



## 16062 - Quasi-Periodic Eruptions (QPEs) in GSN 069

Cycle: 27, 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) GSN069	ACS/SBC	1	28-Apr-2020 13:03:14.0	yes
02	(1) GSN069	ACS/WFC	1	28-Apr-2020 13:03:15.0	yes

2 Total Orbits Used

### ABSTRACT

We have recently reported on the discovery of a new X-ray variability pattern from the nucleus of the galaxy GSN-069, dubbed as Quasi-Periodic Eruptions, or QPEs (Miniutti et al. 2019, Nature, 573, 381). We propose here for further XMM-Newton observations to better characterize this

newly-discovered variability pattern. Ideally, our observations will be complemented with 2 HST orbits with the goals of: i) deriving the optical to X-ray SED of GSN~069; ii) search for possible blue point sources other than the galactic nucleus in comparison with our Chandra data; iii) study the morphology of the poorly known host galaxy; iv) study the spatially-resolved structure of the narrow-line-region in [O~III].

## **OBSERVING DESCRIPTION**

We ask for exposures with the following camera/filters: i) ACS/SBC exposures in the FUV with lters 140LP and 165LP (the second needed to get rid of red leaks) to look for potentially blue sources other than the nucleus, and to contribute to build the SED of GSN 069, in this case in the FUV; ii) ACS/WFC with lter F606W for spatially-resolved imaging of the host galaxy and to look for possible disturbances/merger; iii) ACS/WFC with filters FR647M (continuum) and FR505N (for the [O III] region) to search for signatures of recurrent/intermittent nuclear activity reflected in the narrow line region spatially-resolved structure (e.g. rings/arcs).

The HST observations should be scheduled quasi-simultaneously with the XMM observations (within a few weeks).

At the time the phase 2 is submitted, we only know that the XMM observations could be scheduled between May 30 2020 and July 17 2020. We temporarily set the BETWEEN dates accordingly and we will update them when the XMM schedule is made public, if needed.

Visit 1 and 2 should be grouped within about 5 days but the order does not matter.

Proposal 16062 - Visit 01 - Quasi-Periodic Eruptions (QPEs) in GSN 069

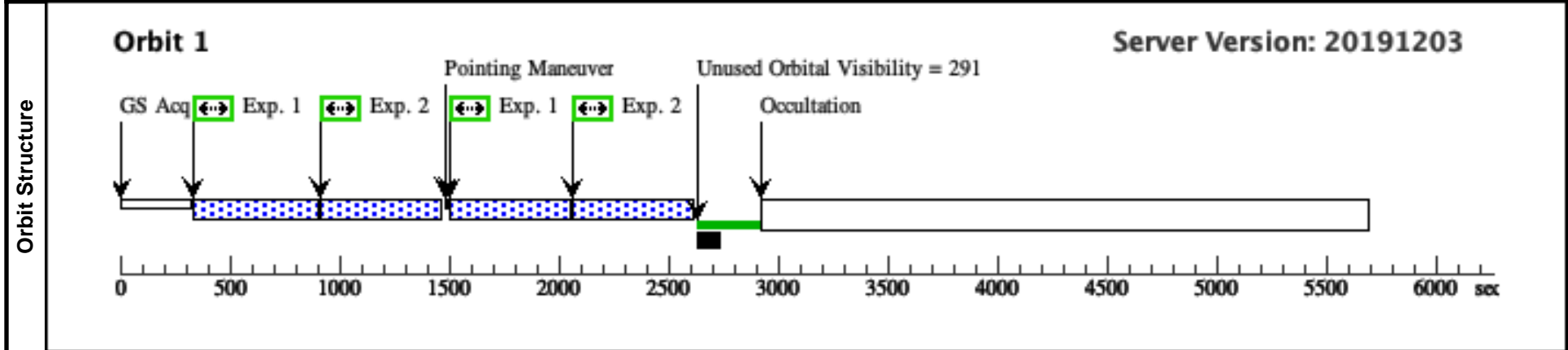
Tue Apr 28 17:03:15 GMT 2020

<b>Visit</b>	<b>Proposal 16062, Visit 01, implementation</b>		
	<b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: ACS/SBC Special Requirements: SCHED 100%		

