14746 - Stellar Laboratories: High-precision Atomic Physics with STIS

Cycle: 24, Proposal Category: GO

(UV Initiative)

(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) EC11481-2303	STIS/CCD STIS/FUV-MAMA	1	29-Jul-2016 15:11:21.0	yes
02	(2) FEIGE110	STIS/CCD STIS/FUV-MAMA	1	29-Jul-2016 15:11:22.0	yes
03	(3) PG0909+276	STIS/CCD STIS/FUV-MAMA	1	29-Jul-2016 15:11:22.0	yes

3 Total Orbits Used

ABSTRACT

Stellar atmospheres are prime laboratories to determine atomic properties of highly ionized species. Since reliable metal opacities are crucial ingredients of many astrophysical simulations, we propose to exploit STIS's spectroscopic capabilities to obtain high-resolution, high-S/N spectra of three hot subdwarf stars that exhibit extremely high iron-group (calcium to nickel) abundances and, thus, are ideal objects to identify even weak

spectral lines of these species. The precise spectral analysis by advanced non-LTE model-atmosphere techniques allows to determine photospheric properties accurately and subsequently derive relative weighted oscillator strengths of iron-group lines. This will establish an important benchmark test for available atomic-line lists of iron-group elements for ionization stages III to VI.

OBSERVING DESCRIPTION

Short-slit (0.2"x0.2") medium-dispersion UV spectroscopy of three relatively bright , isolated sdOB stars in the STIS/FUV-MAMA configuration with grating E140M to cover the wavelength range 1150-1700 A. We used the STIS ETC (version 24.2) to determine the exposure times necessary to achieve S/N 30 - 50 in the complete wavelength range. From our experience with previous HST/STIS data analyses, this S/N is necessary for reliable line-profile analysis. To achieve the maximum S/N, we use the complete orbit.

Visit

Proposal 14746, EC11481-2303 (01) Fri Jul 29 19:11:23 GMT 2016

Diagnostic Status: No Diagnostics

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

Special Requirements: (none)

Fixed Targets

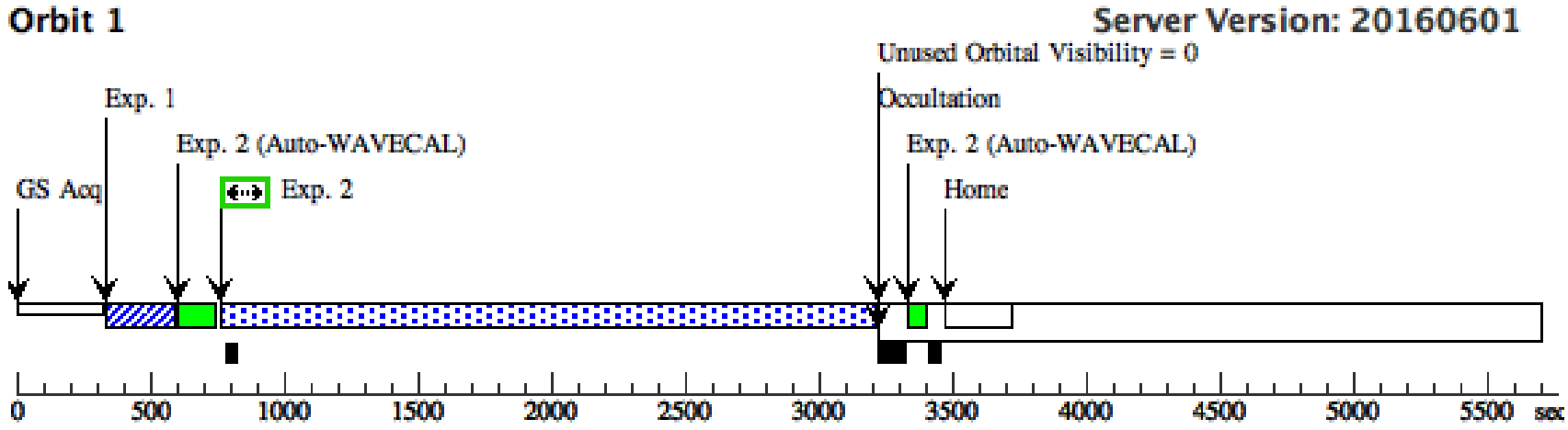
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	EC11481-2303 Alt Name1: WD1148-230 Alt Name2: GSC06665-00691	RA: 11 50 38.8484 (177.6618683d) Dec: -23 20 34.78 (-23.34299d) Equinox: J2000	Proper Motion RA: 2.00 mas/yr Proper Motion Dec: -9.90 mas/yr Epoch of Position: 2000 Radial Velocity: -17.5 km/sec	V=11.778+/-0.1 5.5E-12 erg/cm**2/s/A at 1300 A from IUE SWP48111LL	Reference Frame: ICRS

