13510 - Joint Chandra and HST Monitoring and Studies of the Crab Nebula

Cycle: 21, 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?*
01	(1) CRAB-NEBULA	ACS/WFC	1	22-Oct-2013 22:02:51.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
02	(1) CRAB-NEBULA	ACS/WFC	1	22-Oct-2013 22:02:58.0	yes
03	(1) CRAB-NEBULA	ACS/WFC	1	22-Oct-2013 22:03:04.0	yes
04	(1) CRAB-NEBULA	ACS/WFC	1	22-Oct-2013 22:03:10.0	yes

4 Total Orbits Used

ABSTRACT

The scientific purpose of this proposal is three-fold: (1) Continue to quantify and correlate the Crab s X-ray and optical, temporal and spatial variations, developing a legacy database for high-spatial-resolution studies of this astrophysical archetype; (2) identify and explore phenomena responsible for the recently discovered fact that the Crab is not a standard candle in hard X-rays; and (3) establish X-ray and optical baselines, to aid in determining the location and physics of the Crab s gamma-ray flares.

OBSERVING DESCRIPTION

The program is part of a multiwavelength (X-ray and optical) monitoring campaign of the Crab pulsar and inner Nebula. It consists in a series of 4 ACS imaging observations in the F550M filter, to be performed quasi-simultaneously (within 10 days maximum) with Chandra/ACIS imaging observations. We ask to observe the target in early December 2013, as well as in January, April and August 2014. For each epoch, we have selected a time window (spanning 10 days) in which the target is visible. The HST visits (as well as the Chandra ones) should be scheduled within such windows. The same instrumental setup will be adopted for each visit. To fully cover the FOV of our Chandra observations (150"x150"), we will use the ACS/WFC with the WFC aperture. A box dithering pattern will be implemented to fill the inter-chip gap as well as to reject cosmic ray hits. Setting an exposure of 500 s for each position of the dithering pattern results in 2000 s exposure time per visit, which is well suited to achieve our goals and allows for an optimal use of the orbital visibility window.

Visit

Proposal 13510, Visit 01, implementation Wed Oct 23 02:03:17 GMT 2013

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/WFC

Special Requirements: SCHED 80%; BETWEEN 01-DEC-2013:00:00:00 AND 11-DEC-2013:00:00:00

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-WFC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=3.5 Line Spacing=0.5	Coordinate Frame=POS-TARG Pattern Orientation=85.28 Angle Between Sides=85.28 Center Pattern=false		(1)

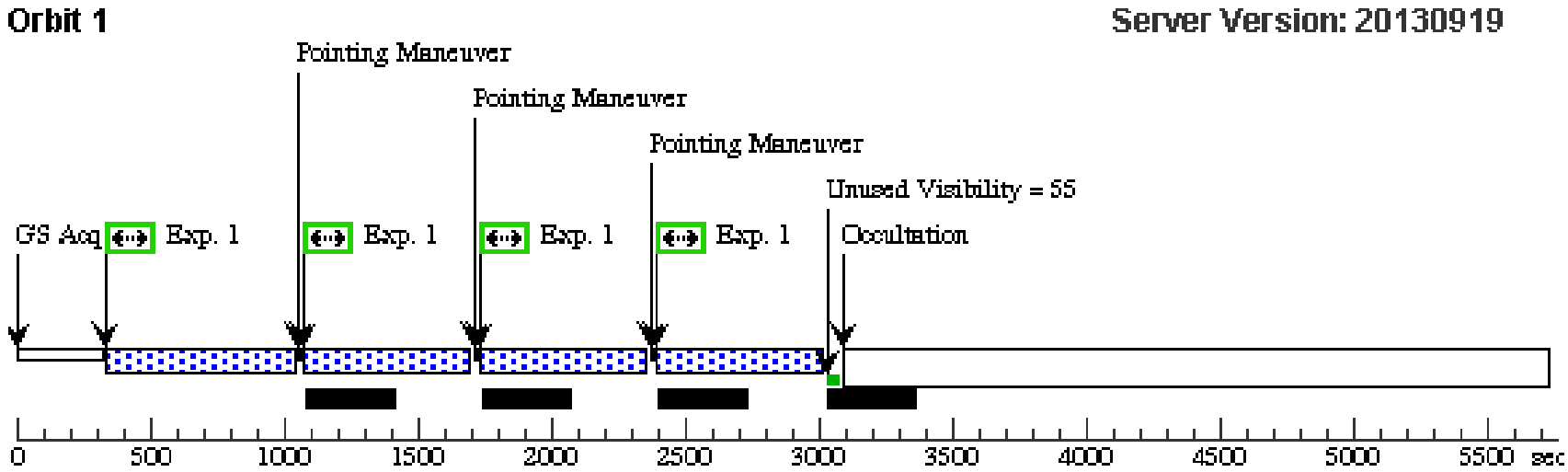
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	CRAB-NEBULA	RA: 05 34 31.9400 (83.6330833d) Dec: +22 00 52.18 (22.01449d) Equinox: J2000		V=16.5	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) CRAB-NEBULA	ACS/WFC, ACCUM, WFC	F550M			Pattern 1, Exps 1-1 in Visit 01 (1)	500 Secs (2000 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	*[1]*

