12017 - The Proper Motion of SNR E0519-69.0

Cycle: 17, Proposal Category: GO

(Availability Mode: SUPPORTED)

INVESTIGATORS

Name	*Institution*	*E-Mail*
Dr. John P. Hughes (PI)	**Rutgers the State University of New Jersey**	**jph@physics.rutgers.edu**
Dr. Carles Badenes (CoI)	Princeton University	carles@astro.princeton.edu

VISITS

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
01	(1) E0519-69.0	ACS/WFC	2	27-Oct-2009 21:11:26.0	yes
02	(1) E0519-69.0	ACS/WFC	2	27-Oct-2009 21:11:32.0	yes

4 Total Orbits Used

ABSTRACT

We propose to measure independently the proper motion expansions of the ejecta and forward shock in SNR E0519-69.0. The metal-enriched reverse-shock-heated ejecta emits only in X-rays, while the forward shock is traced to high precision by H alpha emission. The proposed measurements require the unique high resolution imaging capabilities of Chandra and Hubble. The optical (forward shock) and X-ray (ejecta) results will yield important constraints on the remnant's evolutionary state; we will search in particular for evidence of cosmic-ray modified dynamics. An important component of this project is an integrated theoretical investigation using realistic models of SN Ia explosions evolved to the remnant stage.

OBSERVING DESCRIPTION

This is a program to image a small (approx. 30 arcsec diameter), nearly round supernova remnant in H alpha in order to accurately locate, and measure the expansion rate of, the forward shock. The radial expansion rate of the rim is estimated to be between 0.01 and 0.03 arcsec per year. We will use the ACS WFC with the F658N filter. The expansion measurement requires that the observation be split in two with a time interval between exposures of roughly 1 year and the same observation orientation. We will also take contemporaneous images of the stellar field using the F550M filter.

Visit

Proposal 12017, Visit 01 Wed Oct 28 01:11:35 GMT 2009

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/WFC

Special Requirements: (none)

