diagnostics

(IPH-Upwind-22 (07)) Warning (Form): A target acquisition should probably be performed before doing spectroscopy or coronography with STIS or COS.

(IPH-Upwind-22 (07)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

(IPH-Upwind-22 (07)) Warning (Orbit Planner): REFERENCE-FRAME MUST BE ICRS OR GSC1 FOR SMALL APERTURE

(IPH-Upwind-2 (07.001)) Warning (Form): Sensitive exposures should have an ETC run number provided.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	IPH-UPWIND-2	RA: 16 54 0.0000 (253.5000000d) Dec: -15 30 0.00 (-15.50000d) Equinox: J2000	Proper Motion RA: 0 Proper Motion Dec: 0 Parallax: 0" Epoch of Position: 2000	V=0+/-0 300-1000 Rayleighs	Reference Frame: Sky Background

Comments: STIS SPECTRA OF INTERPLANETARY HYDROGEN, I.E. OBSERVE SKY WITH NO STARS MV < 18 IN APERTURE LOOKING IN THE FLOW DIRECTION (UPWIND)

NOTE THAT EMISSION TO BE OBSERVED IS DIFFUSE ACROSS THE SKY - THUS TWO GYRO POINTING IS OK

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Category=ISM
Description=[UNDESIGNATED]
Extended=YES

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	IPH-Upwind-2	(2) IPH-UPWIND-2	STIS/FUV-MAMA, TIME-TAG, 52X0.5	E140H 1234 A	BUFFER-TIME=4000; WAVECAL=NO			2550 Secs (2550 Secs) *[==>]*	***[1]***
2	WaveCal for Visit 2	WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.09	E140H 1234 A				*[==>]*	***[1]***

Orbit Structure