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	EC11481-2303-ta (STIS.ta.820953)	(1) EC11481-2303	STIS/CCD, ACQ, F28X50OII	MIRROR				1 Secs (1 Secs) *[==>]*	*[1]*
2	EC11481-2303-sc (STIS.sp.820955)	(1) EC11481-2303	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A				2431 Secs (2431 Secs) *[==>]*	*[1]*

Orbit Structure



Visit

Proposal 14746, FEIGE110 (02) Fri Jul 29 19:11:23 GMT 2016

Diagnostic Status: No Diagnostics

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

Special Requirements: (none)

Fixed Targets

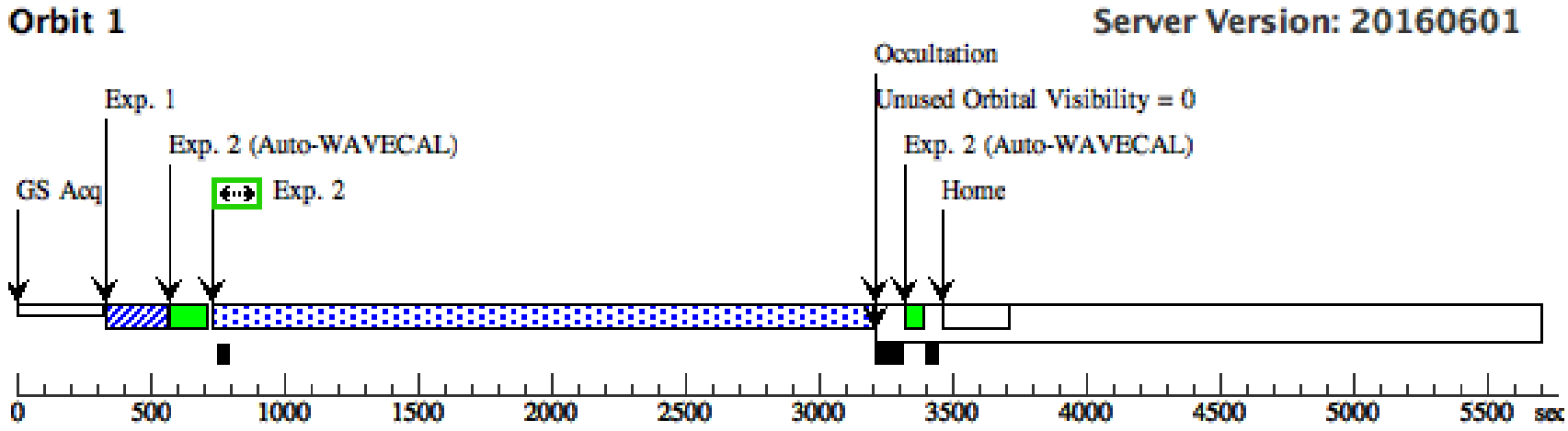
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	FEIGE110 Alt Name1: EGGR158 Alt Name2: GSC05249-01109	RA: 23 19 58.3981 (349.9933254d) Dec: -05 09 56.16 (-5.16560d) Equinox: J2000	Proper Motion RA: -10.68 mas/yr Proper Motion Dec: 0.31 mas/yr Epoch of Position: 2000 Radial Velocity: 8.0 km/sec	V=11.845+/-0.1 7.2E-12 erg/cm**2/s/A at 1300 A from IUE SWP21891LL	Reference Frame: ICRS

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	FEIGE110-ta (STIS.ta.820952)	(2) FEIGE110	STIS/CCD, ACQ, F28X50LP	MIRROR				1 Secs (1 Secs) *[==>]*	*[1]*
2	FEIGE110-sc (STIS.sp.820956)	(2) FEIGE110	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A				2453 Secs (2453 Secs) *[==>]*	*[1]*

Orbit Structure



Visit

Proposal 14746, PG0909+276 (03) Fri Jul 29 19:11:23 GMT 2016

Diagnostic Status: No Diagnostics

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

Special Requirements: (none)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(3)	PG0909+276 Alt Name1: TYC1954-398-1 Alt Name2: GSC01954-00398	RA: 09 12 51.6620 (138.2152583d) Dec: +27 20 31.43 (27.34206d) Equinox: J2000	Proper Motion RA: 0.5 mas/yr Proper Motion Dec: 0.1 mas/yr Epoch of Position: 2000	V=12.091+/-0.1 3.5E-12 erg/cm**2/s/A at 1300 A from IUE SWP27469LL	Reference Frame: ICRS

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	PG0909+726 (STIS.ta.820954)	(3) PG0909+276	STIS/CCD, ACQ, F28X50LP	MIRROR				1 Secs (1 Secs) *[==>]*	 ***[1]***
2	PG0909+726 (STIS.sp.820959)	(3) PG0909+276	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A				2469 Secs (2469 Secs) *[==>]*	 ***[1]***

Orbit Structure