Patterns

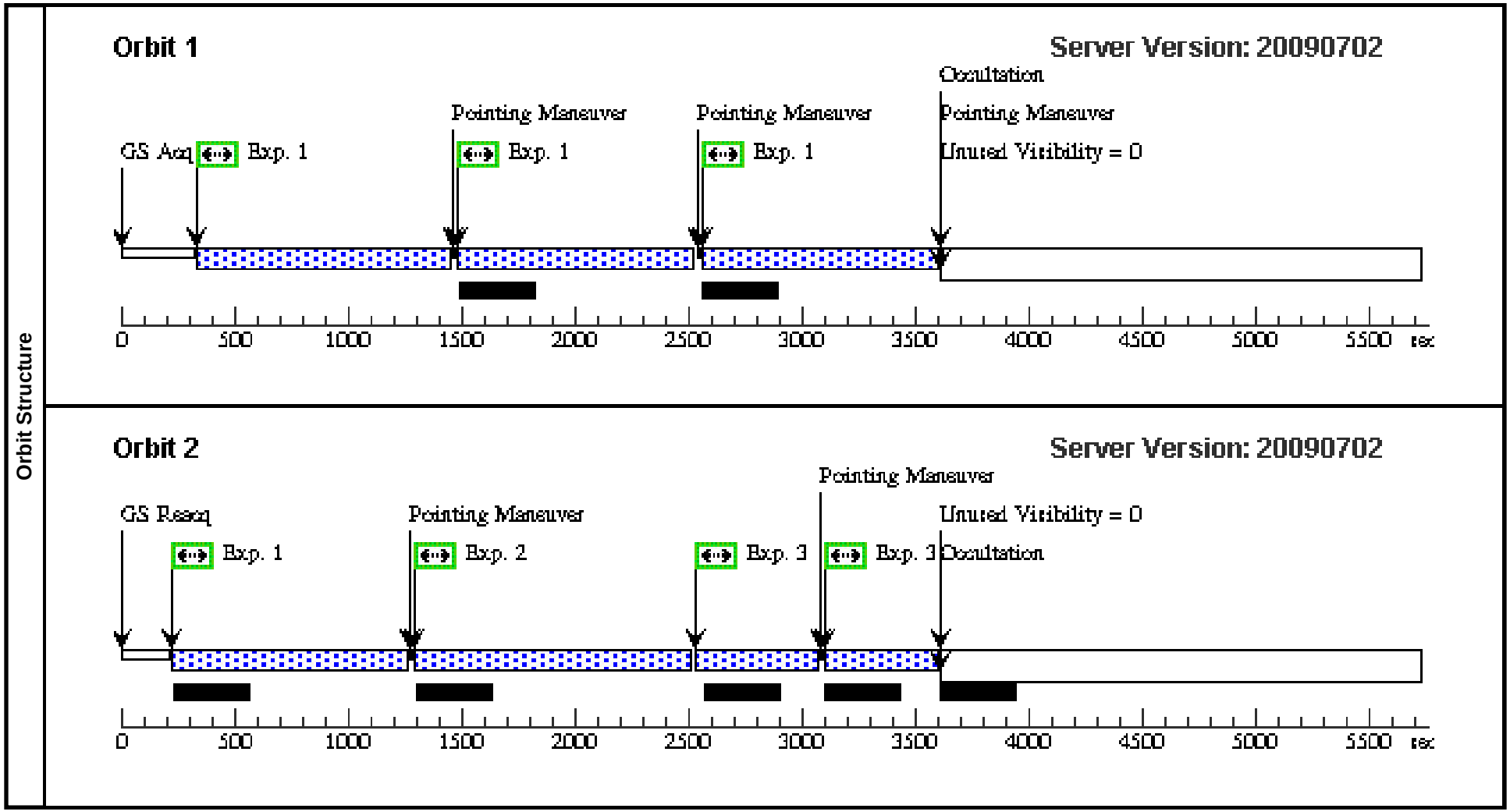
#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-WFC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.265 Line Spacing=0.187	Coordinate Frame=POS-TARG Pattern Orientation=20.67 Angle Between Sides=69.05 Center Pattern=true		(1)
(2)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.146 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=47.17 Angle Between Sides= Center Pattern=false		(3)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	E0519-69.0	RA: 05 19 34.7800 (79.8949167d) Dec: -69 02 8.80 (-69.03578d) Equinox: J2000		V=(?) SURF-LINE(6563)=2e-16	Region Position (E0519-69.0) Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	First epoch Halpha	(1) E0519-69.0	ACS/WFC, ACCUM, WFC2	F658N			Pattern 1, Exps 1-1 (1)	915 Secs	
								[==>(Pattern 1)]	***[1]***
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	***[2]***
2	First epoch Halpha	(1) E0519-69.0	ACS/WFC, ACCUM, WFC2	F658N				1097 Secs	
								[==>]	***[2]***
3	First epoch cont	(1) E0519-69.0	ACS/WFC, ACCUM, WFC2	F550M			Pattern 2, Exps 3-3 (2)	375 Secs	
								[==>(Pattern 1)]	***[2]***
								[==>(Pattern 2)]	


Orbit Structure
Orbit 1
Server Version: 20090702
Occultation
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
GS Acq
Exp. 1
Exp. 1
Exp. 1
Unused Visibility = 0
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec
Orbit 2
Server Version: 20090702
Pointing Maneuver
GS Reacq
Pointing Maneuver
Unused Visibility = 0
Exp. 1
Exp. 2
Exp. 3
Exp. 3
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 12017, Visit 02 Wed Oct 28 01:11:36 GMT 2009

