16983 - Astrometric signature of a Second Planet in Proxima

Cycle: 30, 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) PROXIMA-CENTAURI-TIME	WFC3/UVIS	1	05-Jul-2022 17:00:12.0	yes
02	(1) PROXIMA-CENTAURI-TIME	WFC3/UVIS	1	05-Jul-2022 17:00:13.0	yes

2 Total Orbits Used

ABSTRACT

Proxima Centauri is the closest star to the Sun and the closest known exo-planetary system to Earth. It is therefore a key benchmark for detailed investigations of multi-planet system architecture, particularly for low mass stars. Recent ground-based radial velocity campaigns indicate the presence of at least one --and possibly a second-- exo-planet orbiting Proxima Centauri.

To test the multi-planet configuration of this system, we propose to use HST in spatial-scanning mode to obtain the most precise relative astrometry for Proxima Centauri to date (~20 micro-arc-seconds). The proposed sequence of six (6) epochs of observations over three (3) years will unambiguously detect the astrometric perturbation of Proxima Centauri induced by the hypothesized planet c, and constrain that planet's orbital geometry and mass.

OBSERVING DESCRIPTION

Observing Proxima Centauri

Visit

Proposal 16983, Visit 01, implementation Tue Jul 05 21:00:14 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: ORIENT 132D TO 137 D; BETWEEN 13-AUG-2023 AND 26-AUG-2023

Comments: fourth epoch must be taken as early as possible during Cy30

Fixed Targets

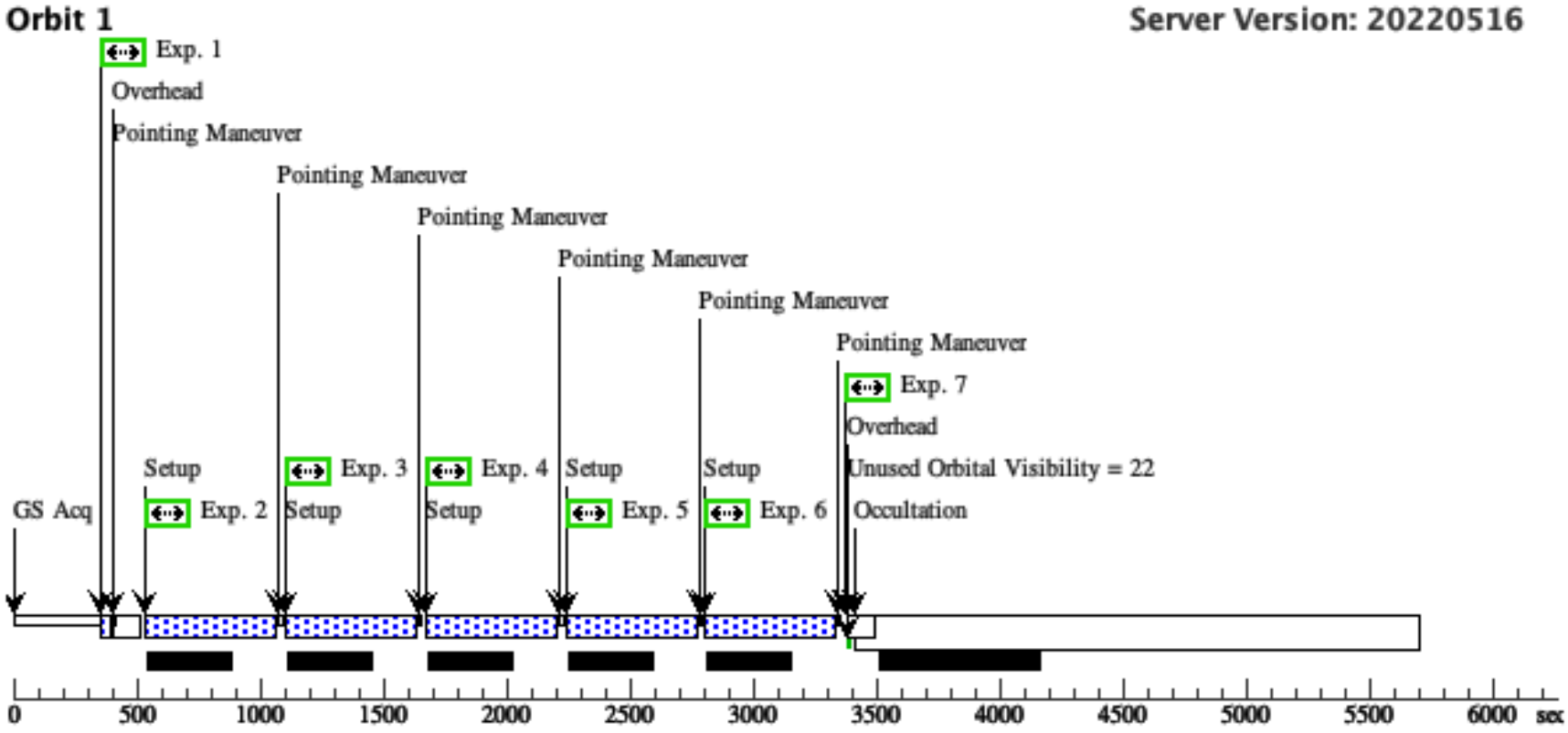
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	PROXIMA-CENTAURI-TIME	RA: 14 29 29.0000 (217.3708333d) Dec: -62 40 25.00 (-62.67361d) Equinox: J2000		V=11.13	Reference Frame: SIMBAD