Orbit Structure



Visit

Proposal 13510, Visit 02, implementation Wed Oct 23 02:03:19 GMT 2013

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/WFC

Special Requirements: SCHED 80%; BETWEEN 20-JAN-2014:00:00:00 AND 31-JAN-2014:00:00:00

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-WFC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=3.5 Line Spacing=0.5	Coordinate Frame=POS-TARG Pattern Orientation=85.28 Angle Between Sides=85.28 Center Pattern=false		(1)

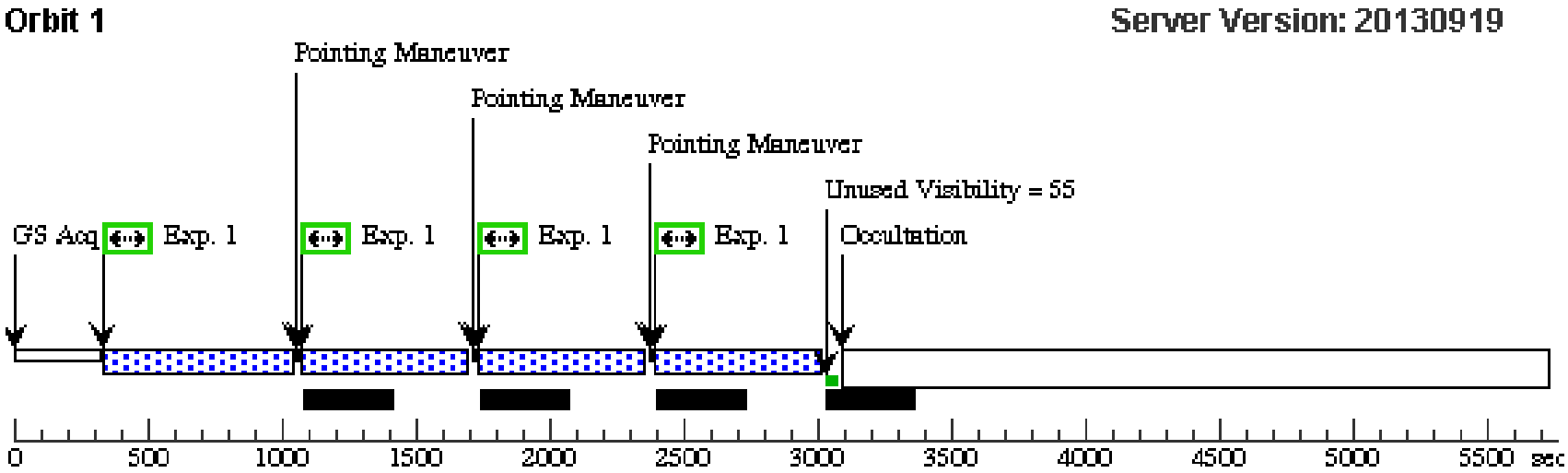
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	CRAB-NEBULA	RA: 05 34 31.9400 (83.6330833d) Dec: +22 00 52.18 (22.01449d) Equinox: J2000		V=16.5	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) CRAB-NEBULA	ACS/WFC, ACCUM, WFC	F550M			Pattern 1, Exps 1-1 in Visit 02 (1)	500 Secs (2000 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	*[1]*

