13867 - Testing a Globular Cluster Origin for Elusive Calcium-rich Gap Transients

Cycle: 22, 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?*
03	(1) SN2005E	WFC3/UVIS	2	12-Sep-2014 21:05:41.0	yes
04	(2) PTF11KMB	WFC3/UVIS	2	12-Sep-2014 21:05:42.0	yes

4 Total Orbits Used

ABSTRACT

The advent of wide-field synoptic surveys has re-invigorated time domain astronomy. The six magnitude luminosity gap between novae and supernovae is now bridged with multiple classes of explosions that are rarer, fainter and faster than supernovae. Here, we discuss an emerging class of transients with the unique property of a small amount of ejecta dominated by Calcium. The members of this class are located in the middle of nowhere in intra-group/intra-cluster environments, offset by tens of kiloparsec from their putative host galaxy. No single model can yet explain all the observables of "Calcium-rich Gap" transients. The location distribution is inconsistent with stellar mass and yet, strikingly consistent with globular clusters. It has been speculated that the high stellar density in globulars leads to peculiar transients. Thus, we propose to use 4 HST orbits to test a globular cluster origin for these elusive Calcium-rich transients.

OBSERVING DESCRIPTION

We would like to obtain deep imaging in one filter for two point source targets: SN2005E and PTF11kmb.

We will be using the WFC3/UVIS/F606W setup. We selected the four point dither pattern so that the co-added exposure will be free of radiation hits and would have adequate sub-pixel sampling.

Running the ETC, we need a depth of V=29 which requires 5531s at an optiumum SNR=5. Using a four-point dither pattern, and including overheads, this requires a total of two orbits for each target as the visibility per orbit is 54 min.

We have no scheduling constraints as we are looking for the quiescent counterpart to these Calcium-rich transients.

Visit

Proposal 13867, Visit 03, implementation Sat Sep 13 01:05:44 GMT 2014

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: (none)

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-UVIS-DITHER-LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=0.135 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(1), (2)

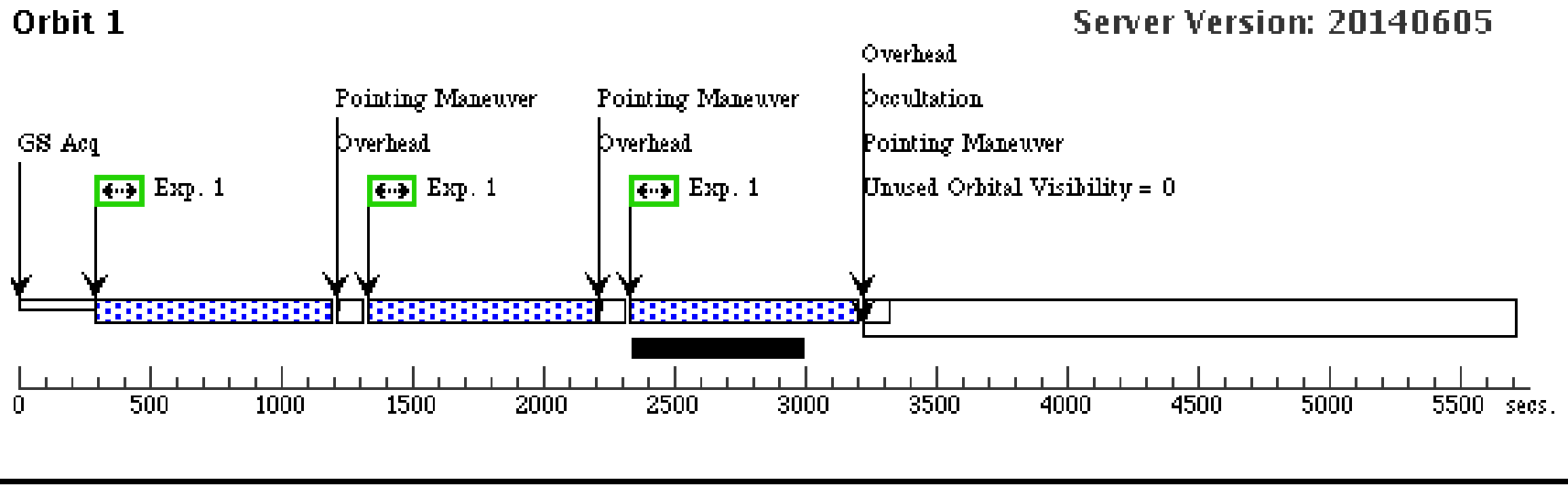
Fixed Targets

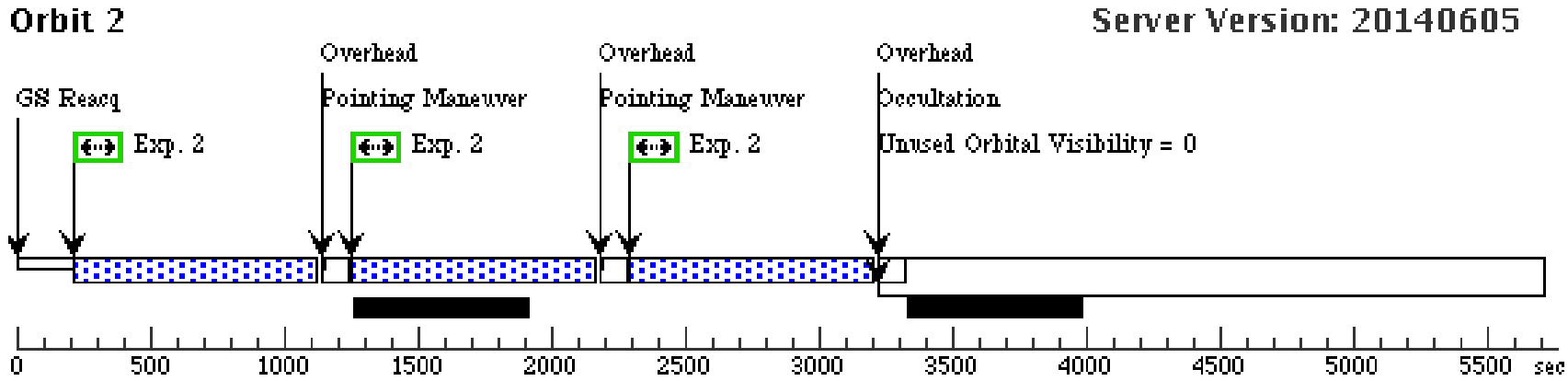
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	SN2005E	RA: 02 39 14.3400 (39.8097500d) Dec: +01 05 55.00 (1.09861d) Equinox: J2000		V=26	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) SN2005E	WFC3/UVIS, ACCUM, UVIS2	F606W		POS TARG -41,-35	Pattern 1, Exps 1-1 in Visit 03 (1)	800 Secs (2625 Secs)	
								[==>875.0 Secs (Pattern 1)]	***[1]***
								[==>875.0 Secs (Pattern 2)]	
								[==>875.0 Secs (Pattern 3)]	
2		(1) SN2005E	WFC3/UVIS, ACCUM, UVIS2	F606W		POS TARG -41.34,-35.34	Pattern 1, Exps 2-2 in Visit 03 (1)	800 Secs (2736 Secs)	
								[==>912.0 Secs (Pattern 1)]	***[2]***
								[==>912.0 Secs (Pattern 2)]	
								[==>912.0 Secs (Pattern 3)]	

Orbit Structure





Visit

Proposal 13867, Visit 04, implementation Sat Sep 13 01:05:44 GMT 2014

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/UVIS

Special Requirements: (none)

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-UVIS-DITHER-LINE-3PT Purpose=DITHER Number Of Points=3 Point Spacing=0.135 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(1), (2)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	PTF11KMB	RA: 22 22 53.6100 (335.7233750d) Dec: +36 17 36.50 (36.29347d) Equinox: J2000		V=26	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(2) PTF11KMB	WFC3/UVIS, ACCUM, UVIS2	F606W		POS TARG -41.34,-35.34	Pattern 1, Exps 1-1 in Visit 04 (1)	800 Secs (2679 Secs) *[==>893.0 Secs (Pattern 1)]* *[==>893.0 Secs (Pattern 2)]* *[==>893.0 Secs (Pattern 3)]*	***[1]***
2		(2) PTF11KMB	WFC3/UVIS, ACCUM, UVIS2	F606W		POS TARG -41,-35	Pattern 1, Exps 2-2 in Visit 04 (1)	800 Secs (2790 Secs) *[==>930.0 Secs (Pattern 1)]* *[==>930.0 Secs (Pattern 2)]* *[==>930.0 Secs (Pattern 3)]*	***[2]***

Orbit Structure