Comments:
Category=STAR
Description=[LOW MASS COMPANION, M V-IV]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) PROXIMA-CENTAURI-TIME	WFC3/UVIS, ACCUM, UVIS1-FIX	F467M	FLASH=16	POS TARG -4,-4		5 Secs (5 Secs) *[==>]*	 ***[1]***
2		(1) PROXIMA-CENTAURI-TIME	WFC3/UVIS, ACCUM, UVIS1	F467M	FLASH=16	POS TARG -4,-4; SPATIAL SCAN 0.2 128,270.0 Degrees,Forward,1.25 Arcsec,6		400 Secs (400 Secs) *[==>]*	 ***[1]***
3		(1) PROXIMA-CENTAURI-TIME	WFC3/UVIS, ACCUM, UVIS1	F467M	FLASH=16	POS TARG -4,4; SPATIAL SCAN 0.2 128,0.0 Degrees,Forward,1.25 Arcsec,6		400 Secs (400 Secs) *[==>]*	 ***[1]***
4		(1) PROXIMA-CENTAURI-TIME	WFC3/UVIS, ACCUM, UVIS1	F467M	FLASH=16	POS TARG 0,0; SPATIAL SCAN 0.2 128,270.0 Degrees,Forward,1.25 Arcsec,6		400 Secs (400 Secs) *[==>]*	 ***[1]***
5		(1) PROXIMA-CENTAURI-TIME	WFC3/UVIS, ACCUM, UVIS1	F467M	FLASH=16	POS TARG 4,-4; SPATIAL SCAN 0.2 128,180.0 Degrees,Forward,1.25 Arcsec,6		400 Secs (400 Secs) *[==>]*	 ***[1]***
6		(1) PROXIMA-CENTAURI-TIME	WFC3/UVIS, ACCUM, UVIS1	F467M	FLASH=16	POS TARG 4,4; SPATIAL SCAN 0.2 128,90.0 Degrees,Forward,1.25 Arcsec,6		400 Secs (400 Secs) *[==>]*	 ***[1]***
7		(1) PROXIMA-CENTAURI-TIME	WFC3/UVIS, ACCUM, UVIS1	F467M	FLASH=16	POS TARG 4,4		5 Secs (5 Secs) *[==>]*	 ***[1]***

Orbit Structure



Visit

Proposal 16983, Visit 02, implementation Tue Jul 05 21:00:14 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: ORIENT 300D TO 318 D; BETWEEN 02-FEB-2024 AND 10-MAR-2024

Comments: thrid epoch must be taken as early as possible during Cy30

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	PROXIMA-CENTAURI-TIME	RA: 14 29 29.0000 (217.3708333d) Dec: -62 40 25.00 (-62.67361d) Equinox: J2000		V=11.13	Reference Frame: SIMBAD

Comments:
Category=STAR
Description=[LOW MASS COMPANION, M V-IV]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) PROXIMA-CENTAURI-TIME	WFC3/UVIS, ACCUM, UVIS2-FIX	F467M	FLASH=16	POS TARG -4,-4		5 Secs (5 Secs) *[==>]*	 ***[1]***
2		(1) PROXIMA-CENTAURI-TIME	WFC3/UVIS, ACCUM, UVIS2-FIX	F467M	FLASH=16	POS TARG -4,-4; SPATIAL SCAN 0.2 128,270.0 Degrees,Forward,1.25 Arcsec,6		400 Secs (400 Secs) *[==>]*	 ***[1]***
3		(1) PROXIMA-CENTAURI-TIME	WFC3/UVIS, ACCUM, UVIS2-FIX	F467M	FLASH=16	POS TARG -4,4; SPATIAL SCAN 0.2 128,0.0 Degrees,Forward,1.25 Arcsec,6		400 Secs (400 Secs) *[==>]*	 ***[1]***
4		(1) PROXIMA-CENTAURI-TIME	WFC3/UVIS, ACCUM, UVIS2-FIX	F467M	FLASH=16	POS TARG 0,0; SPATIAL SCAN 0.2 128,270.0 Degrees,Forward,1.25 Arcsec,6		400 Secs (400 Secs) *[==>]*	 ***[1]***
5		(1) PROXIMA-CENTAURI-TIME	WFC3/UVIS, ACCUM, UVIS2-FIX	F467M	FLASH=16	POS TARG 4,-4; SPATIAL SCAN 0.2 128,180.0 Degrees,Forward,1.25 Arcsec,6		400 Secs (400 Secs) *[==>]*	 ***[1]***
6		(1) PROXIMA-CENTAURI-TIME	WFC3/UVIS, ACCUM, UVIS2-FIX	F467M	FLASH=16	POS TARG 4,4; SPATIAL SCAN 0.2 128,90.0 Degrees,Forward,1.25 Arcsec,6		400 Secs (400 Secs) *[==>]*	 ***[1]***
7		(1) PROXIMA-CENTAURI-TIME	WFC3/UVIS, ACCUM, UVIS2-FIX	F467M	FLASH=16	POS TARG 4,4		5 Secs (5 Secs) *[==>]*	 ***[1]***

Orbit Structure