



# 17590 - PROBING THE QUIESCENT EMISSION OF A UNIQUE ISOLATED NEUTRON STAR

Cycle: 31, Proposal Category: GO  
(Availability Mode: SUPPORTED)

## INVESTIGATORS

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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) PSRJ0901-4046	ACS/SBC	4	20-Jun-2024 11:03:07.0	yes

4 Total Orbits Used

## ABSTRACT

PSR J0901-4046 is a unique long period magnetar candidate detected only at radio wavelengths thus far. The source has a spin-down age of 5.5 Myr, yet still has a magnetar-like magnetic field of  $B \sim 1.5 \times 10^{14}$  G. Here, we propose deep XMM-Newton and HST UV observations to detect or place

Proposal 17590 (STScI Edit Number: 1, Created: Thursday, June 20, 2024 at 10:03:07 AM Eastern Standard Time) - Overview  
physically constraining upper-limits on the temperature of hot spots and the full surface thermal emission from this interesting object. These observations will test, and help to significantly constrain, magneto-thermal evolution models in a parameter space where few data points currently exist.

### **OBSERVING DESCRIPTION**

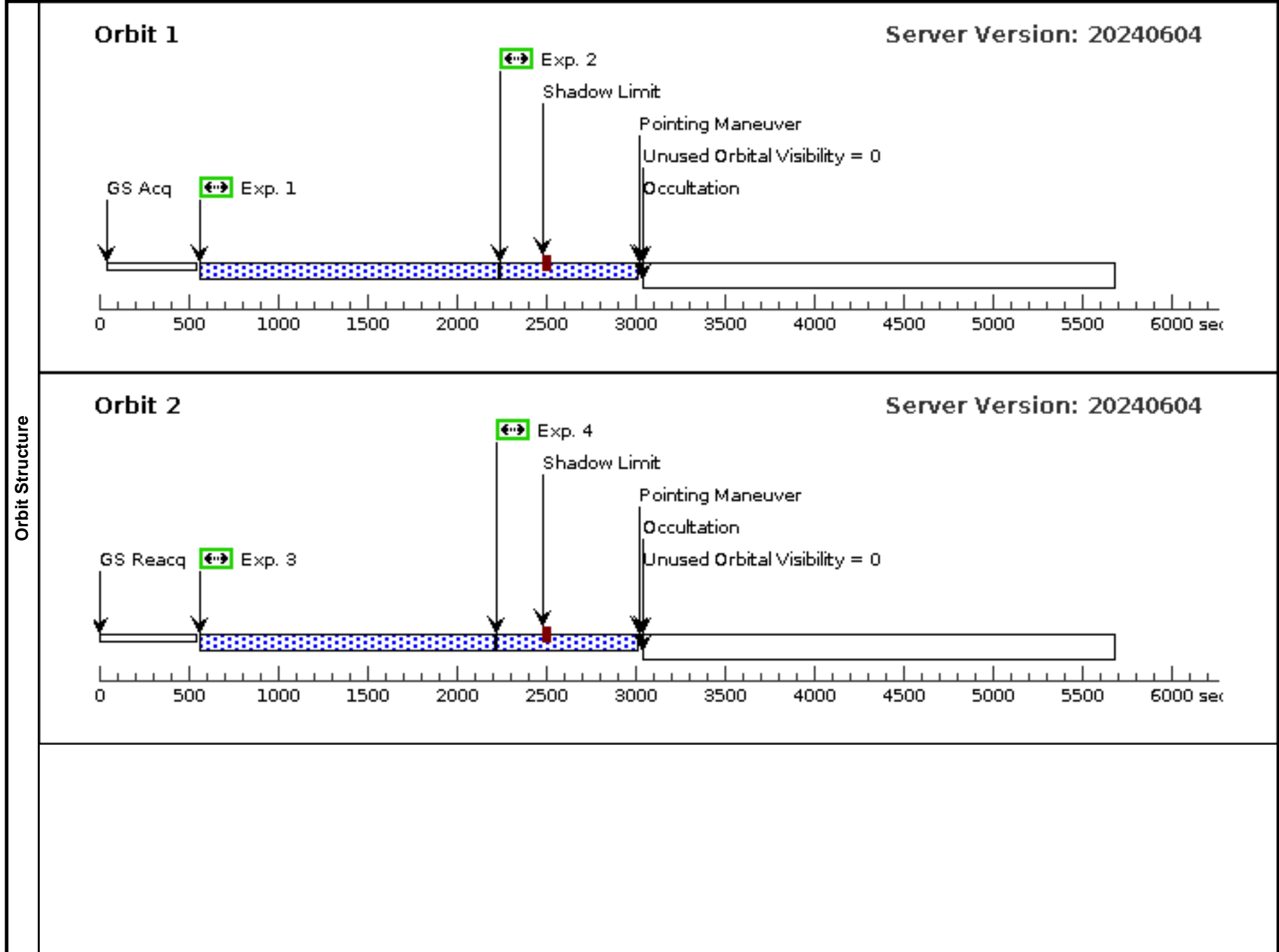
HST will observe the target in Earth's shadow using the SBC/FP125LP filter, for the remainder of the orbit the source will be observed using the F140LP filter. The HST and XMM observations do not need to occur simultaneously.