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/WFC

Special Requirements: SAME ORIENT AS 01; AFTER 01 BY 365 D TO 560 D

Patterns

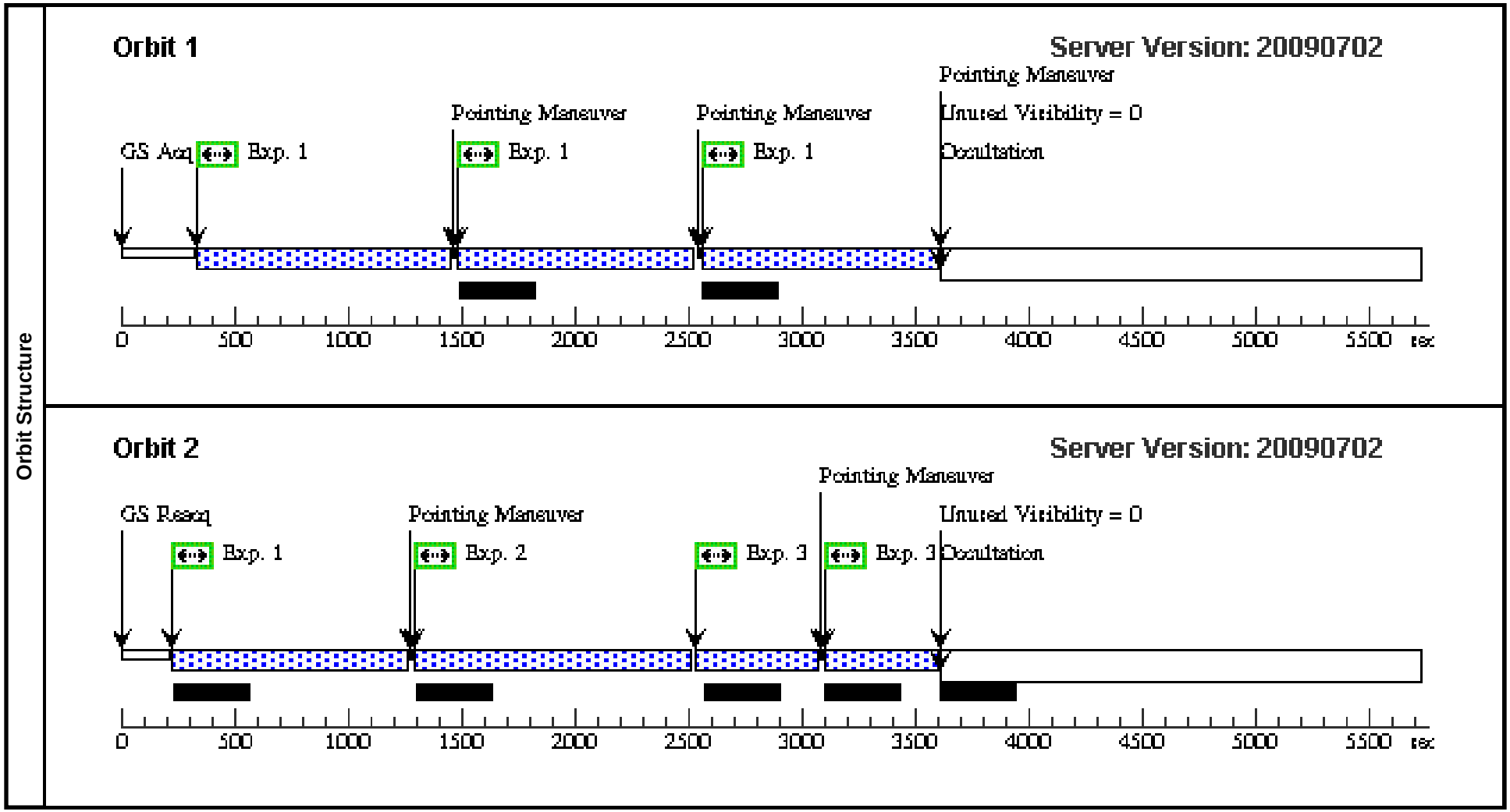
#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-WFC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.265 Line Spacing=0.187	Coordinate Frame=POS-TARG Pattern Orientation=20.67 Angle Between Sides=69.05 Center Pattern=true		(1)
(2)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.146 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=47.17 Angle Between Sides= Center Pattern=false		(3)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	E0519-69.0	RA: 05 19 34.7800 (79.8949167d) Dec: -69 02 8.80 (-69.03578d) Equinox: J2000		V=(?) SURF-LINE(6563)=2e-16	Region Position (E0519-69.0) Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	Second epoch Halpha	(1) E0519-69.0	ACS/WFC, ACCUM, WFC2	F658N			Pattern 1, Exps 1-1 (1)	915 Secs	
								[==>(Pattern 1)]	***[1]***
								[==>(Pattern 2)]	
								[==>(Pattern 3)]	
								[==>(Pattern 4)]	***[2]***
2	Second epoch Halpha	(1) E0519-69.0	ACS/WFC, ACCUM, WFC2	F658N				1097 Secs	
								[==>]	***[2]***
3	Second epoch cont	(1) E0519-69.0	ACS/WFC, ACCUM, WFC2	F550M			Pattern 2, Exps 3-3 (2)	375 Secs	
								[==>(Pattern 1)]	***[2]***
								[==>(Pattern 2)]	


Orbit Structure
Orbit 1
Server Version: 20090702
GS Acq
Exp. 1
Pointing Maneuver
Exp. 1
Pointing Maneuver
Exp. 1
Pointing Maneuver
Unused Visibility = 0
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec
Orbit 2
Server Version: 20090702
GS Reacq
Exp. 1
Pointing Maneuver
Exp. 2
Exp. 3
Pointing Maneuver
Exp. 3
Unused Visibility = 0
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec