



15676 - A new adventure of the musketeer PSR B1055-52

Cycle: 26, 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) PSRB1052-52	WFC3/IR	1	18-Mar-2019 17:00:13.0	yes

1 Total Orbits Used

ABSTRACT

The nearby, middle-aged neutron star PSR B1055-52, one of the so-called Three Musketeers, has been observed once by XMM-Newton in 2000 resulting in a detailed phase-resolved spectral analysis. Chandra observations in 2012 show spectral changes and an apparent >30% flux decrease with respect to the 2000 XMM-Newton observation. These changes are too large to be due to cross-calibration problems. We propose new XMM-Newton observations to probe the apparent spectral changes. Using a better suited instrument mode than the 2000 observations, we will also be able to measure more accurately the magnetospheric spectral component and relate it to the radio and gamma-ray pulse profiles. Furthermore, we will search for phase-dependent absorption features in the new epoch data.

OBSERVING DESCRIPTION

The goal of the HST observation in this joint HST/XMM project is to obtain measurements of the pulsar flux in two NIR bands (F110W, F160W). The scheduling is independent from XMM-Newton scheduling.

The pulsar is expected to be very faint, and it is close (4.8 arcsec separation) to a bright star. Therefore, we apply ORIENT constraints to avoid diffraction and bleeding spikes. We further employ the STEP-readout mode for a better dynamical exposure coverage that will help to minimize persistence (we cannot avoid persistence at various locations due to many bright objects in the field together with a faint target).

We also use a small dither pattern (offsets according to WIDE-3POS-TARGs in Instrument Science Report WFC3 2016-14) aiming to sample the PSF as good as possible. While not the main goal, we will look for extended emission around the position of the pulsar.

Proposal 15676 - Visit 01 - A new adventure of the musketeer PSR B1055-52

Mon Mar 18 21:00:13 GMT 2019

Visit	Proposal 15676, Visit 01, implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR Special Requirements: ORIENT 75D TO 85 D <i>Comments: There is a H=12.3 star a spatial separation of 4.8arcsec and PA=325.7 degree from the target. In order to avoid bleeding and diffraction spikes we chose ORIENT constraints.</i>																					
	Fixed Targets	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th>Targ. Coord. Corrections</th> <th>Fluxes</th> <th>Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>(1)</td> <td>PSRB1052-52</td> <td>RA: 10 57 58.9650 (164.4956875d) Dec: -52 26 56.26 (-52.44896d) Equinox: J2000</td> <td>Proper Motion RA: +43 mas/yr Proper Motion Dec: -3 mas/yr Epoch of Position: 2008.2</td> <td>V=25.5</td> <td>Reference Frame: ICRS</td> </tr> </tbody> </table> <p><i>Comments: Category=STAR Description=[PULSAR] Extended=NO</i></p>										#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous	(1)	PSRB1052-52	RA: 10 57 58.9650 (164.4956875d) Dec: -52 26 56.26 (-52.44896d) Equinox: J2000	Proper Motion RA: +43 mas/yr Proper Motion Dec: -3 mas/yr Epoch of Position: 2008.2	V=25.5
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Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit												
	1	B1055_F16 0W_P1	(1) PSRB1052-52	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=13; SAMP-SEQ=STEP1 00	POS TARG 0.0,0.0		699.232615 Secs (699.233 Secs) [==>]	[1]												
	2	B1055_F16 0W_P2	(1) PSRB1052-52	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=13; SAMP-SEQ=STEP1 00	POS TARG 0.858,0. 083		699.232615 Secs (699.233 Secs) [==>]	[1]												
	3	B1055_F16 0W_P3	(1) PSRB1052-52	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=12; SAMP-SEQ=STEP1 00	POS TARG 0.497,0. 647		599.232292 Secs (599.232 Secs) [==>]	[1]												
	4	B1055_F11 0W_P1	(1) PSRB1052-52	WFC3/IR, MULTIACCUM, IR	F110W	NSAMP=13; SAMP-SEQ=STEP2 5	POS TARG 0.0,0.8		224.233831 Secs (224.234 Secs) [==>]	[1]												
	5	B1055_F11 0W_P2	(1) PSRB1052-52	WFC3/IR, MULTIACCUM, IR	F110W	NSAMP=13; SAMP-SEQ=STEP2 5	POS TARG 0.858,0. 883		224.233831 Secs (224.234 Secs) [==>]	[1]												
	6	B1055_F11 0W_P3	(1) PSRB1052-52	WFC3/IR, MULTIACCUM, IR	F110W	NSAMP=12; SAMP-SEQ=STEP2 5	POS TARG 0.497,1. 447		199.233316 Secs (199.233 Secs) [==>]	[1]												