We expect the impact of the reduced gyro operations to be minimal outside of the schedulability of the observations. If possible, we prefer for the visits to be separated to allow for the SBC camera to cool down providing a lower background and increasing our sensitivity, as this is expected to be a very faint target.

Proposal 17590 - Visit 01 - PROBING THE QUIESCENT EMISSION OF A UNIQUE ISOLATED NEUTRON STAR

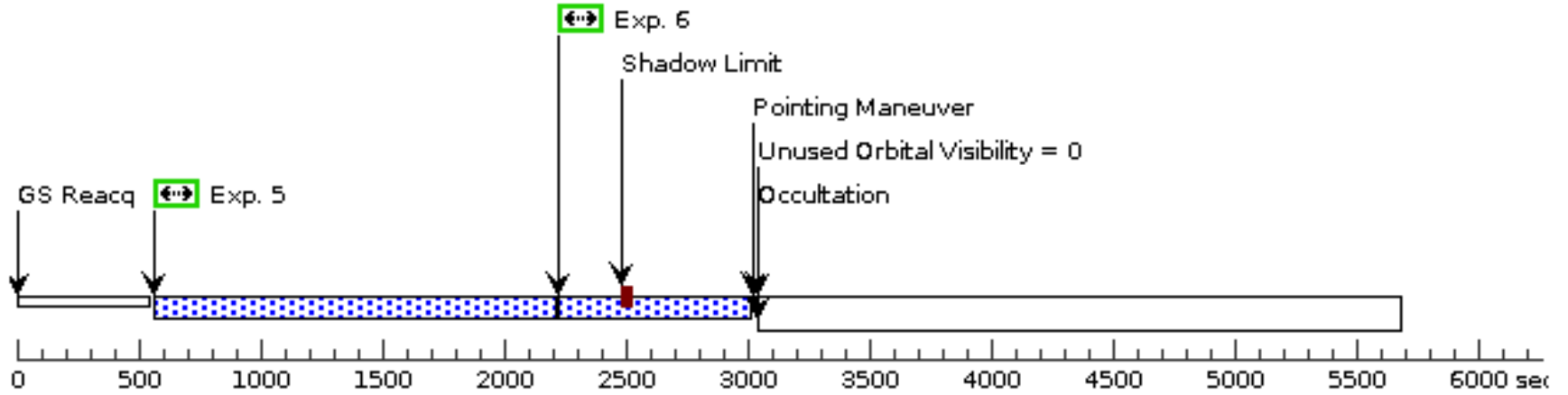
Thu Jun 20 15:03:07 GMT 2024

Visit	Proposal 17590, Visit 01, pi Diagnostic Status: No Diagnostics Scientific Instruments: ACS/SBC Special Requirements: (none)									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
	(1)	PSRJ0901-4046	RA: 09 01 29.2490 (135.3718708d) Dec: -40 46 2.99 (-40.76750d) Equinox: J2000		V=28	Reference Frame: ICRS				
	Comments: Category=STAR Description=[NEUTRON STAR]									
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(ACS.im.18 62670)	(1) PSRJ0901-4046	ACS/SBC, ACCUM, SBC-LODARK	F125LP		POS TARG 0,0; SHADOW		1600 Secs (1600 Secs) [==>]	[1]
	2	(ACS.im.18 62828)	(1) PSRJ0901-4046	ACS/SBC, ACCUM, SBC-LODARK	F140LP		POS TARG 0,0		722 Secs (722 Secs) [==>]	[1]
	3	(ACS.im.18 62670)	(1) PSRJ0901-4046	ACS/SBC, ACCUM, SBC-LODARK	F125LP		POS TARG 0.168,0.062; SHADOW		1600 Secs (1600 Secs) [==>]	[2]
	4	(ACS.im.18 62828)	(1) PSRJ0901-4046	ACS/SBC, ACCUM, SBC-LODARK	F140LP		POS TARG 0.168,0.062		740 Secs (740 Secs) [==>]	[2]
	5	(ACS.im.18 62670)	(1) PSRJ0901-4046	ACS/SBC, ACCUM, SBC-LODARK	F125LP		POS TARG 0.084,0.143; SHADOW		1600 Secs (1600 Secs) [==>]	[3]
	6	(ACS.im.18 62828)	(1) PSRJ0901-4046	ACS/SBC, ACCUM, SBC-LODARK	F140LP		POS TARG 0.084,0.143		740 Secs (740 Secs) [==>]	[3]
	7	(ACS.im.18 62670)	(1) PSRJ0901-4046	ACS/SBC, ACCUM, SBC-LODARK	F125LP		POS TARG -0.084,0.082; SHADOW		1600 Secs (1600 Secs) [==>]	[4]
	8	(ACS.im.18 62828)	(1) PSRJ0901-4046	ACS/SBC, ACCUM, SBC-LODARK	F140LP		POS TARG -0.084,0.082		760 Secs (760 Secs) [==>]	[4]



### Orbit 3

Server Version: 20240604



### Orbit 4

Server Version: 20240604

