



## 16653 - Astrometric signature of a Second Planet in Proxima

Cycle: 29, Proposal Category: GO

(Availability Mode: SUPPORTED)

### INVESTIGATORS

<i>Name</i>	<i>Institution</i>	<i>E-Mail</i>
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### VISITS

<i>Visit</i>	<i>Targets used in Visit</i>	<i>Configurations used in Visit</i>	<i>Orbits Used</i>	<i>Last Orbit Planner Run</i>	<i>OP Current with Visit?</i>
01	(1) PROXIMA-CENTAURI-TIME	WFC3/UVIS	1	03-Feb-2023 11:00:15.0	yes
02	(1) PROXIMA-CENTAURI-TIME	WFC3/UVIS	1	03-Feb-2023 11:00:16.0	yes
33	(1) PROXIMA-CENTAURI-TIME	WFC3/UVIS	1	03-Feb-2023 11:00:17.0	yes

3 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

Proposal 16653 (STScI Edit Number: 0, Created: Friday, February 3, 2023 at 11:00:18 AM Eastern Standard Time) - Overview  
geometry and mass.

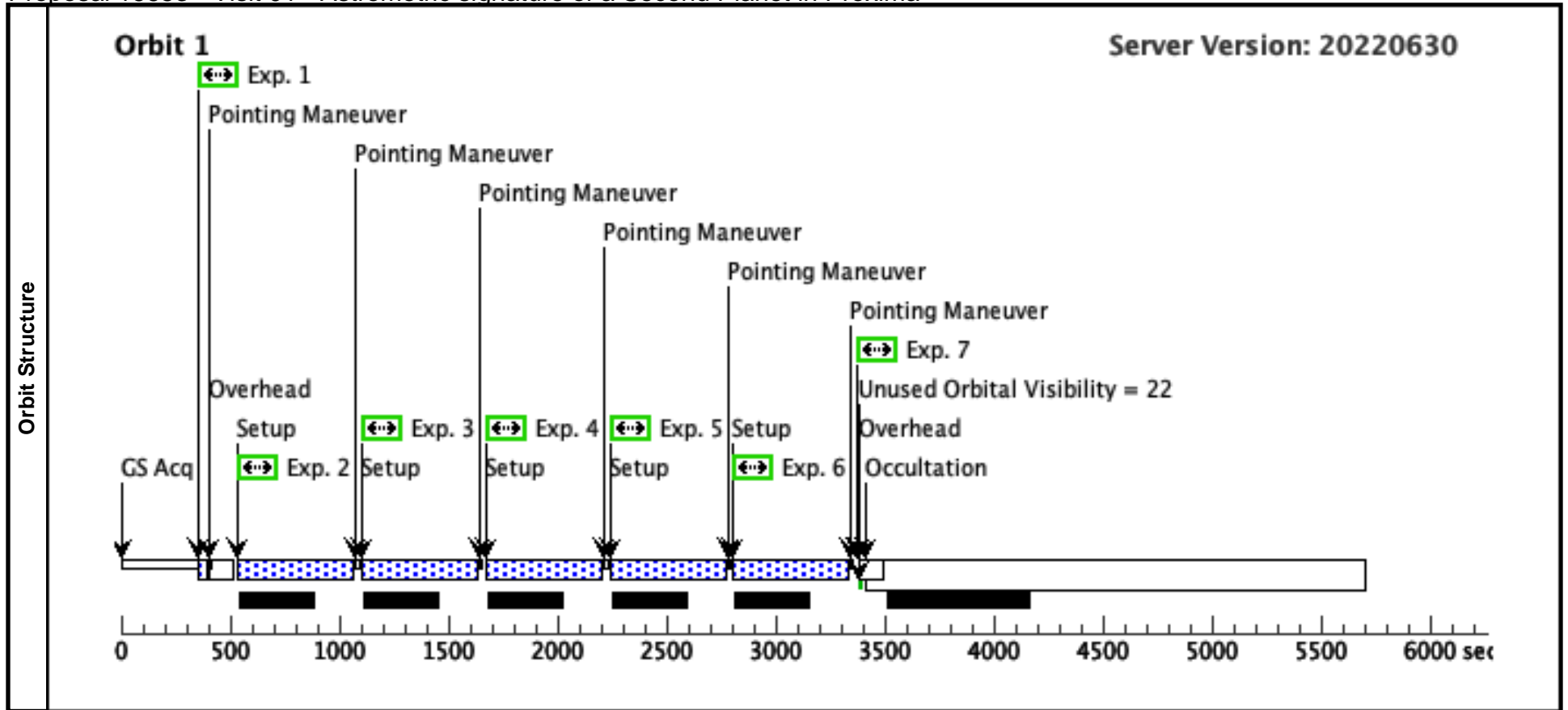
## **OBSERVING DESCRIPTION**

Observing Proxima Centauri

Proposal 16653 - Visit 01 - Astrometric signature of a Second Planet in Proxima

Fri Feb 03 16:00:18 GMT 2023

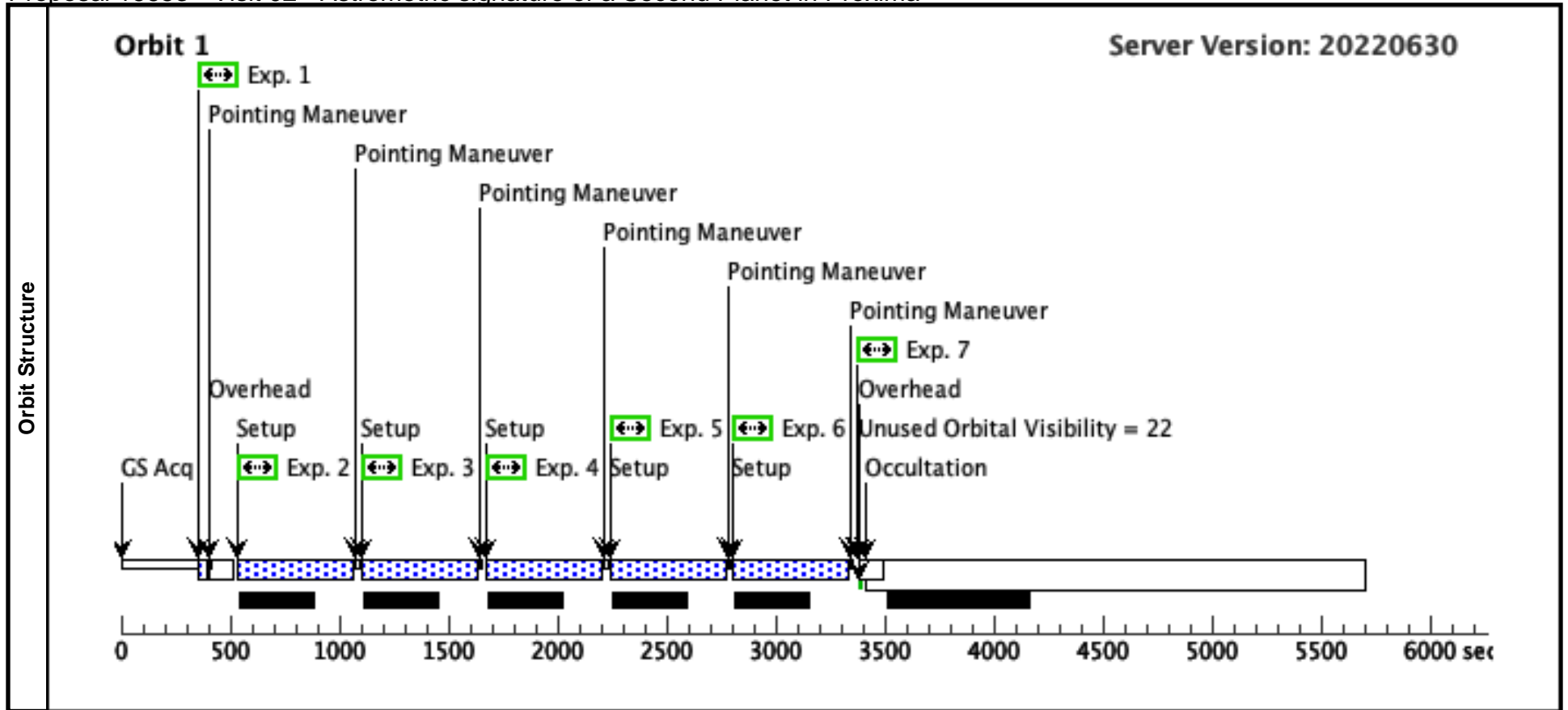
Visit	<b>Proposal 16653, Visit 01, failed</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/UVIS Special Requirements: ORIENT 132D TO 137 D; BETWEEN 13-AUG-2022 AND 26-AUG-2022 Comments: first epoch must be taken as early as possible during Cv29									
	Fixed Targets	#	Name	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-CEN TAURI-TIME	WFC3/UVIS, ACCUM, UVIS1-FIX	F467M	FLASH=16	POS TARG -4,-4		5 Secs (5 Secs) [==>]	[1]
	2		(1) PROXIMA-CEN TAURI-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-CEN TAURI-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-CEN TAURI-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-CEN TAURI-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-CEN TAURI-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-CEN TAURI-TIME	WFC3/UVIS, ACCUM, UVIS1	F467M	FLASH=16	POS TARG 4,4		5 Secs (5 Secs) [==>]	[1]



Proposal 16653 - Visit 02 - Astrometric signature of a Second Planet in Proxima

Fri Feb 03 16:00:18 GMT 2023

Visit	<b>Proposal 16653, Visit 02, completed</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/UVIS Special Requirements: ORIENT 313D TO 315 D; BETWEEN 19-FEB-2022 AND 10-MAR-2022 Comments: first epoch must be taken as early as possible during Cv29									
	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-CEN TAURI-TIME	WFC3/UVIS, ACCUM, UVIS2-FIX	F467M	FLASH=16	POS TARG -4,-4		5 Secs (5 Secs) [==>]	[1]
	2		(1) PROXIMA-CEN TAURI-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-CEN TAURI-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-CEN TAURI-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-CEN TAURI-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-CEN TAURI-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-CEN TAURI-TIME	WFC3/UVIS, ACCUM, UVIS2-FIX	F467M	FLASH=16	POS TARG 4,4		5 Secs (5 Secs) [==>]	[1]



Proposal 16653 - Visit 33 - Astrometric signature of a Second Planet in Proxima

Fri Feb 03 16:00:18 GMT 2023

Visit	<b>Proposal 16653, Visit 33</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/UVIS Special Requirements: ORIENT 313D TO 315 D; BETWEEN 10-FEB-2023 AND 30-MAR-2023 Comments: first epoch must be taken as early as possible during Cv29									
	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-CEN TAURI-TIME	WFC3/UVIS, ACCUM, UVIS2-FIX	F467M	FLASH=16	POS TARG -4,-4		5 Secs (5 Secs) [==>]	[1]
	2		(1) PROXIMA-CEN TAURI-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-CEN TAURI-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-CEN TAURI-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-CEN TAURI-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-CEN TAURI-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-CEN TAURI-TIME	WFC3/UVIS, ACCUM, UVIS2-FIX	F467M	FLASH=16	POS TARG 4,4		5 Secs (5 Secs) [==>]	[1]