Orbit Structure



Visit

Proposal 13510, Visit 03, implementation Wed Oct 23 02:03:19 GMT 2013

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/WFC

Special Requirements: SCHED 80%; BETWEEN 12-APR-2014:00:00:00 AND 23-APR-2014:00:00:00

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-WFC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=3.5 Line Spacing=0.5	Coordinate Frame=POS-TARG Pattern Orientation=85.28 Angle Between Sides=85.28 Center Pattern=false		(1)

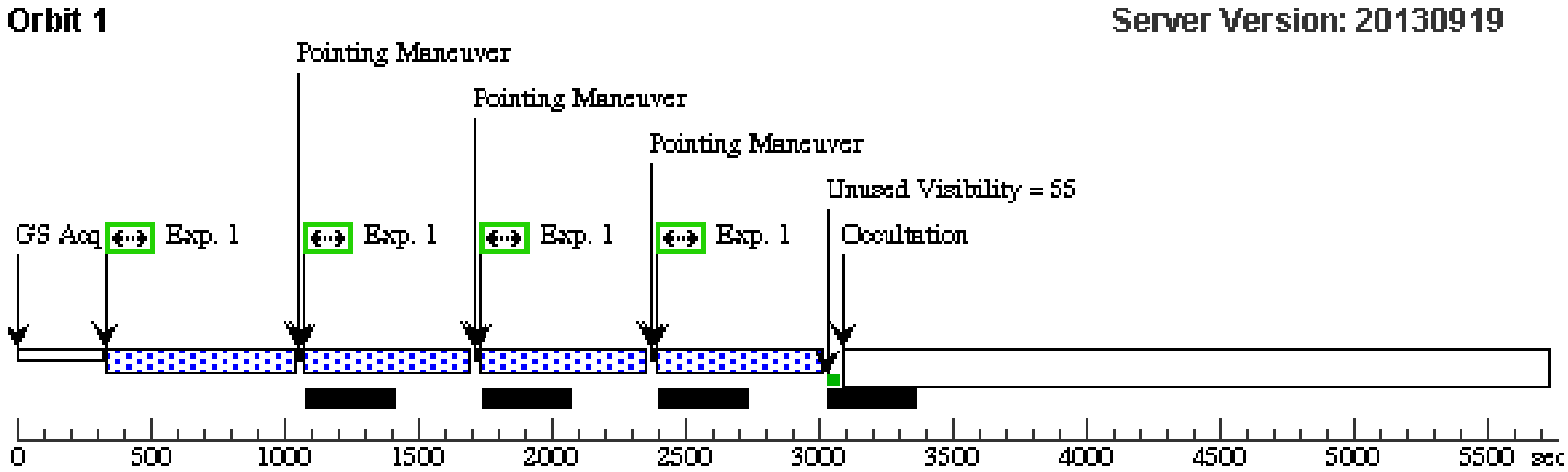
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	CRAB-NEBULA	RA: 05 34 31.9400 (83.6330833d) Dec: +22 00 52.18 (22.01449d) Equinox: J2000		V=16.5	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) CRAB-NEBULA	ACS/WFC, ACCUM, WFC	F550M			Pattern 1, Exps 1-1 in Visit 03 (1)	500 Secs (2000 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	*[1]*

Orbit Structure



Visit

Proposal 13510, Visit 04, implementation Wed Oct 23 02:03:20 GMT 2013

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/WFC

Special Requirements: SCHED 80%; BETWEEN 07-AUG-2014:00:00:00 AND 18-AUG-2014:00:00:00

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-WFC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=3.5 Line Spacing=0.5	Coordinate Frame=POS-TARG Pattern Orientation=85.28 Angle Between Sides=85.28 Center Pattern=false		(1)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	CRAB-NEBULA	RA: 05 34 31.9400 (83.6330833d) Dec: +22 00 52.18 (22.01449d) Equinox: J2000		V=16.5	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) CRAB-NEBULA	ACS/WFC, ACCUM, WFC	F550M			Pattern 1, Exps 1-1 in Visit 04 (1)	500 Secs (2000 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	*[1]*

Orbit Structure