<b>Patterns</b>	#	Primary Pattern	Secondary Pattern	Exposures
	(1)	Pattern Type=ACS-SBC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.472 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=44.4 Angle Between Sides= Center Pattern=false	

<b>Fixed Targets</b>	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(1)	GSN069	RA: 01 19 8.6600 (19.7860833d) Dec: -34 11 30.52 (-34.19181d) Equinox: J2000  <i>Comments: Galaxy magnitude from Gaia</i> Category=GALAXY Description=[SEYFERT] Extended=YES			V=17.0

<b>Exposures</b>	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(ACS.im.14 10716)	(1) GSN069	ACS/SBC, ACCUM, SBC	F140LP				Pattern 1, Exps 1-2 in Visit 01 (1)	500 Secs (1000 Secs) [=>(Pattern 1)] [=>(Pattern 2)]
2	(ACS.im.14 10716)	(1) GSN069	ACS/SBC, ACCUM, SBC	F165LP				Pattern 1, Exps 1-2 in Visit 01 (1)	500 Secs (1000 Secs) [=>(Pattern 1)] [=>(Pattern 2)]	[1]



Proposal 16062 - Visit 02 - Quasi-Periodic Eruptions (QPEs) in GSN 069

Tue Apr 28 17:03:15 GMT 2020

<b>Visit</b>	<b>Proposal 16062, Visit 02, implementation</b> <b>Diagnostic Status: Warning</b> Scientific Instruments: ACS/WFC Special Requirements: (none)									
	(Exposure 1 (Pattern 2, Exps 1-1 in Visit 02)) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp filters as central wavelengths & transmission efficiencies vary within the apertures. (Exposure 2 (Pattern 2, Exps 2-2 in Visit 02)) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp filters as central wavelengths & transmission efficiencies vary within the apertures.									
<b>Diagnosics</b>										
<b>Patterns</b>	#	<b>Primary Pattern</b>	<b>Secondary Pattern</b>	<b>Exposures</b>						
	(2)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=3.034 Line Spacing= Coordinate Frame=POS-TARG Pattern Orientation=85.29 Angle Between Sides= Center Pattern=false		(1), (2), (3)						
<b>Fixed Targets</b>	#	<b>Name</b>	<b>Target Coordinates</b>	<b>Targ. Coord. Corrections</b>	<b>Fluxes</b>	<b>Miscellaneous</b>				
	(1)	GSN069	RA: 01 19 8.6600 (19.7860833d) Dec: -34 11 30.52 (-34.19181d) Equinox: J2000  <i>Comments: Galaxy magnitude from Gaia</i> <i>Category=GALAXY</i> <i>Description=[SEYFERT]</i> <i>Extended=YES</i>		V=17.0	Reference Frame: ICRS				
<b>Exposures</b>	#	<b>Label</b>	<b>Target</b>	<b>Config,Mode,Aperture</b>	<b>Spectral Els.</b>	<b>Opt. Params.</b>	<b>Special Reqs.</b>	<b>Groups</b>	<b>Exp. Time (Total)/[Actual Dur.]</b>	<b>Orbit</b>
	1	(1) GSN069	(1) GSN069	ACS/WFC, ACCUM, WFC1-MRAMPQ	FR505N 5099.4 A			Pattern 2, Exps 1-1 in Visit 02 (2)	350 Secs (700 Secs) [=>(Pattern 1)] [=>(Pattern 2)]	[1]
	2	(1) GSN069	(1) GSN069	ACS/WFC, ACCUM, WFC1-IRAMPQ	FR647M 5757.0 A			Pattern 2, Exps 2-2 in Visit 02 (2)	80 Secs (160 Secs) [=>(Pattern 1)] [=>(Pattern 2)]	[1]
	3	(1) GSN069	(1) GSN069	ACS/WFC, ACCUM, WFC-FIX	F606W			Pattern 2, Exps 3-3 in Visit 02 (2)	400 Secs (800 Secs) [=>(Pattern 1)] [=>(Pattern 2)]	[1]

